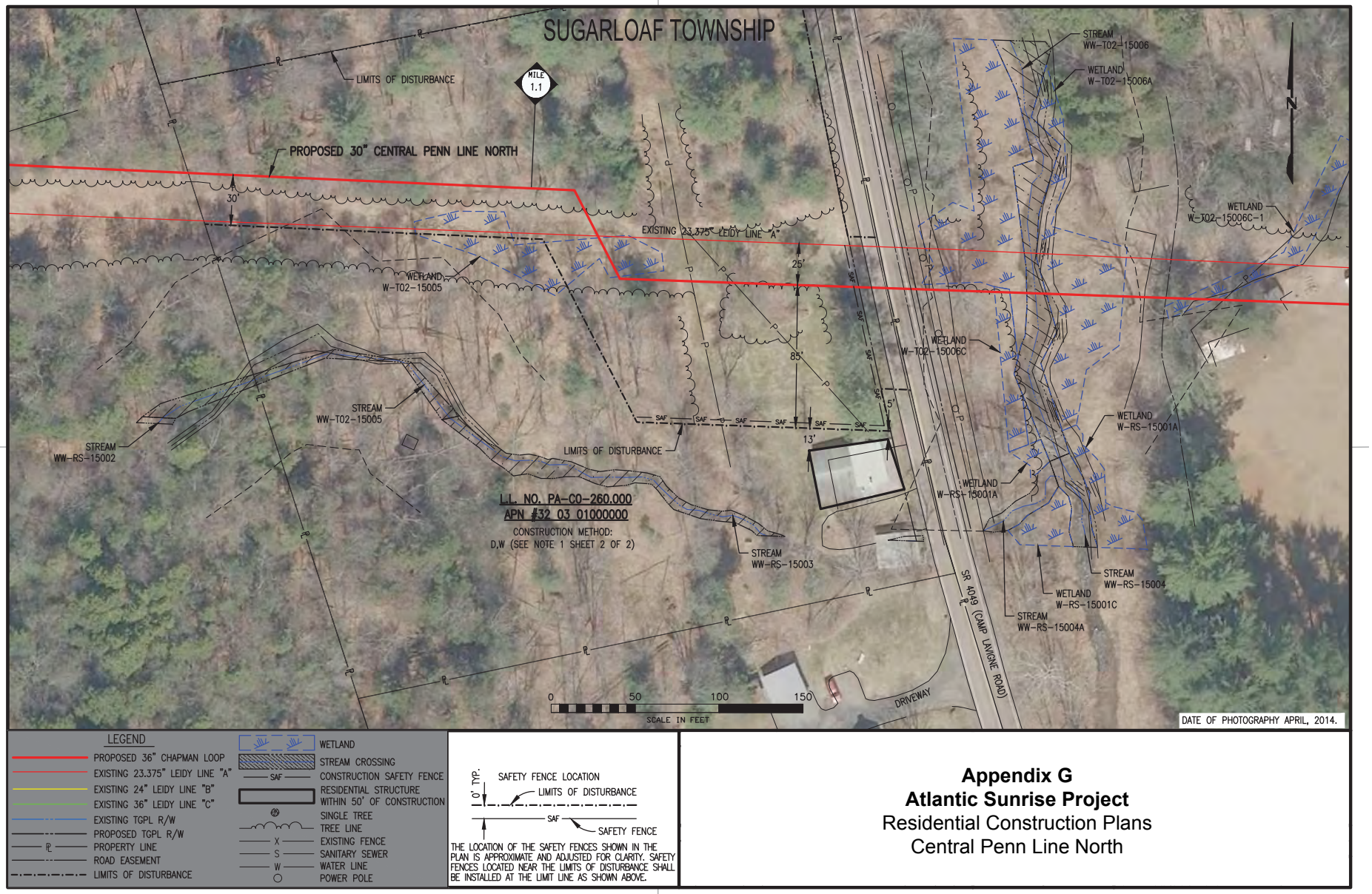
APPENDIX G

RESIDENTIAL CONSTRUCTION PLANS

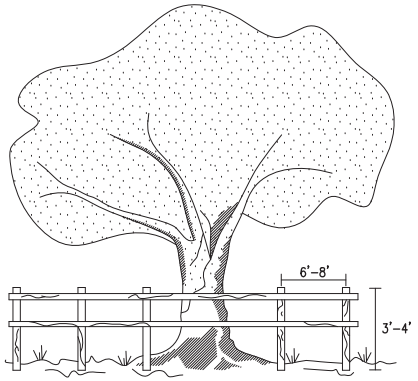
Central Penn Line North



Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

SUGARLOAF TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



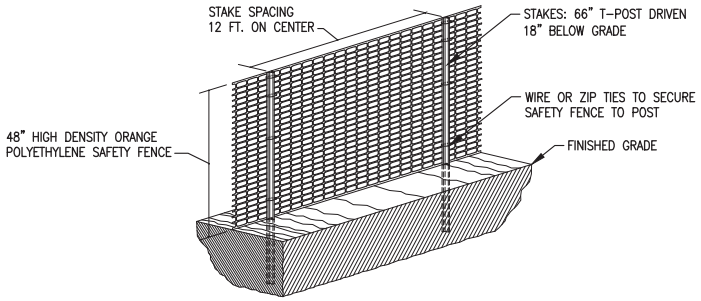
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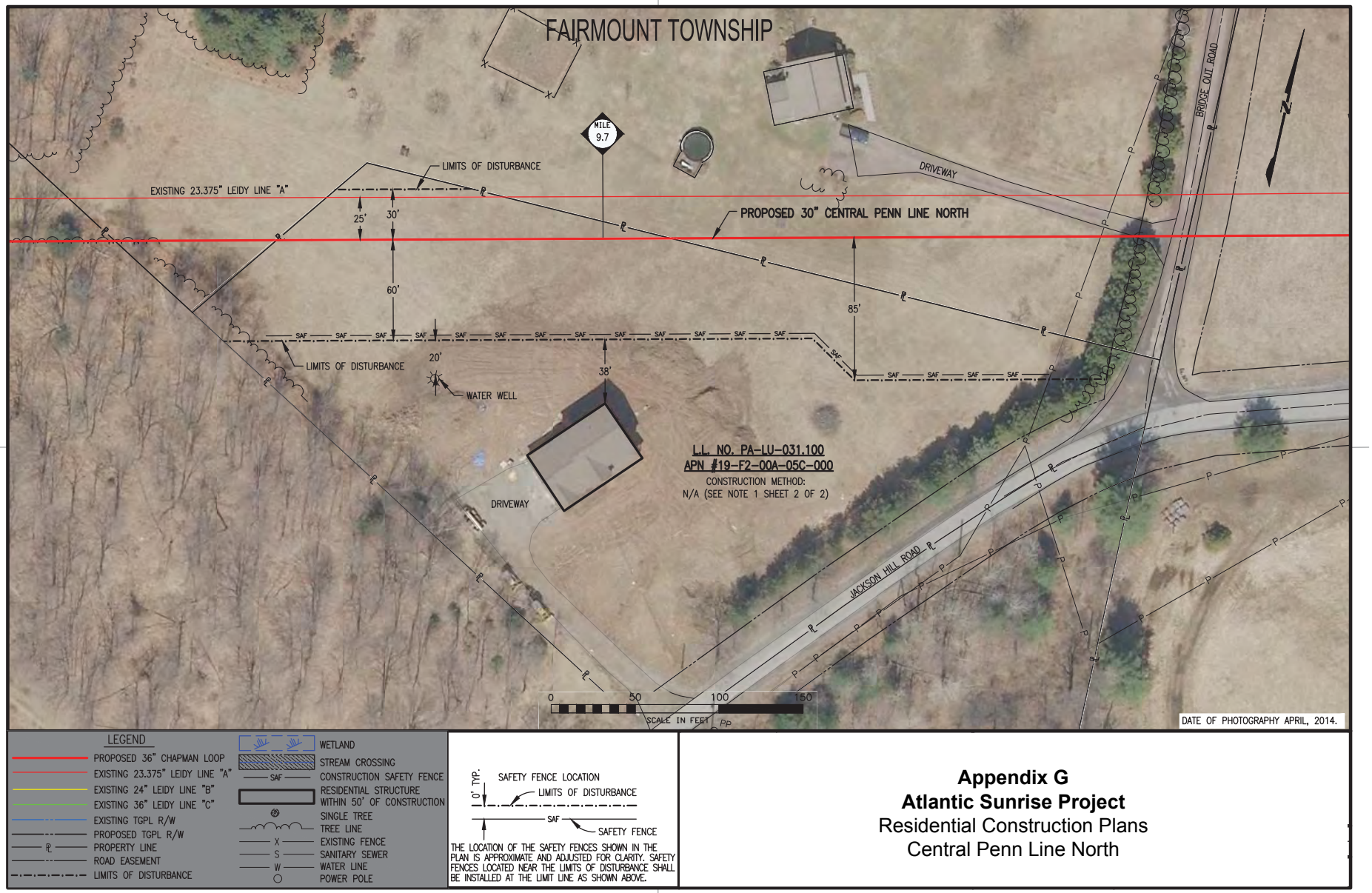
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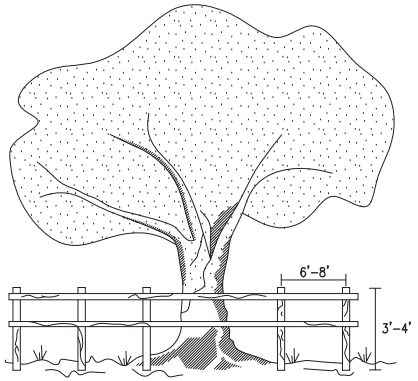




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

FAIRMOUNT TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



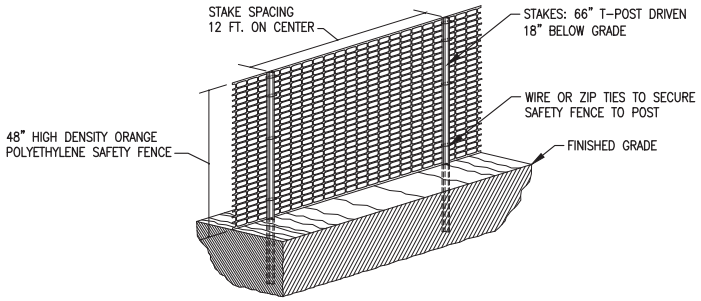
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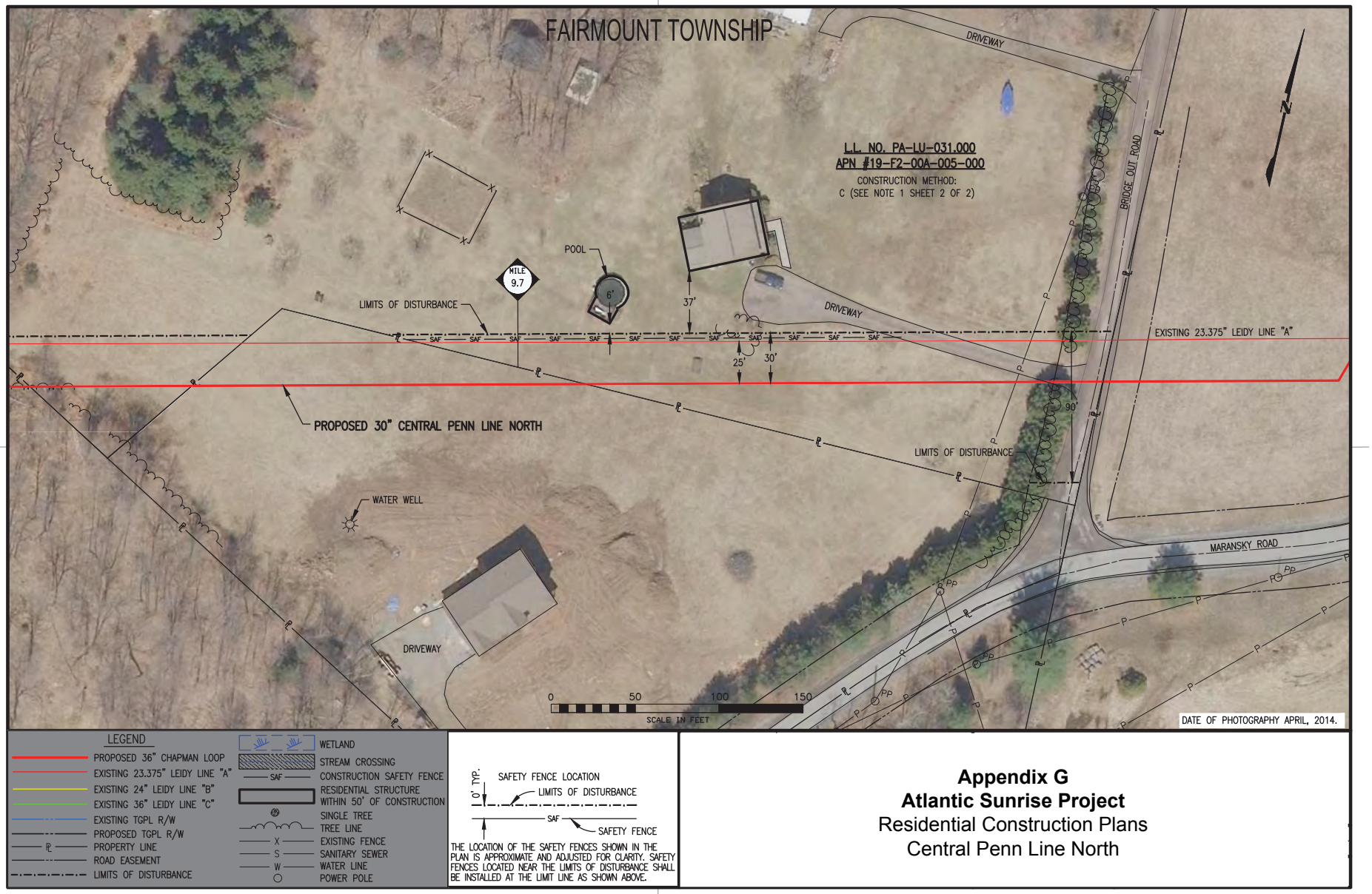
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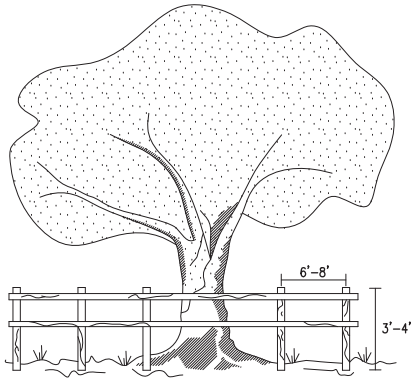




Appendix G
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Residential Construction Plans
Central Penn Line North

FAIRMOUNT TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



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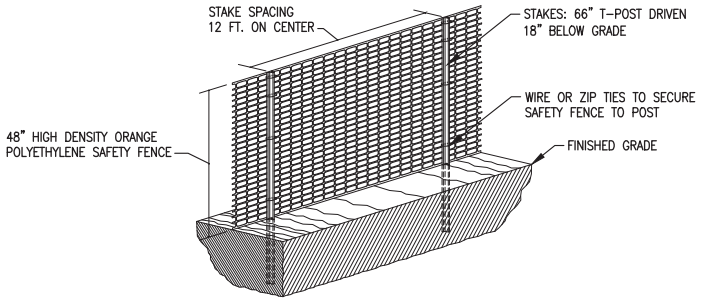
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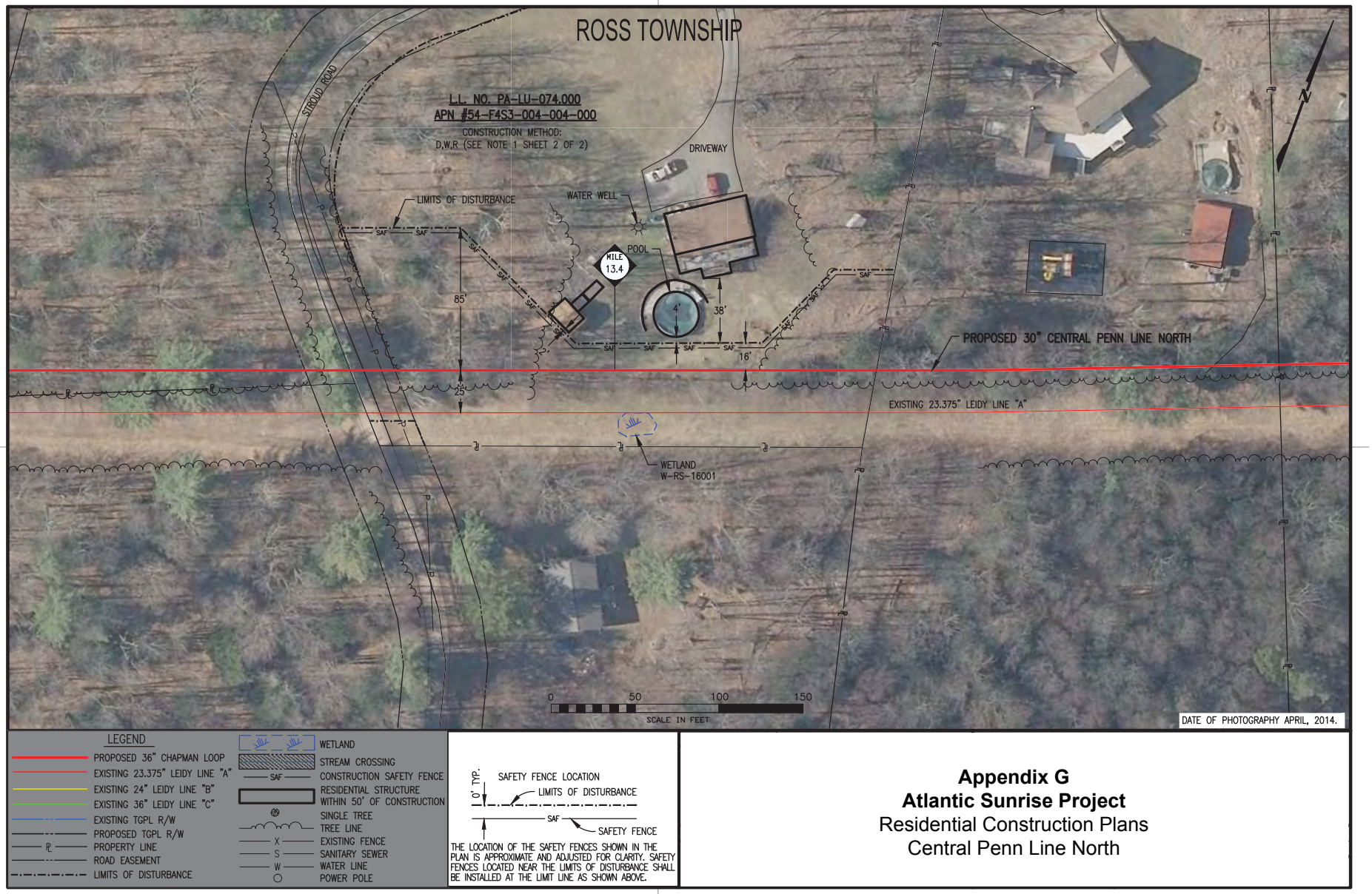
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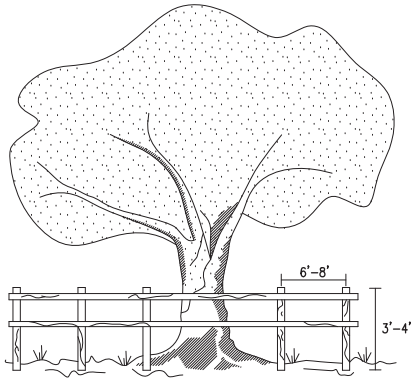




Appendix G
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Residential Construction Plans
Central Penn Line North

ROSS TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



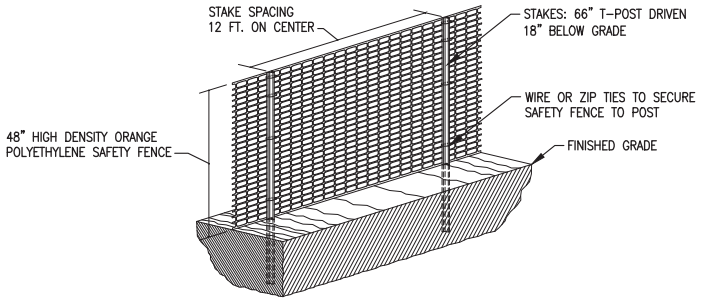
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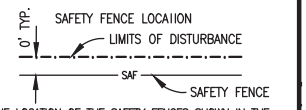
SAFETY FENCE





LEGEND

- PROPOSED 36" CHAPMAN LOOP
- EXISTING 23.375" LEIDY LINE "A"
- EXISTING 24" LEIDY LINE "B"
- EXISTING 36" LEIDY LINE "C"
- EXISTING TGPL R/W
- PROPOSED TGPL R/W
- PROPERTY LINE
- ROAD EASEMENT
- LIMITS OF DISTURBANCE
- WETLAND
- STREAM CROSSING
- SAF — CONSTRUCTION SAFETY FENCE
- RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
- SINGLE TREE
- TREE LINE
- X — EXISTING FENCE
- S — SANITARY SEWER
- W — WATER LINE
- POWER POLE

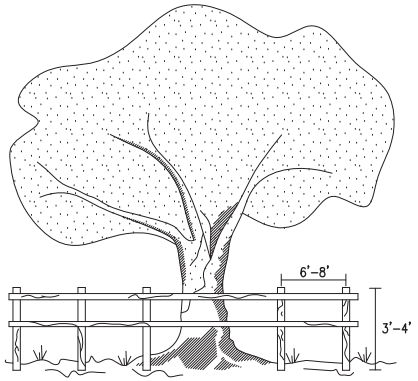


THE LOCATION OF THE SAFETY FENCES SHOWN IN THE PLAN IS APPROXIMATE AND ADJUSTED FOR CLARITY. SAFETY FENCES LOCATED NEAR THE LIMITS OF DISTURBANCE SHALL BE INSTALLED AT THE LIMIT LINE AS SHOWN ABOVE.

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ROSS TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



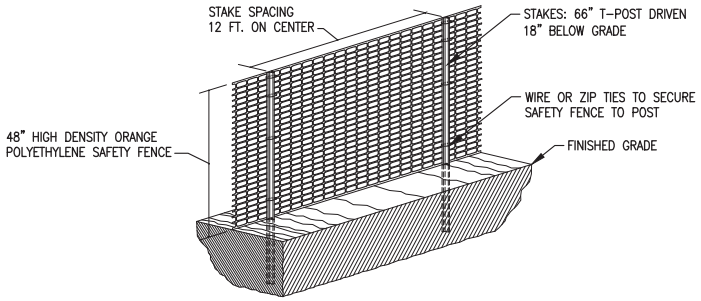
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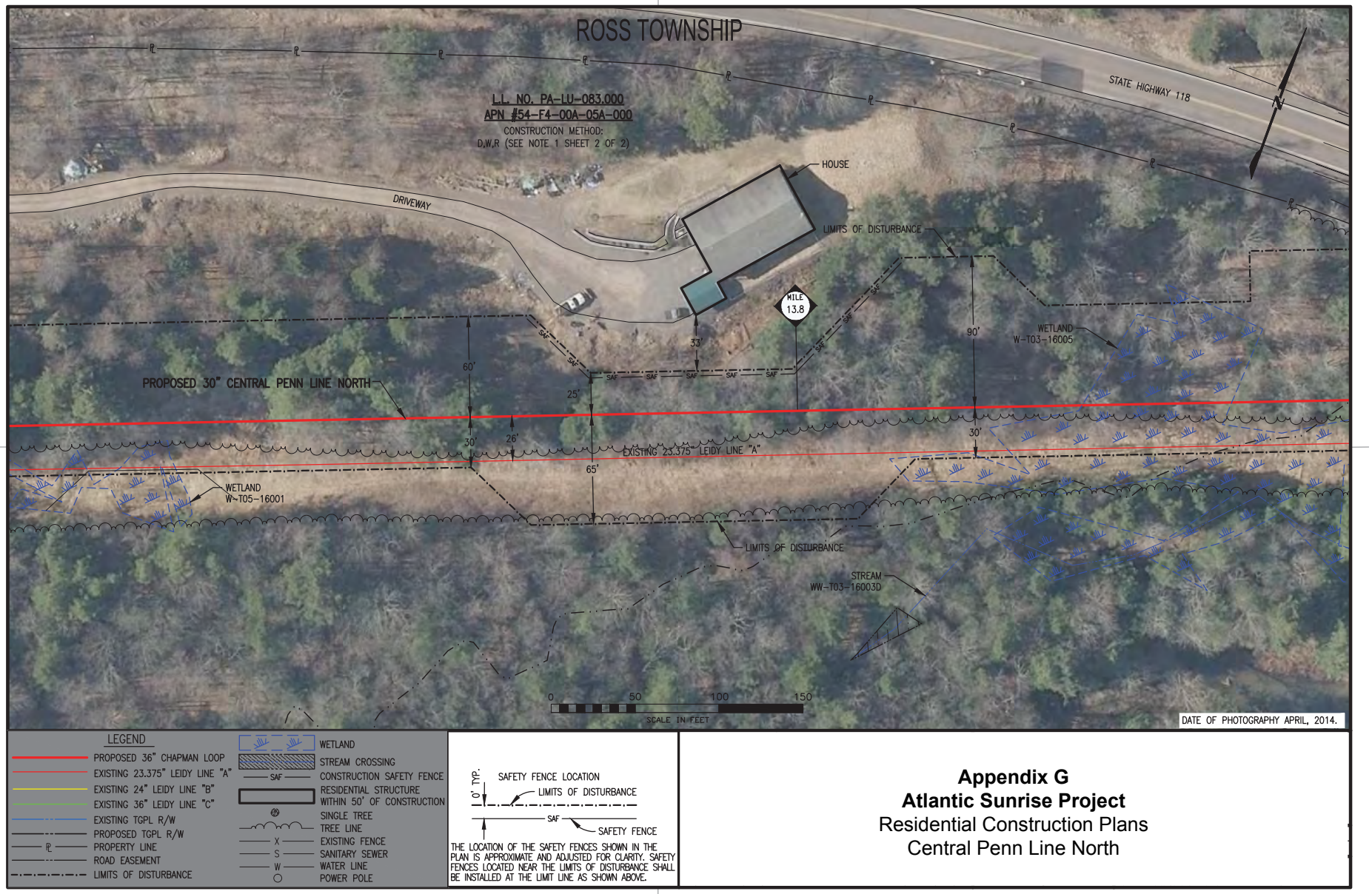
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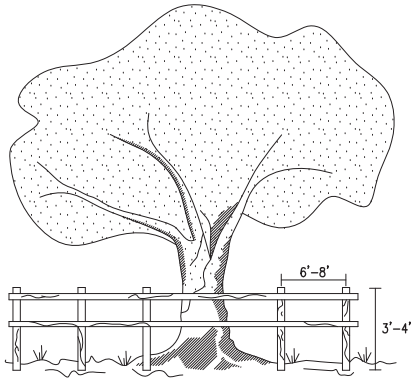




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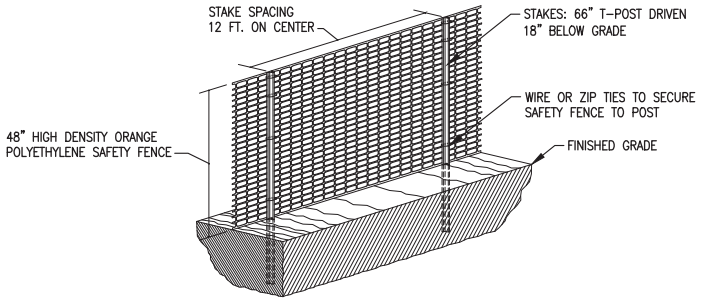
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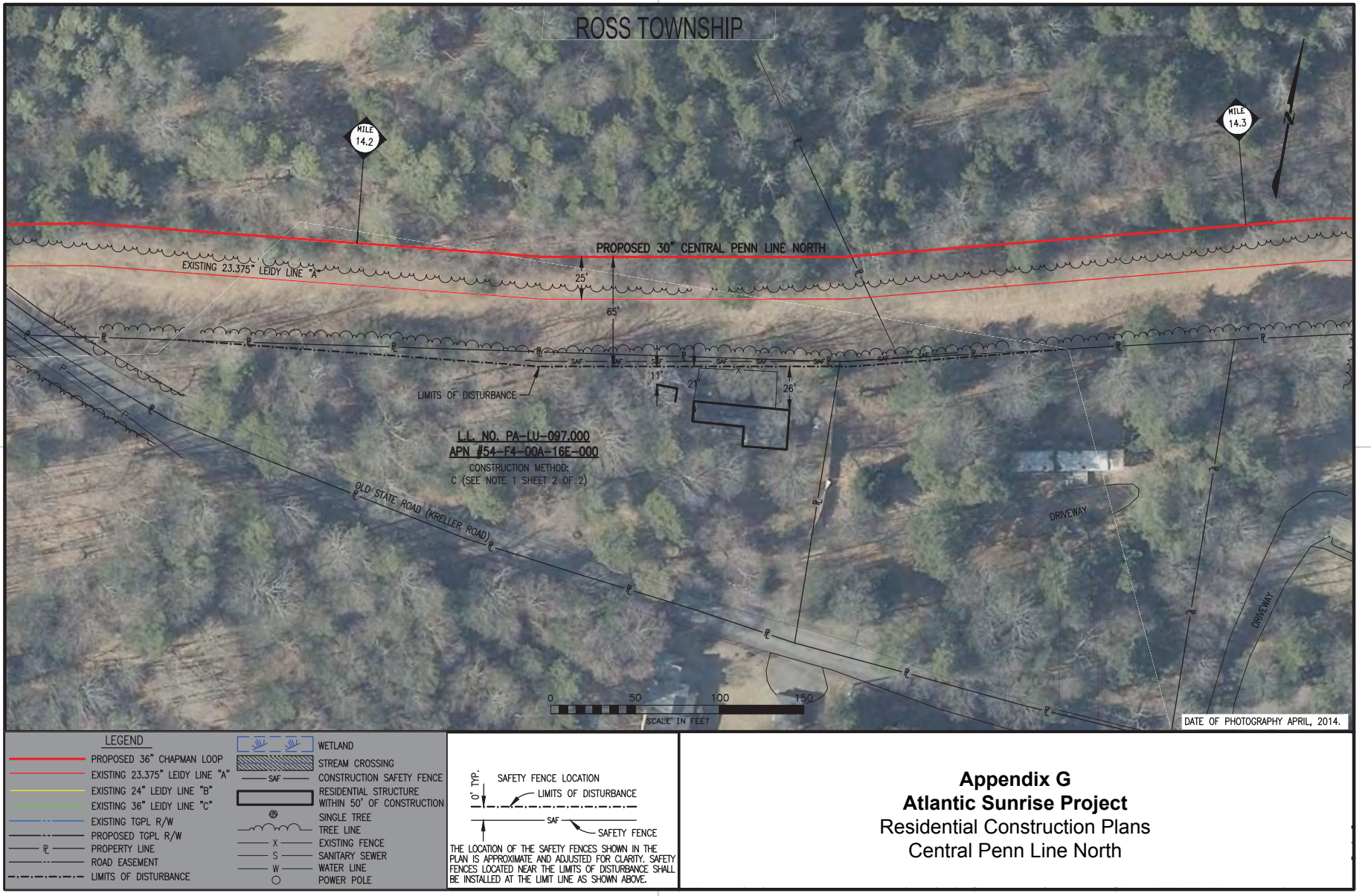
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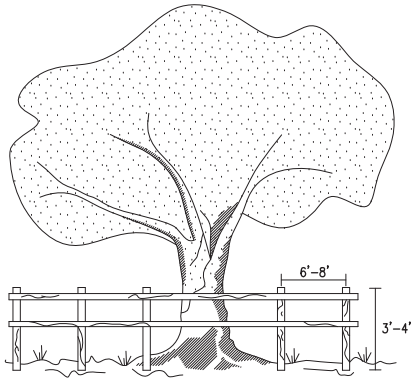
SAFETY FENCE




ROSS TOWNSHIP
MILE 14.2
MILE 14.3
N
PROPOSED 30" CENTRAL PENN LINE NORTH
EXISTING 23.375" LEIDY LINE "A"
25'
65'
LIMITS OF DISTURBANCE
11'
21'
26'
L.L. NO. PA-LU-097.000
APN #54-F4-00A-16E-000
CONSTRUCTION METHOD:
C (SEE NOTE 1 SHEET 2 OF 2)
OLD STATE ROAD (KRELLER ROAD)
DRIVEWAY
DRIVEWAY
0
50
100
150
SCALE IN FEET
DATE OF PHOTOGRAPHY APRIL, 2014.
LEGEND
PROPOSED 36" CHAPMAN LOOP
EXISTING 23.375" LEIDY LINE "A"
EXISTING 24" LEIDY LINE "B"
EXISTING 36" LEIDY LINE "C"
EXISTING TGPL R/W
PROPOSED TGPL R/W
PROPERTY LINE
ROAD EASEMENT
LIMITS OF DISTURBANCE
WETLAND
STREAM CROSSING
SAF CONSTRUCTION SAFETY FENCE
RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
SINGLE TREE
TREE LINE
X EXISTING FENCE
S SANITARY SEWER
W WATER LINE
POWER POLE
10' TYP.
SAFETY FENCE LOCATION
LIMITS OF DISTURBANCE
SAF
SAFETY FENCE
THE LOCATION OF THE SAFETY FENCES SHOWN IN THE PLAN IS APPROXIMATE AND ADJUSTED FOR CLARITY. SAFETY FENCES LOCATED NEAR THE LIMITS OF DISTURBANCE SHALL BE INSTALLED AT THE LIMIT LINE AS SHOWN ABOVE.
Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

ROSS TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



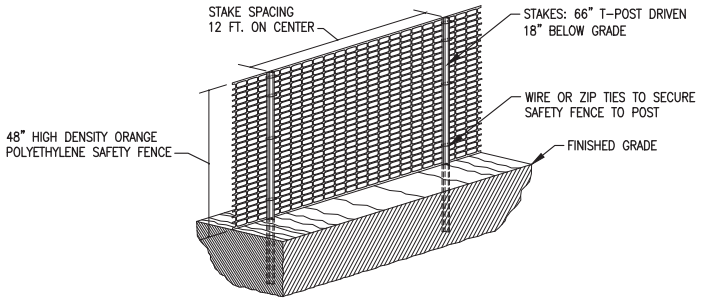
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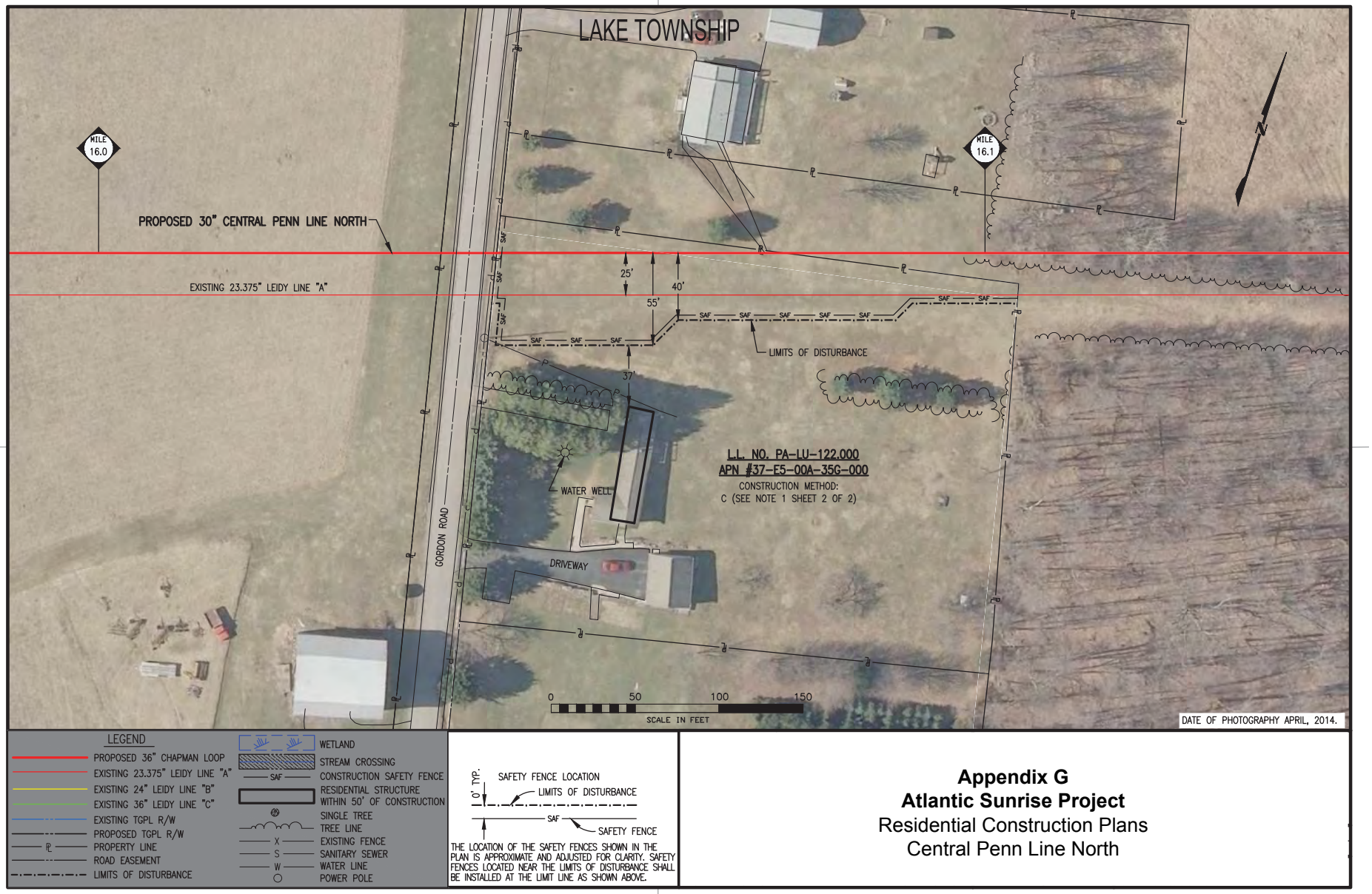
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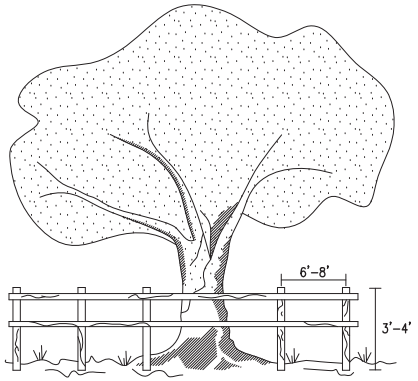




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

LAKE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



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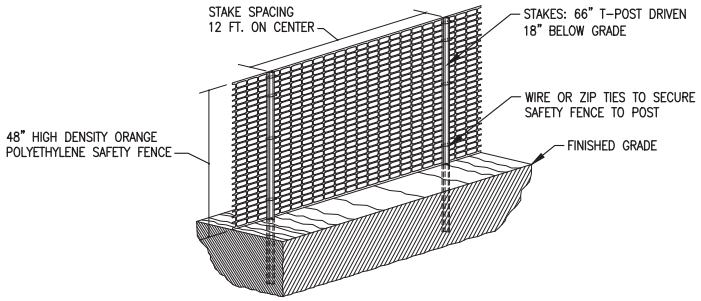
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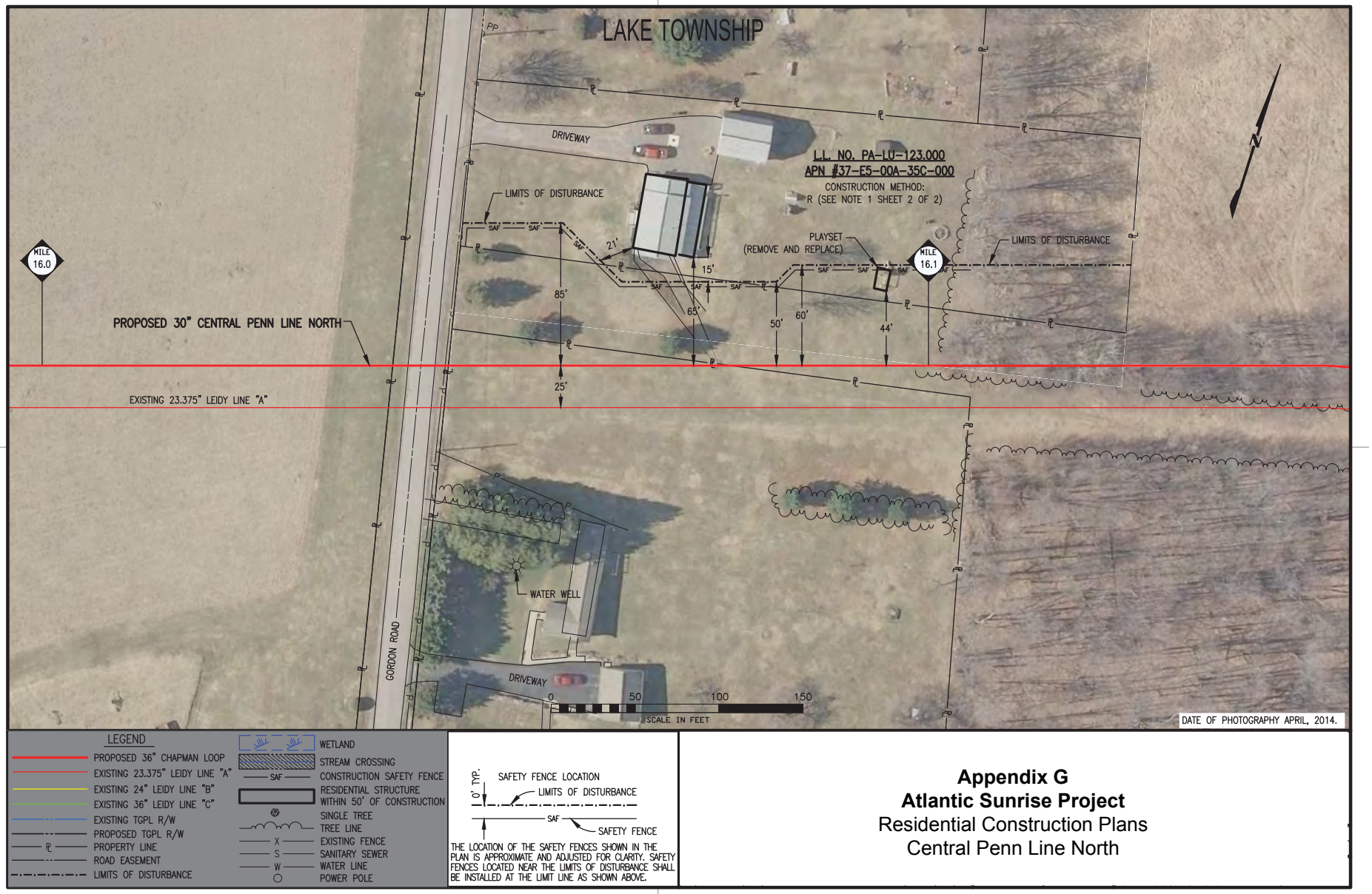
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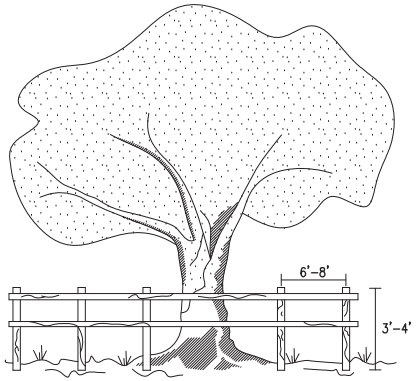




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LAKE TOWNSHIP

BARRICADE DETAIL
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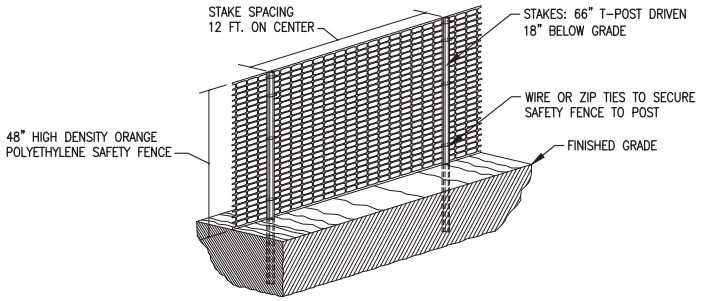
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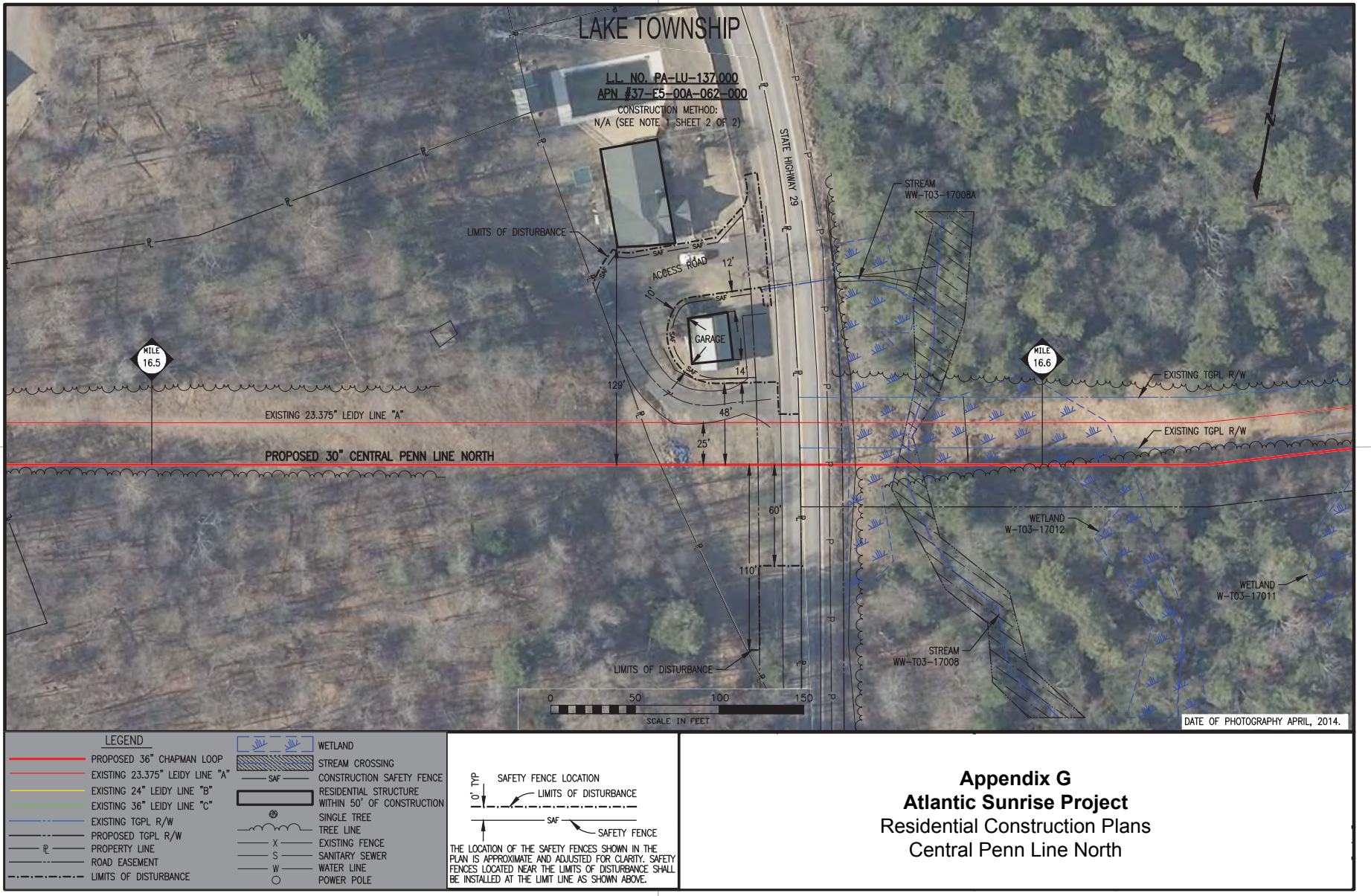
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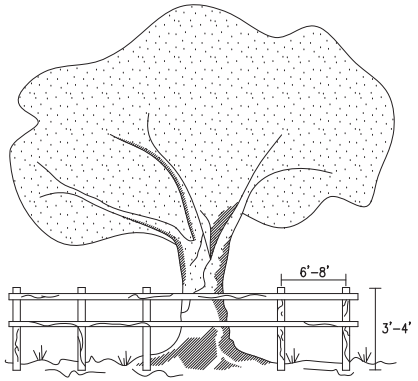




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Residential Construction Plans
Central Penn Line North

LAKE TOWNSHIP

BARRICADE DETAIL
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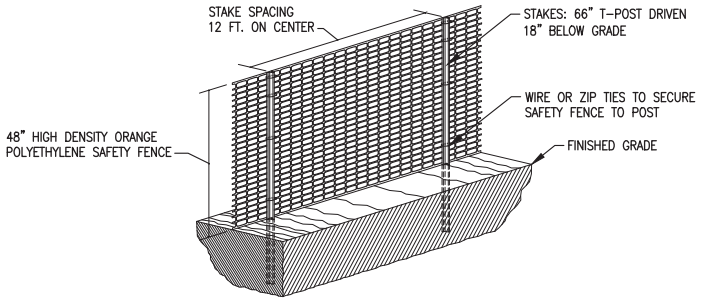
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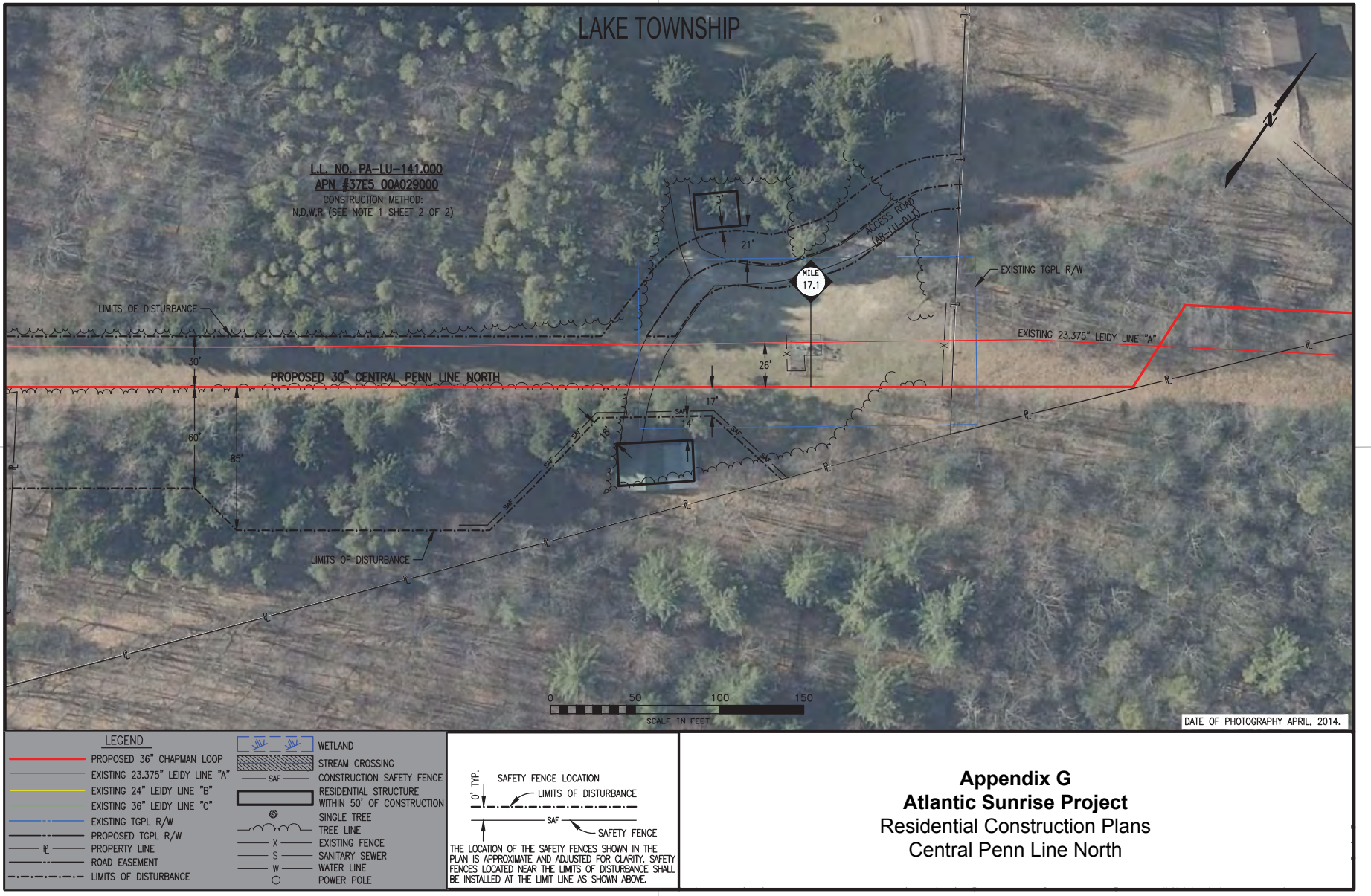
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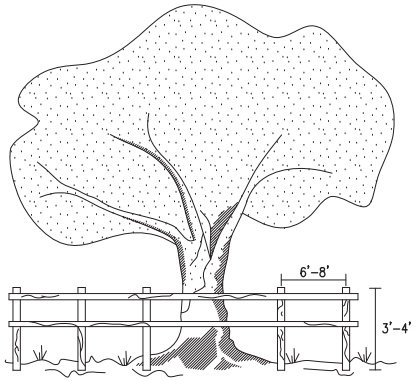




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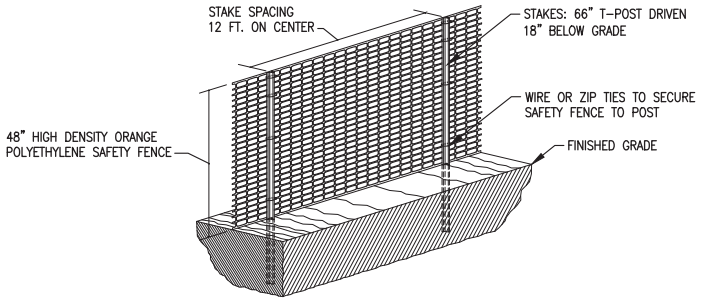
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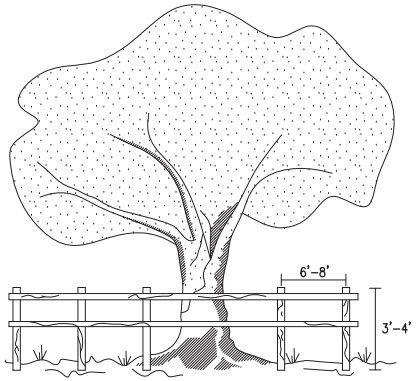




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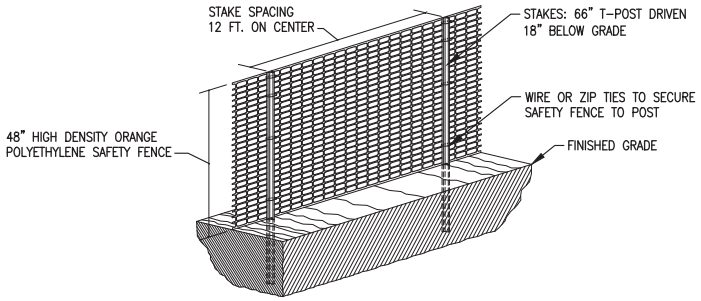
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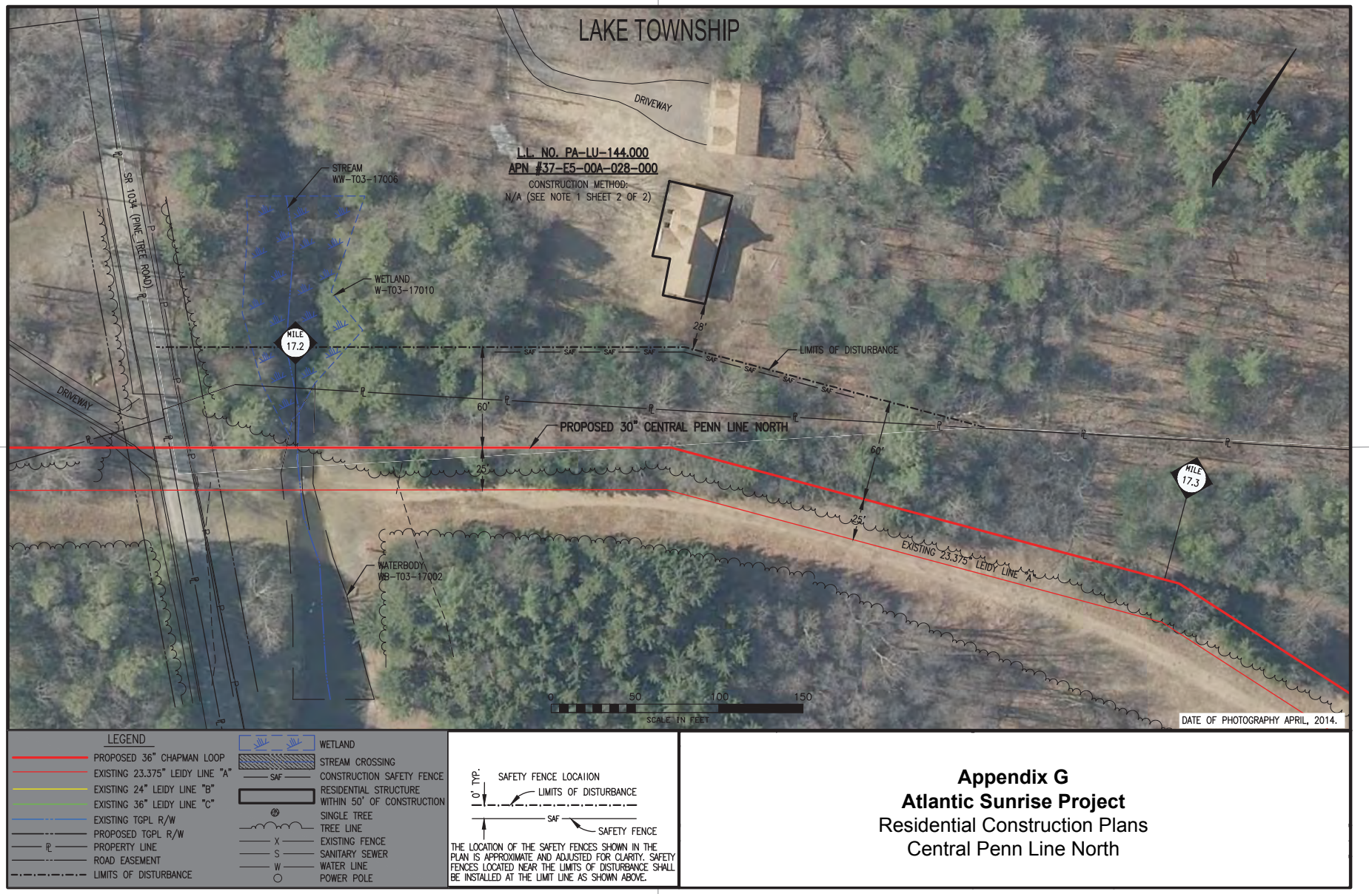
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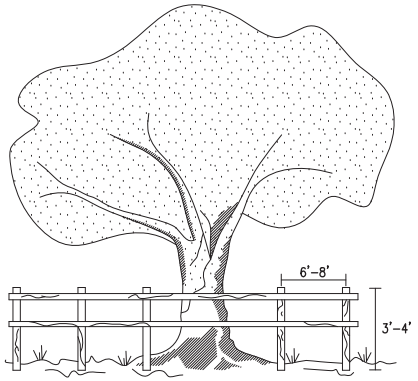




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

LAKE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



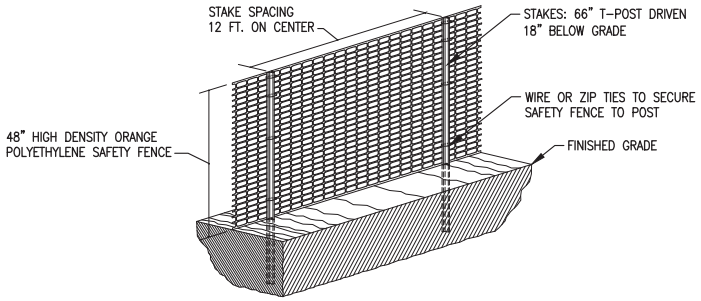
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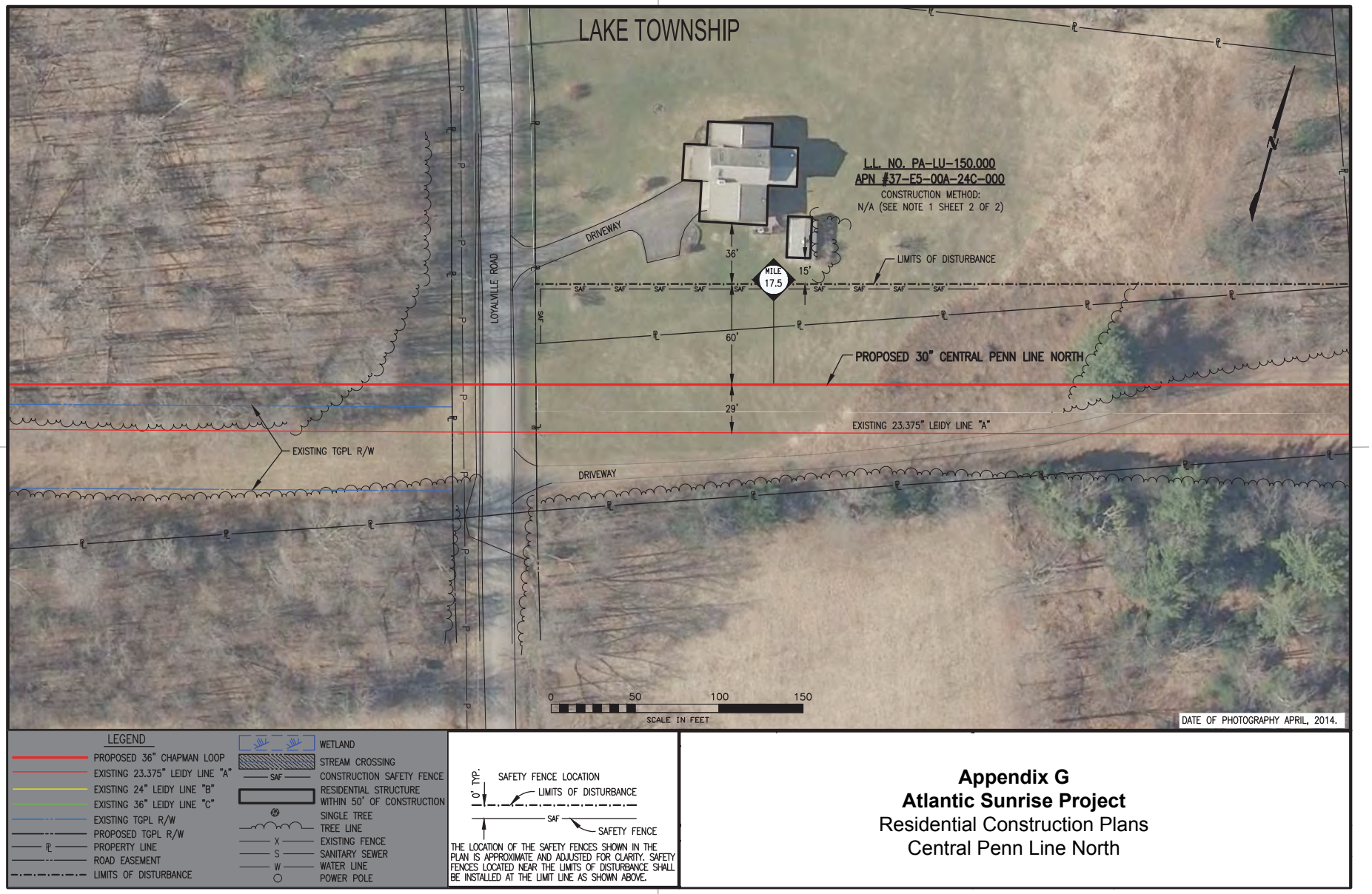
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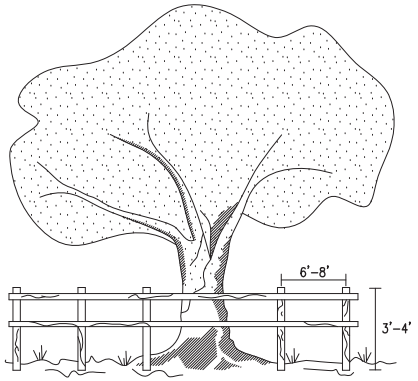




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Residential Construction Plans
Central Penn Line North

LAKE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



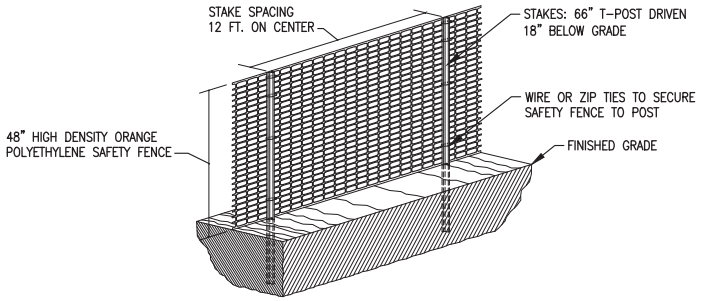
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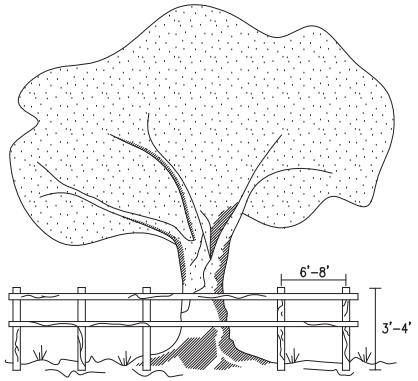




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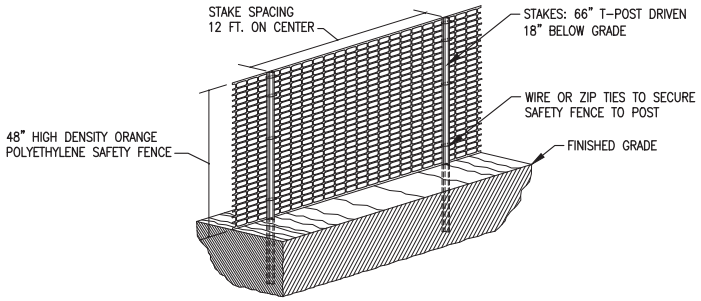
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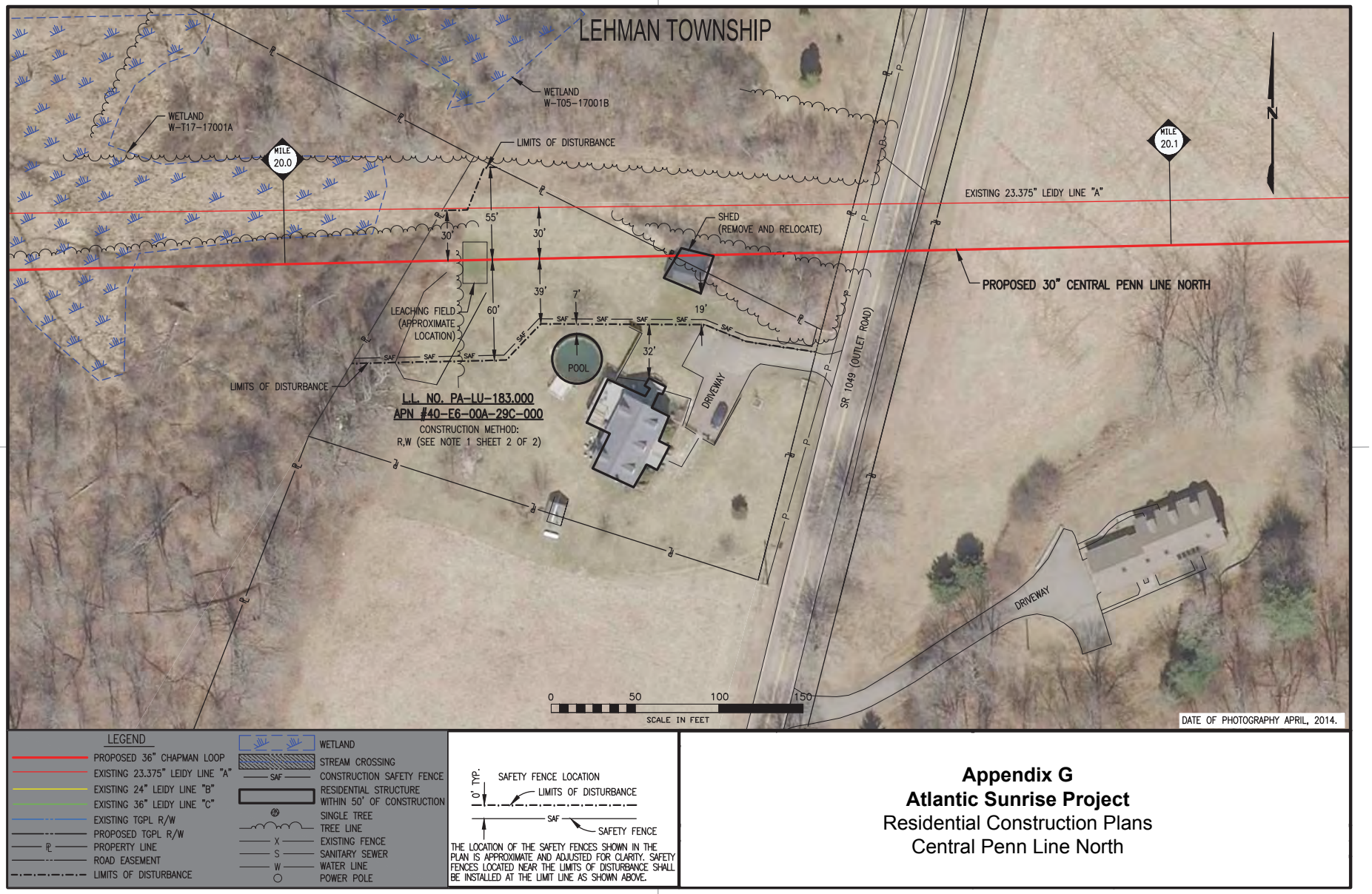
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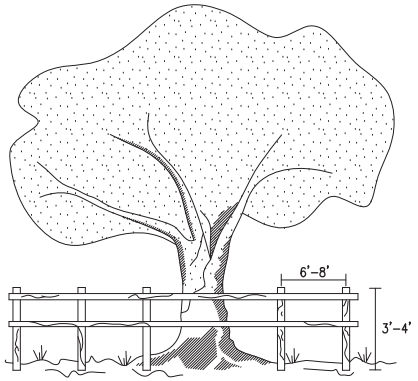




Appendix G
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Residential Construction Plans
Central Penn Line North

LEHMAN TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



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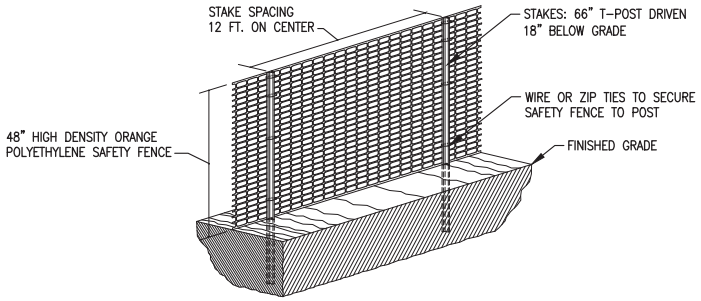
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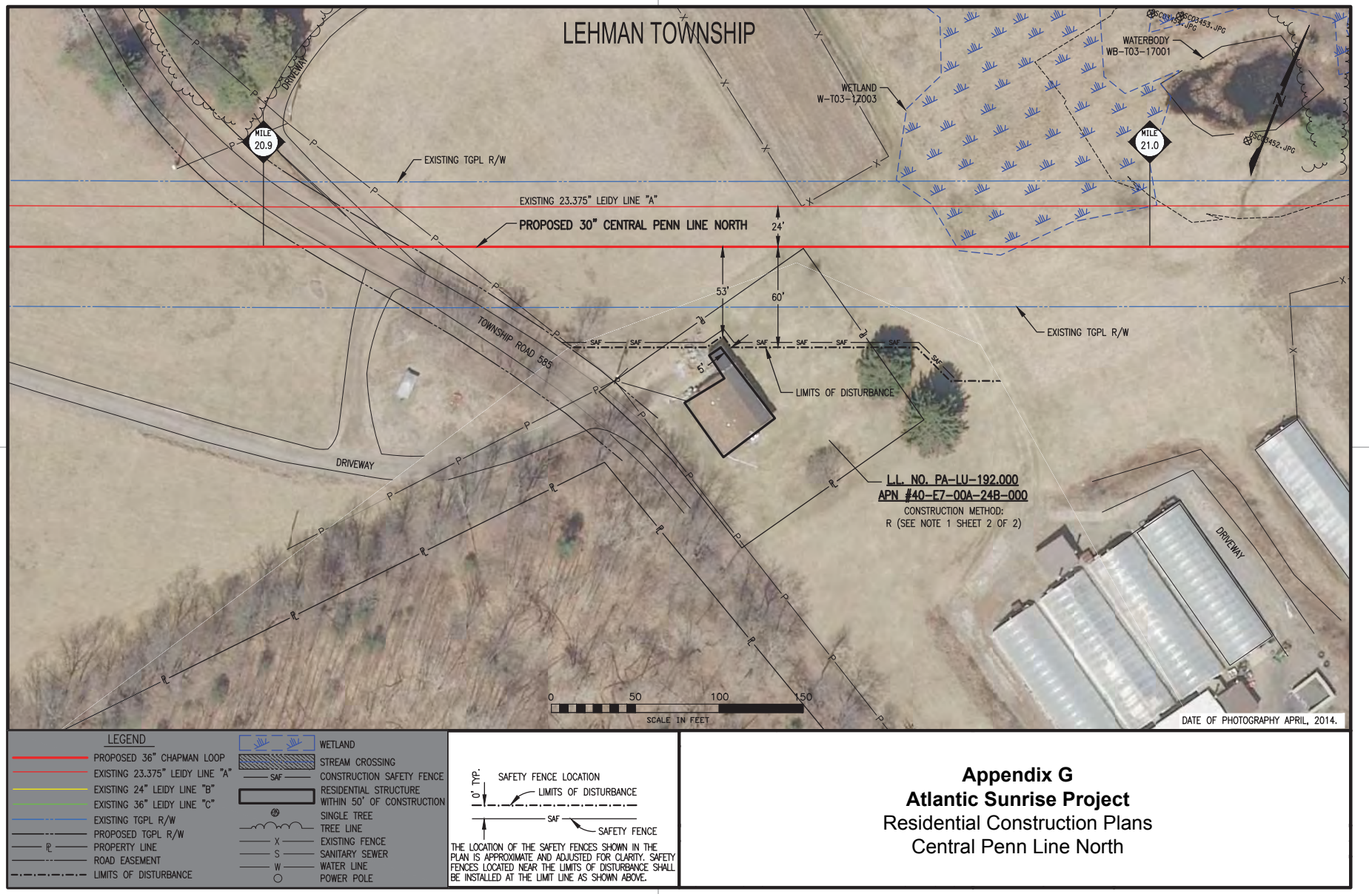
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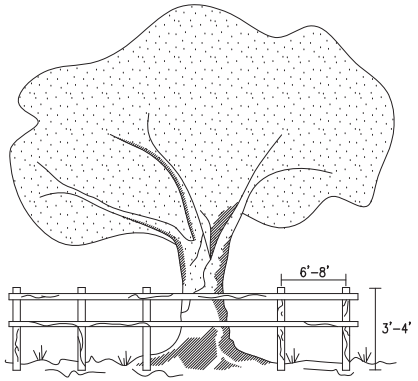




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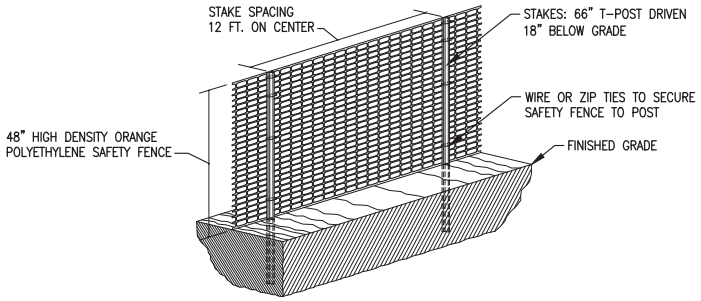
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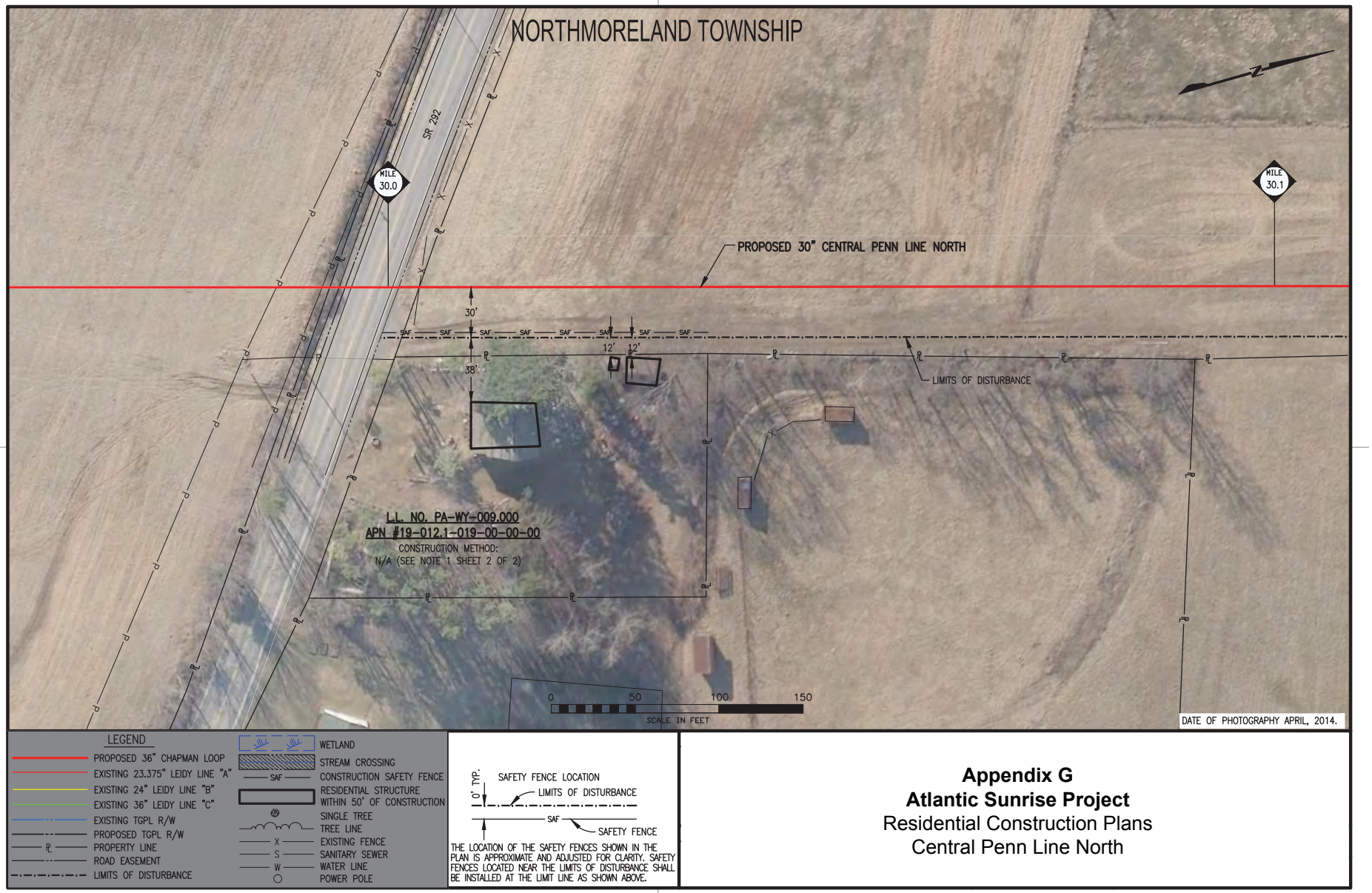
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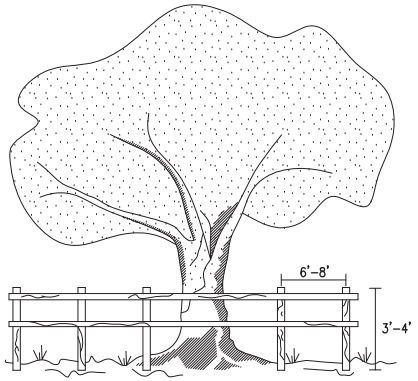




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NORTHMORELAND TOWNSHIP

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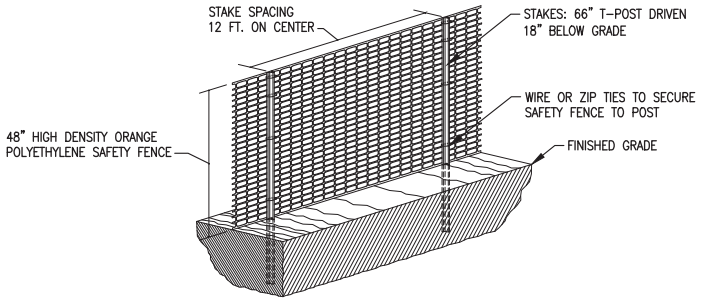
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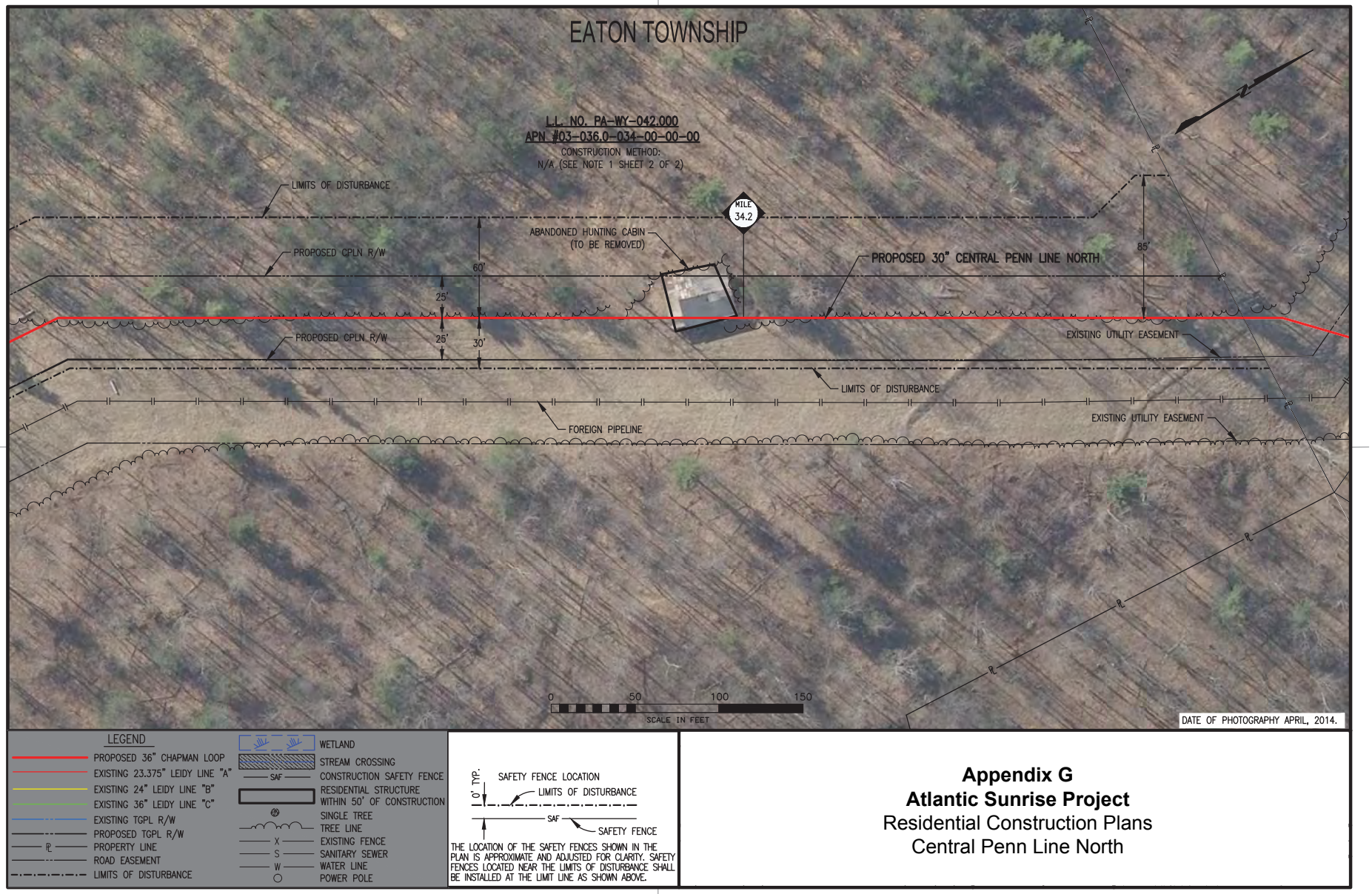
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SAFETY FENCE

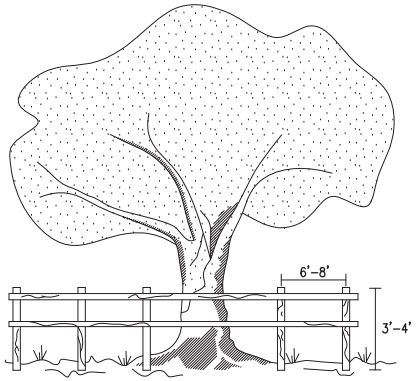




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

EATON TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



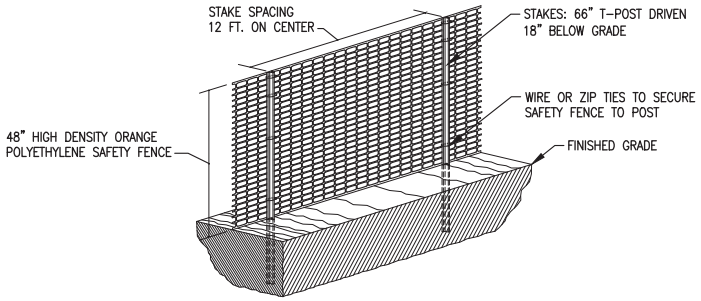
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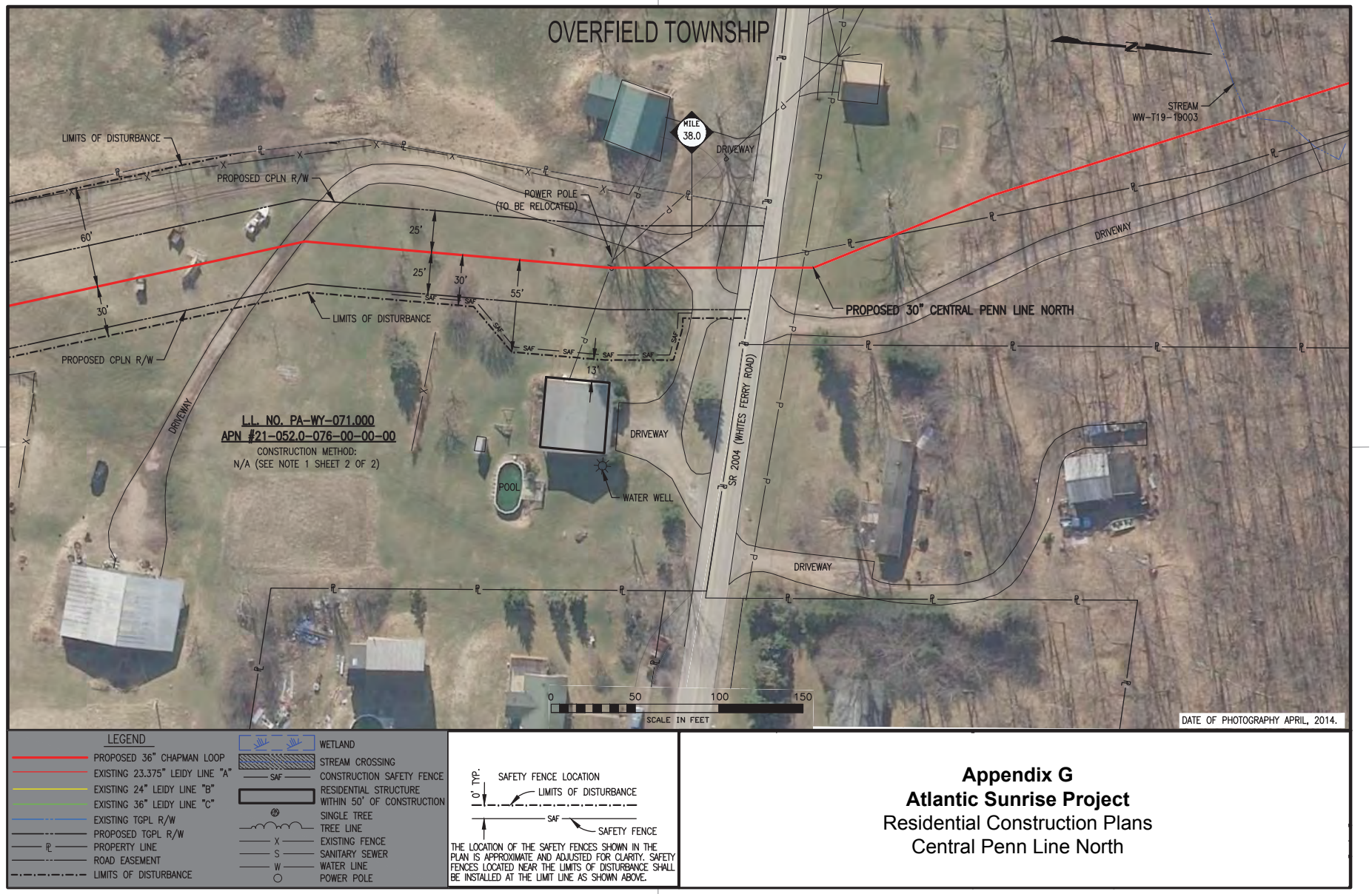
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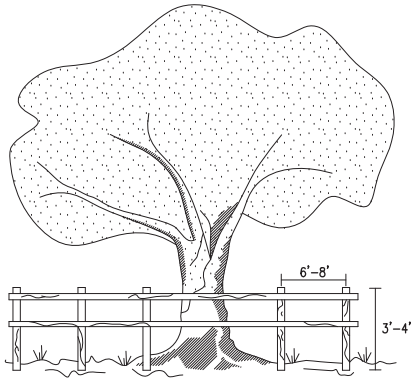




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

OVERFIELD TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



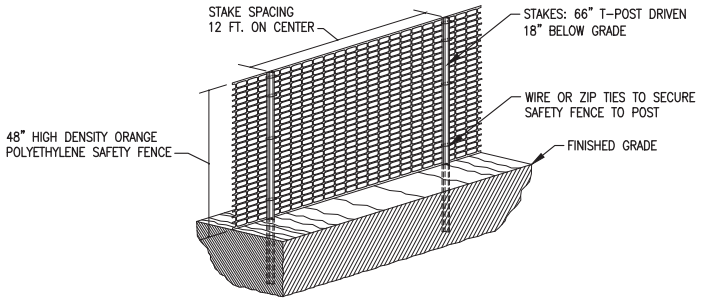
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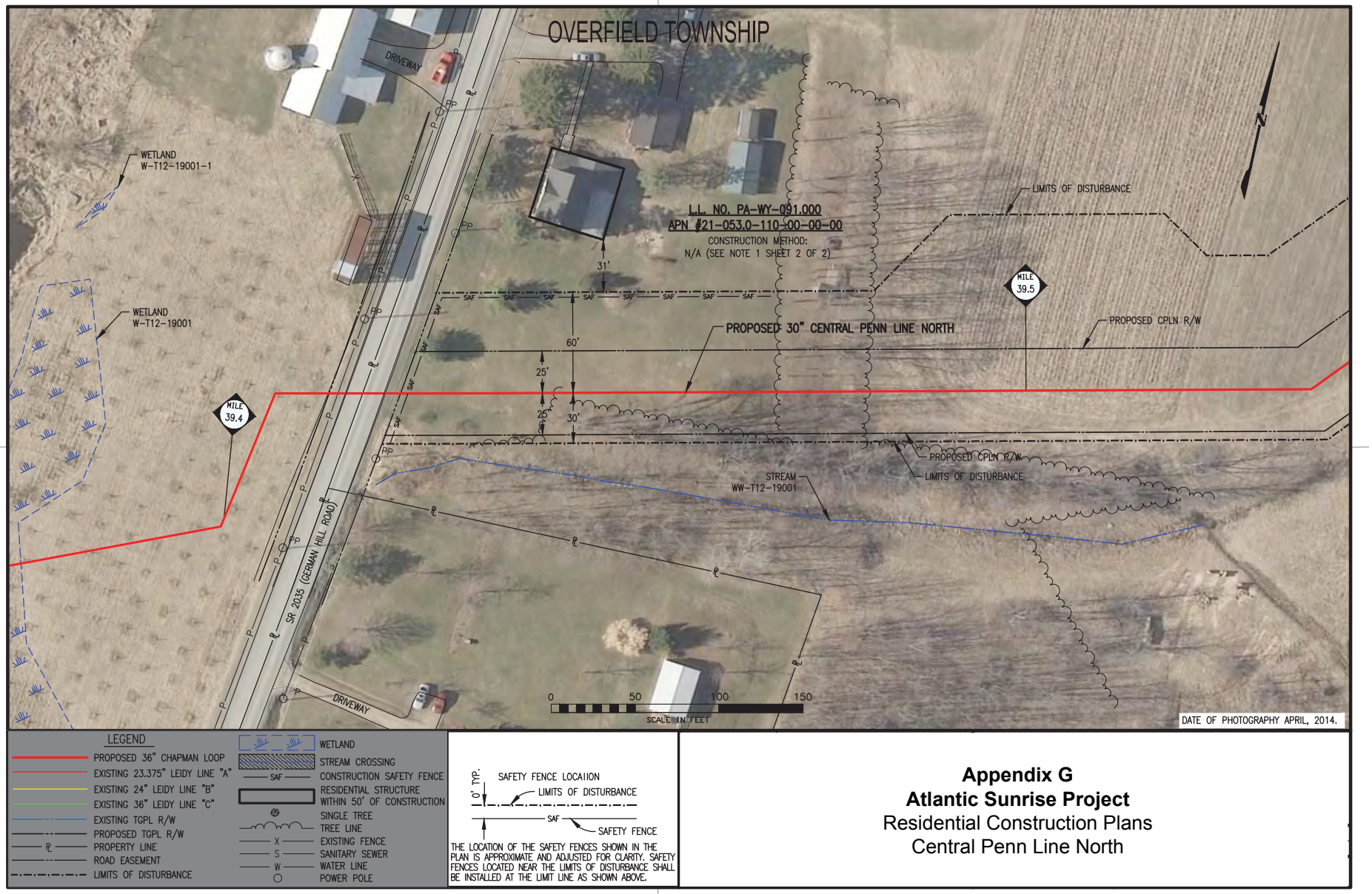
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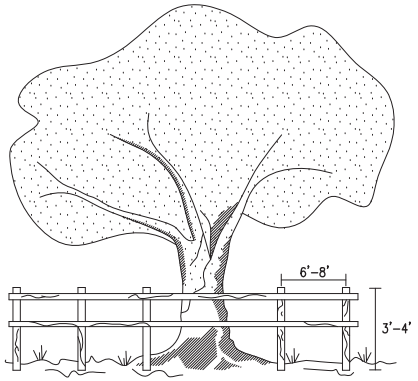




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

OVERFIELD TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



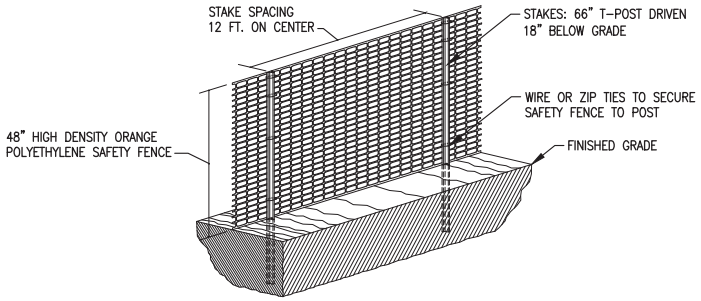
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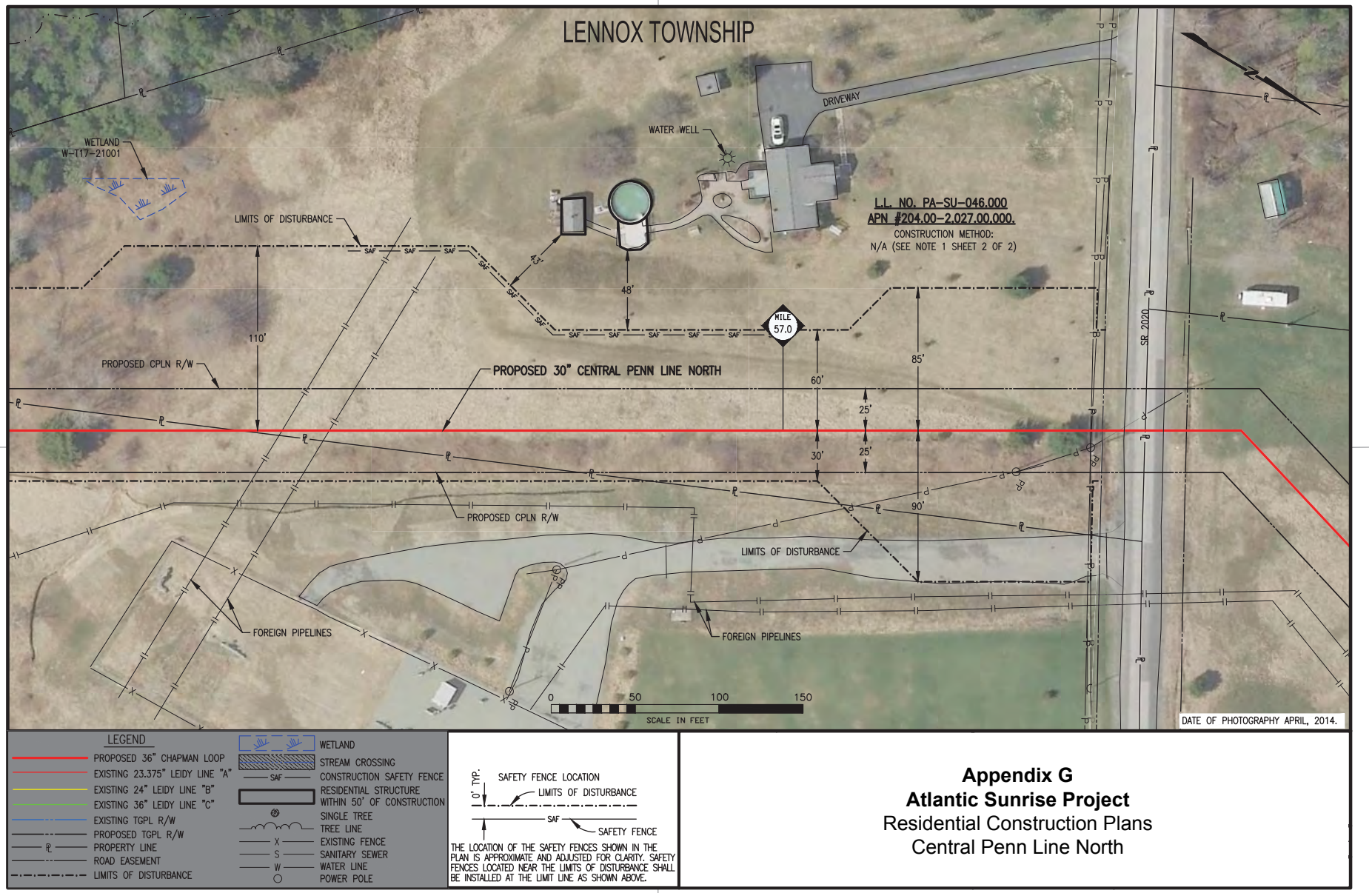
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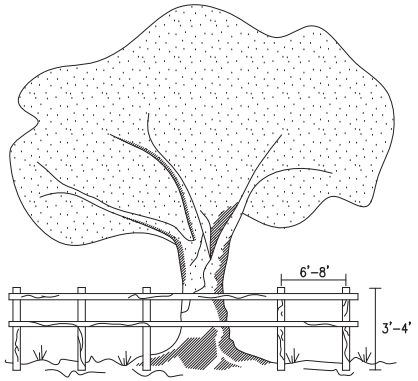




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line North

LENNOX TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



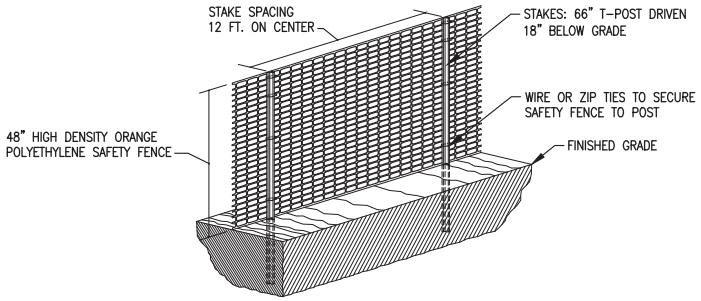
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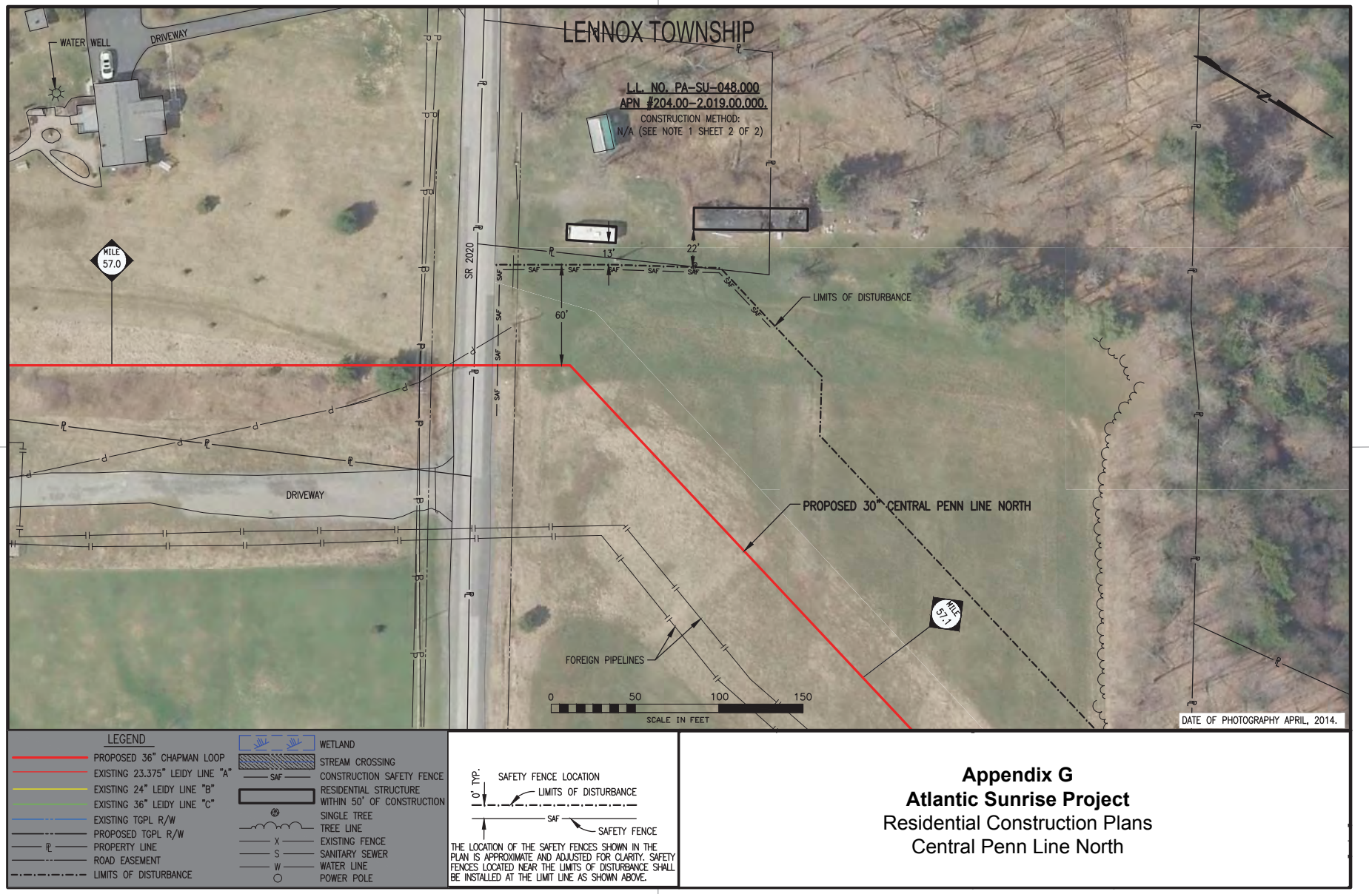
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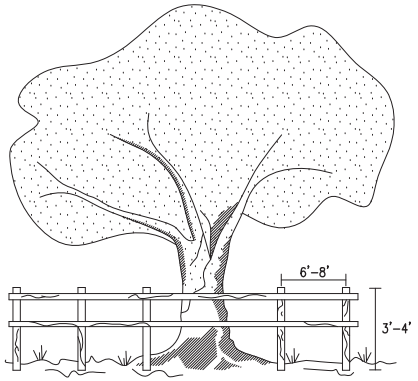




Appendix G
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Residential Construction Plans
Central Penn Line North

LENNOX TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



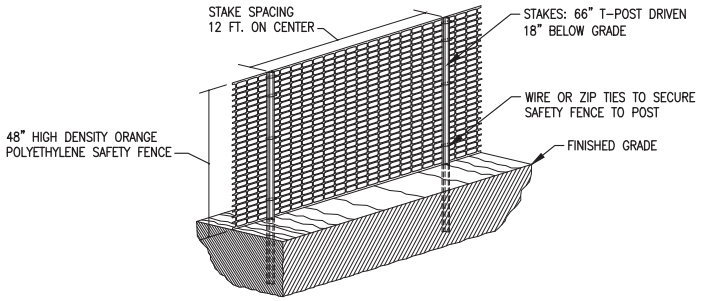
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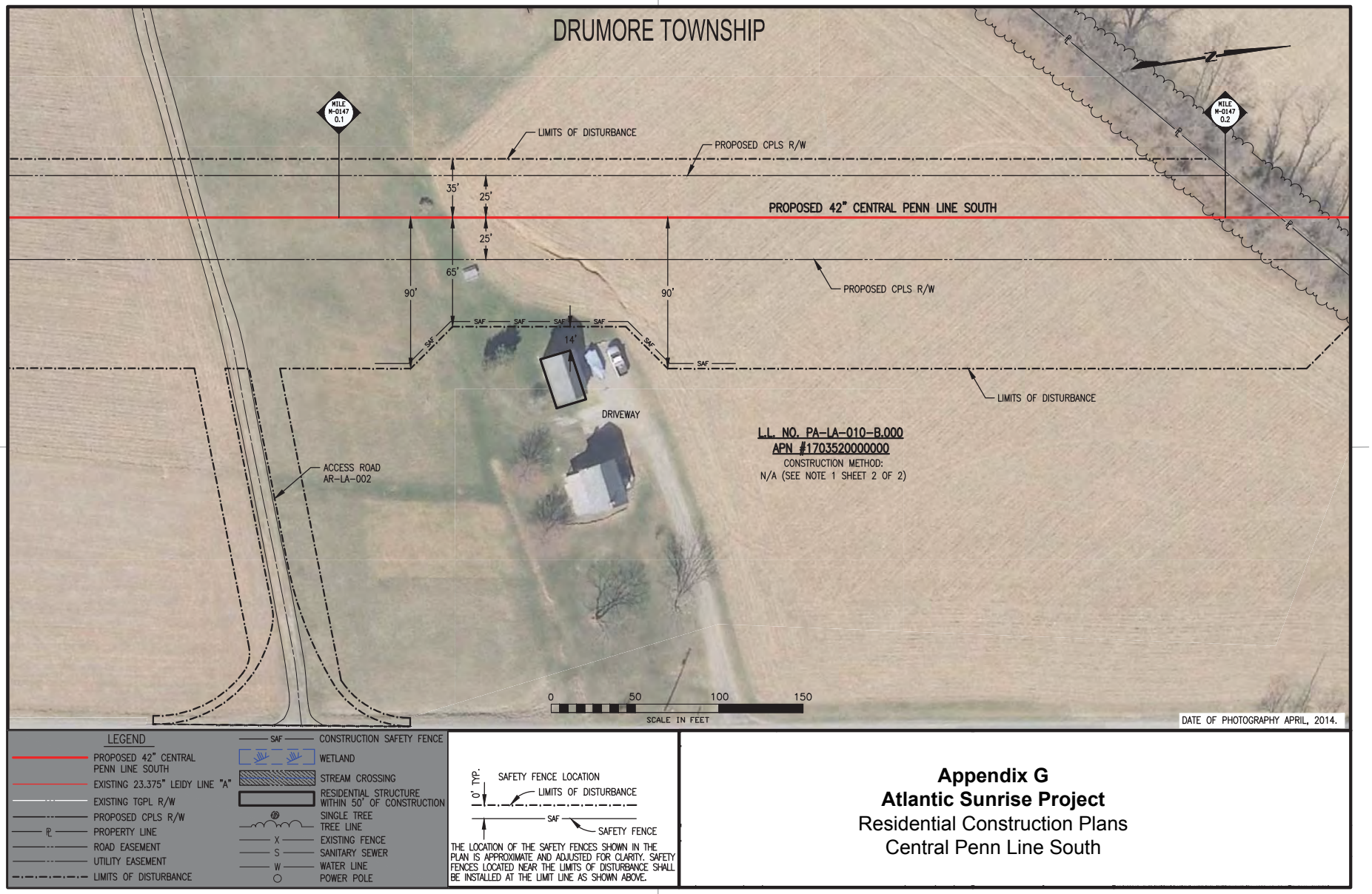
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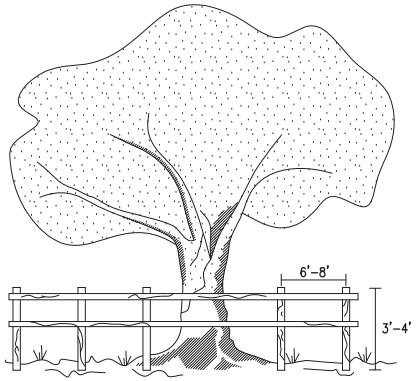
Central Penn Line South



Appendix G
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Residential Construction Plans
Central Penn Line South

DRUMORE TOWNSHIP

BARRICADE DETAIL
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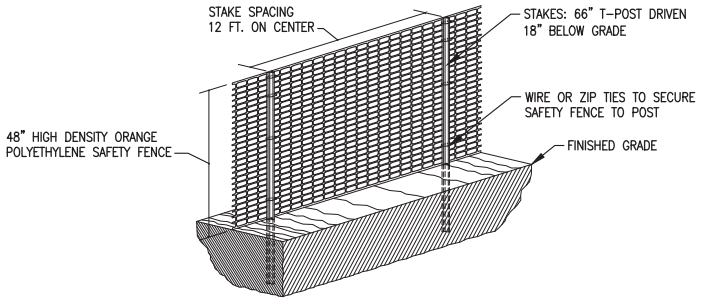
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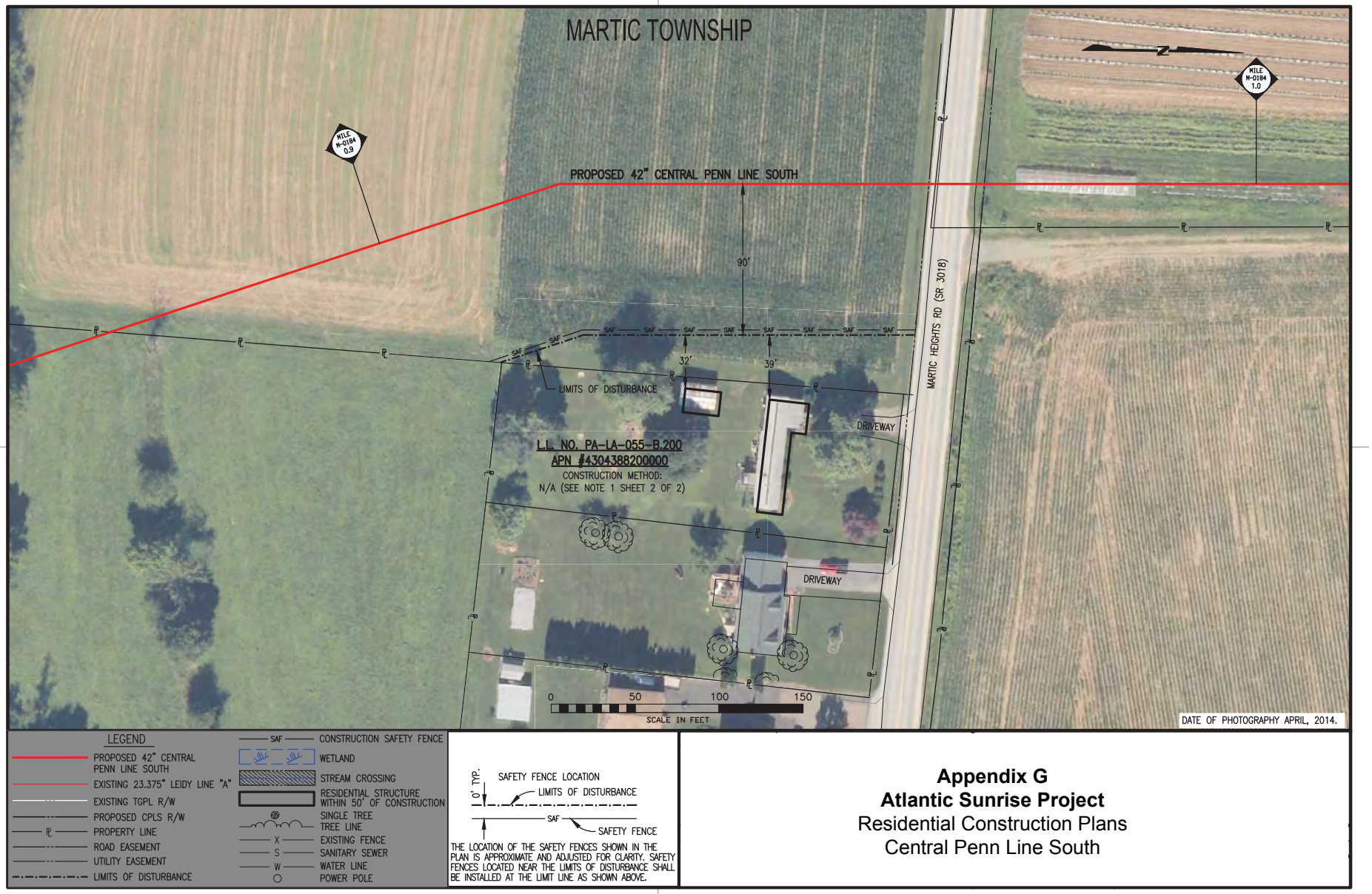
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4. CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA. "SEE LOCATION DETAIL THIS SHEET. REMOVE AFTER RESTORATION IS COMPLETE."
5. ALL FEATURES WITHIN THE CONSTRUCTION WORK AREA OR LIMITS OF DISTURBANCE SHALL BE REMOVED EXCEPT AS NOTED ON THE DRAWING. MATURE TREES AND LANDSCAPING WITHIN THE EDGE OF THE CONSTRUCTION WORK AREA MAY BE SAVED UNLESS NECESSARY TO REMOVE FOR SAFE OPERATION OF CONSTRUCTION EQUIPMENT.
6. CONTRACTOR SHALL MAINTAIN RESIDENTIAL ACCESS AT ALL TIMES. IF APPLICABLE, CONTRACTOR SHALL PROVIDE PRIOR NOTICE TO COMPANY WHEN THE EXISTING DRIVEWAY IS PLANNED TO BE OPEN CUT. COMPANY SHALL THEN NOTIFY THE HOMEOWNER(S). DRIVEWAY ACCESS MAY BE TEMPORARILY CLOSED FOR THE PIPELINE INSTALLATION, STEEL PLATES SHALL BE USED ACROSS THE OPEN TRENCH IF NOT BACKFILLED DURING SAME WORK DAY.
7. THIS PROPERTY
   - ☐ (DOES) ☐ (DOES NOT) HAVE A SEPTIC SYSTEM
   - ☒ (DOES) ☐ (DOES NOT) HAVE A WATER WELL
   - ☐ _____
   - ☐ _____
   - ☐ _____
8. A MOBILE WATER TRUCK WILL BE USED TO CONTROL DUST ON THE R.O.W. AS NEEDED.
9. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC IS OFFERING PRE-CONSTRUCTION AND POST-CONSTRUCTION MONITORING PROGRAM. THE HOMEOWNER:
   ☐ ACCEPTS ☐ DECLINES TO PARTICIPATE

SAFETY FENCE

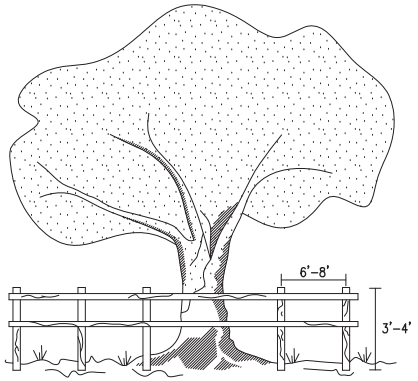




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

MARTIC TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



HORIZONTAL: WOOD MEMBER, ORANGE FENCING, CHAIN LINK FENCE OR OTHER APPROVED MATERIAL
VERTICAL: WOOD MEMBER OR APPROVED MATERIAL BARRICADES PLACED AT DESIGNATED PROTECTIVE ROOT ZONE.

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY FENCE 3 FEET OUTSIDE THE DRIP LINE OF THE TREE.
3. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE POST.
4. THE FENCE MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

NOTES:

1. CONSTRUCTION TECHNIQUES TO BE USED TO MINIMIZE IMPACT TO THIS RESIDENCE ARE DENOTED ON SHEET 1 OF THIS DRAWING. CONSTRUCTION TECHNIQUES INCLUDE REDUCED PIPELINE SEPARATION (N), DRAG SECTION (D), WORKING OVER EXISTING PIPELINE (W), PIPELINE CROSSOVERS (C), REDUCED CONSTRUCTION RIGHT-OF-WAY (R).

2. EXCAVATION OF THE PIPELINE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPELINE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION.

3. HOMEOWNER SHALL BE NOTIFIED ONE (1) WEEK PRIOR TO EXCAVATION OF PIPELINE TRENCH.

4. CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA. "SEE LOCATION DETAIL THIS SHEET. REMOVE AFTER RESTORATION IS COMPLETE."

5. ALL FEATURES WITHIN THE CONSTRUCTION WORK AREA OR LIMITS OF DISTURBANCE SHALL BE REMOVED EXCEPT AS NOTED ON THE DRAWING. MATURE TREES AND LANDSCAPING WITHIN THE EDGE OF THE CONSTRUCTION WORK AREA MAY BE SAVED UNLESS NECESSARY TO REMOVE FOR SAFE OPERATION OF CONSTRUCTION EQUIPMENT.

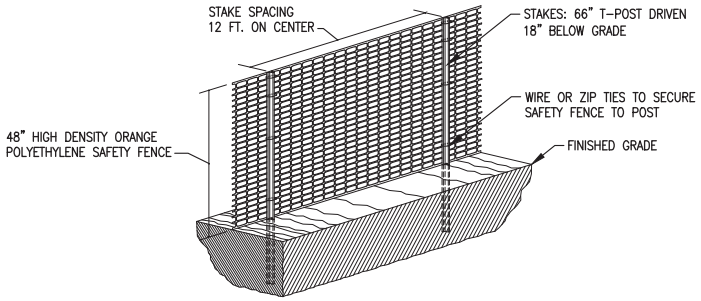
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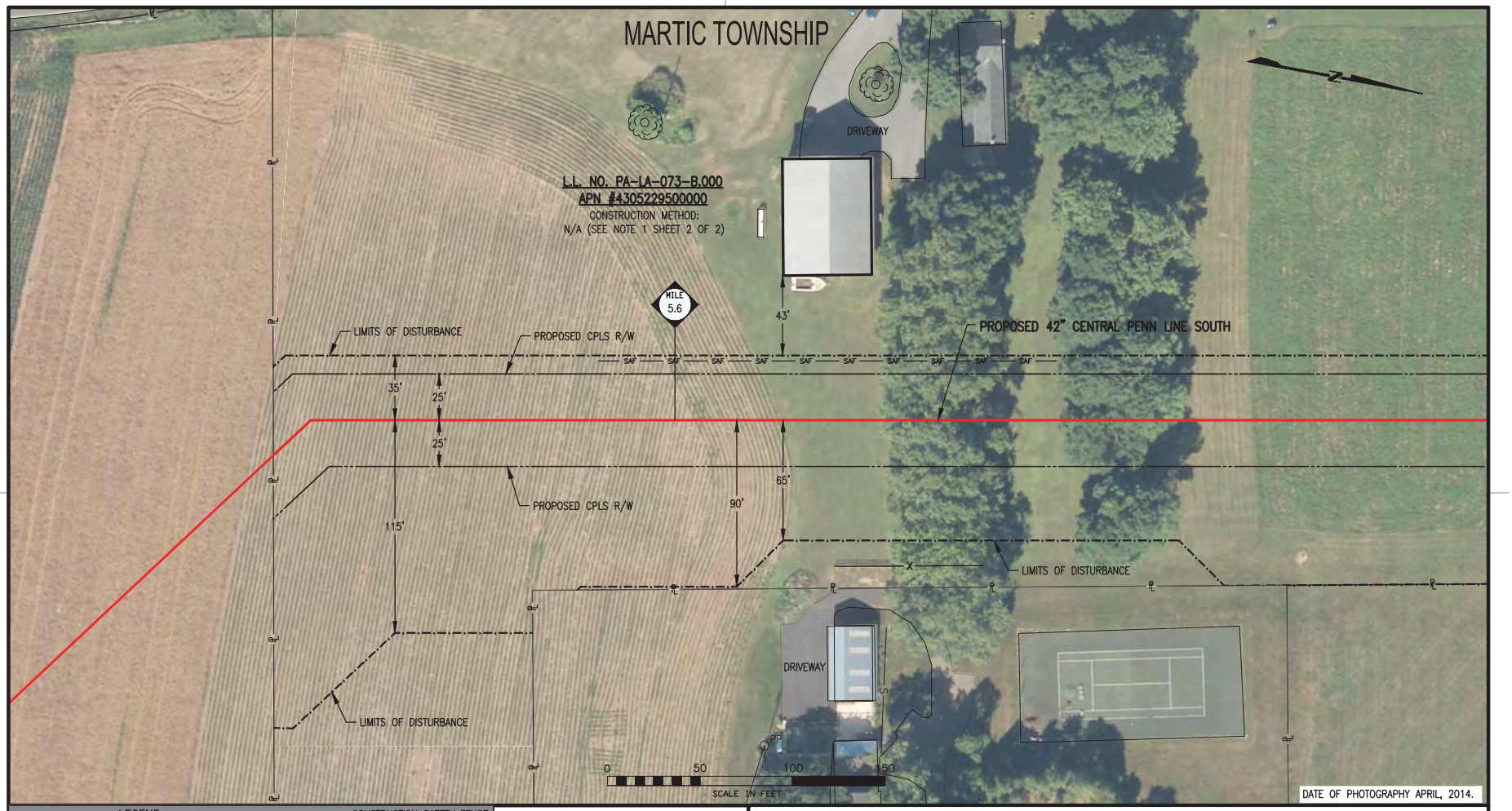
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   - ☐ _____
   - ☐ _____
   - ☐ _____

8. A MOBILE WATER TRUCK WILL BE USED TO CONTROL DUST ON THE R.O.W. AS NEEDED.

9. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC IS OFFERING PRE-CONSTRUCTION AND POST-CONSTRUCTION MONITORING PROGRAM. THE HOMEOWNER:
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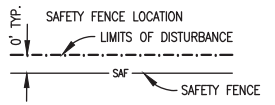
SAFETY FENCE





LEGEND

- PROPOSED 42" CENTRAL PENN LINE SOUTH
- EXISTING 23.375" LEIDY LINE "A"
- EXISTING TGPL R/W
- PROPOSED CPLS R/W
- PROPERTY LINE
- ROAD EASEMENT
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- LIMITS OF DISTURBANCE
- SAF — CONSTRUCTION SAFETY FENCE
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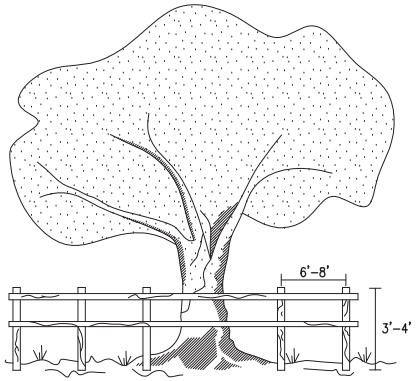


THE LOCATION OF THE SAFETY FENCES SHOWN IN THE PLAN IS APPROXIMATE AND ADJUSTED FOR CLARITY. SAFETY FENCES LOCATED NEAR THE LIMITS OF DISTURBANCE SHALL BE INSTALLED AT THE LIMIT LINE AS SHOWN ABOVE.

Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

MARTIC TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



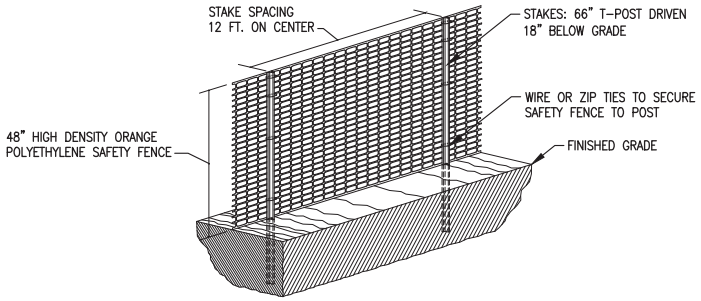
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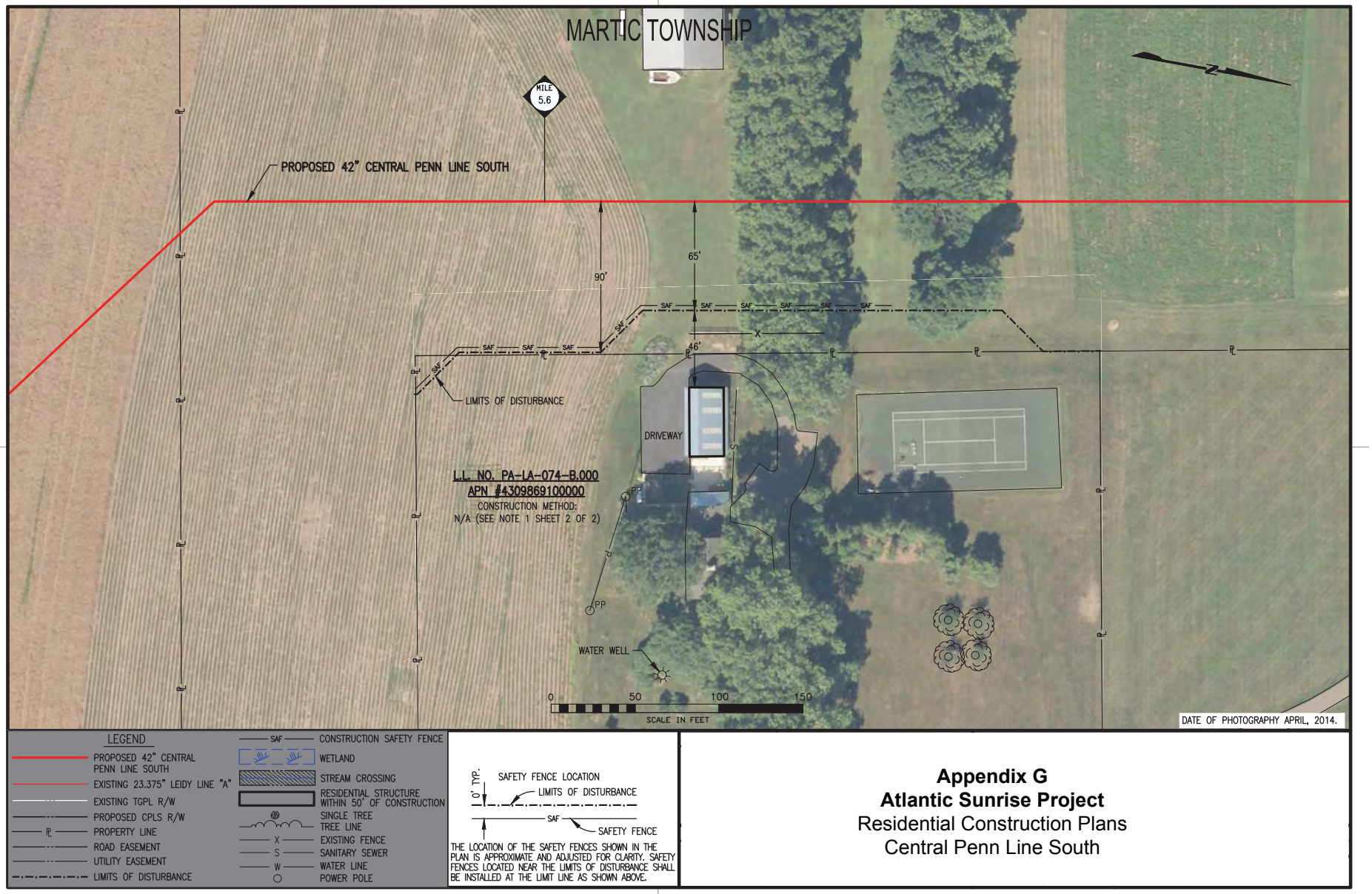
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NOTES:

1. CONSTRUCTION TECHNIQUES TO BE USED TO MINIMIZE IMPACT TO THIS RESIDENCE ARE DENOTED ON SHEET 1 OF THIS DRAWING. CONSTRUCTION TECHNIQUES INCLUDE REDUCED PIPELINE SEPARATION (N), DRAG SECTION (D), WORKING OVER EXISTING PIPELINE (W), PIPELINE CROSSOVERS (C), REDUCED CONSTRUCTION RIGHT-OF-WAY (R).
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   - ☐ _____
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9. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC IS OFFERING PRE-CONSTRUCTION AND POST-CONSTRUCTION MONITORING PROGRAM. THE HOMEOWNER:
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SAFETY FENCE

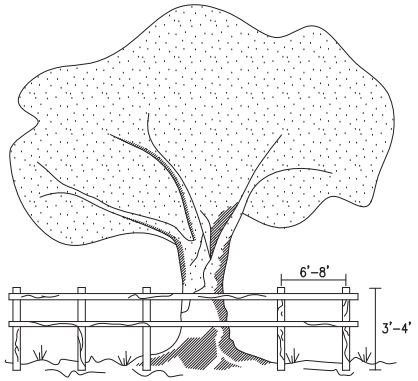




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

MARTIC TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



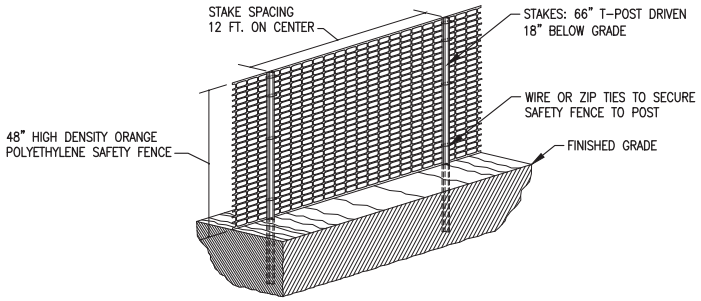
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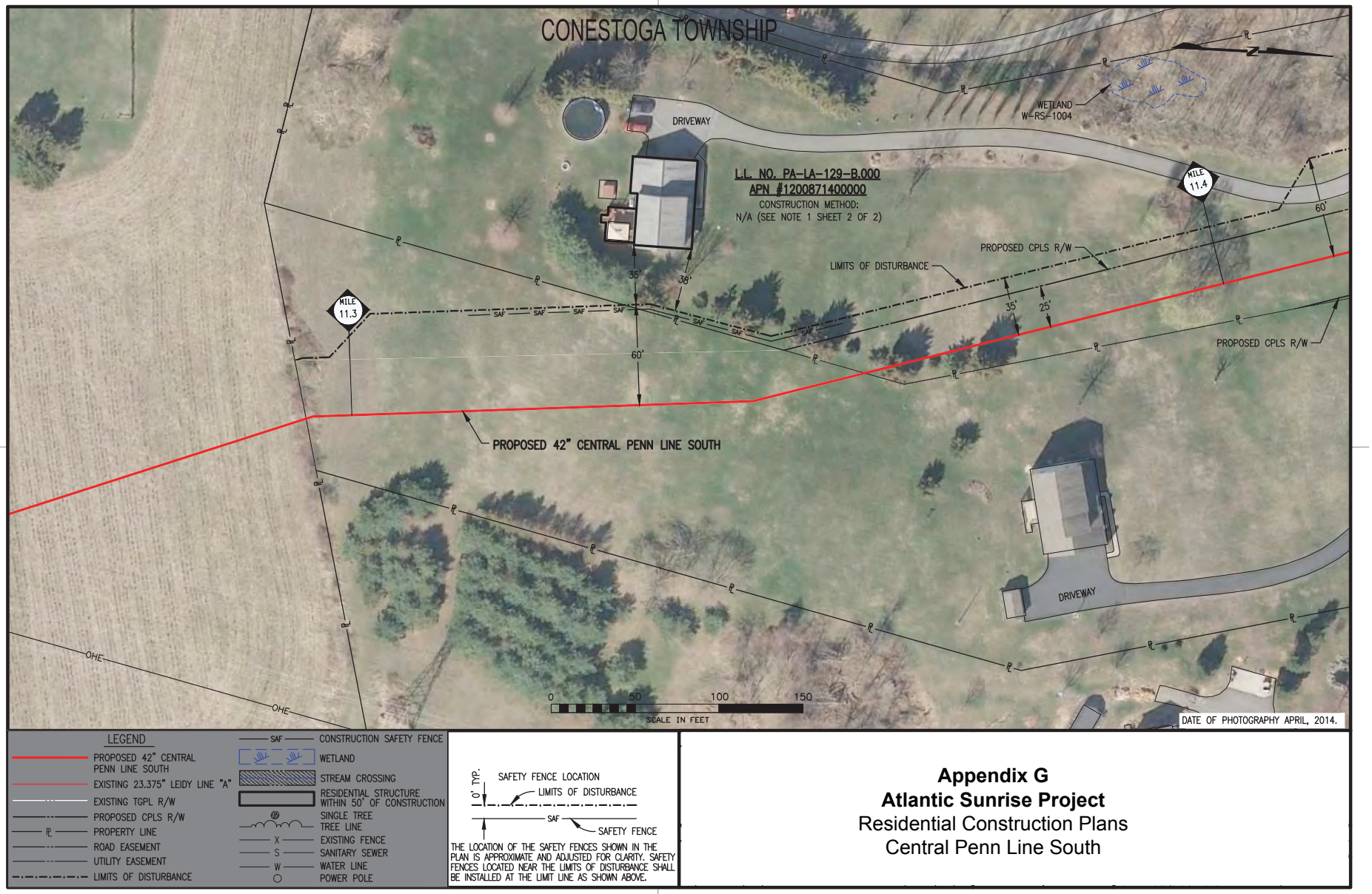
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   - ☐ _____
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SAFETY FENCE

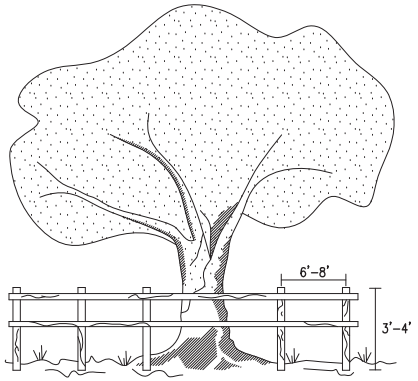




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

CONESTOGA TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



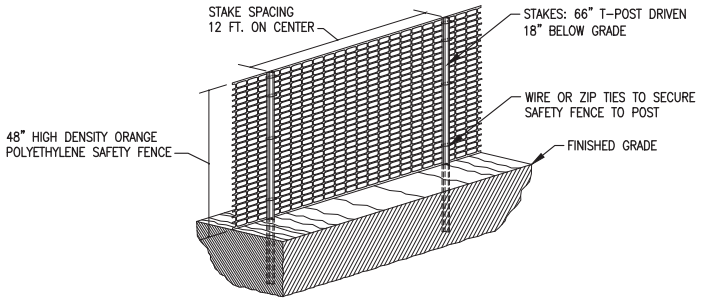
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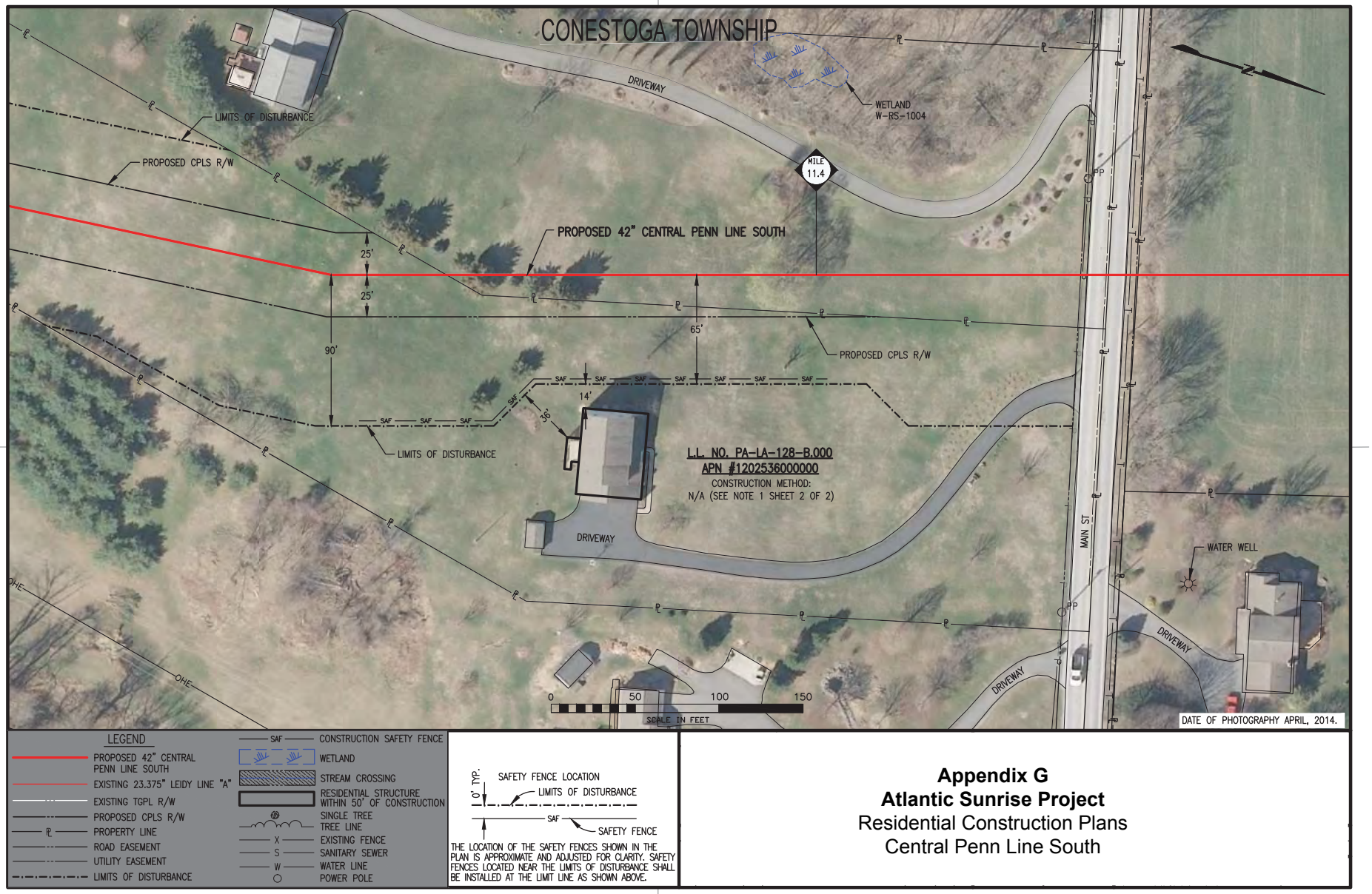
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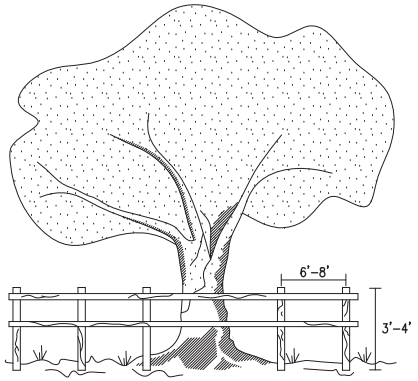




Appendix G
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Residential Construction Plans
Central Penn Line South

CONESTOGA TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



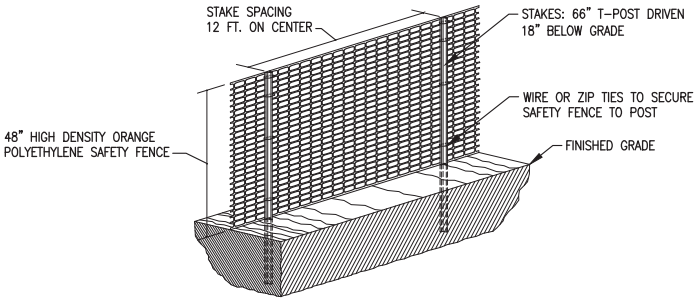
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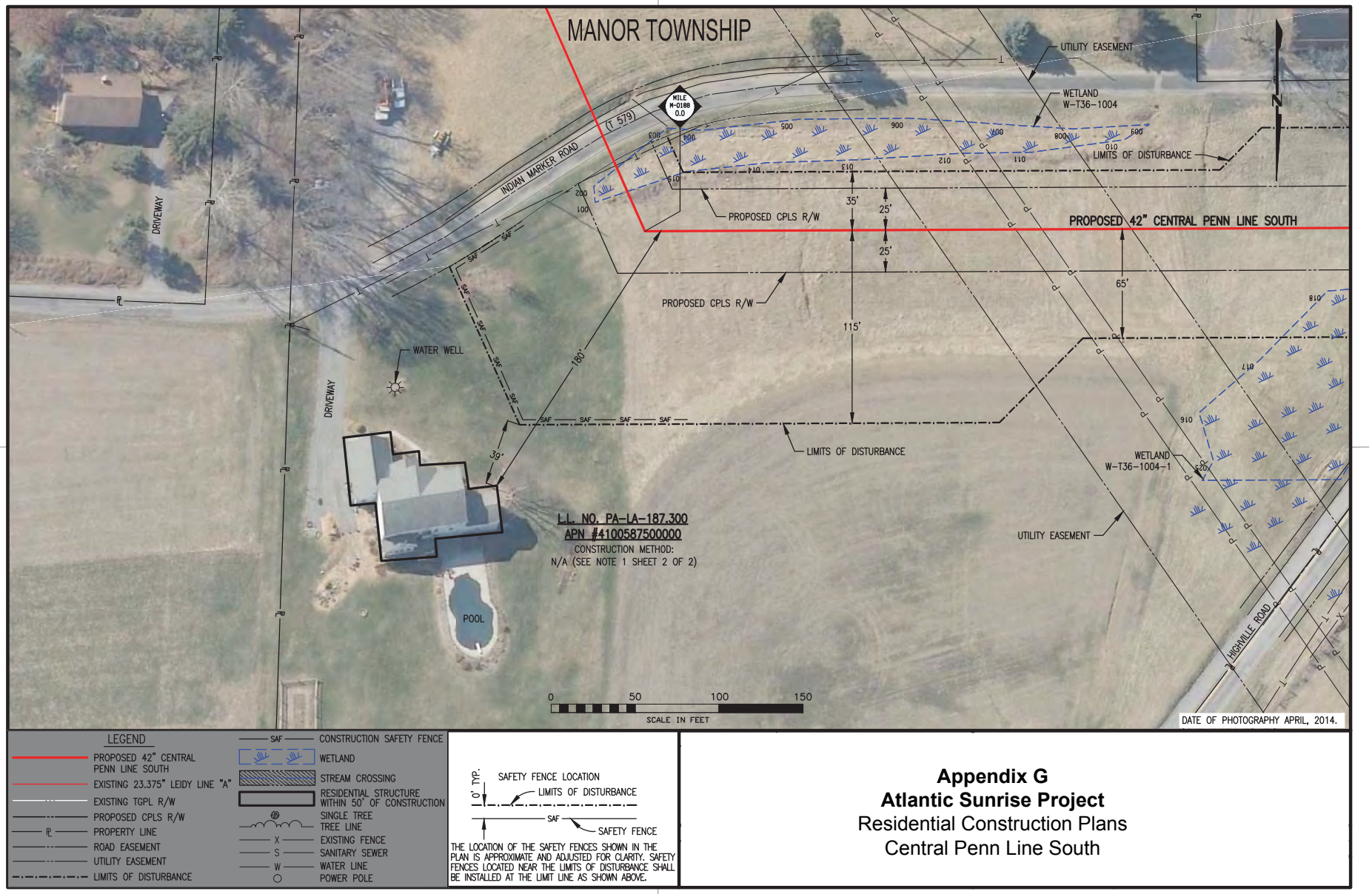
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SAFETY FENCE





LEGEND

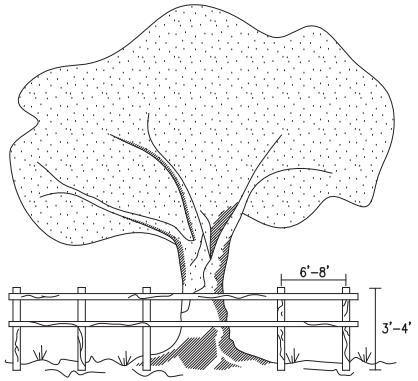
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Residential Construction Plans
Central Penn Line South

MANOR TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



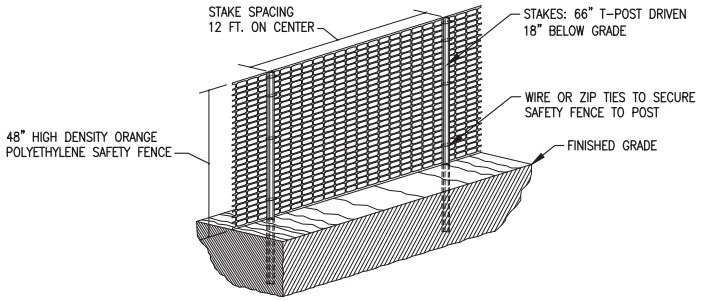
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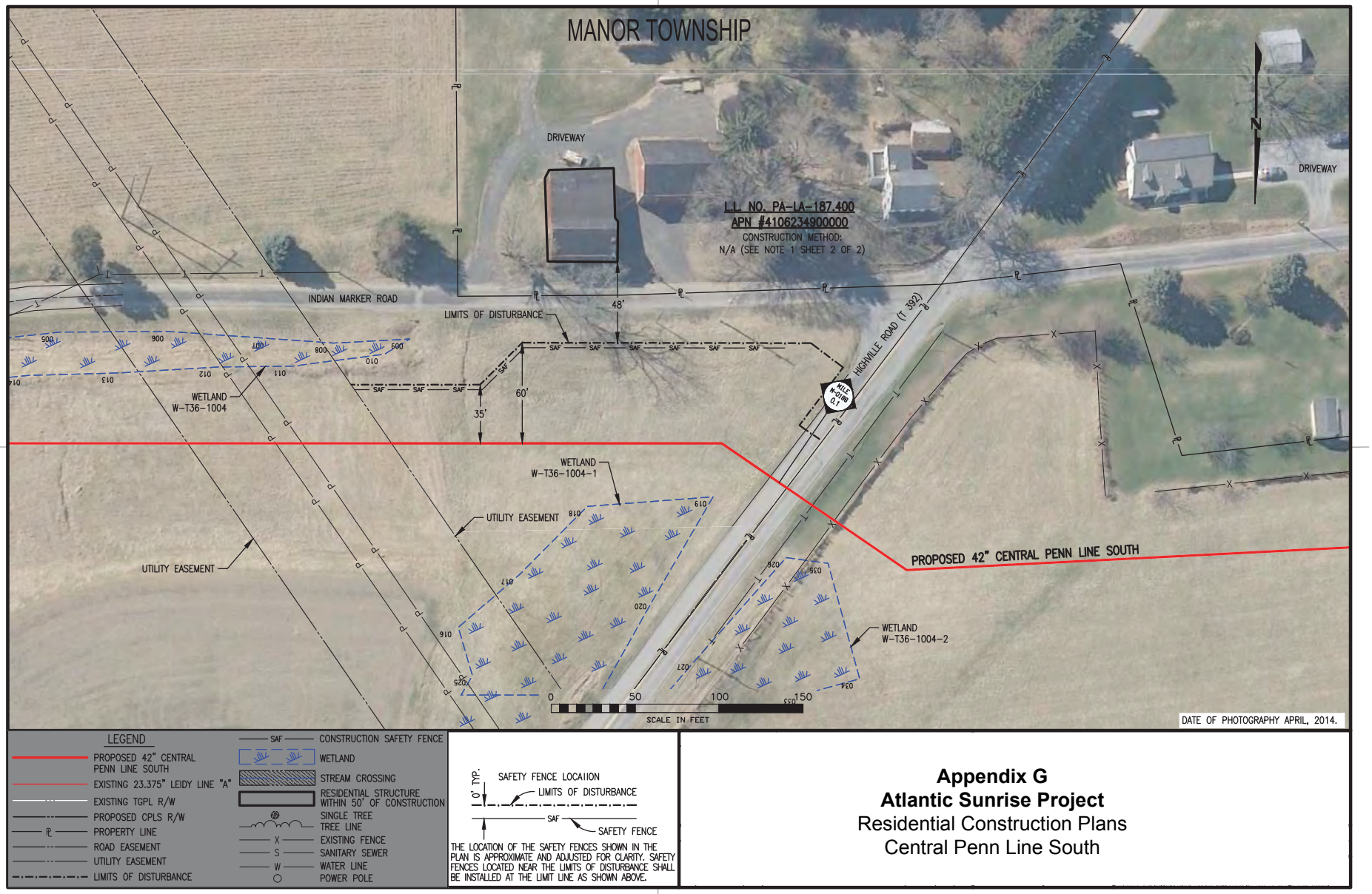
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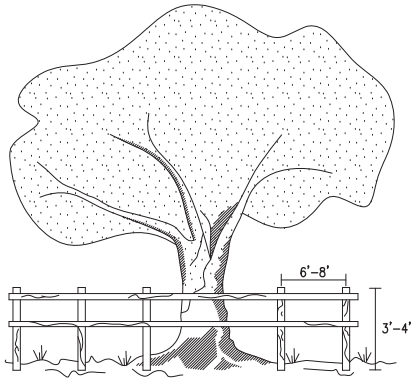




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

MANOR TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



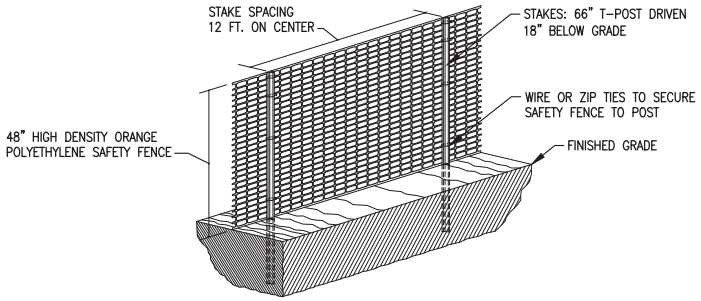
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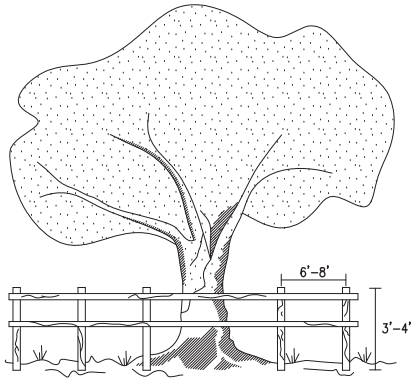




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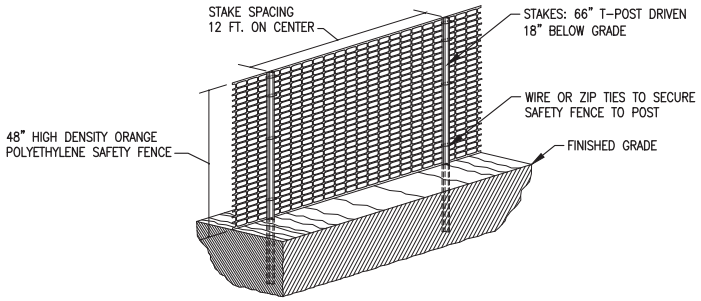
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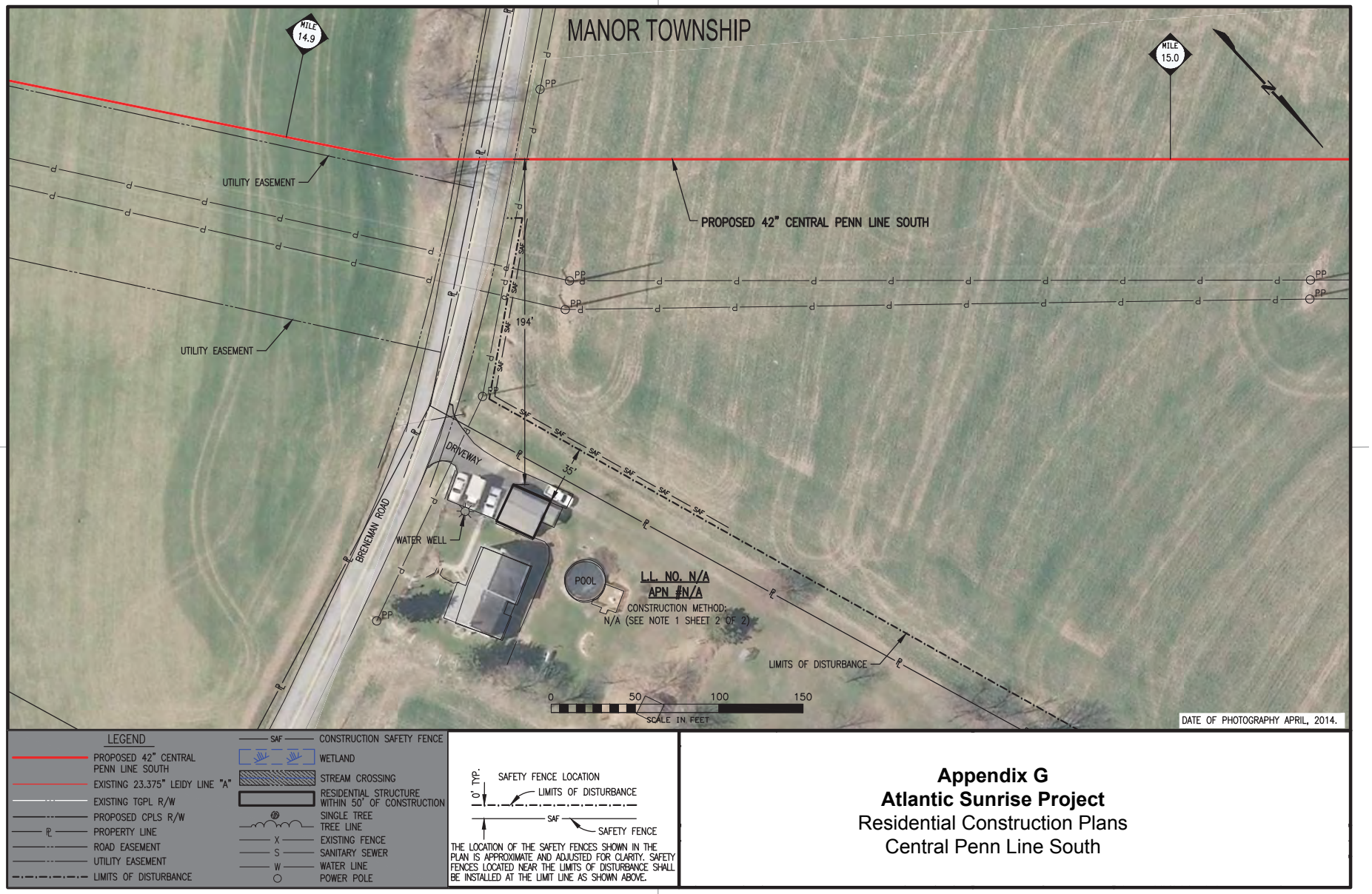
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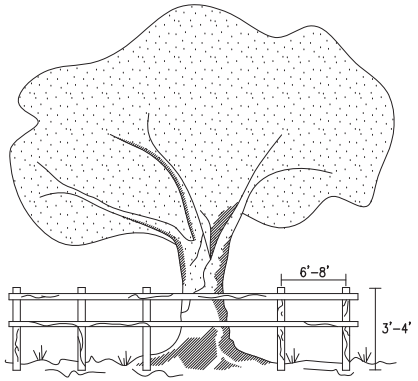




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

MANOR TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



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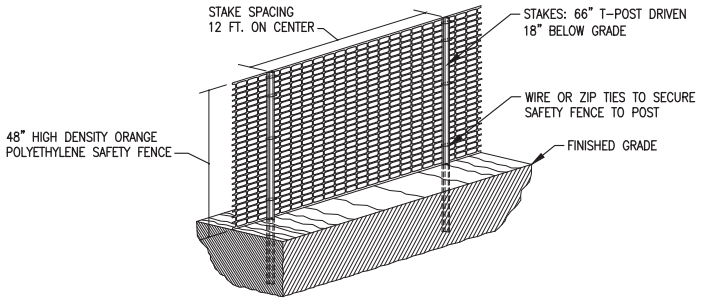
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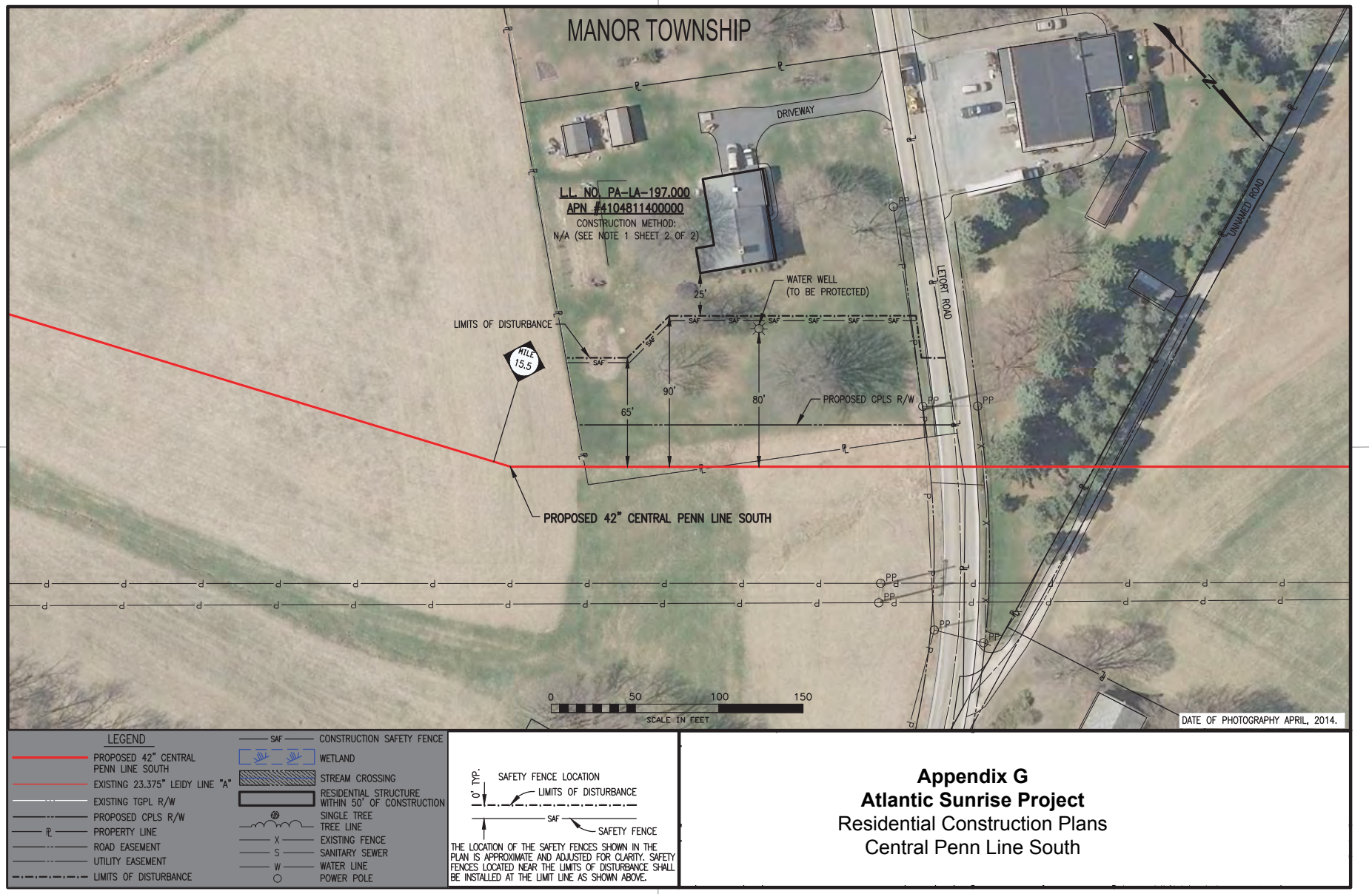
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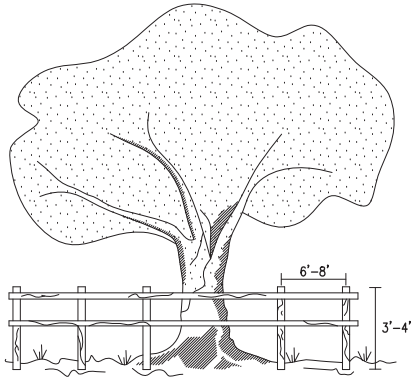




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Residential Construction Plans
Central Penn Line South

MANOR TOWNSHIP

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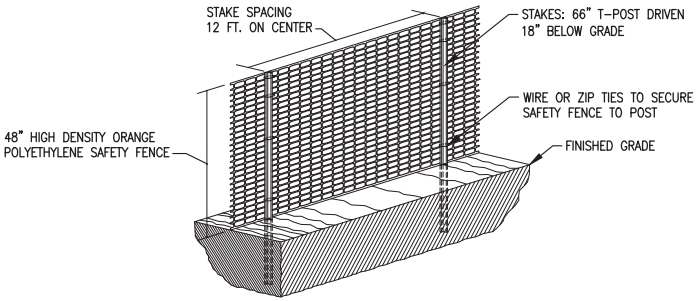
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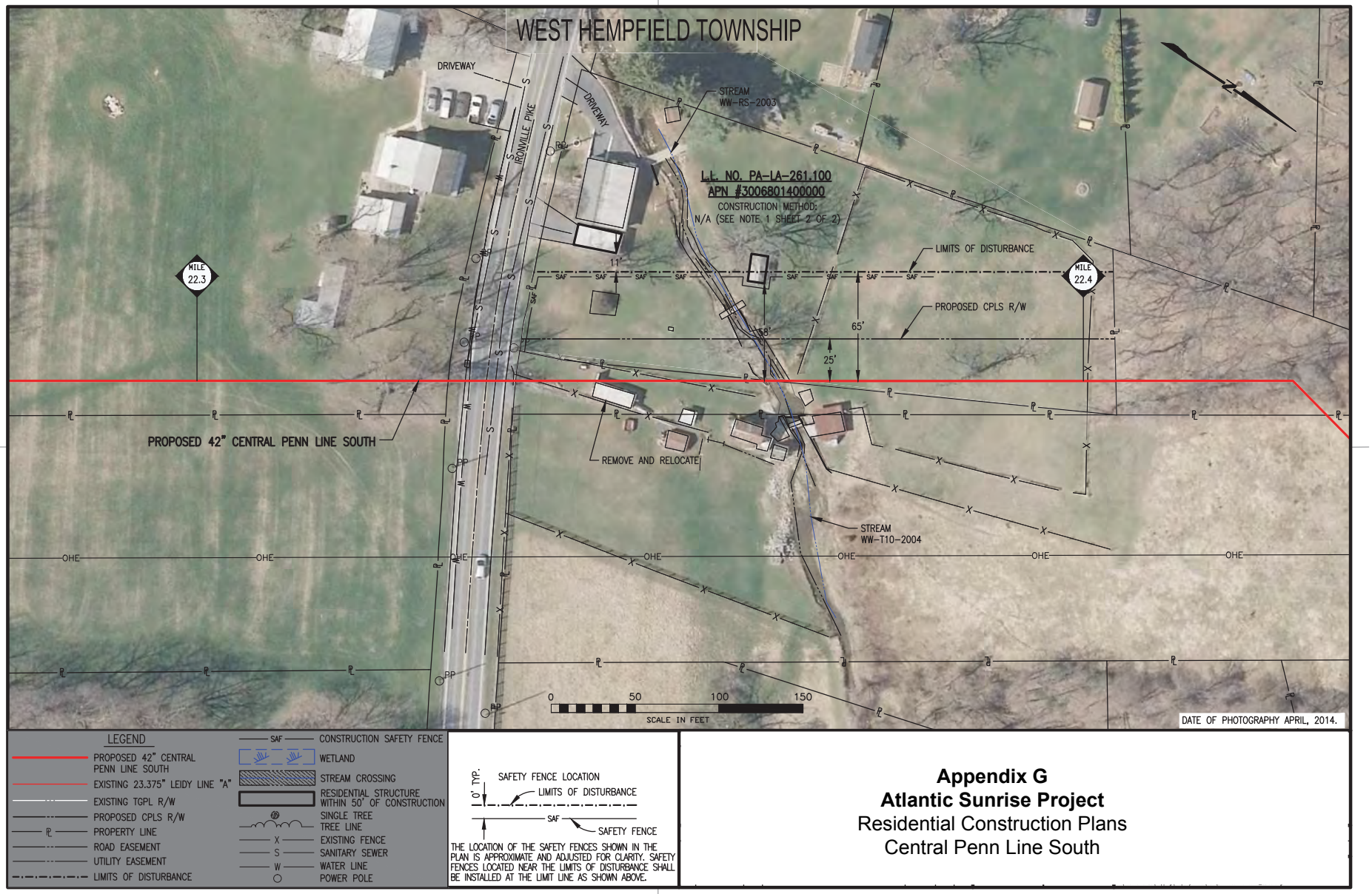
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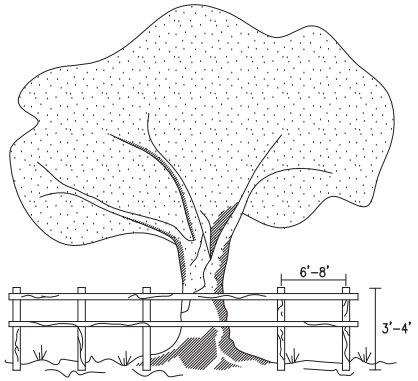




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WEST HEMPFIELD TOWNSHIP

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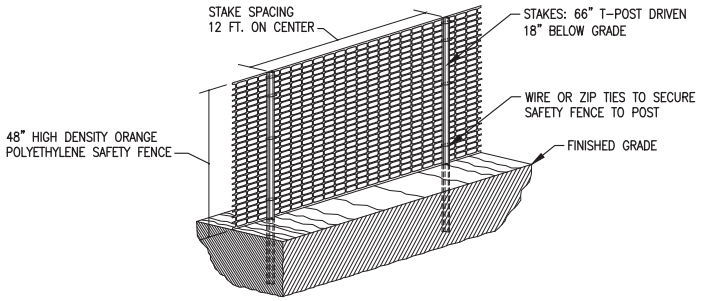
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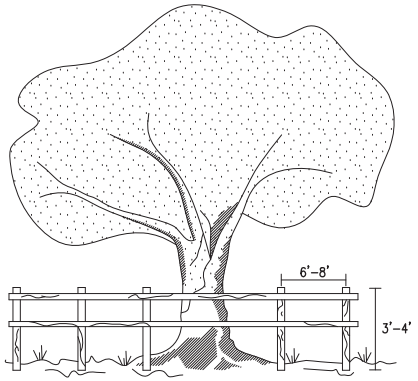




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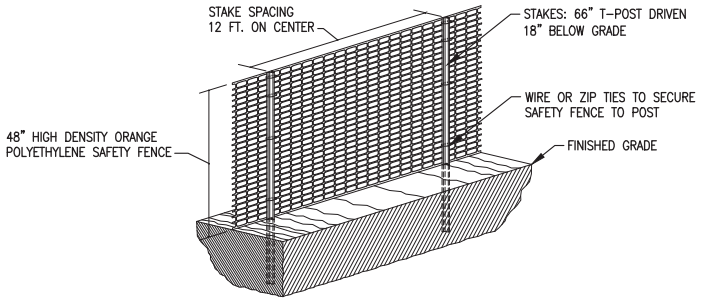
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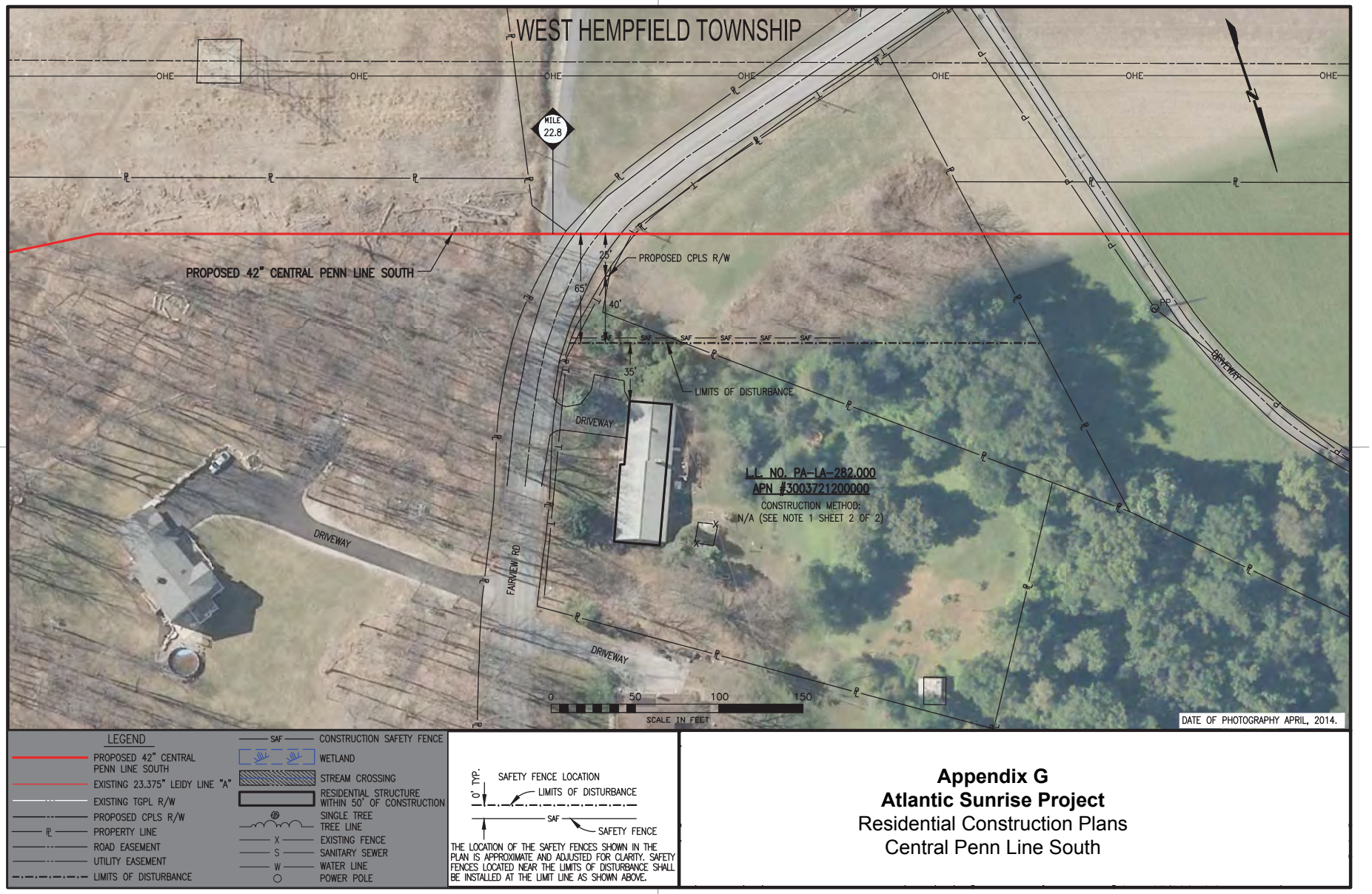
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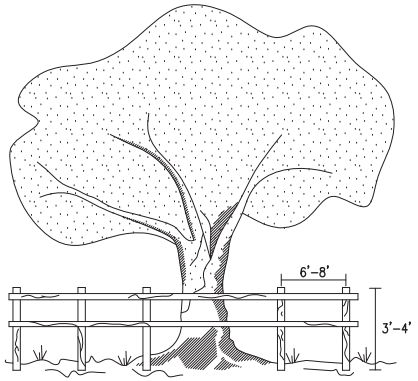




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

WEST HEMPFIELD TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



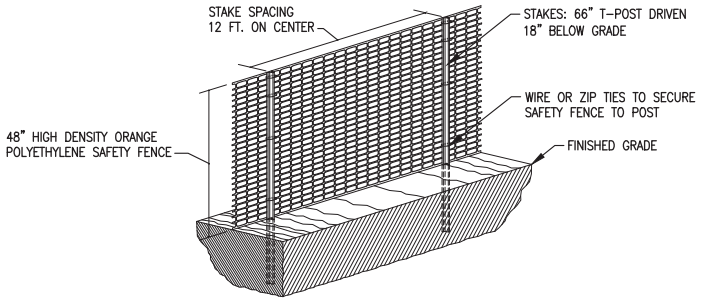
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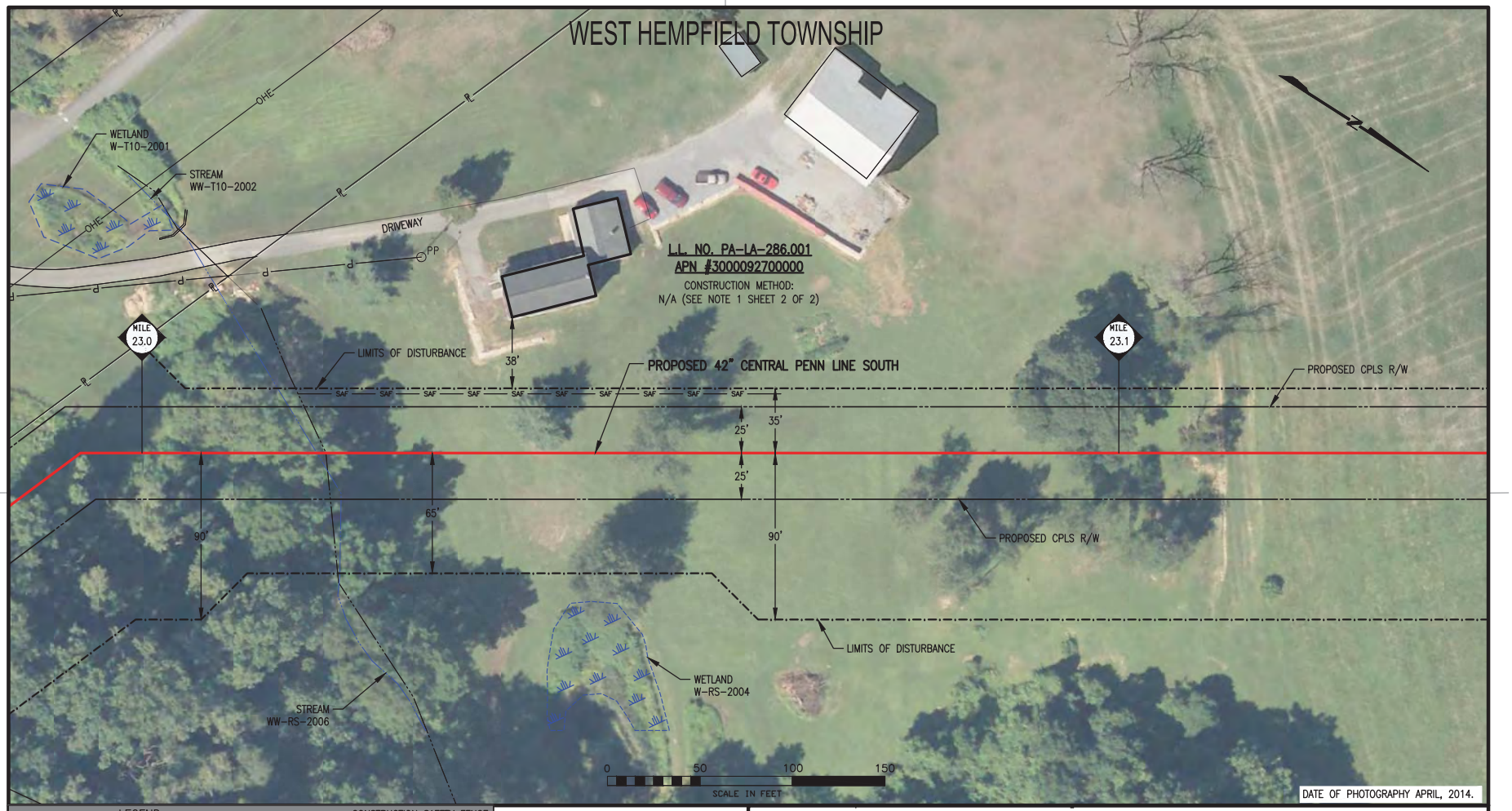
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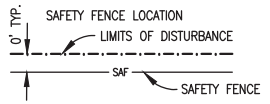
SAFETY FENCE





LEGEND

- PROPOSED 42" CENTRAL PENN LINE SOUTH
- EXISTING 23.375" LEIDY LINE "A"
- EXISTING TGPL R/W
- PROPOSED CPLS R/W
- PROPERTY LINE
- ROAD EASEMENT
- UTILITY EASEMENT
- LIMITS OF DISTURBANCE
- SAF — CONSTRUCTION SAFETY FENCE
- WETLAND
- STREAM CROSSING
- RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
- SINGLE TREE
- TREE LINE
- X — EXISTING FENCE
- S — SANITARY SEWER
- W — WATER LINE
- POWER POLE

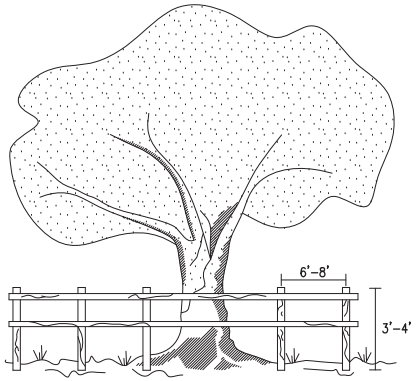


THE LOCATION OF THE SAFETY FENCES SHOWN IN THE PLAN IS APPROXIMATE AND ADJUSTED FOR CLARITY. SAFETY FENCES LOCATED NEAR THE LIMITS OF DISTURBANCE SHALL BE INSTALLED AT THE LIMIT LINE AS SHOWN ABOVE.

Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

WEST HEMPFIELD TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



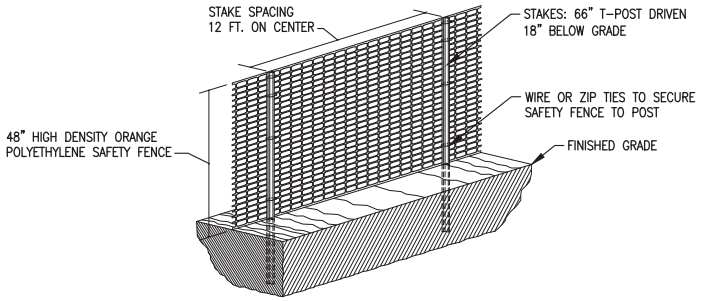
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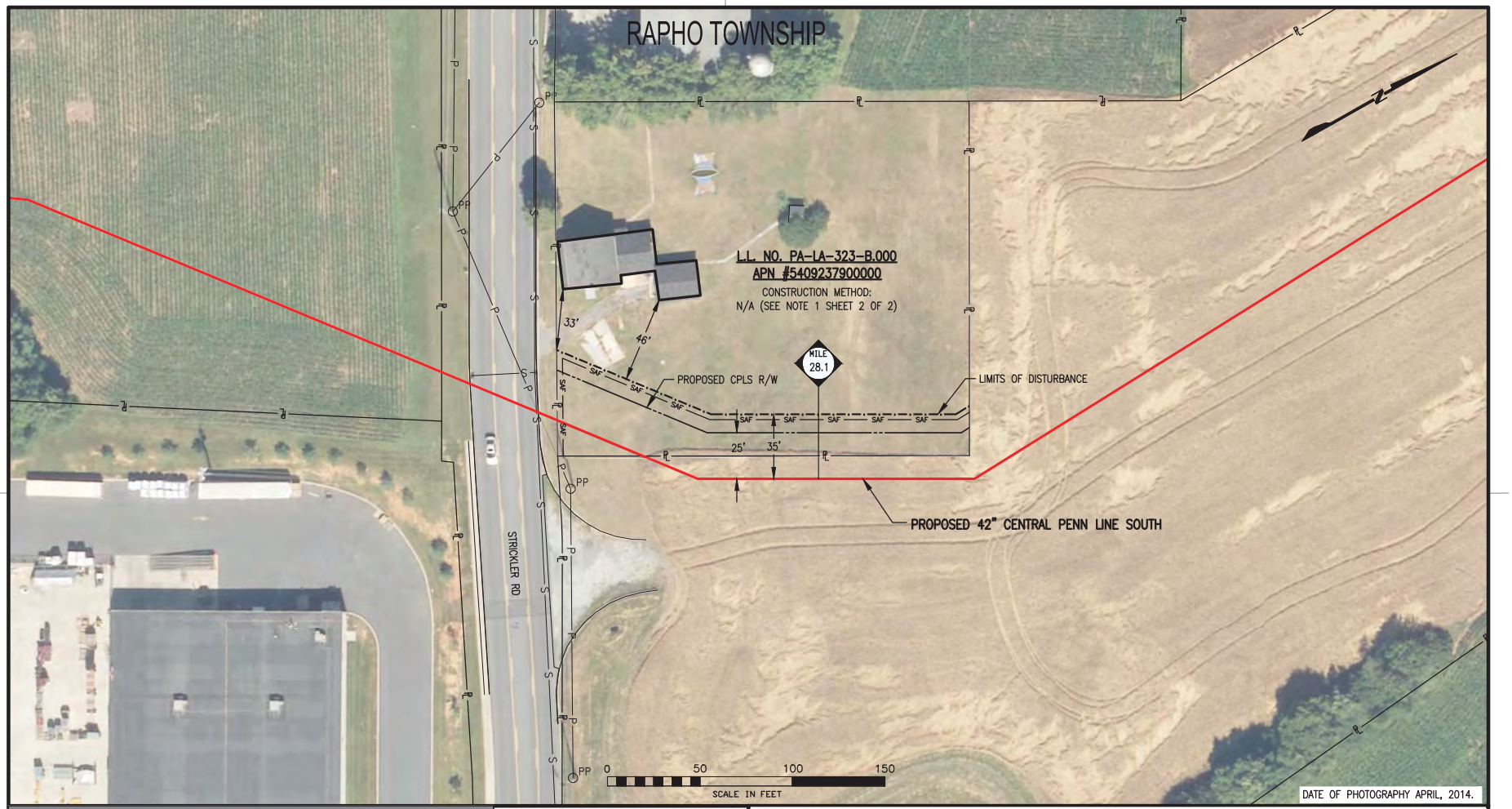
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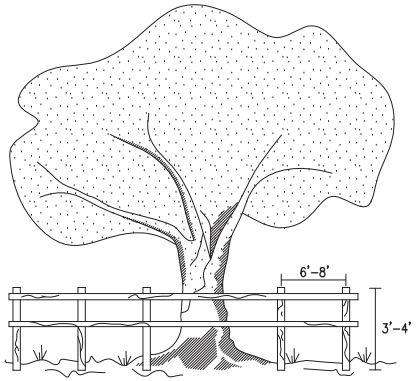




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

RAPHO TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



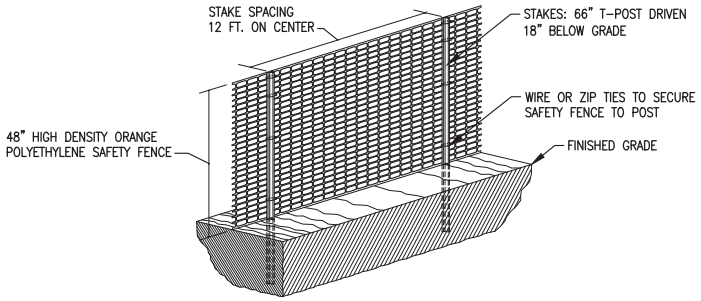
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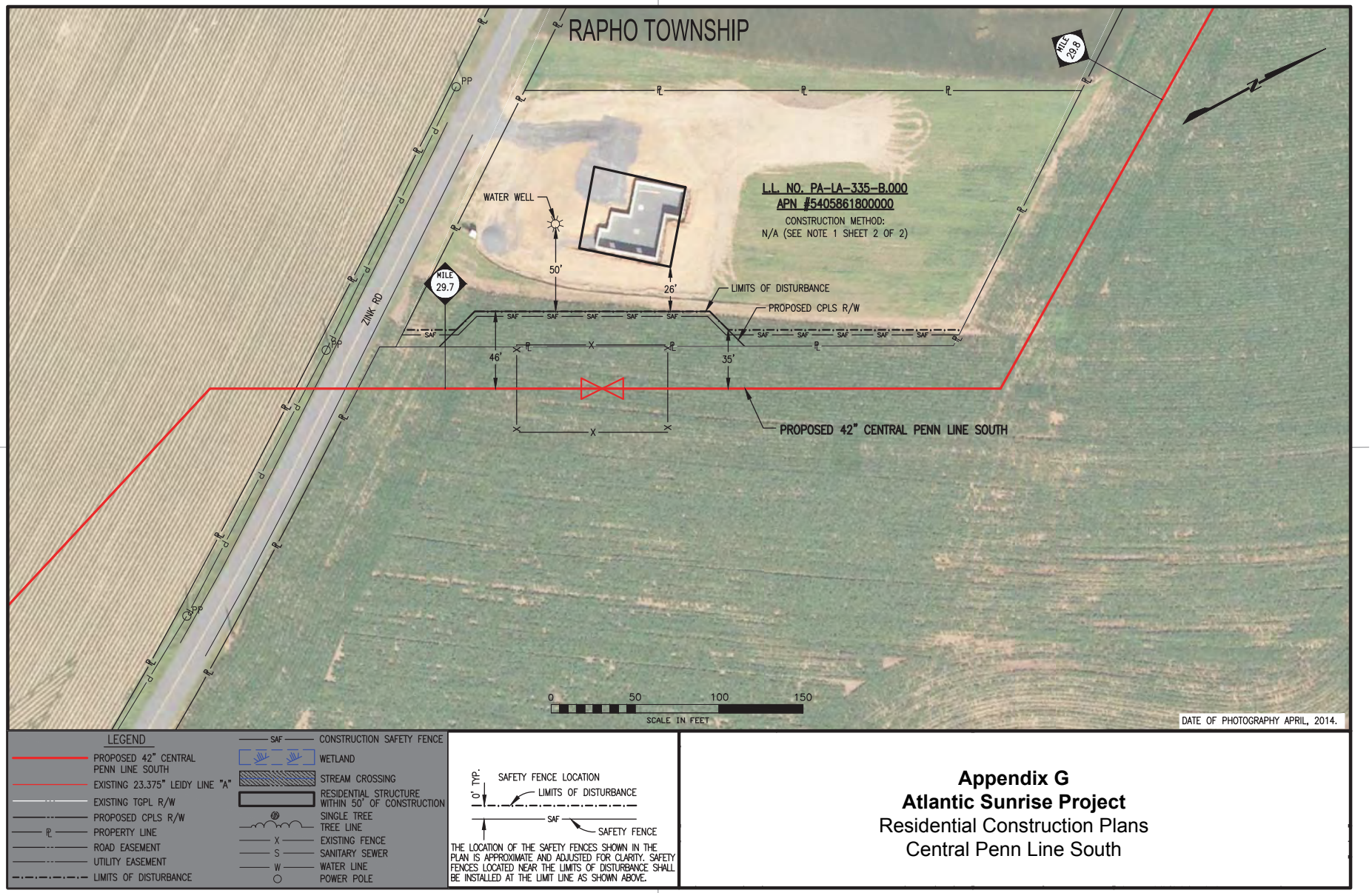
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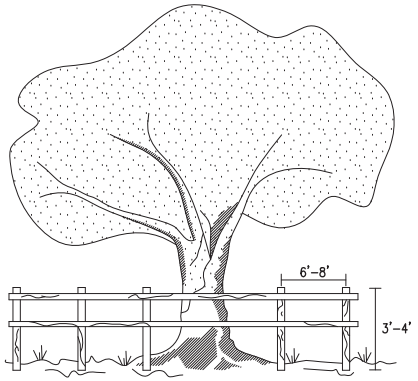




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Central Penn Line South

RAPHO TOWNSHIP

BARRICADE DETAIL
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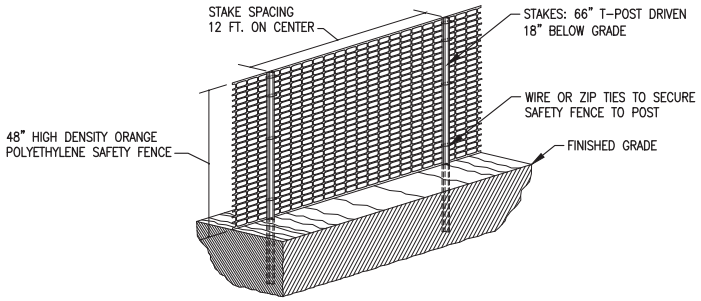
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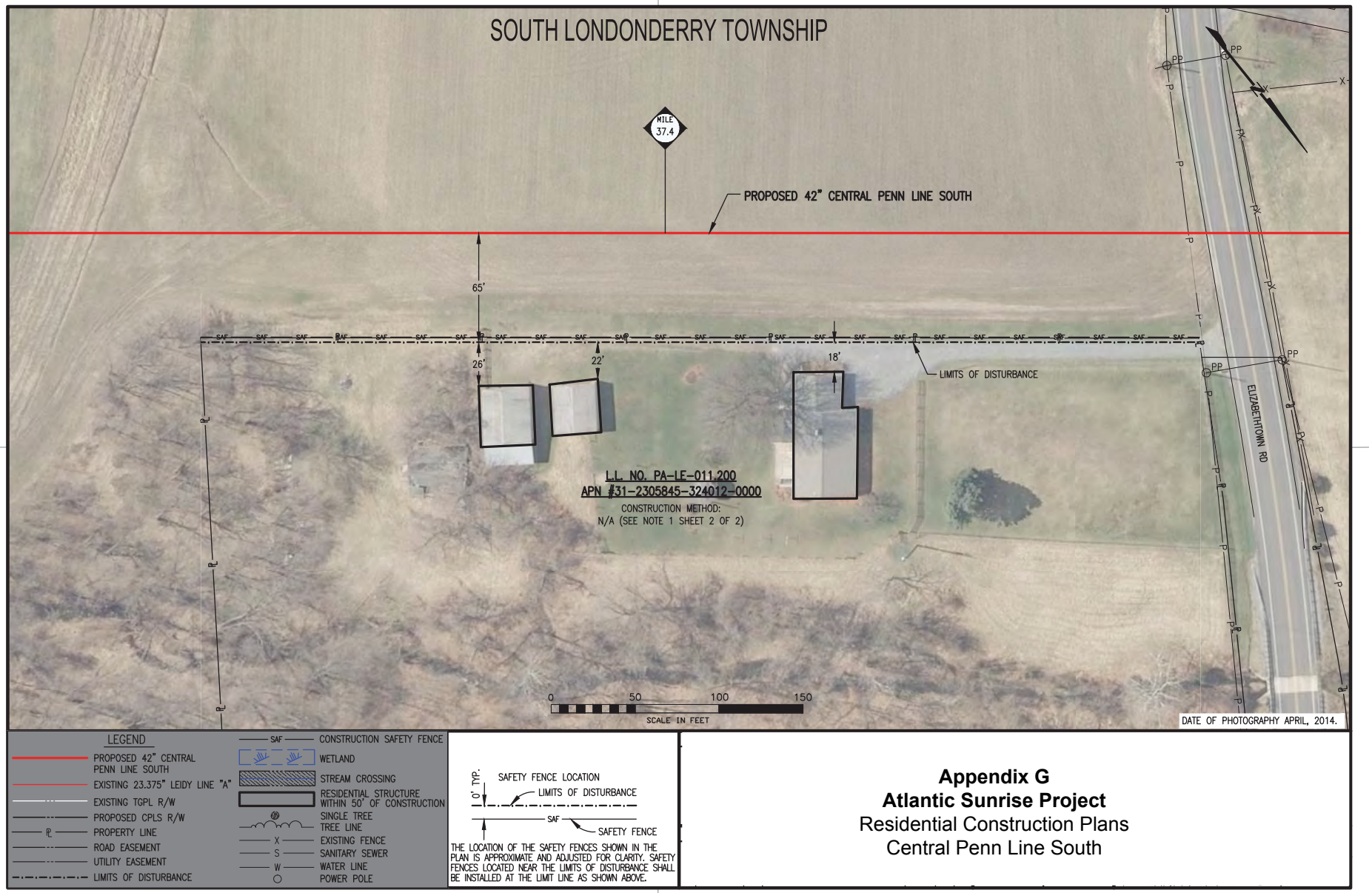
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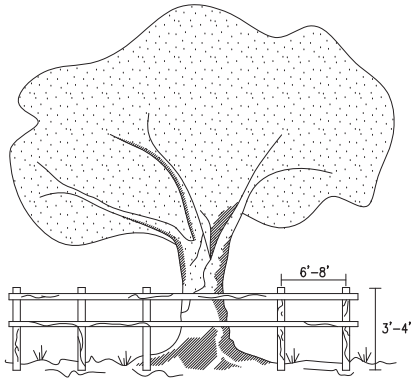




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SOUTH LONDONDERRY TOWNSHIP

BARRICADE DETAIL
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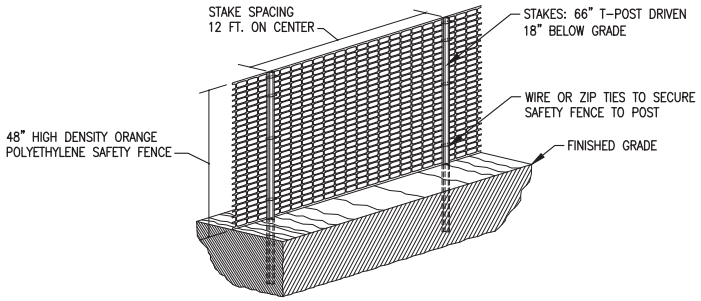
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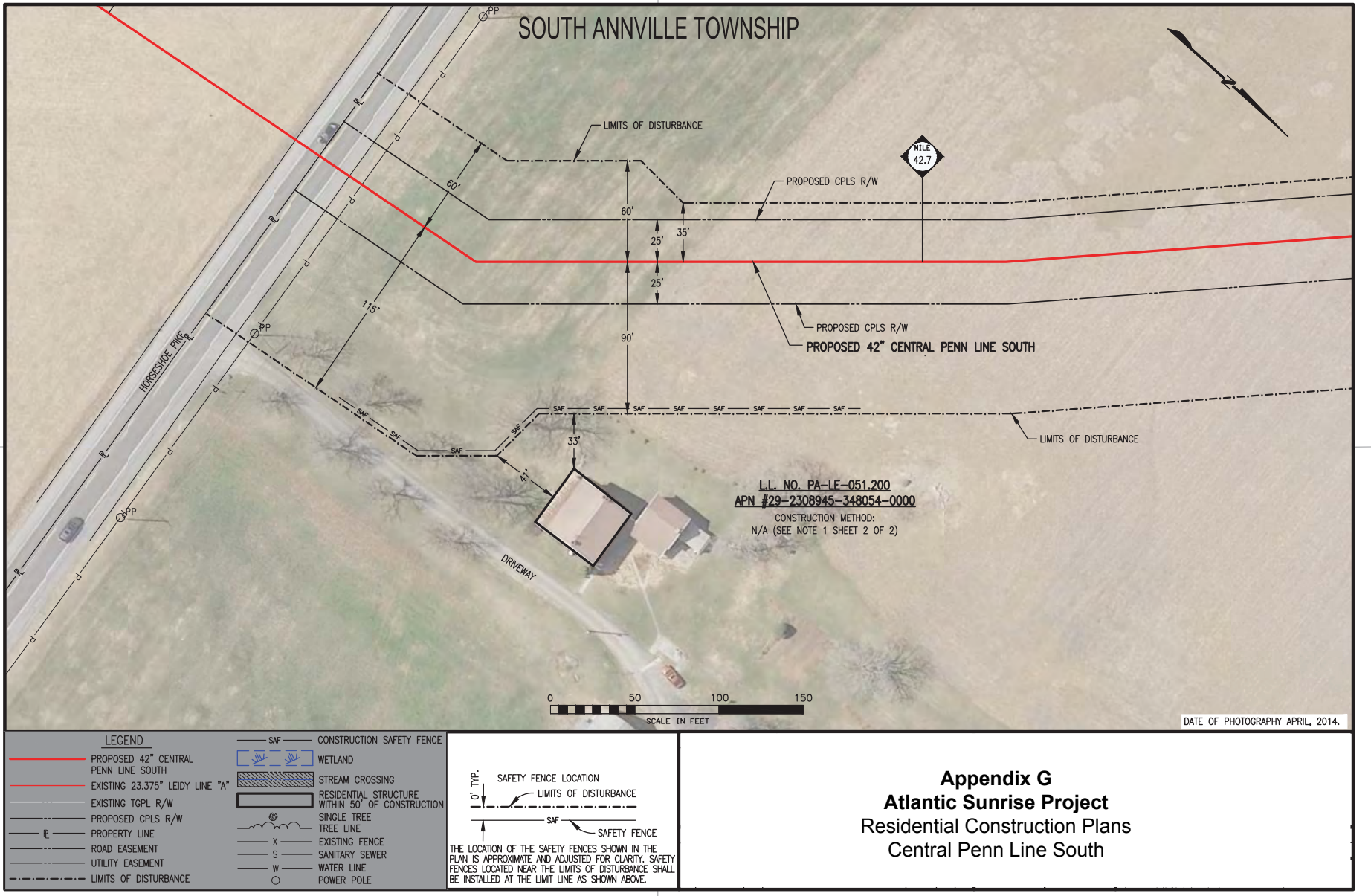
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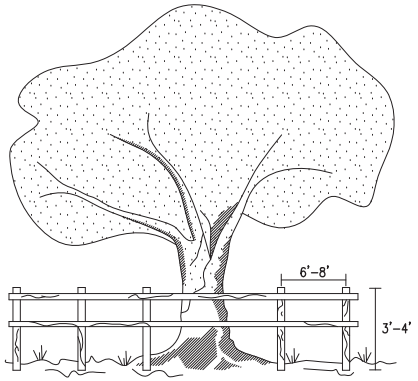




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

SOUTH ANNVILLE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



HORIZONTAL: WOOD MEMBER, ORANGE FENCING, CHAIN LINK FENCE OR OTHER APPROVED MATERIAL
VERTICAL: WOOD MEMBER OR APPROVED MATERIAL BARRICADES PLACED AT DESIGNATED PROTECTIVE ROOT ZONE.

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY FENCE 3 FEET OUTSIDE THE DRIP LINE OF THE TREE.
3. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE POST.
4. THE FENCE MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

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2. EXCAVATION OF THE PIPELINE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPELINE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION.

3. HOMEOWNER SHALL BE NOTIFIED ONE (1) WEEK PRIOR TO EXCAVATION OF PIPELINE TRENCH.

4. CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA. "SEE LOCATION DETAIL THIS SHEET. REMOVE AFTER RESTORATION IS COMPLETE."

5. ALL FEATURES WITHIN THE CONSTRUCTION WORK AREA OR LIMITS OF DISTURBANCE SHALL BE REMOVED EXCEPT AS NOTED ON THE DRAWING. MATURE TREES AND LANDSCAPING WITHIN THE EDGE OF THE CONSTRUCTION WORK AREA MAY BE SAVED UNLESS NECESSARY TO REMOVE FOR SAFE OPERATION OF CONSTRUCTION EQUIPMENT.

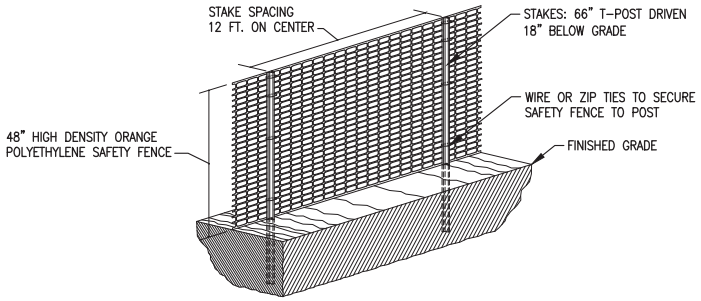
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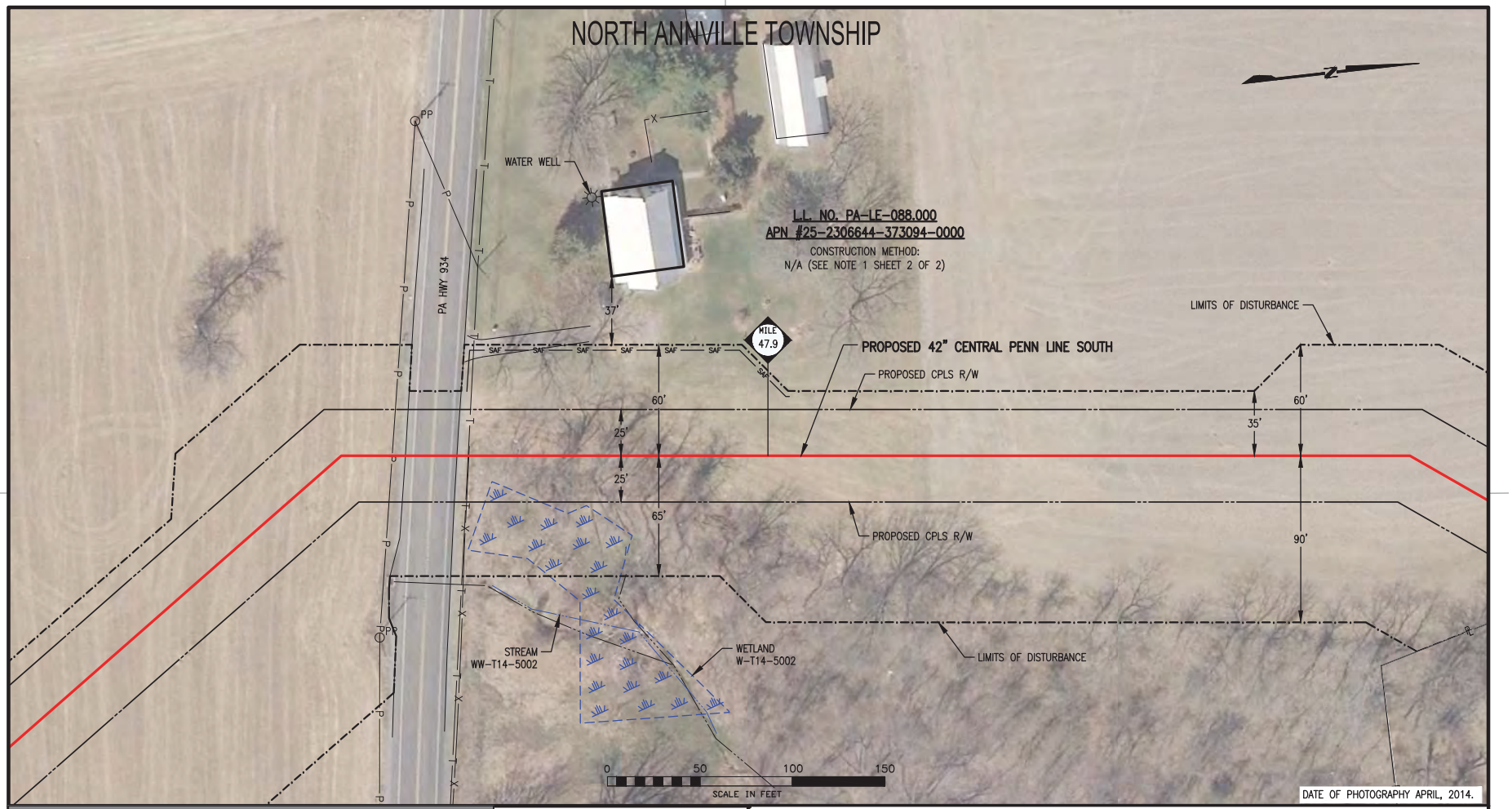
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   - ☐ _____
   - ☐ _____
   - ☐ _____

8. A MOBILE WATER TRUCK WILL BE USED TO CONTROL DUST ON THE R.O.W. AS NEEDED.

9. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC IS OFFERING PRE-CONSTRUCTION AND POST-CONSTRUCTION MONITORING PROGRAM. THE HOMEOWNER:
   ☐ ACCEPTS ☐ DECLINES TO PARTICIPATE

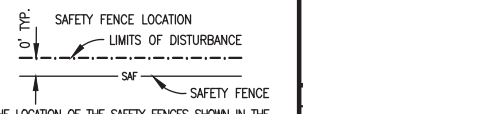
SAFETY FENCE





LEGEND

- PROPOSED 42" CENTRAL PENN LINE SOUTH
- EXISTING 23.375" LEIDY LINE "A"
- EXISTING TGPL R/W
- PROPOSED CPLS R/W
- PROPERTY LINE
- ROAD EASEMENT
- UTILITY EASEMENT
- LIMITS OF DISTURBANCE
- SAF — CONSTRUCTION SAFETY FENCE
- WETLAND
- STREAM CROSSING
- RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
- SINGLE TREE
- TREE LINE
- X — EXISTING FENCE
- S — SANITARY SEWER
- W — WATER LINE
- POWER POLE

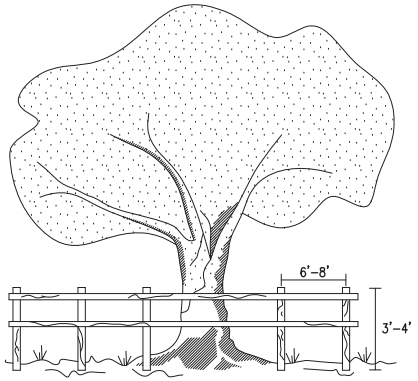


THE LOCATION OF THE SAFETY FENCES SHOWN IN THE PLAN IS APPROXIMATE AND ADJUSTED FOR CLARITY. SAFETY FENCES LOCATED NEAR THE LIMITS OF DISTURBANCE SHALL BE INSTALLED AT THE LIMIT LINE AS SHOWN ABOVE.

Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

NORTH ANNVILLE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



HORIZONTAL: WOOD MEMBER, ORANGE FENCING, CHAIN LINK FENCE OR OTHER APPROVED MATERIAL
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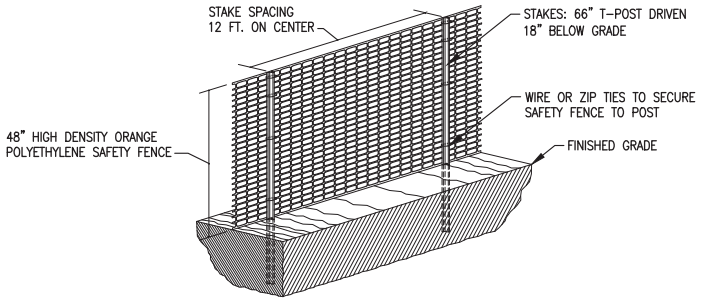
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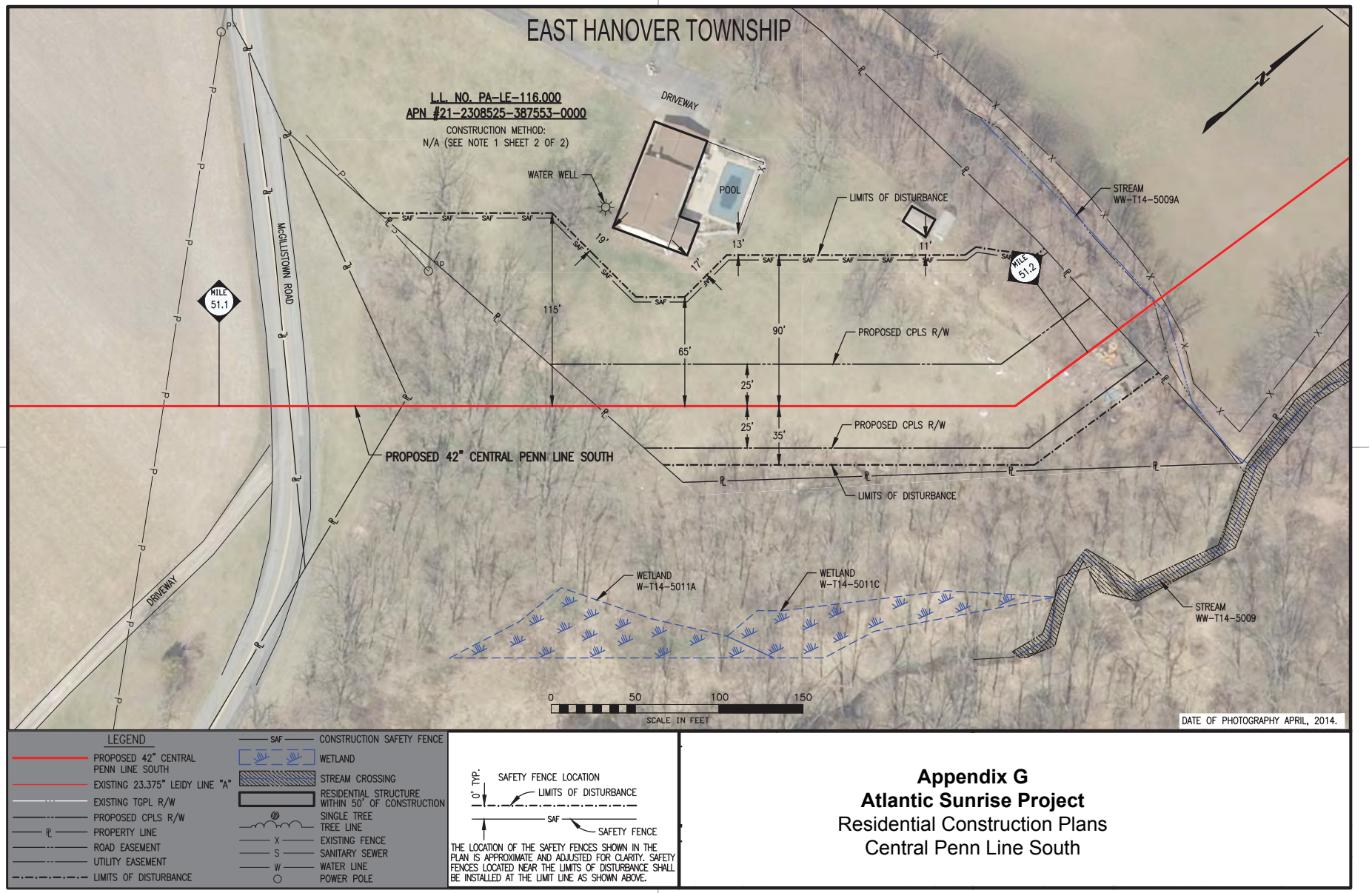
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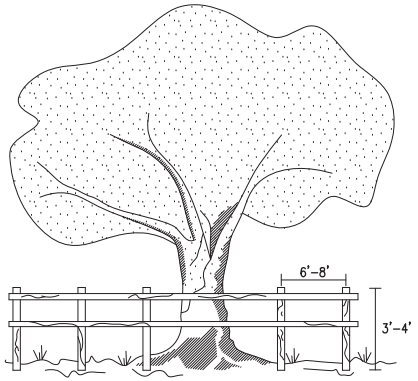




Appendix G
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Residential Construction Plans
Central Penn Line South

EAST HANOVER TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



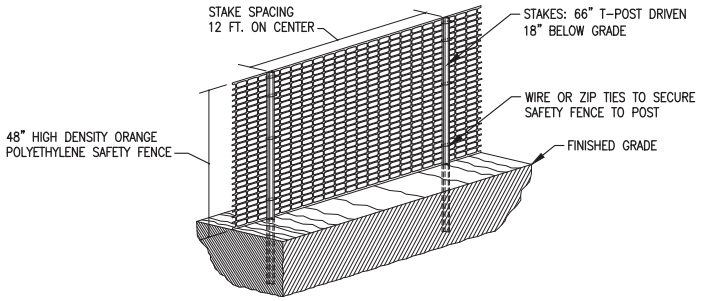
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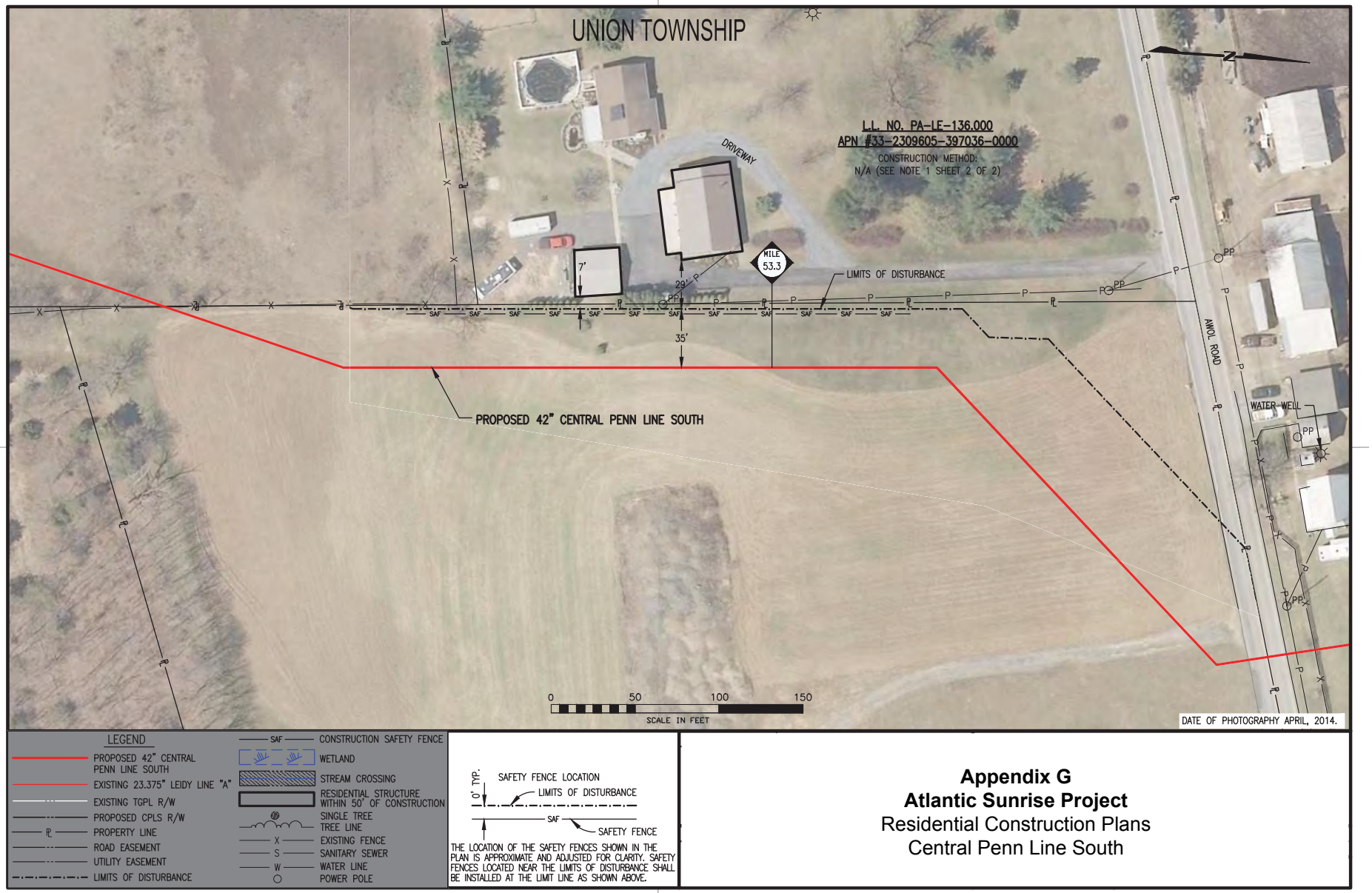
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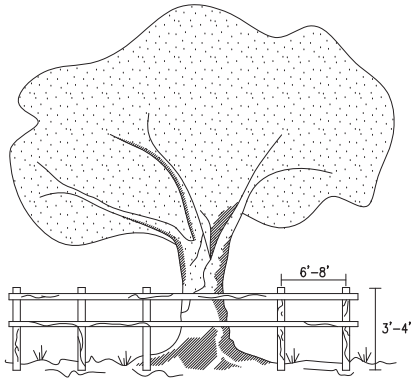




Appendix G
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Residential Construction Plans
Central Penn Line South

UNION TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



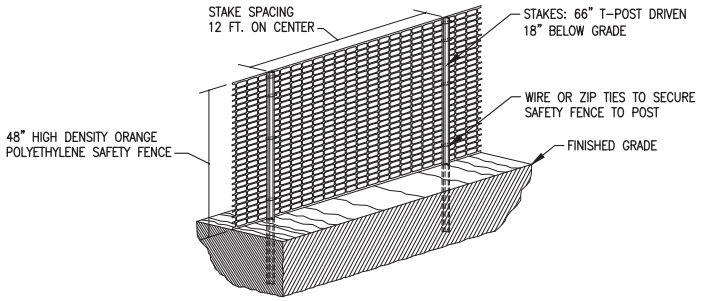
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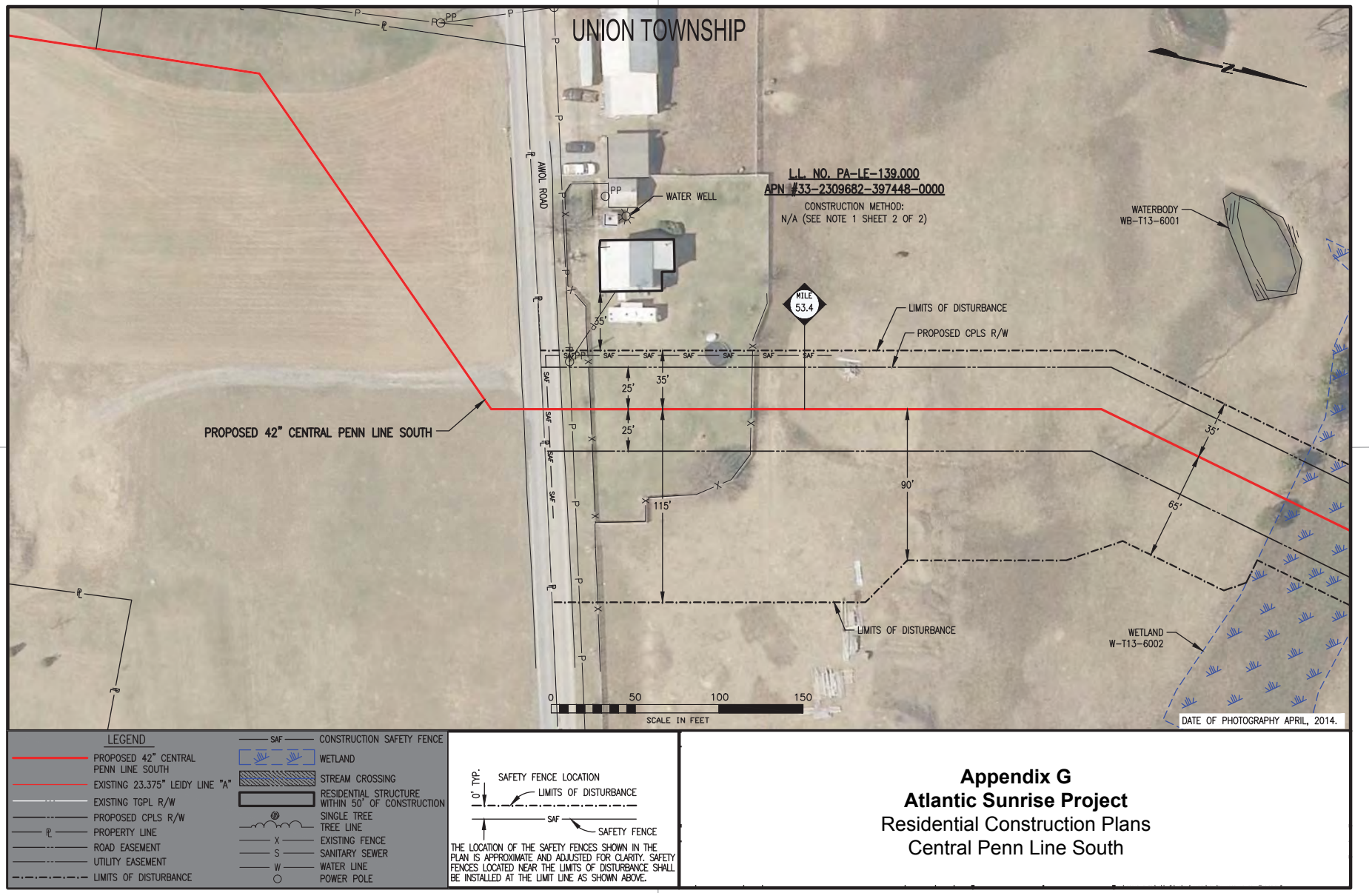
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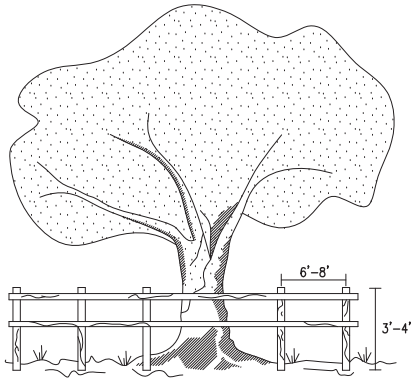




Appendix G
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Residential Construction Plans
Central Penn Line South

UNION TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



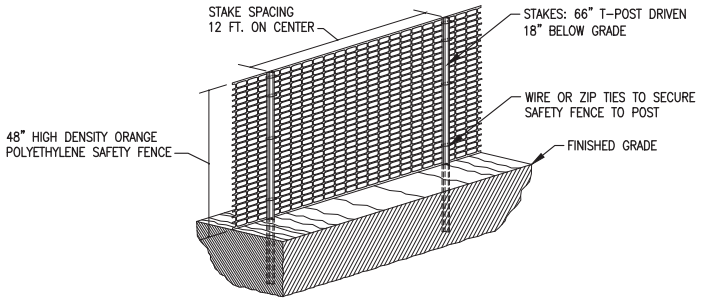
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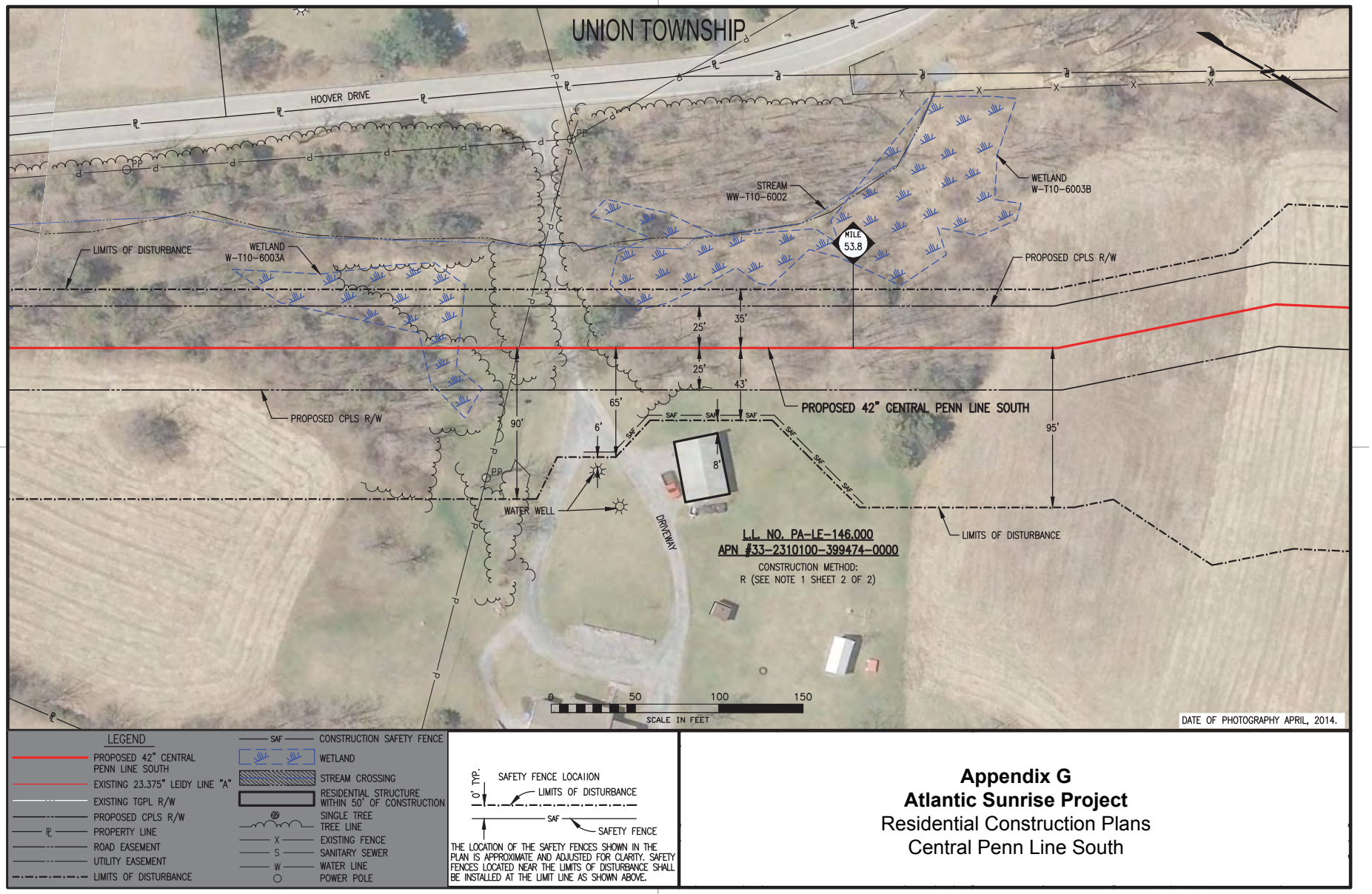
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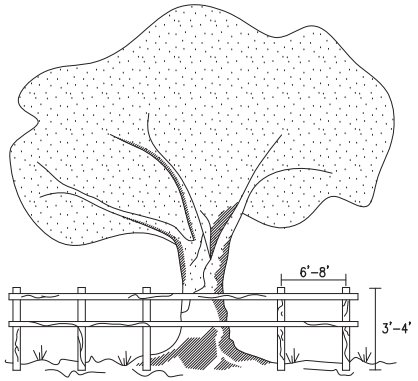




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UNION TOWNSHIP

BARRICADE DETAIL
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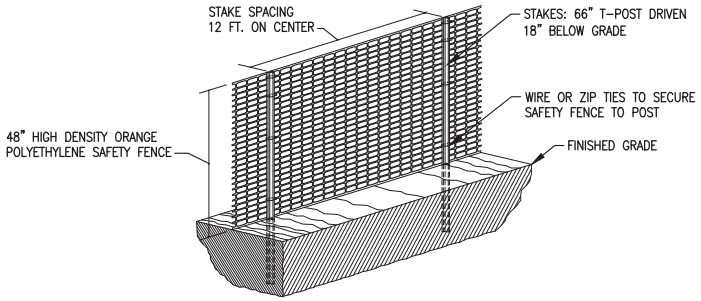
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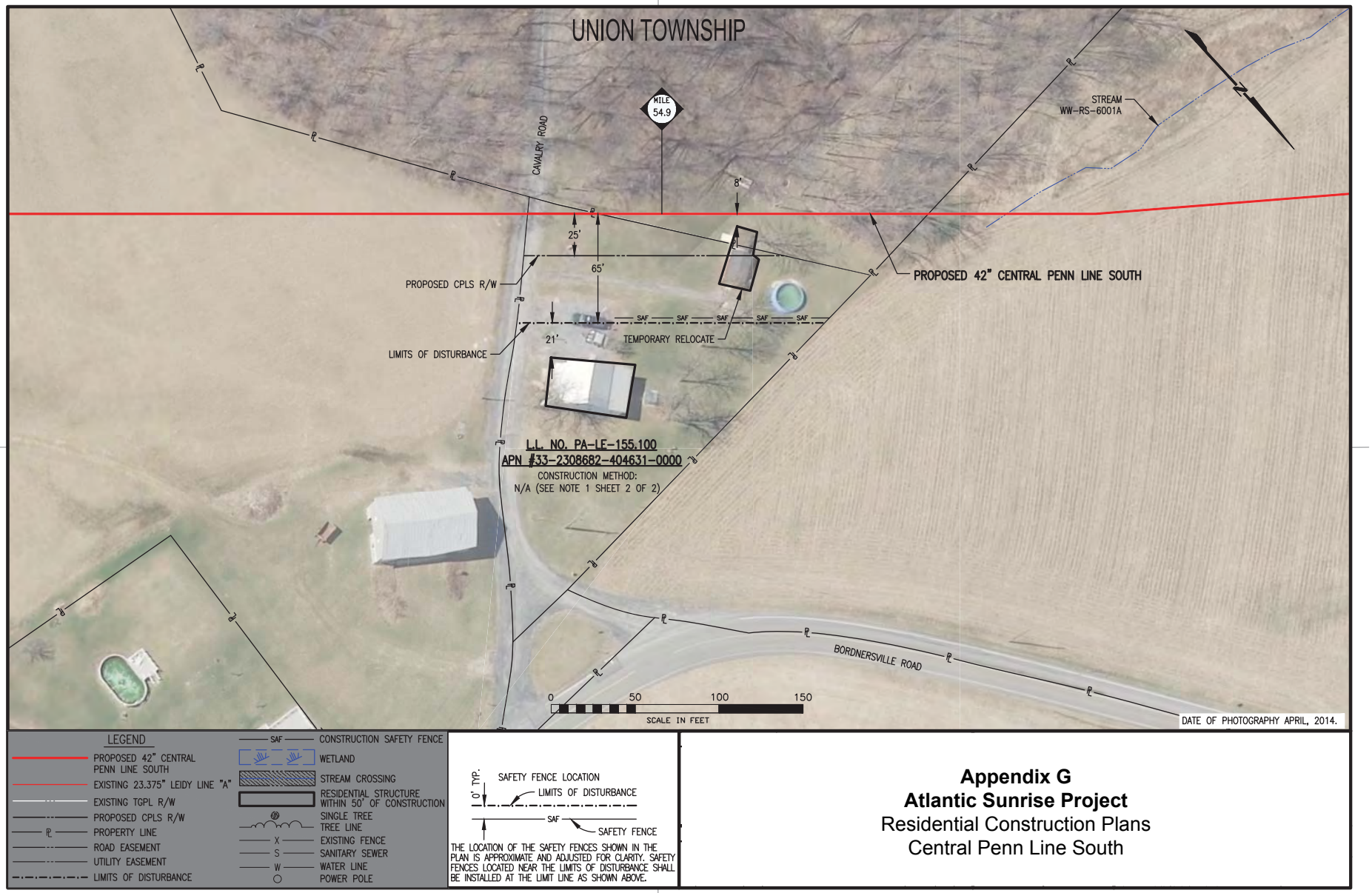
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SAFETY FENCE



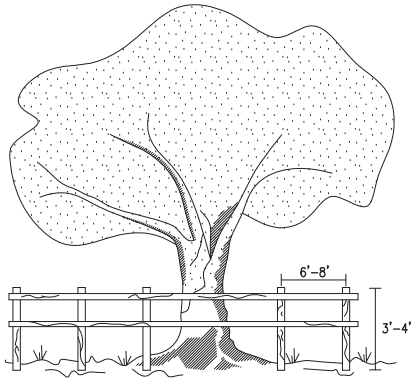


Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

UNION TOWNSHIP

G-100

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



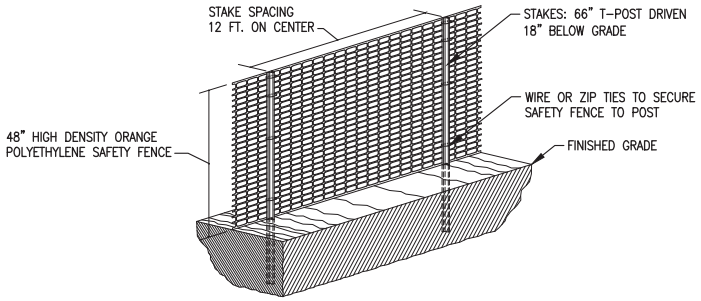
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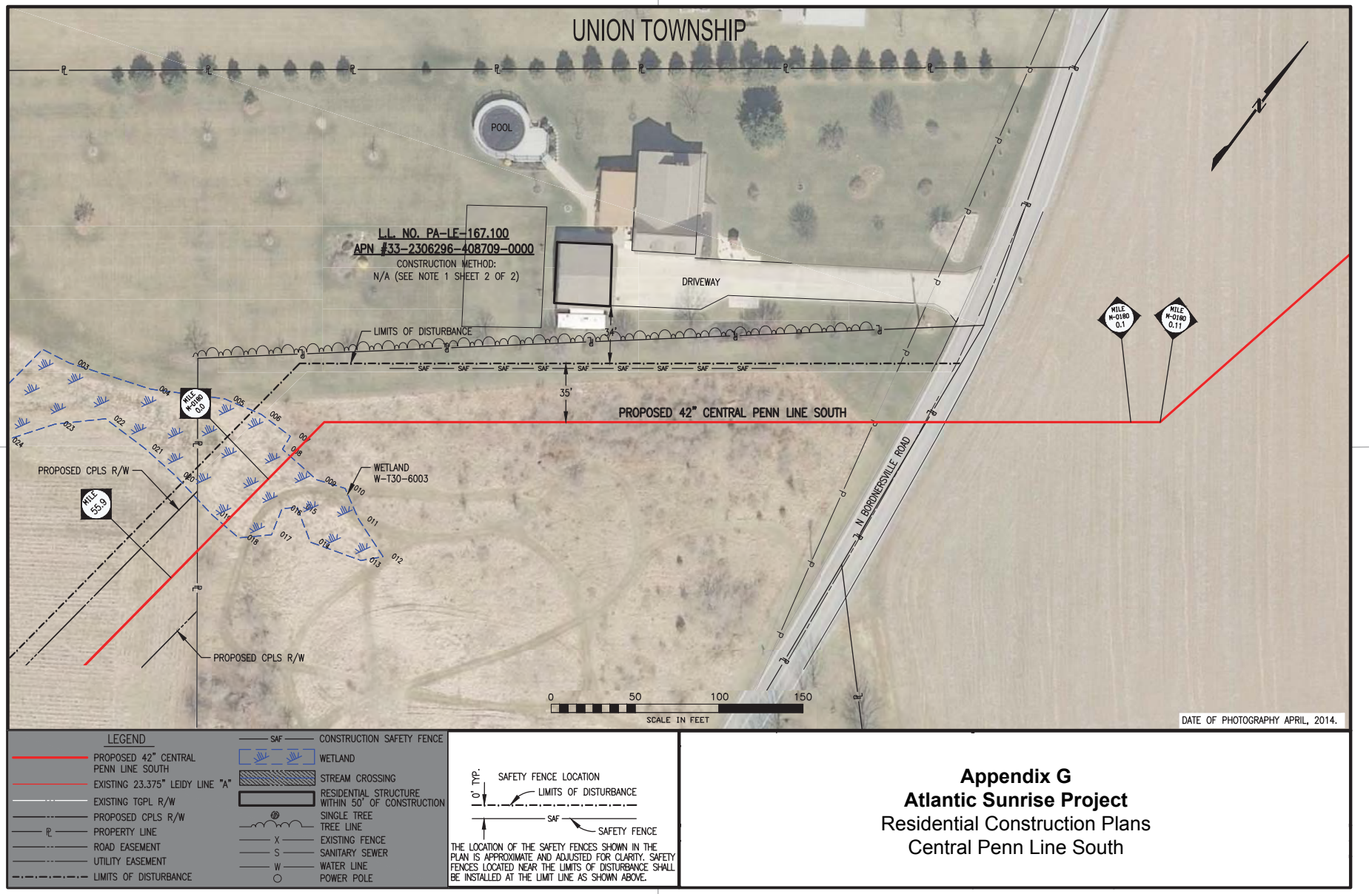
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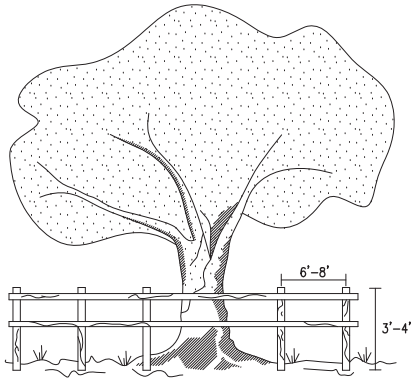




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

UNION TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



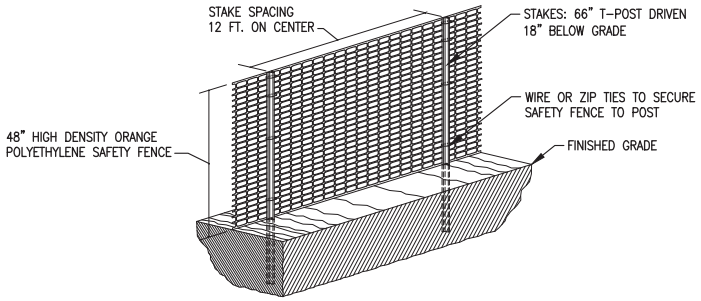
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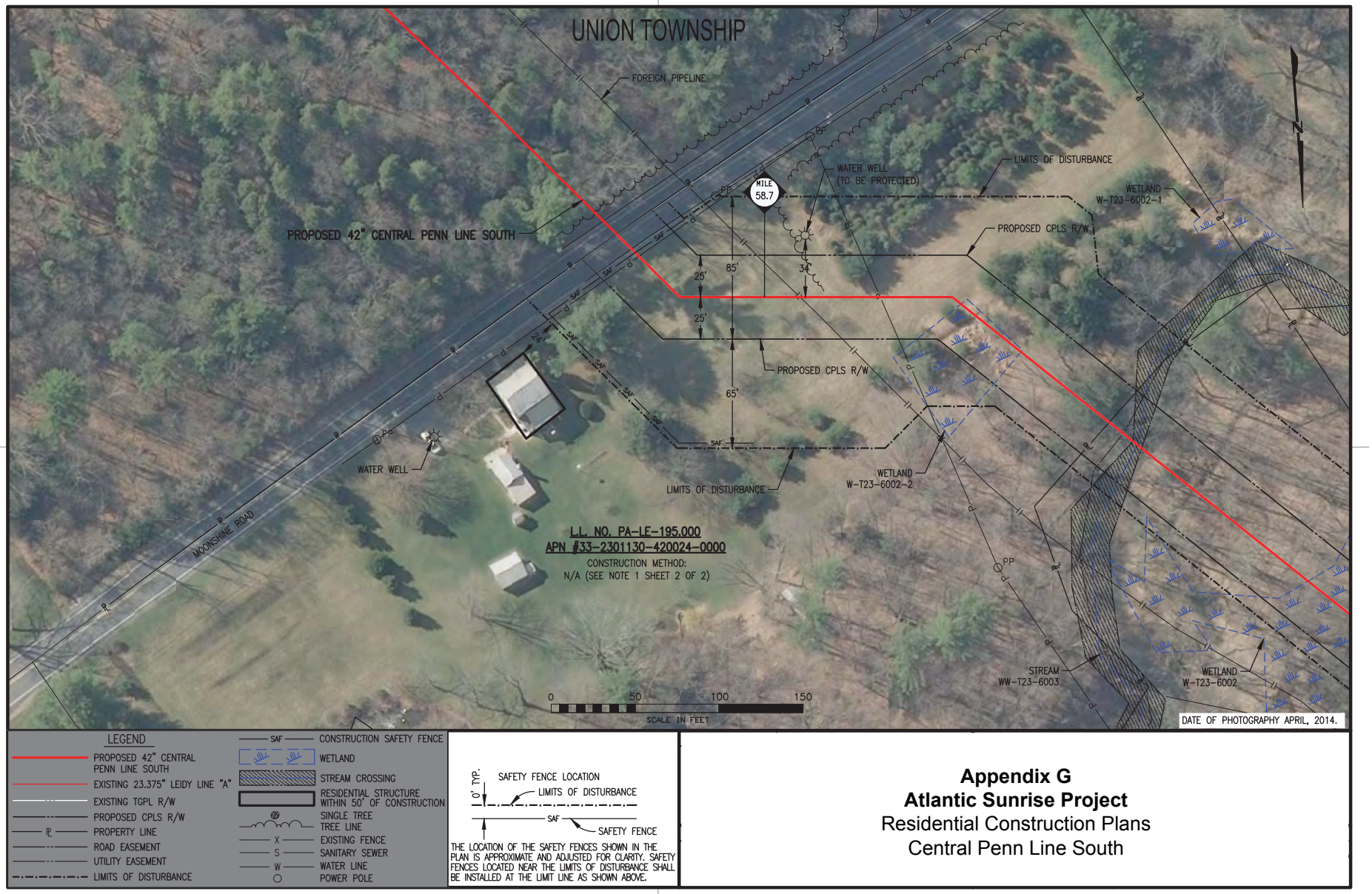
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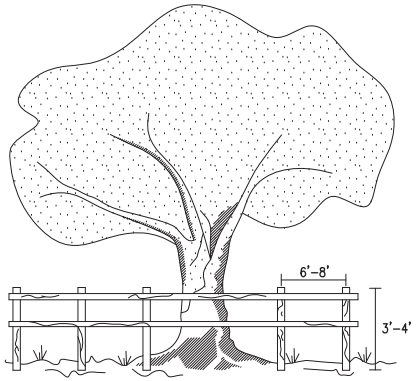


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UNION TOWNSHIP
FOREIGN PIPELINE
PROPOSED 42" CENTRAL PENN LINE SOUTH
MILE 58.7
WATER WELL (TO BE PROTECTED)
LIMITS OF DISTURBANCE
WETLAND W-T23-6002-1
PROPOSED CPLS R/W
85'
34'
25'
25'
65'
PROPOSED CPLS R/W
WATER WELL
LIMITS OF DISTURBANCE
WETLAND W-T23-6002-2
MOONSHINE ROAD
L.L. NO. PA-LE-195.000
APN #33-2301130-420024-0000
CONSTRUCTION METHOD:
N/A (SEE NOTE 1 SHEET 2 OF 2)
STREAM WW-T23-6003
WETLAND W-T23-6002
0 50 100 150
SCALE IN FEET
DATE OF PHOTOGRAPHY APRIL, 2014.
LEGEND
PROPOSED 42" CENTRAL PENN LINE SOUTH
EXISTING 23.375" LEIDY LINE "A"
EXISTING TGPL R/W
PROPOSED CPLS R/W
PROPERTY LINE
ROAD EASEMENT
UTILITY EASEMENT
LIMITS OF DISTURBANCE
CONSTRUCTION SAFETY FENCE
WETLAND
STREAM CROSSING
RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
SINGLE TREE
TREE LINE
EXISTING FENCE
SANITARY SEWER
WATER LINE
POWER POLE
10' TYP.
SAFETY FENCE LOCATION
LIMITS OF DISTURBANCE
SAF
SAFETY FENCE
THE LOCATION OF THE SAFETY FENCES SHOWN IN THE PLAN IS APPROXIMATE AND ADJUSTED FOR CLARITY. SAFETY FENCES LOCATED NEAR THE LIMITS OF DISTURBANCE SHALL BE INSTALLED AT THE LIMIT LINE AS SHOWN ABOVE.
Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

UNION TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



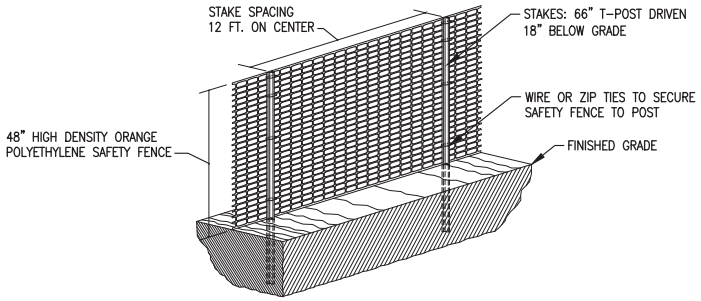
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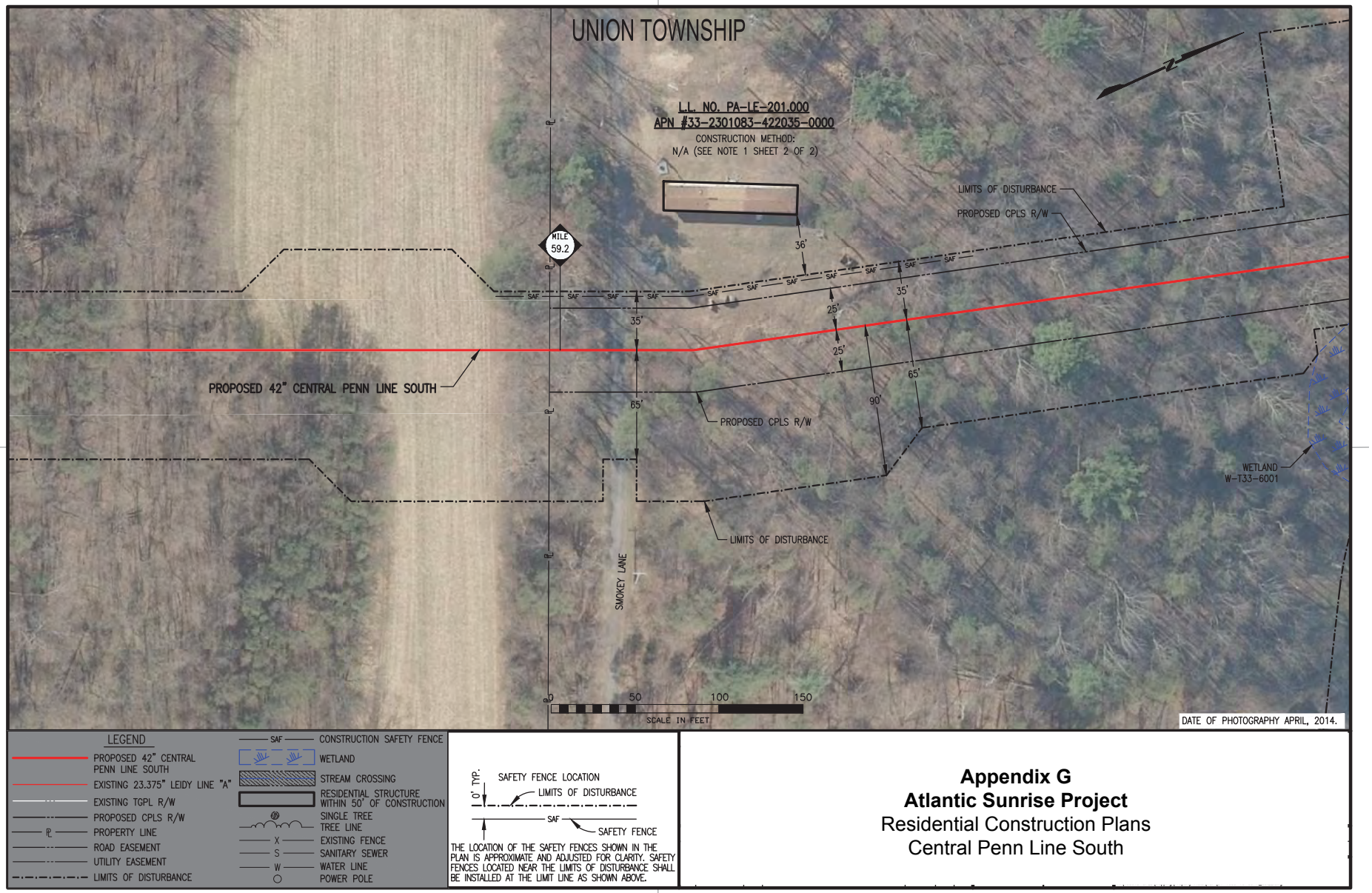
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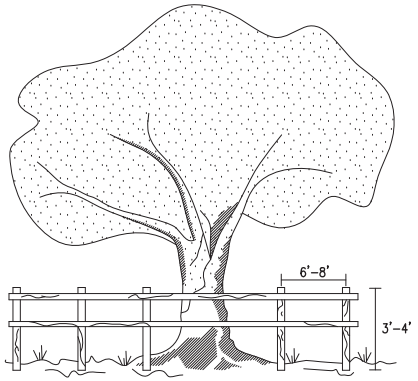




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Residential Construction Plans
Central Penn Line South

UNION TOWNSHIP

BARRICADE DETAIL
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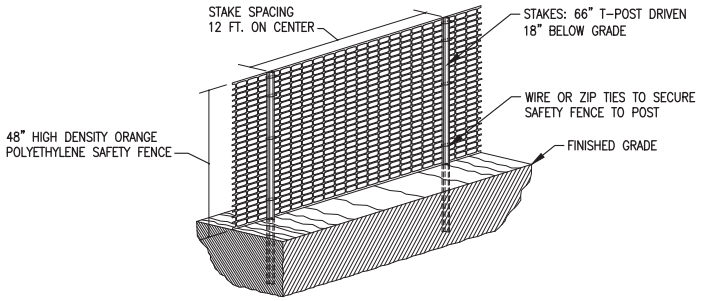
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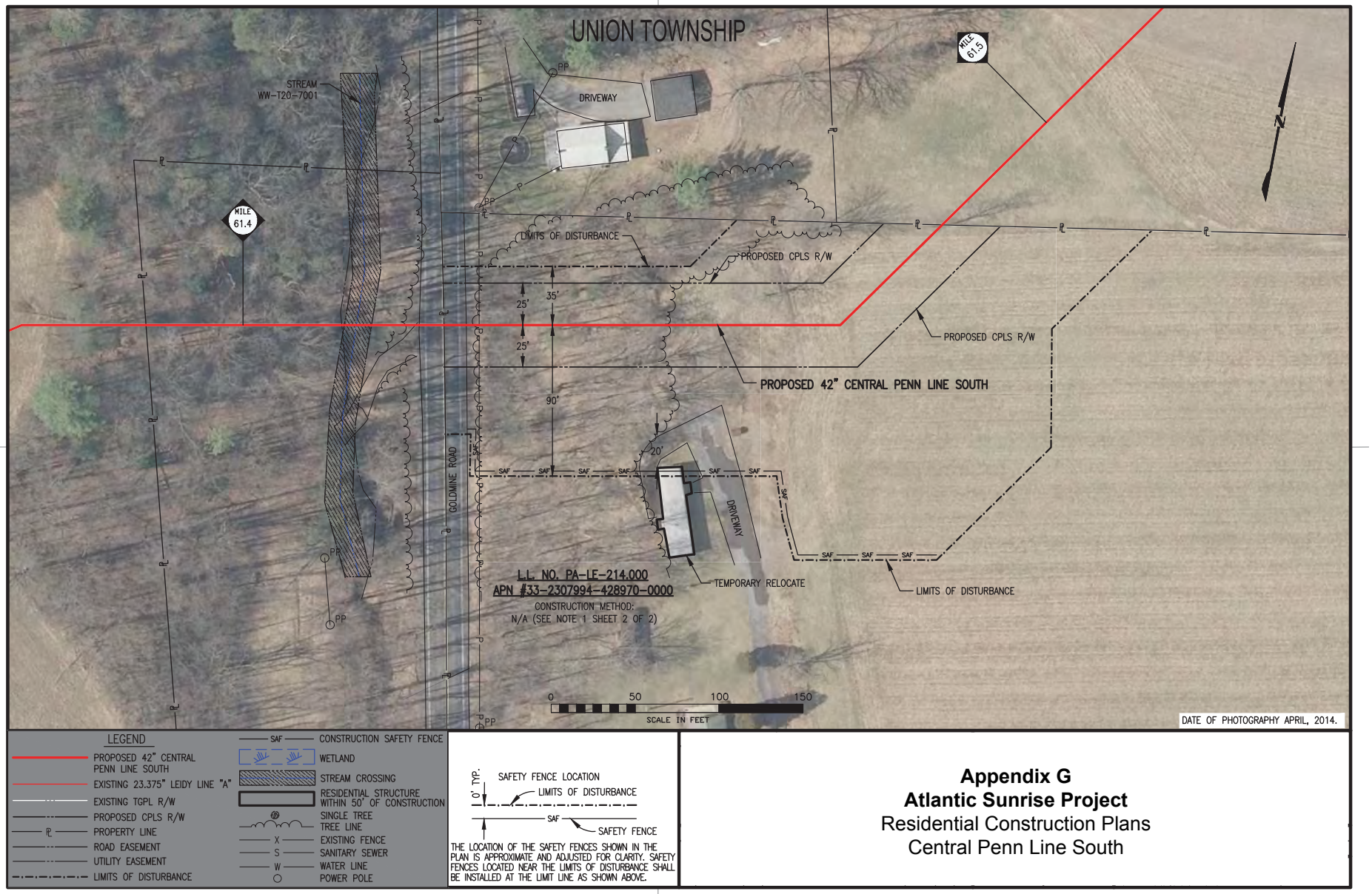
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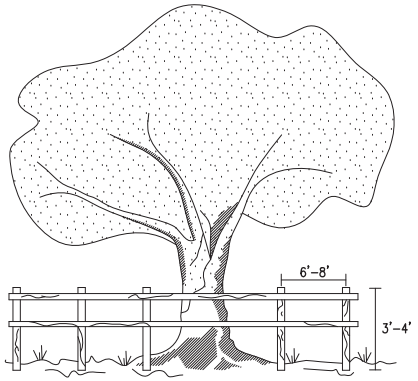
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Appendix G
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Central Penn Line South

UNION TOWNSHIP

BARRICADE DETAIL
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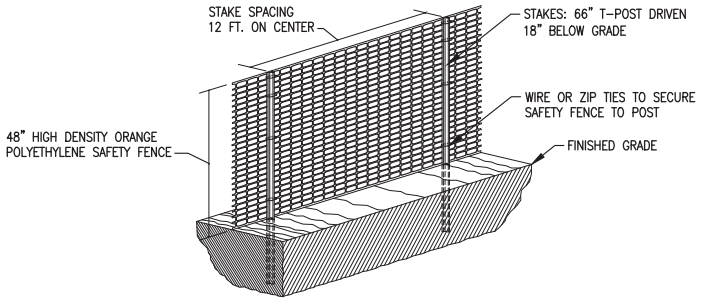
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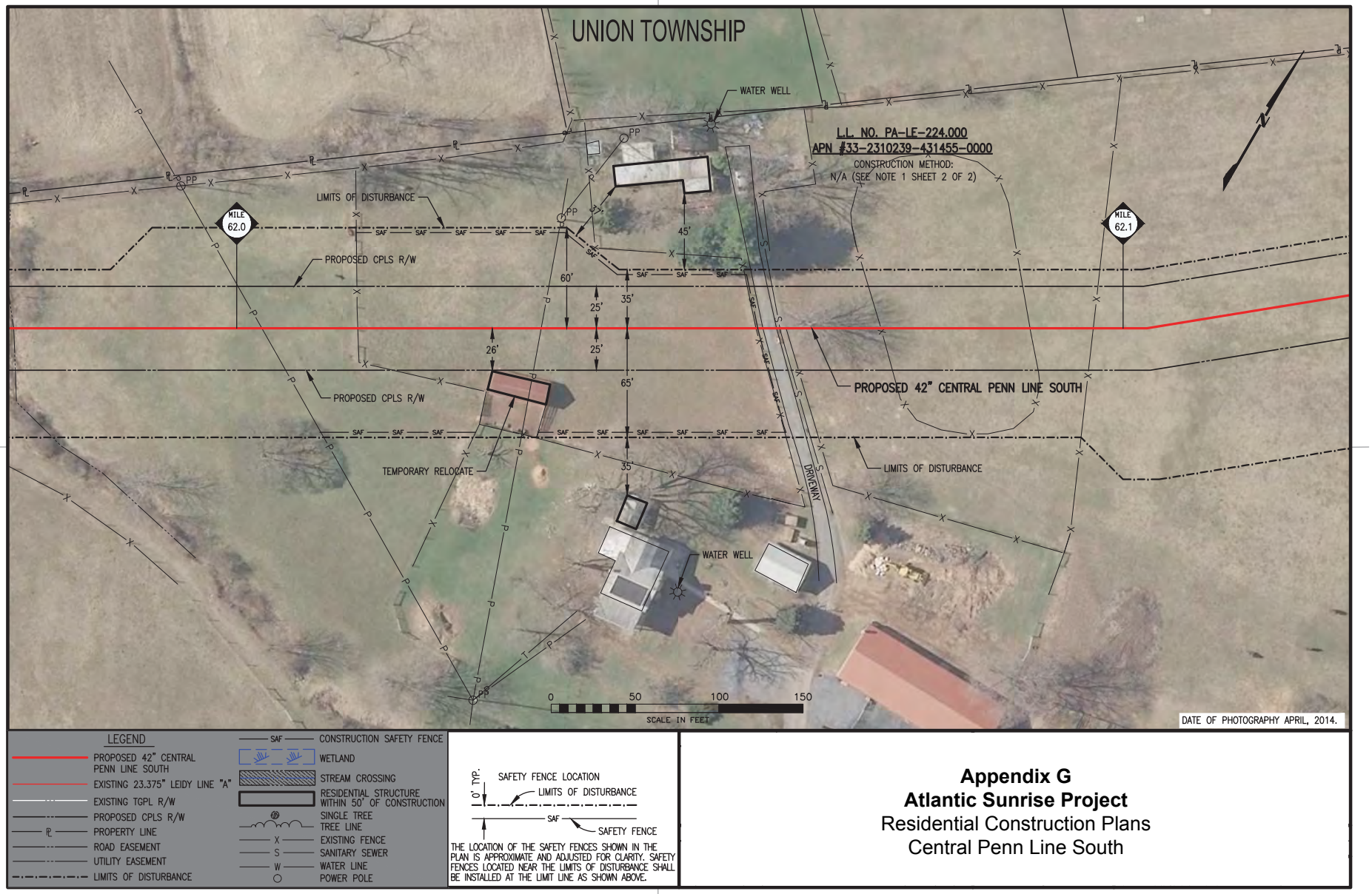
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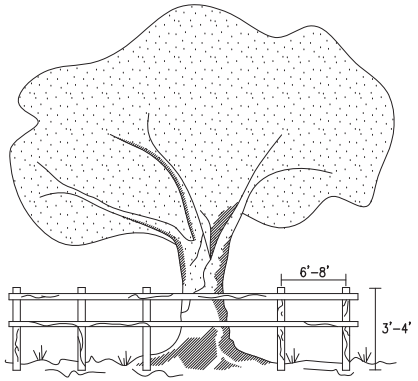
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Appendix G
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BARRICADE DETAIL
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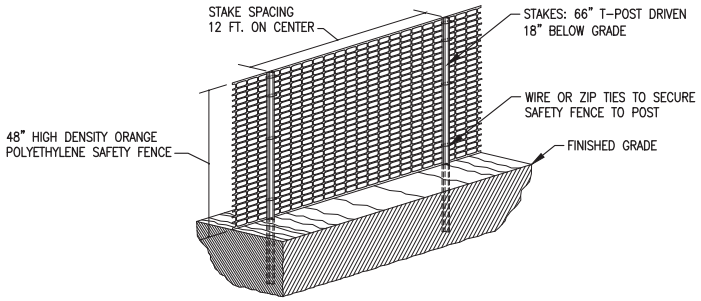
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   - ☐ (DOES) ☐ (DOES NOT) HAVE A WATER WELL
   - ☐ _____
   - ☐ _____
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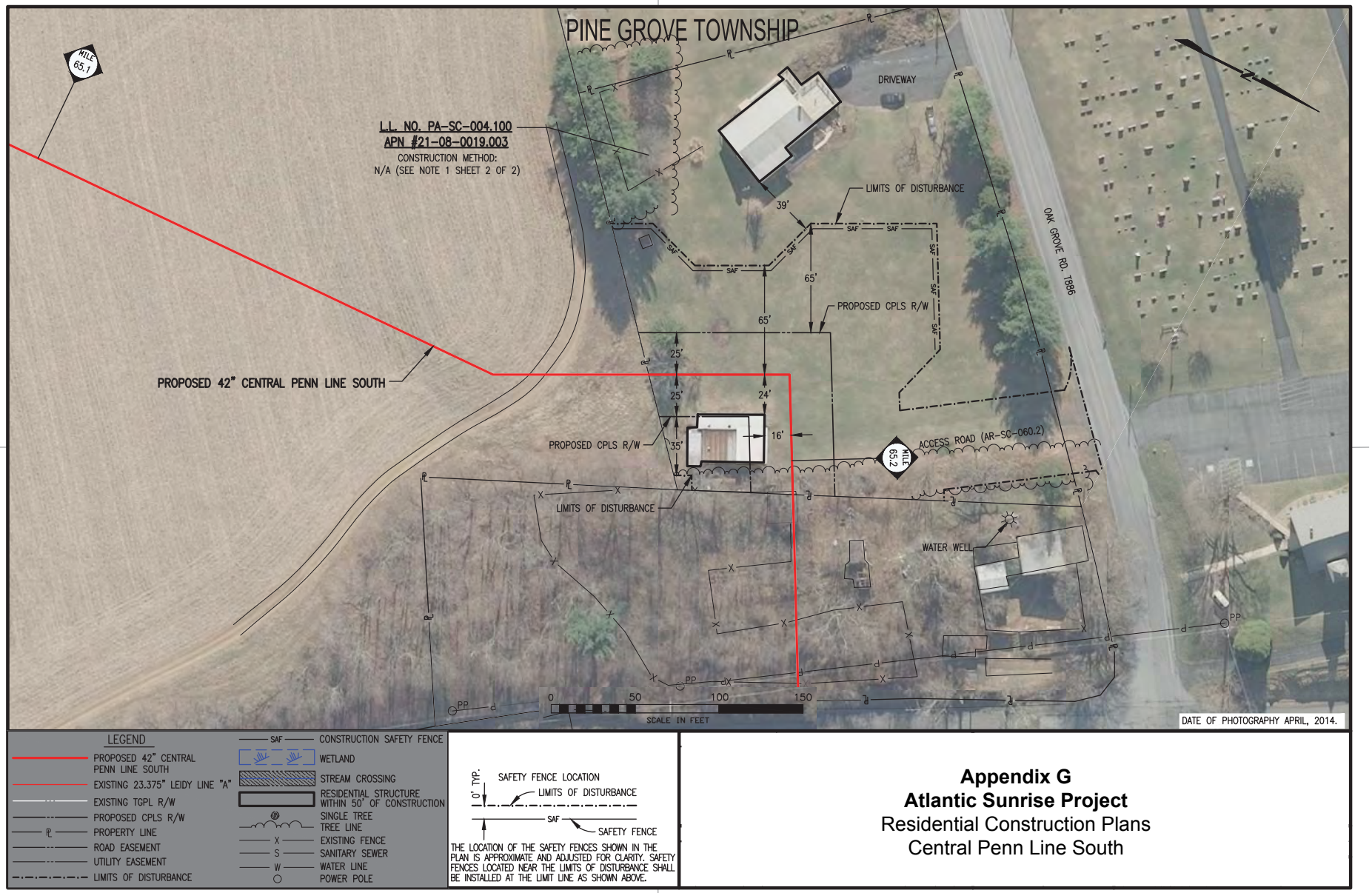
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   ☐ ACCEPTS ☐ DECLINES TO PARTICIPATE

SAFETY FENCE



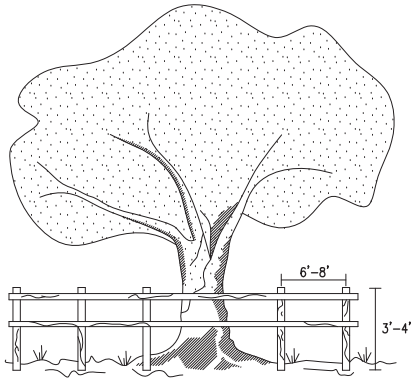
G-110



Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

PINE GROVE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



HORIZONTAL: WOOD MEMBER, ORANGE FENCING, CHAIN LINK FENCE OR OTHER APPROVED MATERIAL
VERTICAL: WOOD MEMBER OR APPROVED MATERIAL BARRICADES PLACED AT DESIGNATED PROTECTIVE ROOT ZONE.

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY FENCE 3 FEET OUTSIDE THE DRIP LINE OF THE TREE.
3. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE POST.
4. THE FENCE MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

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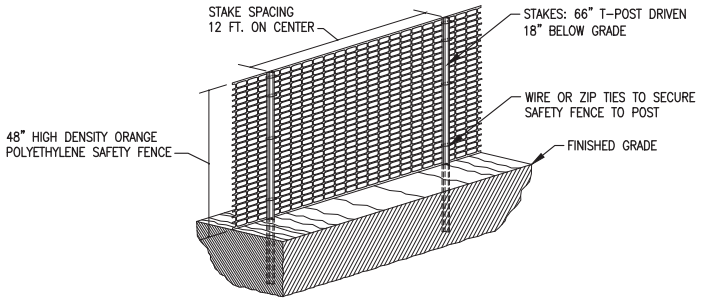
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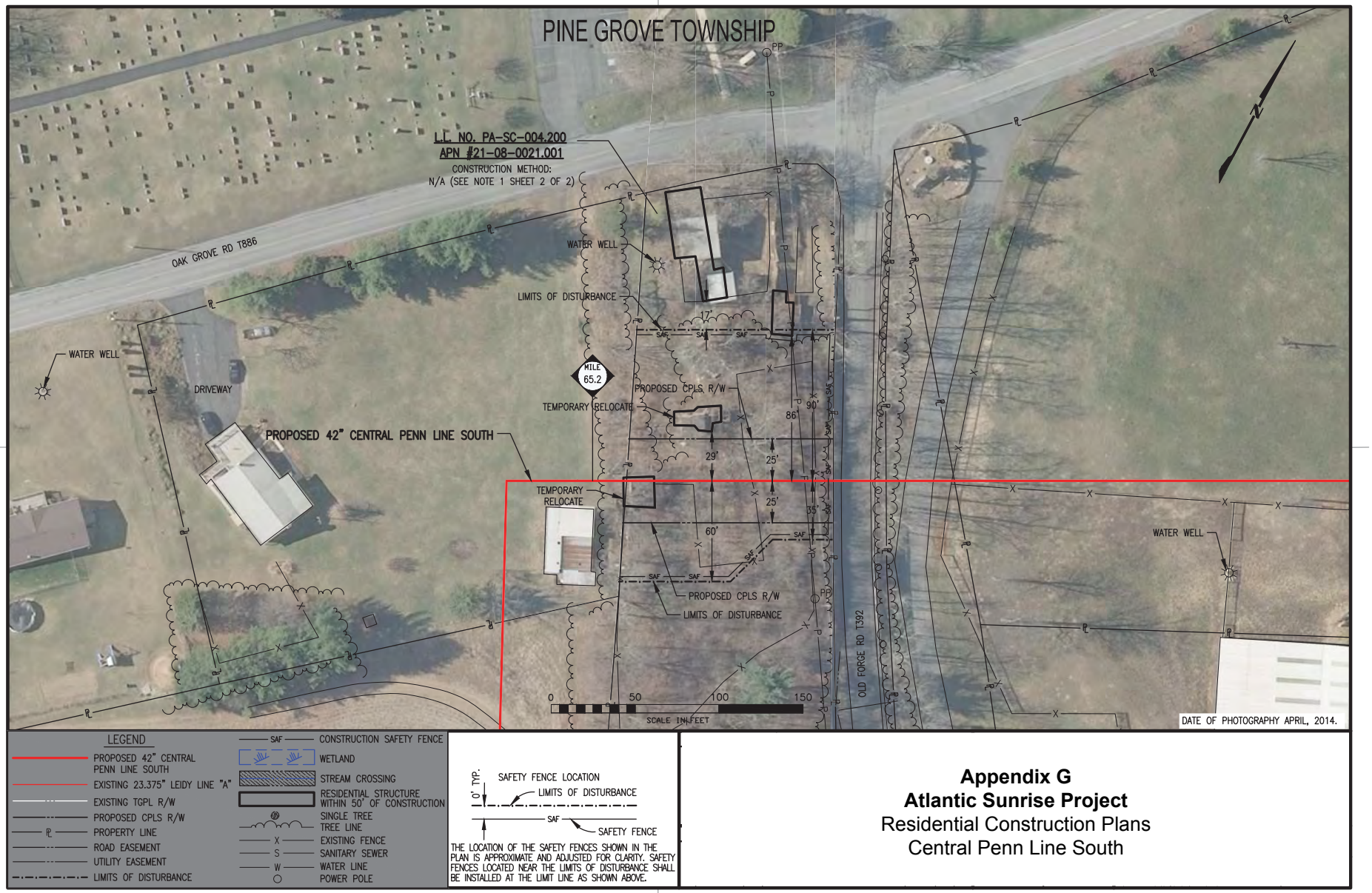
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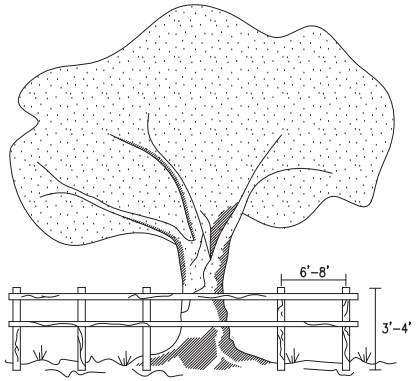




Appendix G
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Residential Construction Plans
Central Penn Line South

PINE GROVE TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



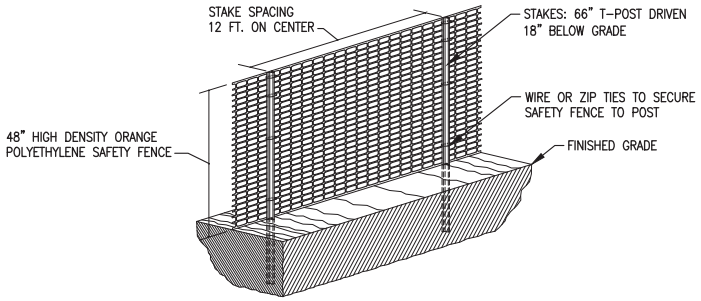
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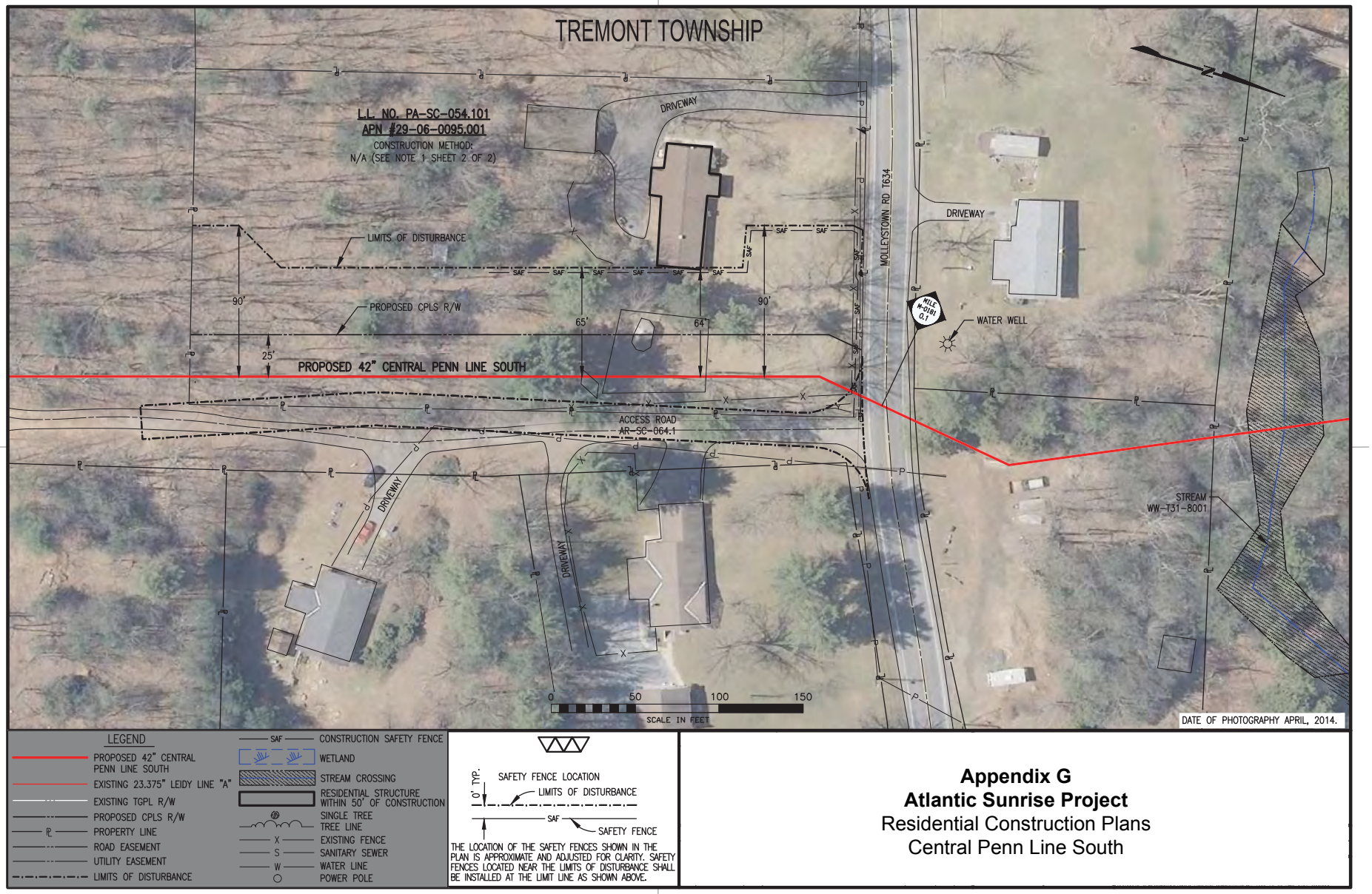
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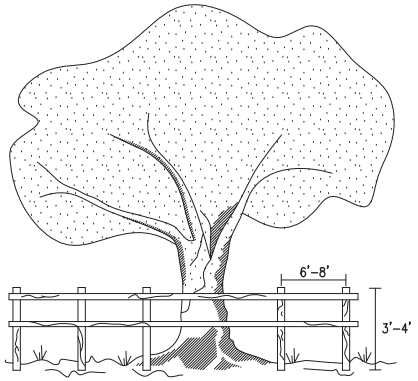
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Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

TREMONT TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



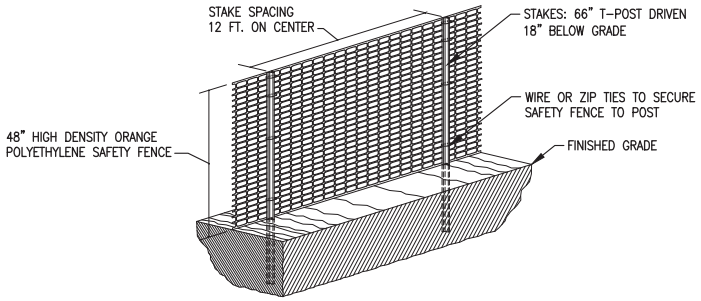
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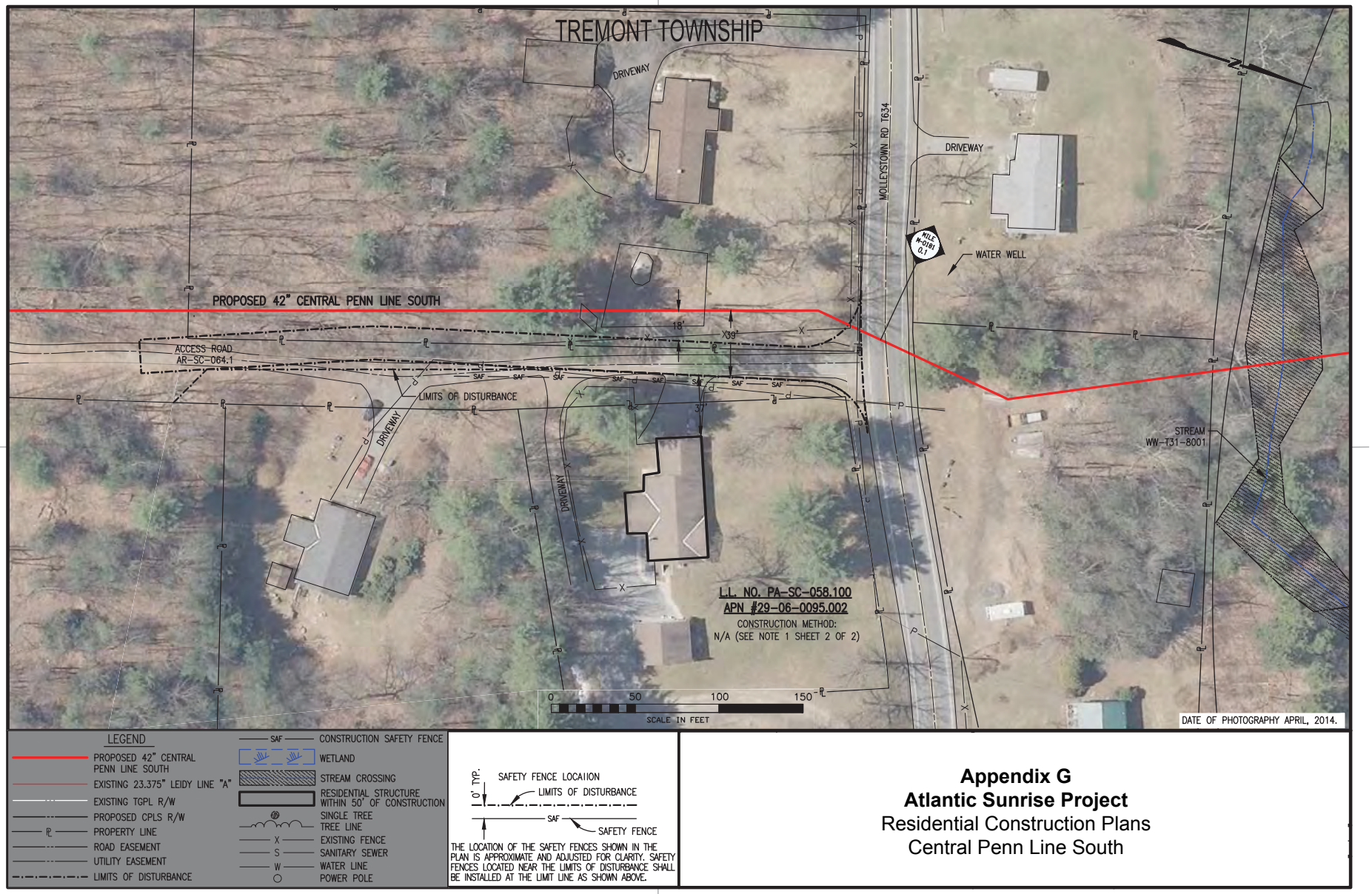
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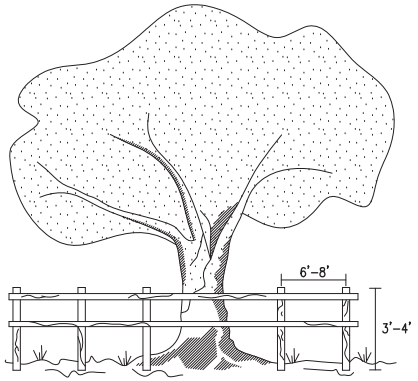




Appendix G
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Residential Construction Plans
Central Penn Line South

TREMONT TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



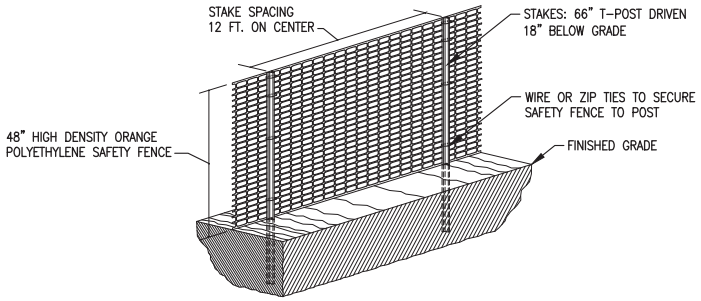
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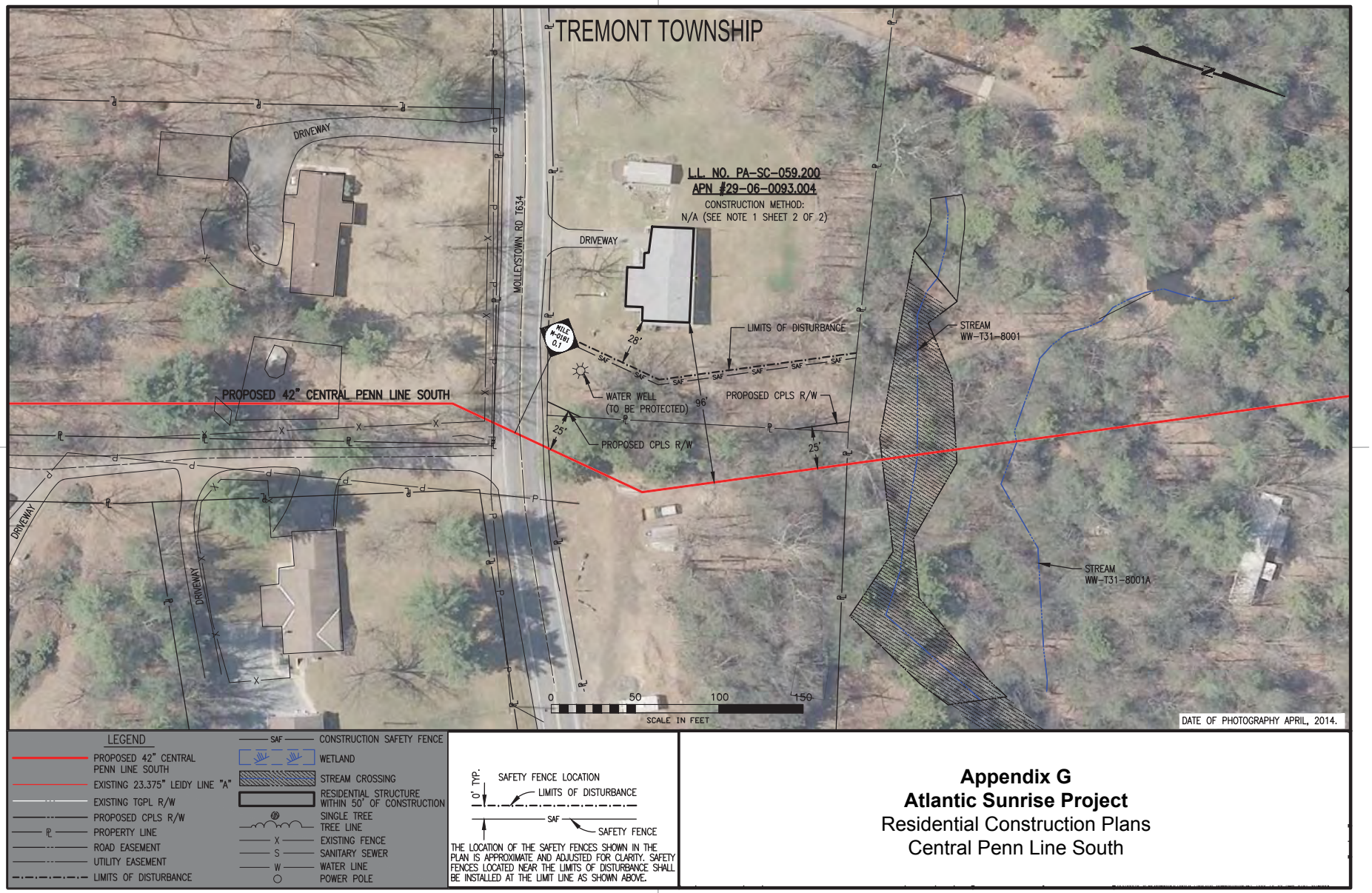
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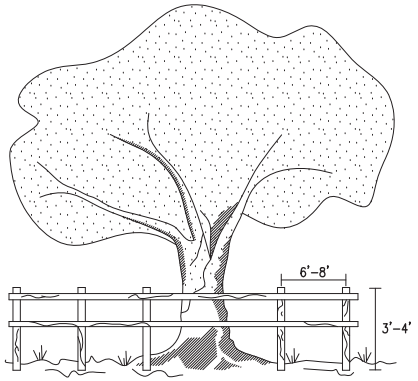




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Residential Construction Plans
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BARRICADE DETAIL
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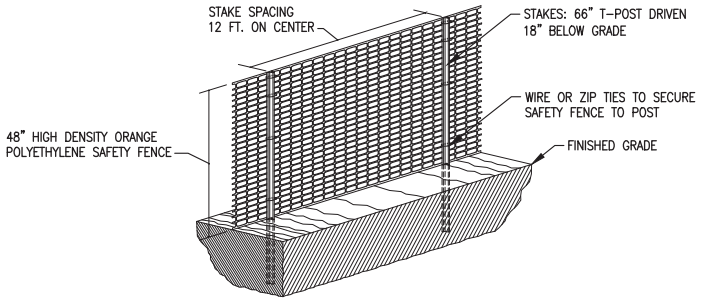
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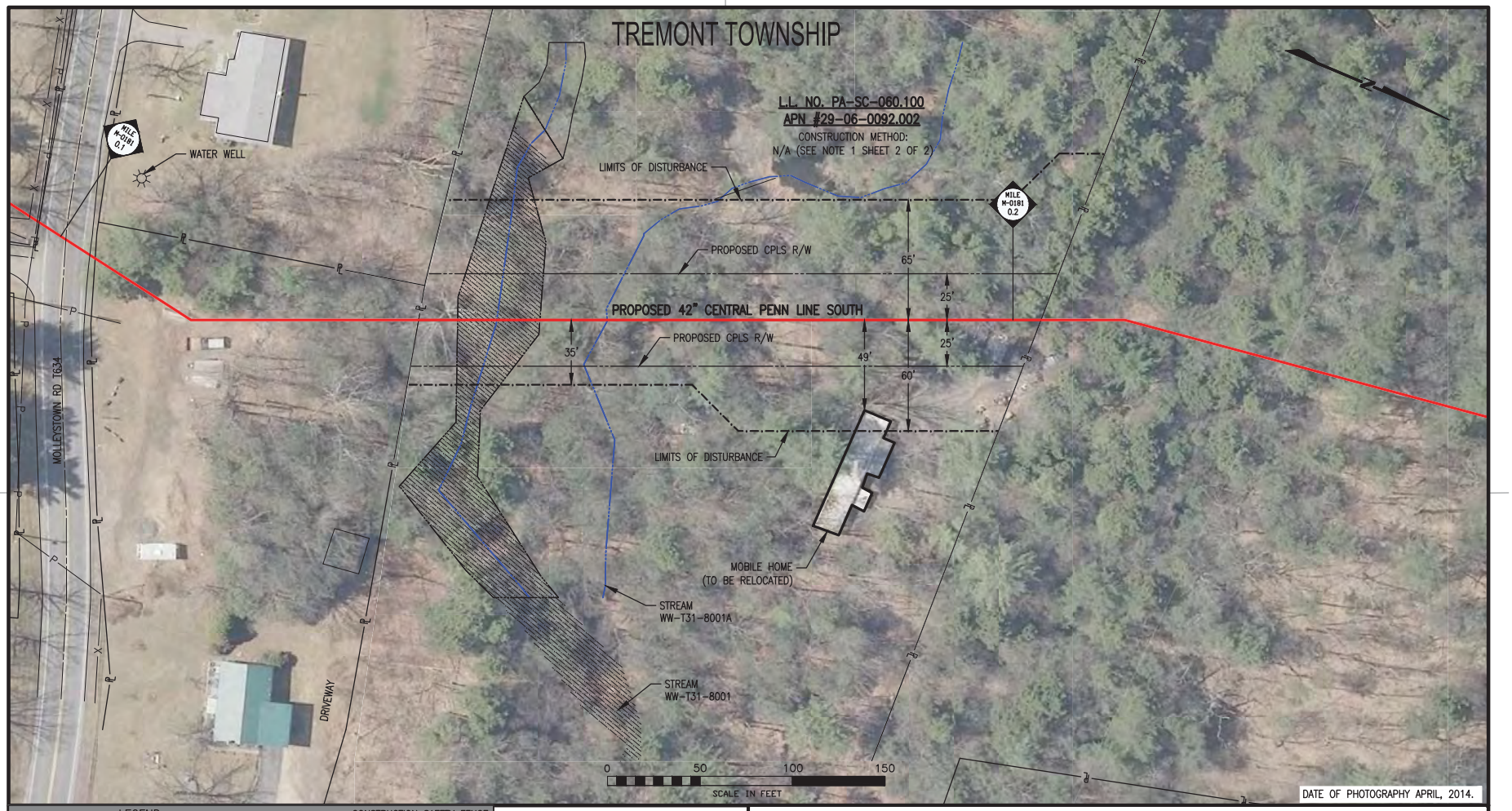
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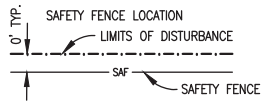
SAFETY FENCE





LEGEND

- PROPOSED 42" CENTRAL PENN LINE SOUTH
- EXISTING 23.375" LEIDY LINE "A"
- EXISTING TGPL R/W
- PROPOSED CPLS R/W
- PROPERTY LINE
- ROAD EASEMENT
- UTILITY EASEMENT
- LIMITS OF DISTURBANCE
- SAF — CONSTRUCTION SAFETY FENCE
- WETLAND
- STREAM CROSSING
- RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
- SINGLE TREE
- TREE LINE
- X — EXISTING FENCE
- S — SANITARY SEWER
- W — WATER LINE
- POWER POLE

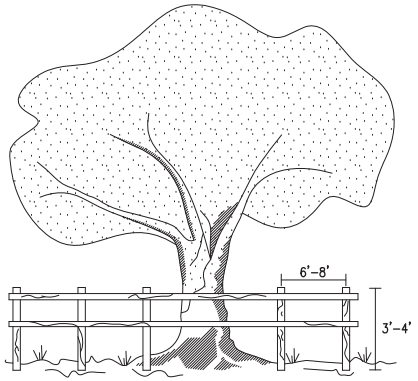


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Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South

TREMONT TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



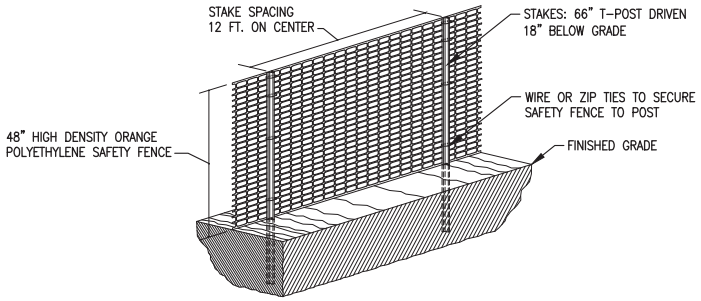
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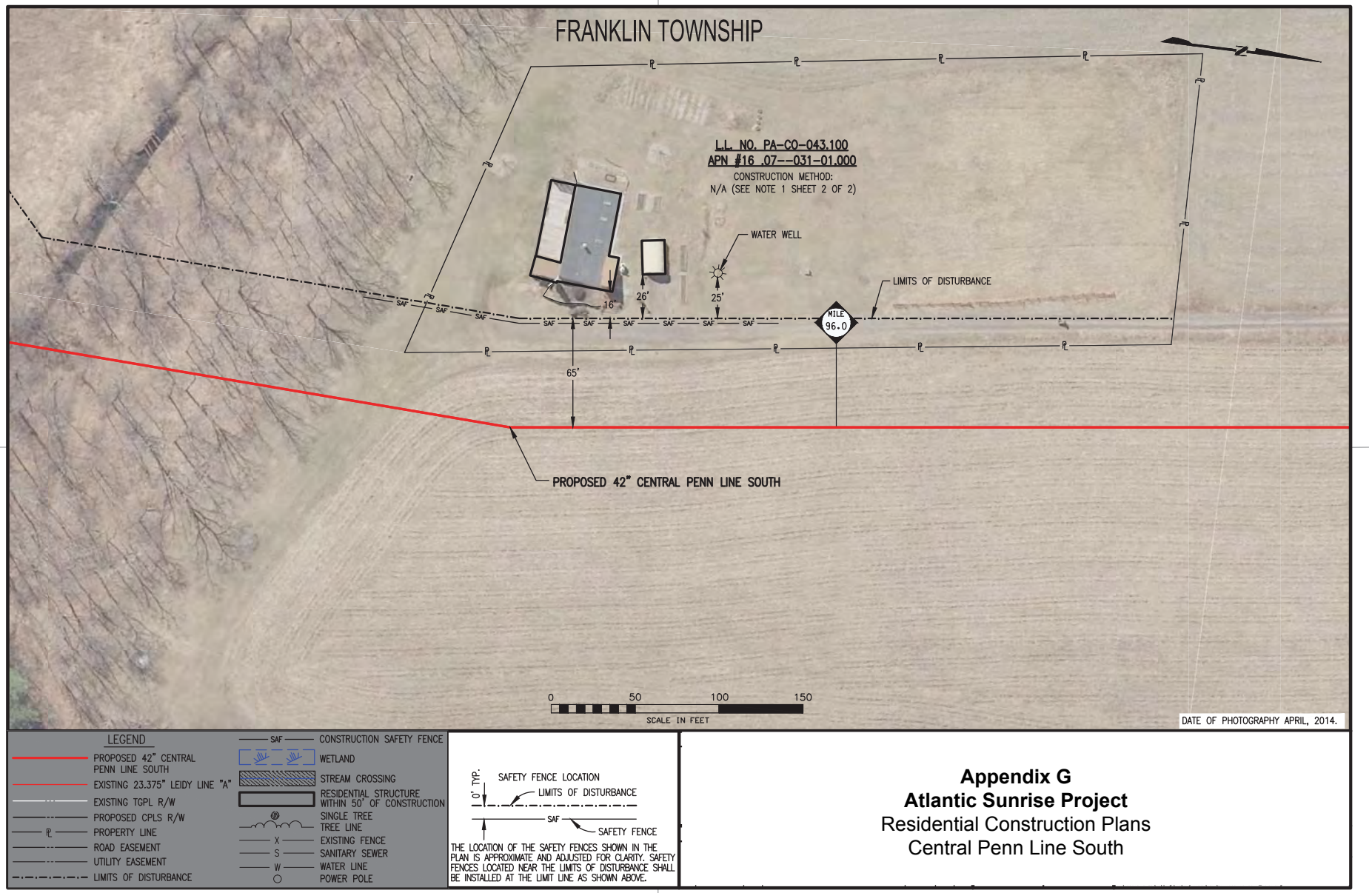
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   - ☐ _____
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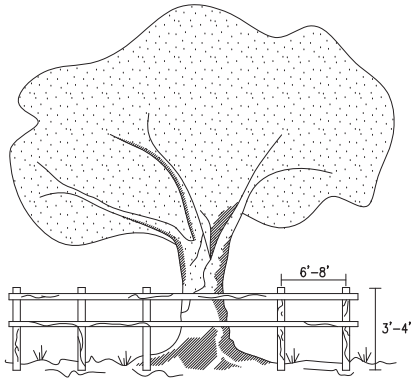
SAFETY FENCE




FRANKLIN TOWNSHIP
L.L. NO. PA-CO-043.100
APN #16 .07--031-01.000
CONSTRUCTION METHOD:
N/A (SEE NOTE 1 SHEET 2 OF 2)
WATER WELL
LIMITS OF DISTURBANCE
MILE 96.0
16'
26'
25'
65'
PROPOSED 42" CENTRAL PENN LINE SOUTH
0 50 100 150
SCALE IN FEET
DATE OF PHOTOGRAPHY APRIL, 2014.
LEGEND
PROPOSED 42" CENTRAL PENN LINE SOUTH
EXISTING 23.375" LEIDY LINE "A"
EXISTING TGPL R/W
PROPOSED CPLS R/W
PROPERTY LINE
ROAD EASEMENT
UTILITY EASEMENT
LIMITS OF DISTURBANCE
CONSTRUCTION SAFETY FENCE
WETLAND
STREAM CROSSING
RESIDENTIAL STRUCTURE WITHIN 50' OF CONSTRUCTION
SINGLE TREE
TREE LINE
EXISTING FENCE
SANITARY SEWER
WATER LINE
POWER POLE
10' TYP.
SAFETY FENCE LOCATION
LIMITS OF DISTURBANCE
SAF
SAFETY FENCE
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Central Penn Line South

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BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



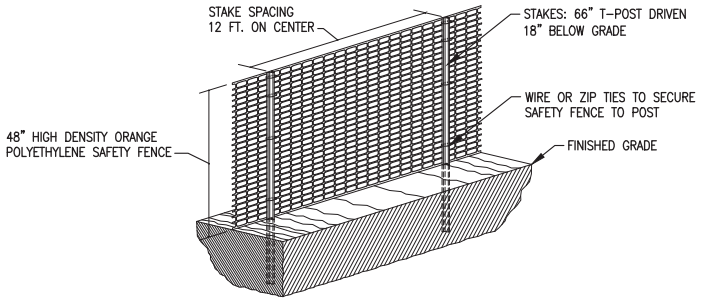
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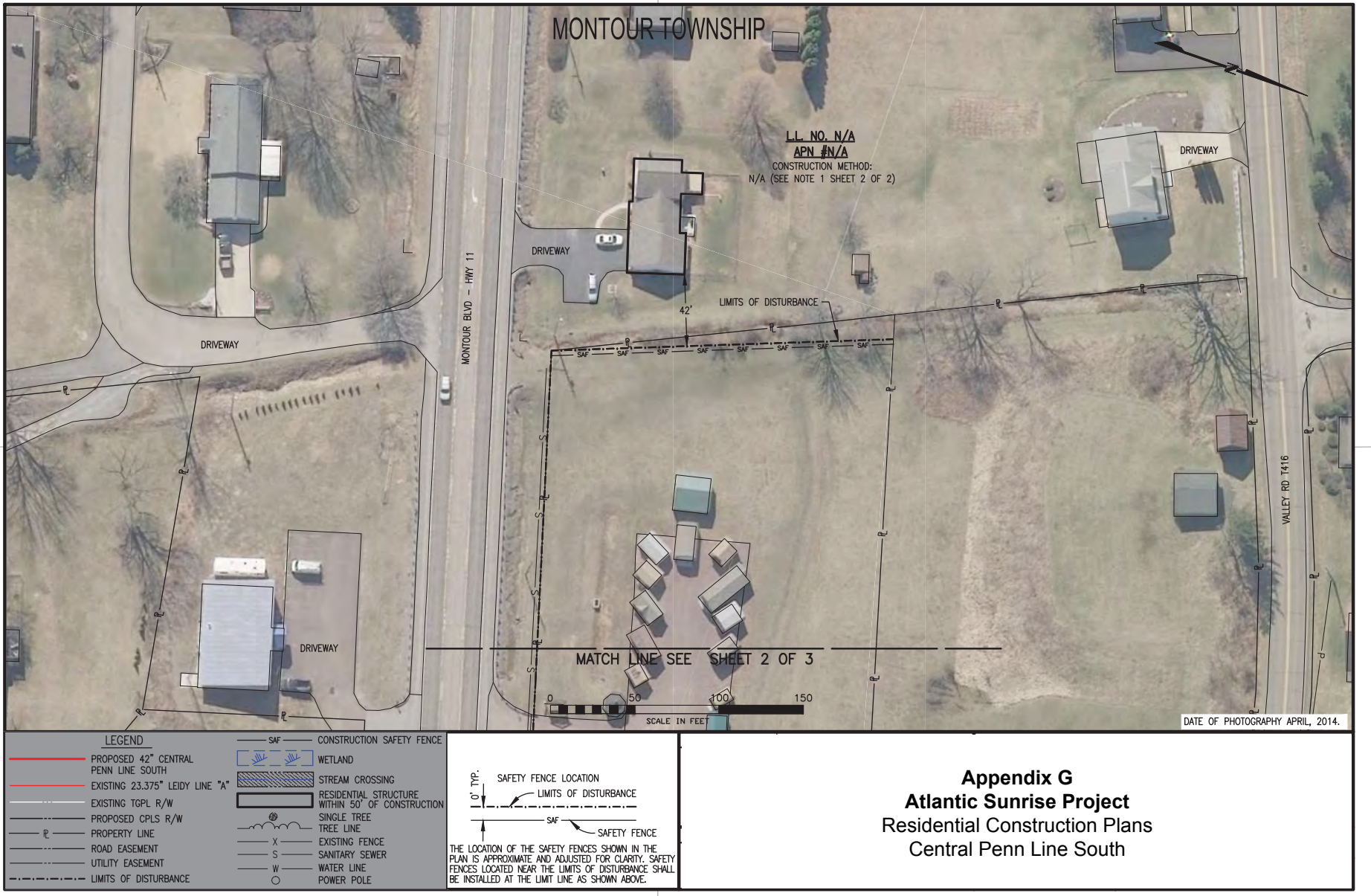
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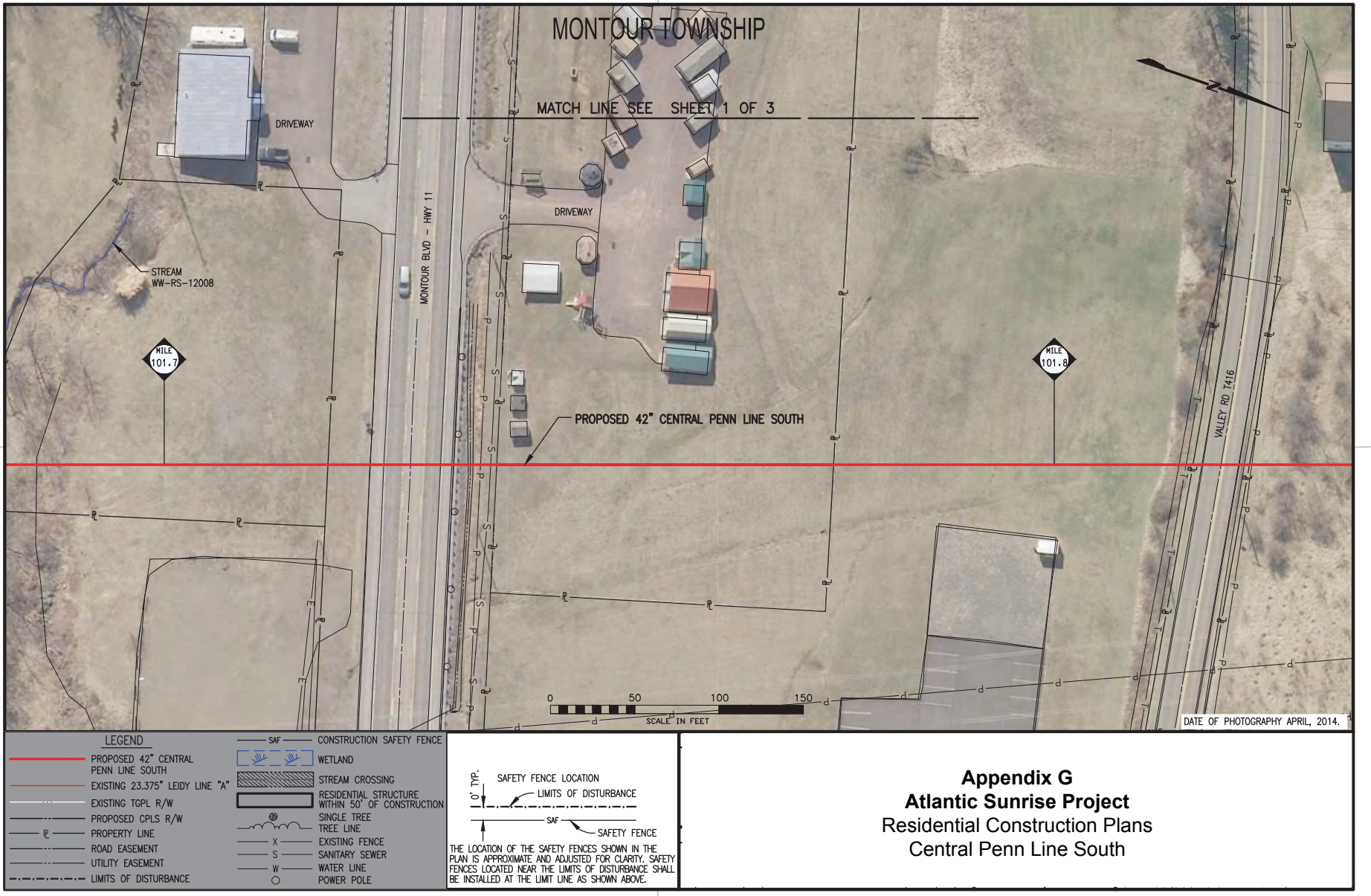
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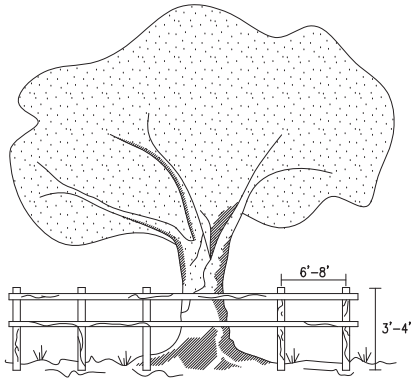
Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Central Penn Line South



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Residential Construction Plans
Central Penn Line South

MONTOUR TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



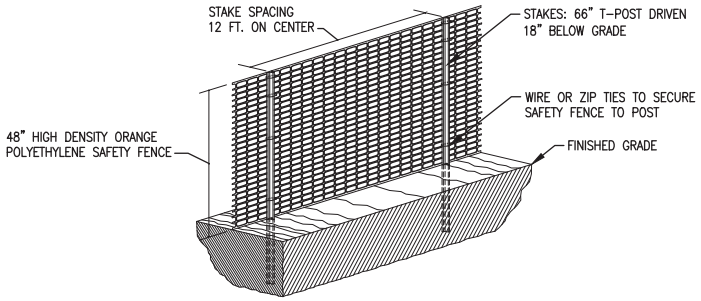
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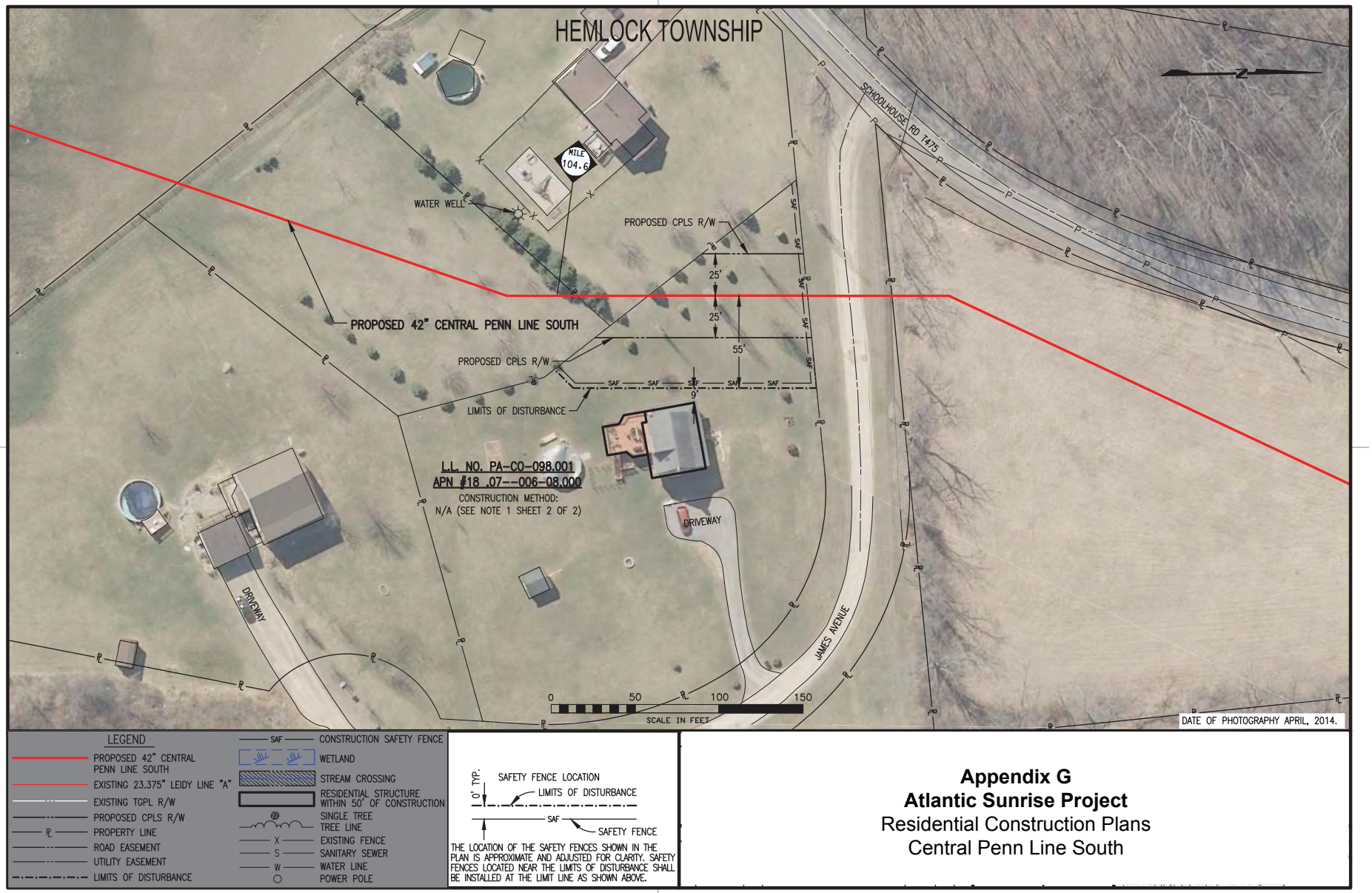
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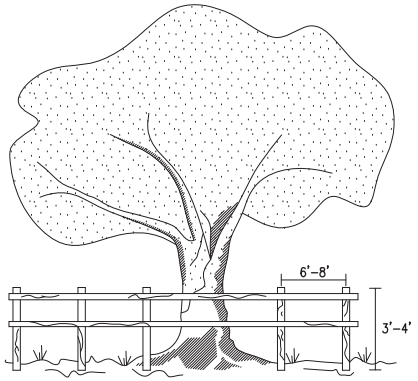




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Residential Construction Plans
Central Penn Line South

HEMLOCK TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



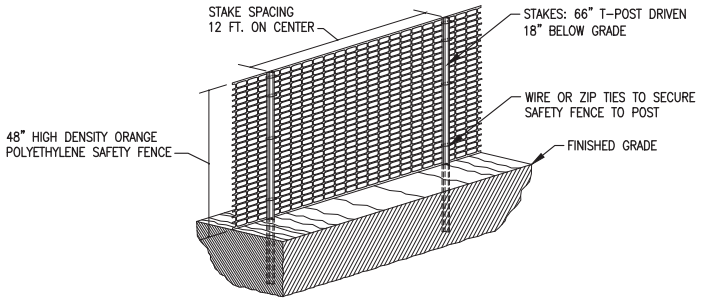
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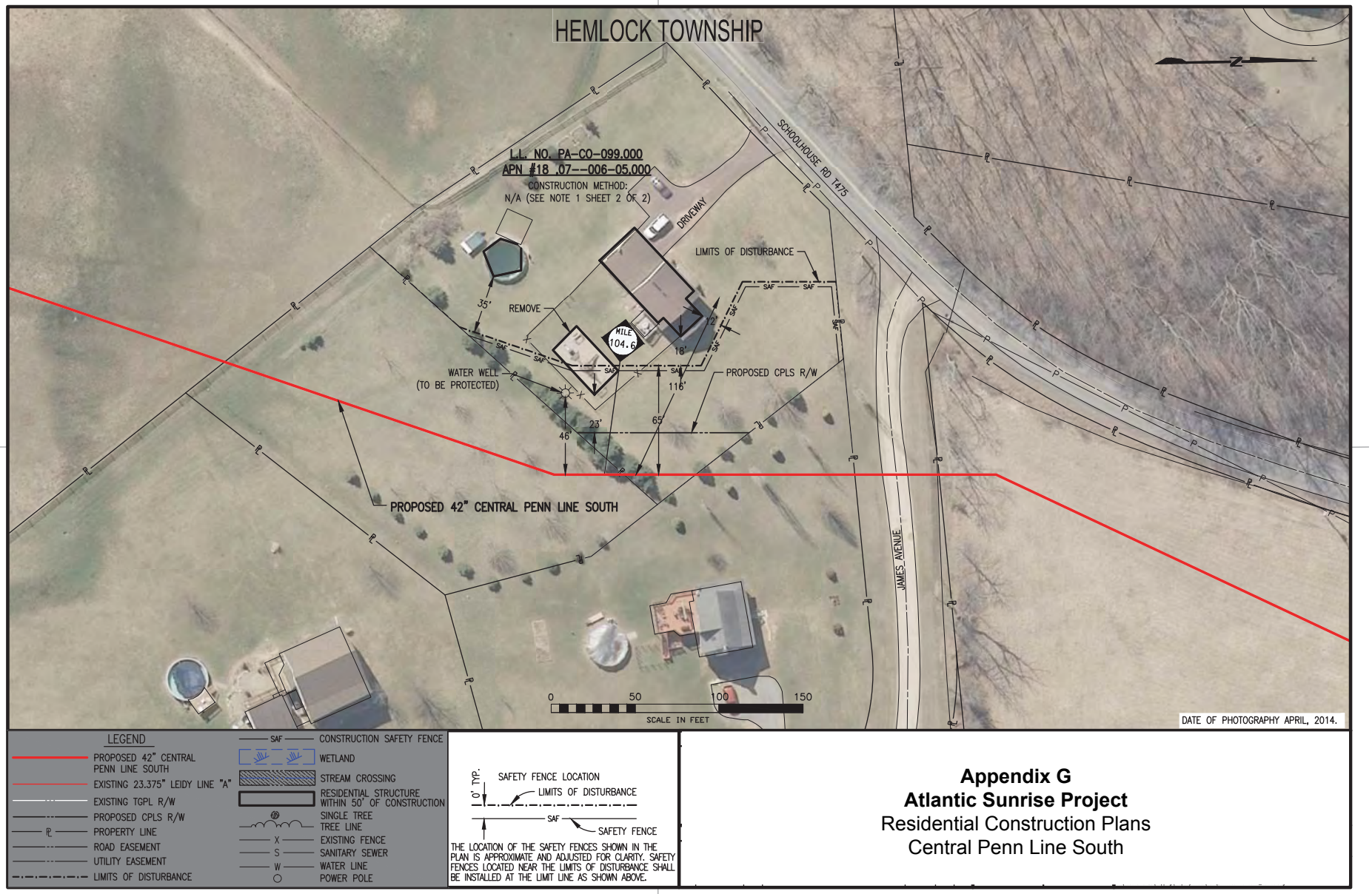
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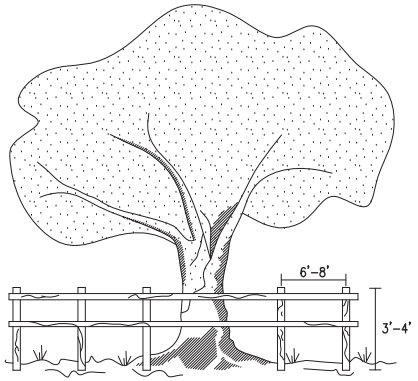




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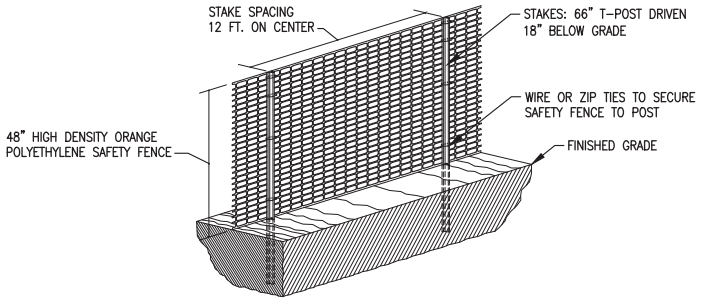
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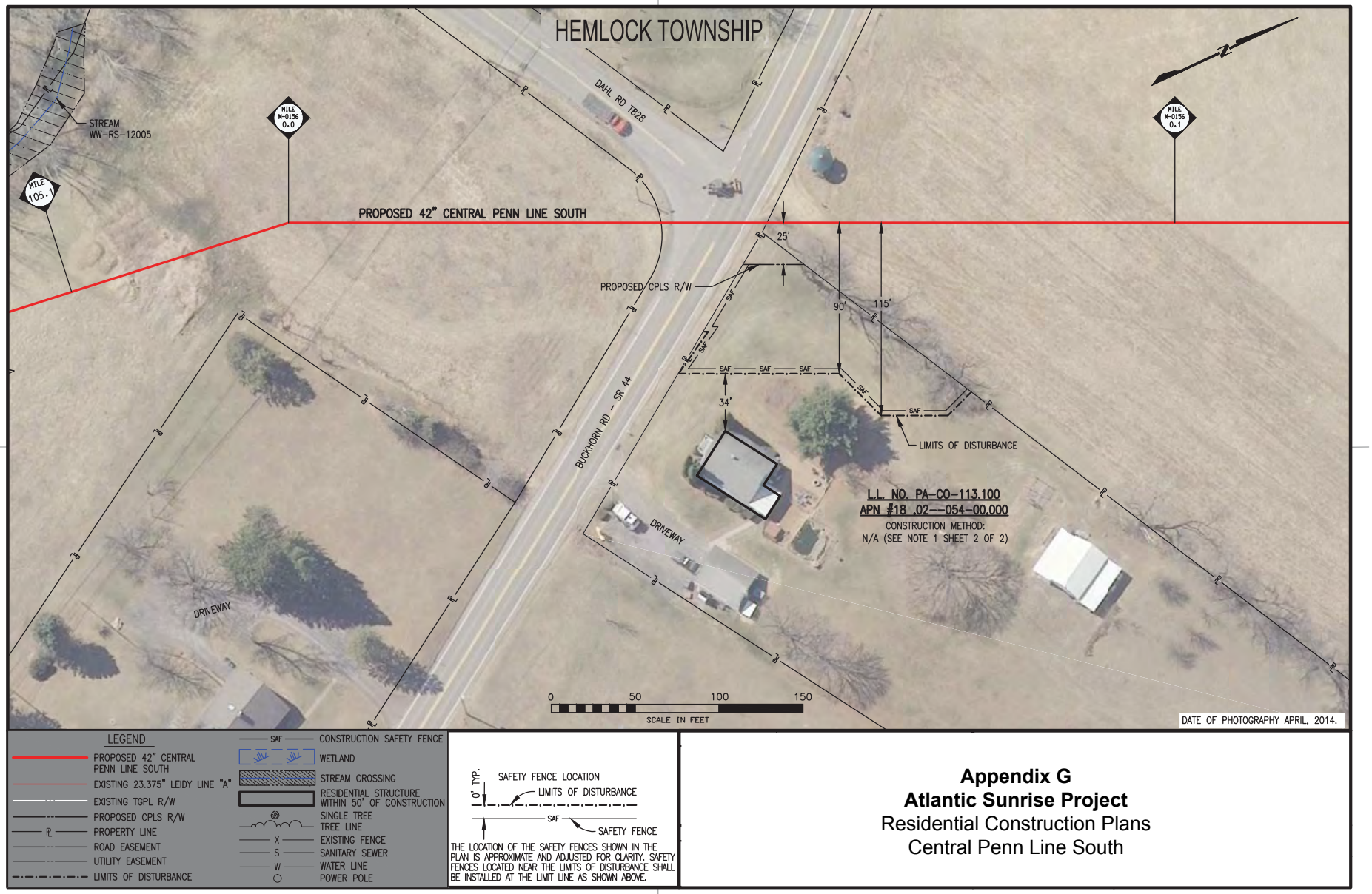
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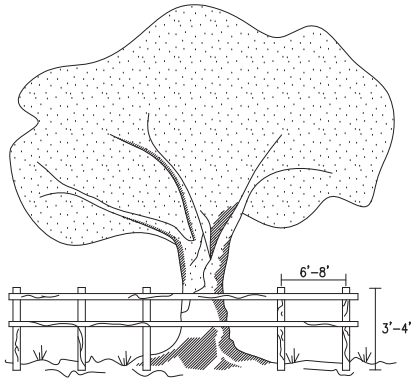




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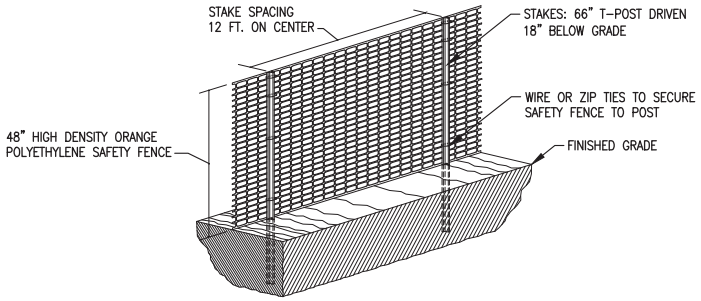
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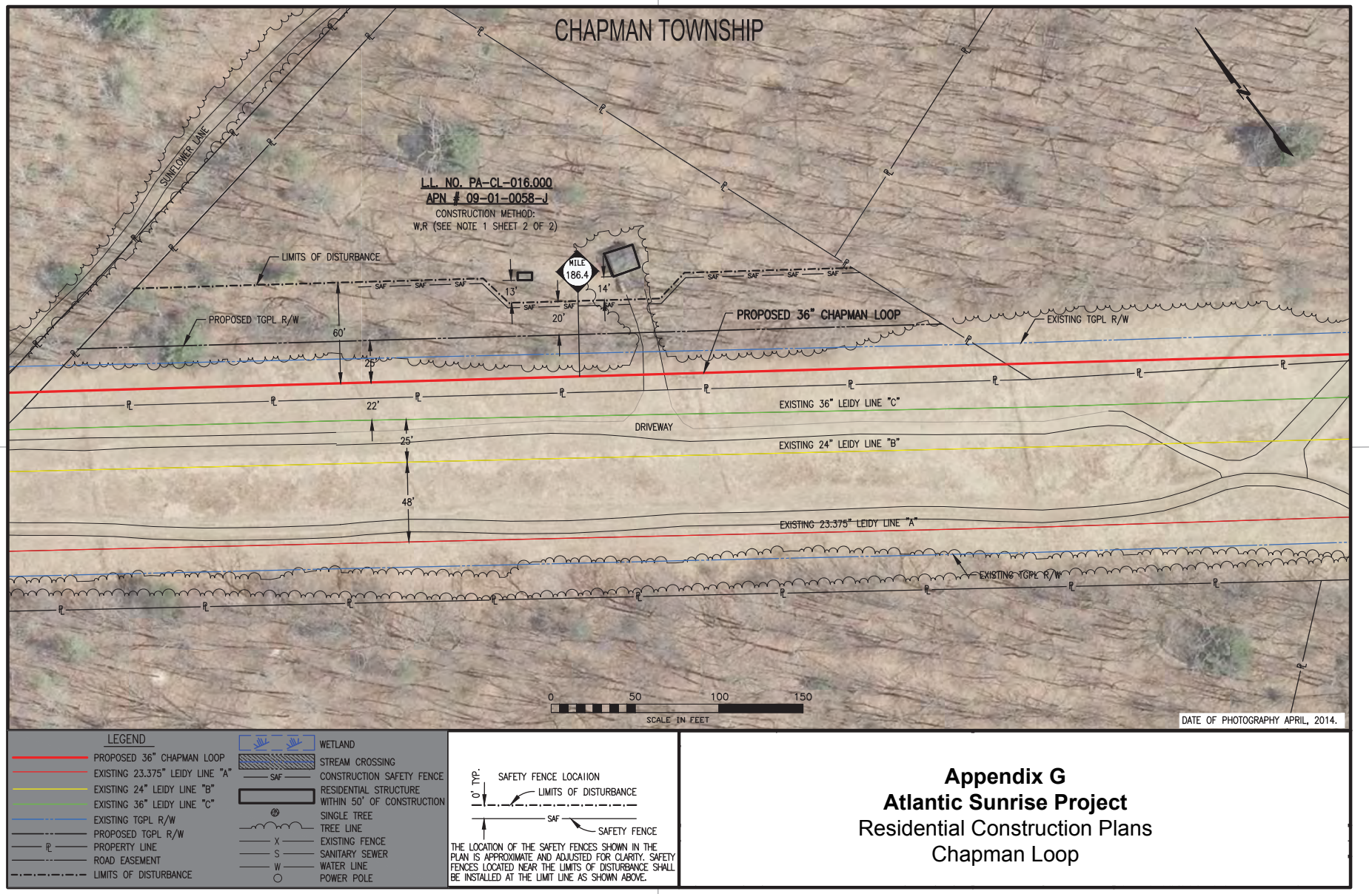
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8. A MOBILE WATER TRUCK WILL BE USED TO CONTROL DUST ON THE R.O.W. AS NEEDED.
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SAFETY FENCE



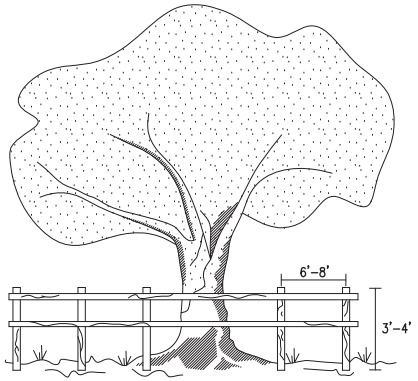
Chapman Loop



Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Chapman Loop

CHAPMAN TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



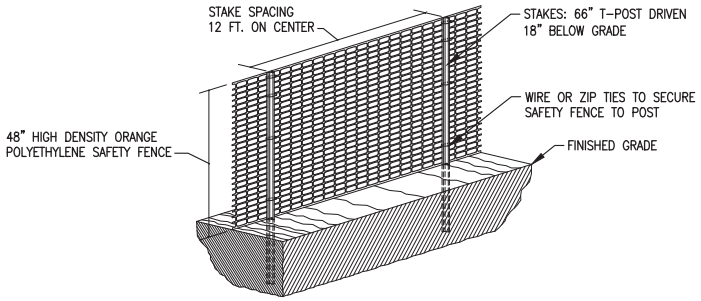
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VERTICAL: WOOD MEMBER OR APPROVED MATERIAL BARRICADES PLACED AT DESIGNATED PROTECTIVE ROOT ZONE.

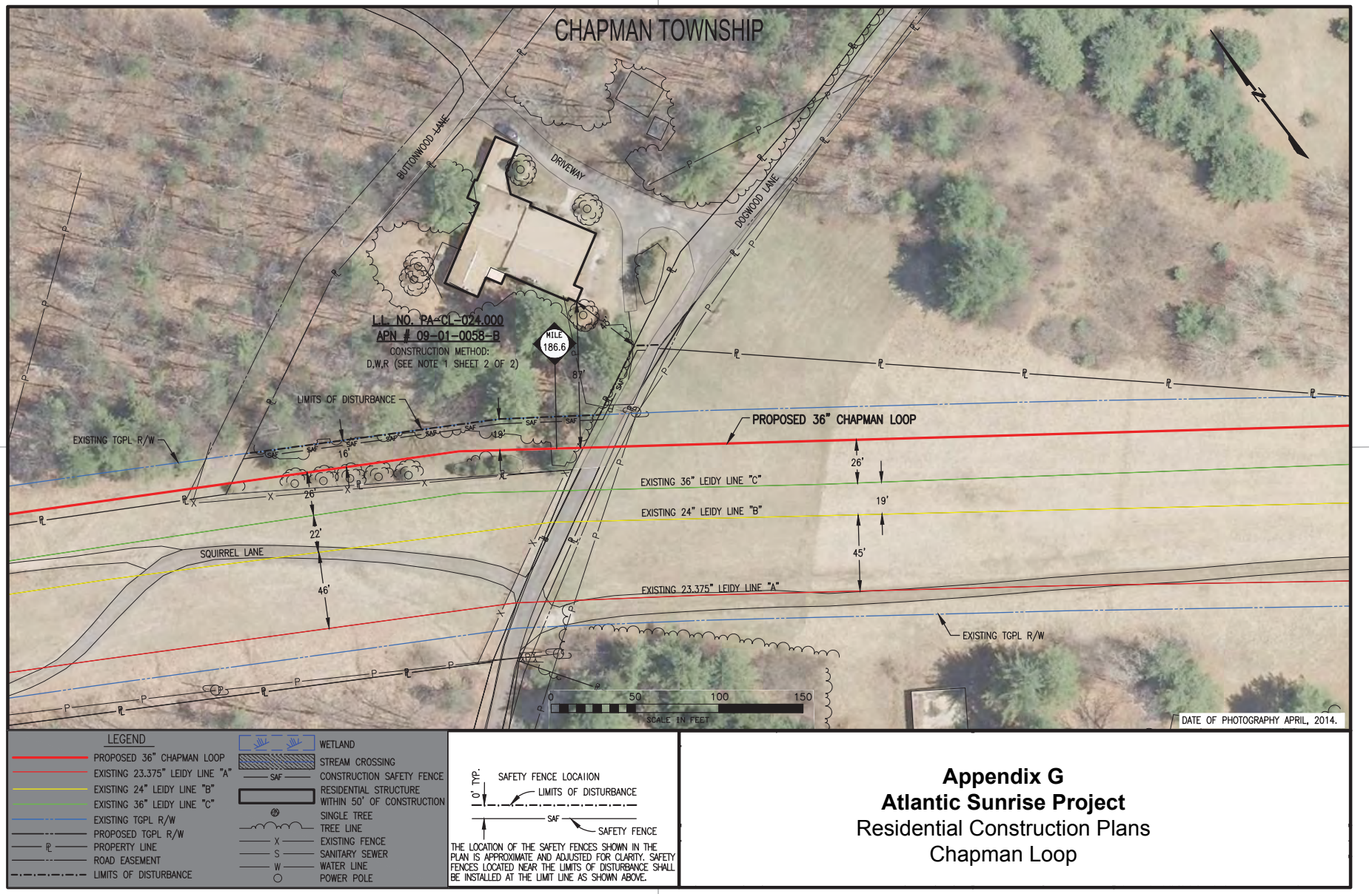
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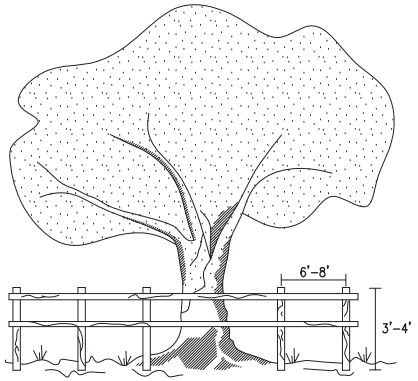




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Chapman Loop

CHAPMAN TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



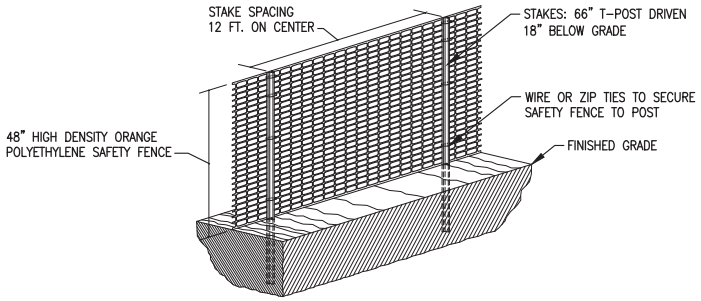
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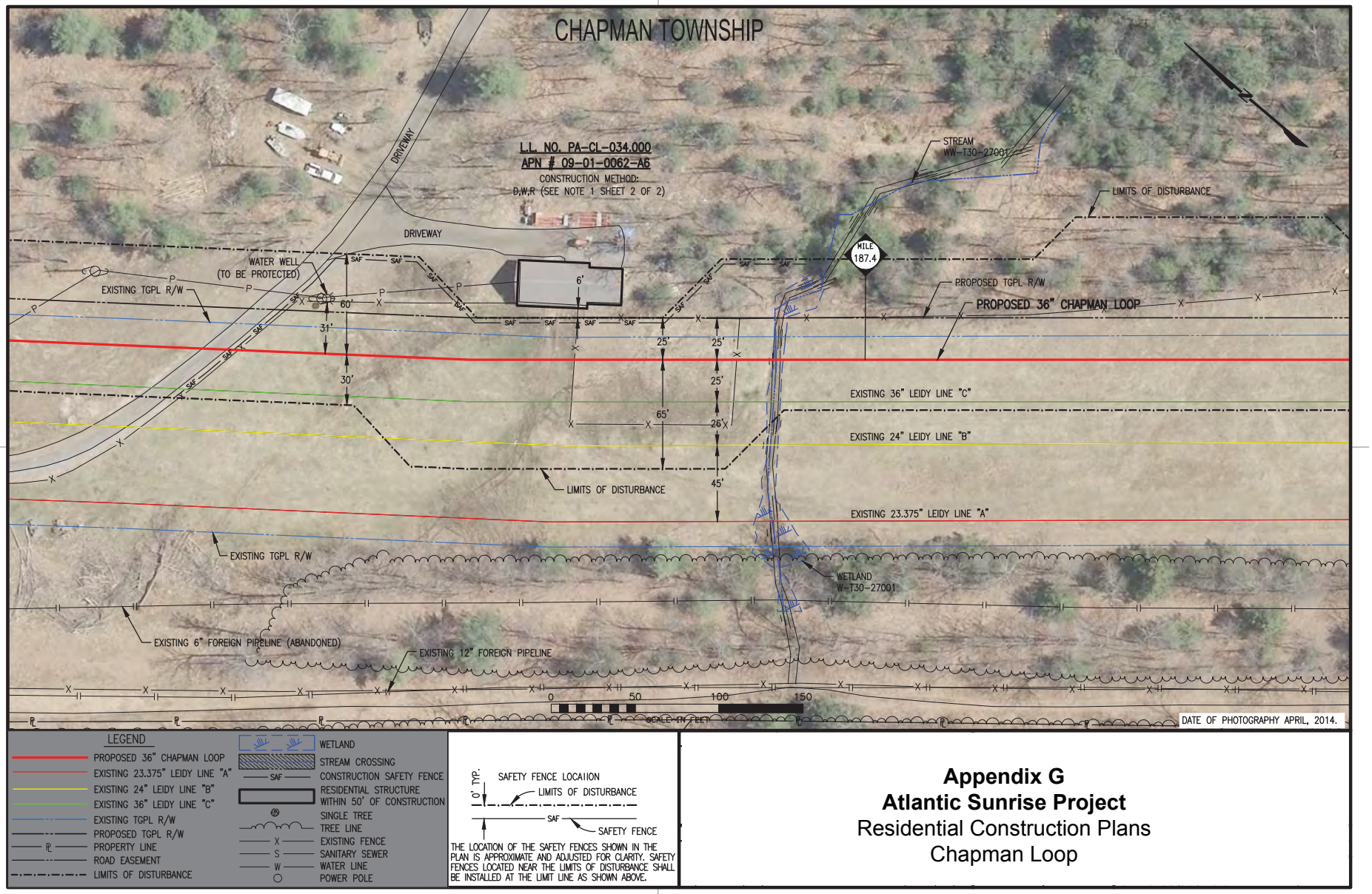
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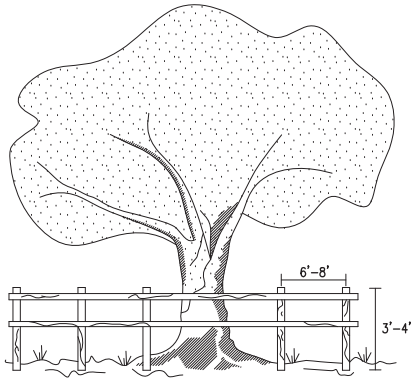




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Chapman Loop

CHAPMAN TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



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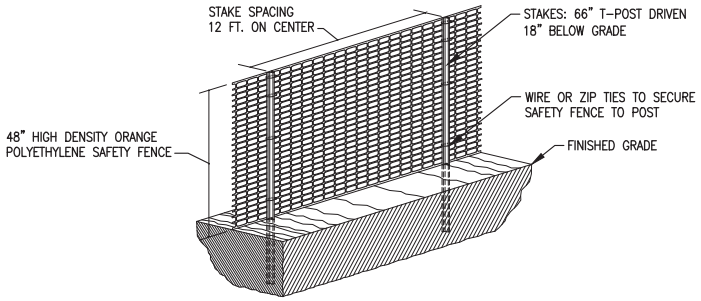
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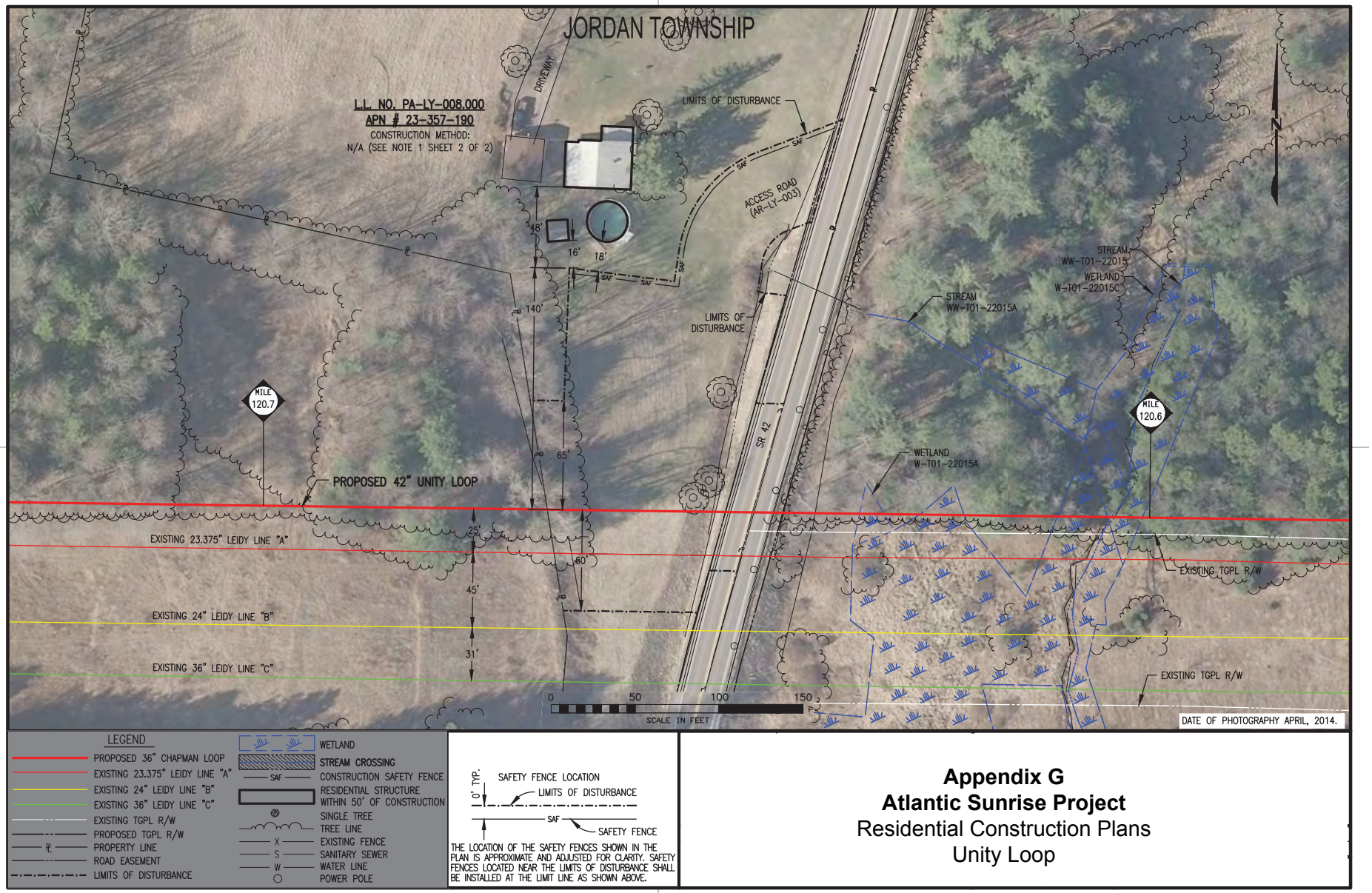
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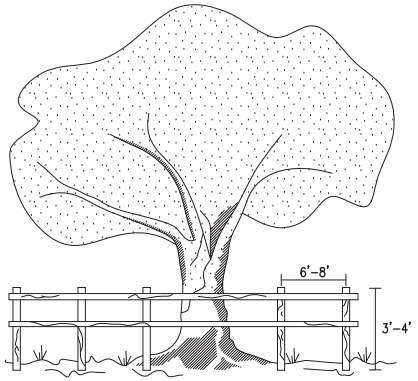
Unity Loop



Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Unity Loop

JORDAN TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



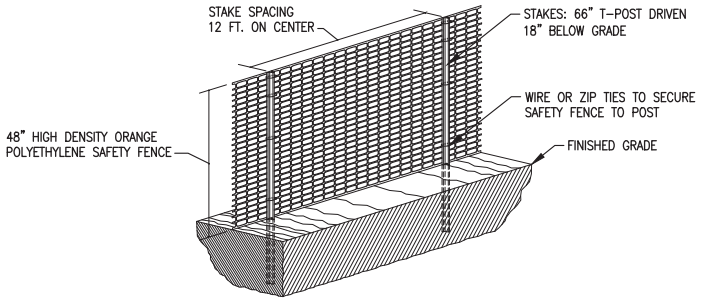
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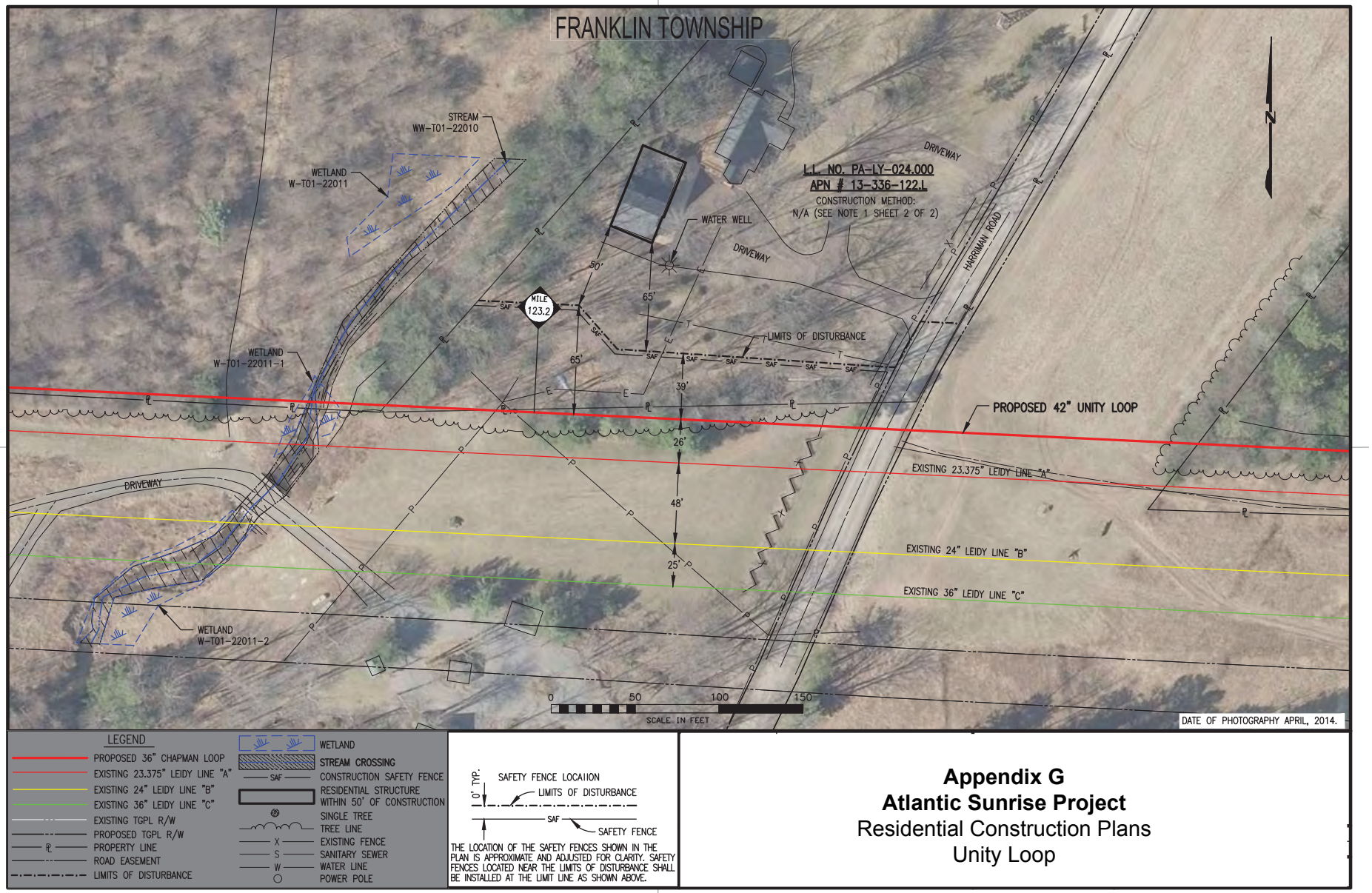
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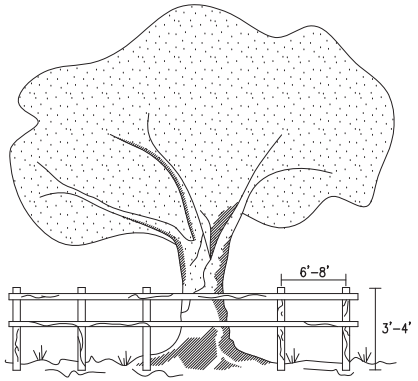




Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Unity Loop

FRANKLIN TOWNSHIP

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



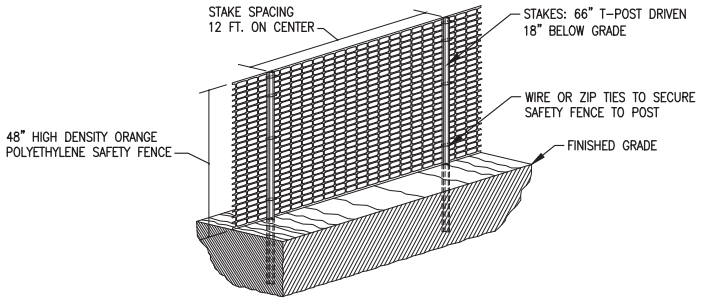
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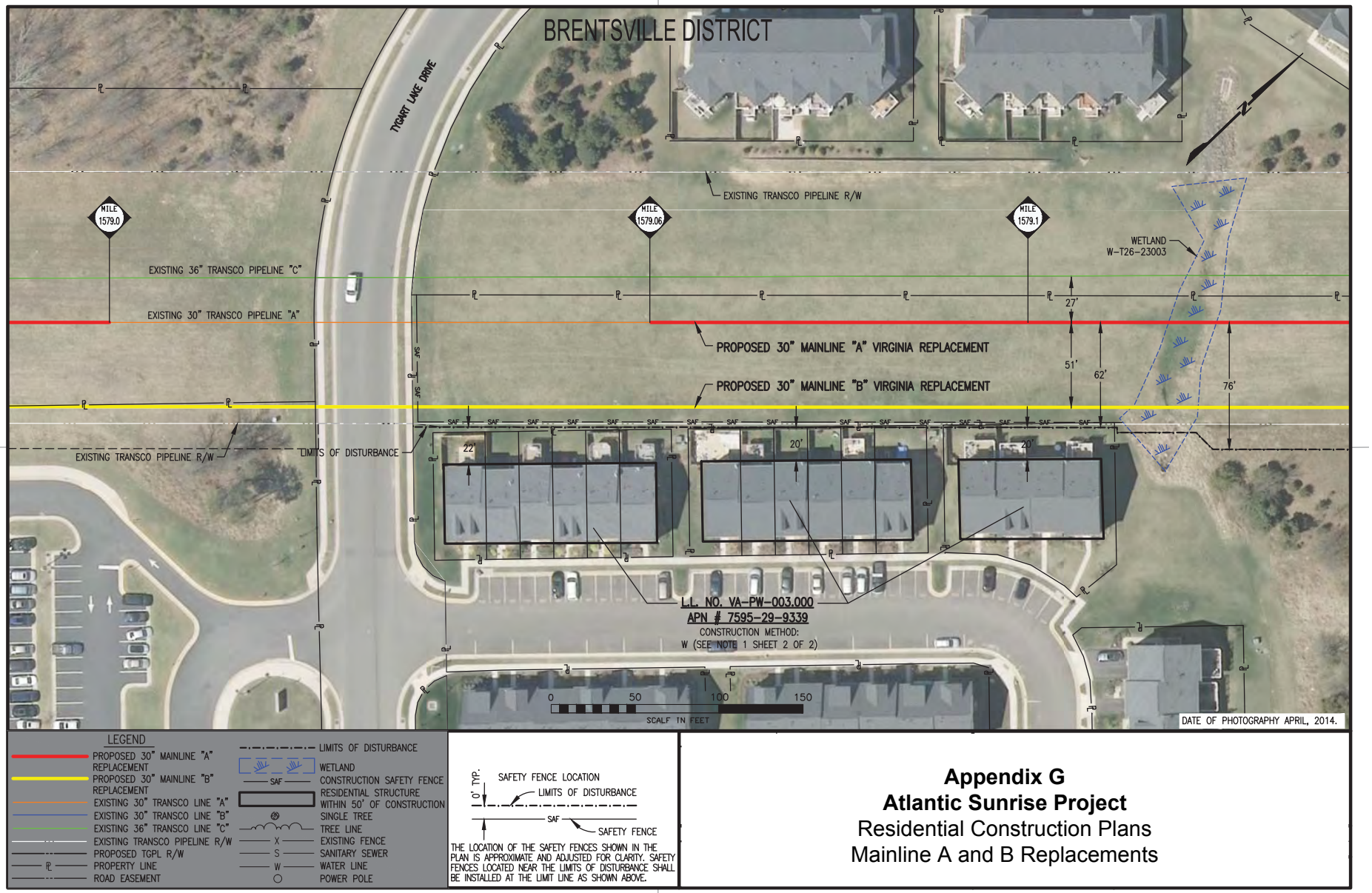
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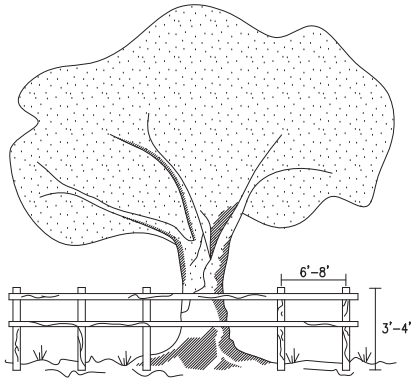
Mainline A and B Replacements



Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Mainline A and B Replacements

BRENTSVILLE DISTRICT

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



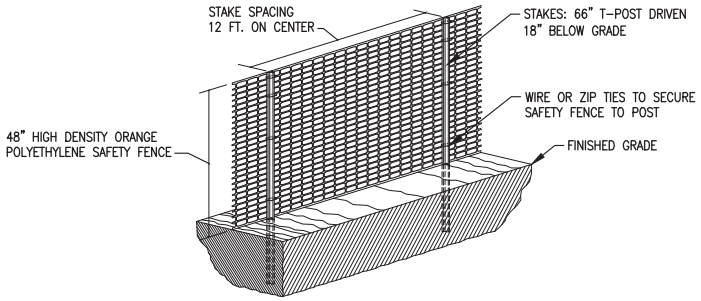
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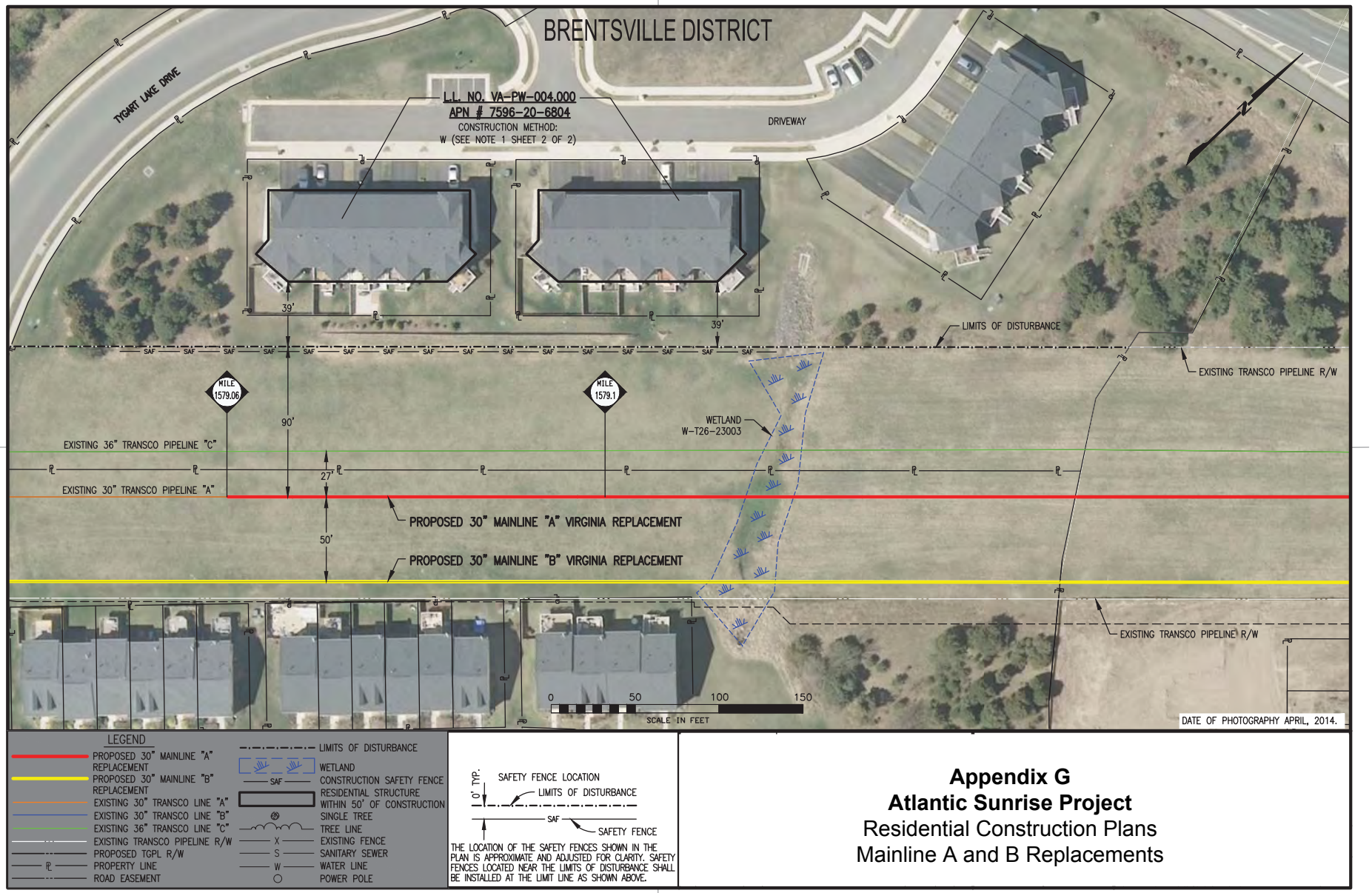
NOTES:

1. CONSTRUCTION TECHNIQUES TO BE USED TO MINIMIZE IMPACT TO THIS RESIDENCE ARE DENOTED ON SHEET 1 OF THIS DRAWING. CONSTRUCTION TECHNIQUES INCLUDE REDUCED PIPELINE SEPARATION (N), DRAG SECTION (D), WORKING OVER EXISTING PIPELINE (W), PIPELINE CROSSOVERS (C), REDUCED CONSTRUCTION RIGHT-OF-WAY (R).
2. EXCAVATION OF THE PIPELINE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPELINE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION.
3. HOMEOWNER SHALL BE NOTIFIED ONE (1) WEEK PRIOR TO EXCAVATION OF PIPELINE TRENCH.
4. CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA. "SEE LOCATION DETAIL THIS SHEET. REMOVE AFTER RESTORATION IS COMPLETE."
5. ALL FEATURES WITHIN THE CONSTRUCTION WORK AREA OR LIMITS OF DISTURBANCE SHALL BE REMOVED EXCEPT AS NOTED ON THE DRAWING. MATURE TREES AND LANDSCAPING WITHIN THE EDGE OF THE CONSTRUCTION WORK AREA MAY BE SAVED UNLESS NECESSARY TO REMOVE FOR SAFE OPERATION OF CONSTRUCTION EQUIPMENT.
6. CONTRACTOR SHALL MAINTAIN RESIDENTIAL ACCESS AT ALL TIMES. IF APPLICABLE, CONTRACTOR SHALL PROVIDE PRIOR NOTICE TO COMPANY WHEN THE EXISTING DRIVEWAY IS PLANNED TO BE OPEN CUT. COMPANY SHALL THEN NOTIFY THE HOMEOWNER(S). DRIVEWAY ACCESS MAY BE TEMPORARILY CLOSED FOR THE PIPELINE INSTALLATION, STEEL PLATES SHALL BE USED ACROSS THE OPEN TRENCH IF NOT BACKFILLED DURING SAME WORK DAY.
7. THIS PROPERTY
   - ☐ (DOES) ☐ (DOES NOT) HAVE A SEPTIC SYSTEM
   - ☒ (DOES) ☐ (DOES NOT) HAVE A WATER WELL
   - ☐ _____
   - ☐ _____
   - ☐ _____
8. A MOBILE WATER TRUCK WILL BE USED TO CONTROL DUST ON THE R.O.W. AS NEEDED.
9. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC IS OFFERING PRE-CONSTRUCTION AND POST-CONSTRUCTION MONITORING PROGRAM. THE HOMEOWNER:
   ☐ ACCEPTS ☐ DECLINES TO PARTICIPATE

SAFETY FENCE



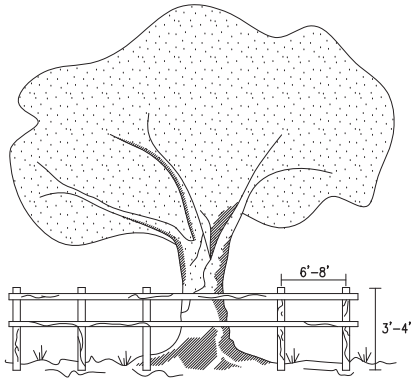
CONSTRUCTION SURVEY
PERIMETER FENCING DETAIL
N.T.S.



Appendix G
Atlantic Sunrise Project
Residential Construction Plans
Mainline A and B Replacements

BRENTSVILLE DISTRICT

BARRICADE DETAIL
FOR PROTECTED AND GRAND TREES



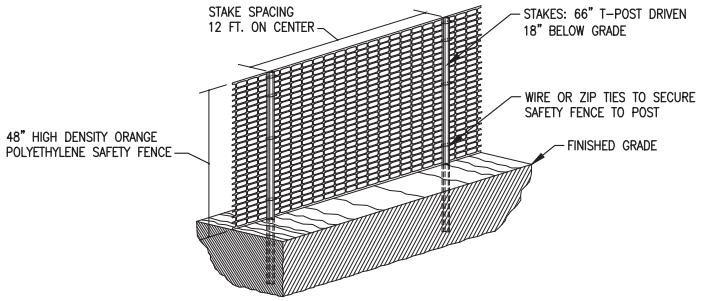
HORIZONTAL: WOOD MEMBER, ORANGE FENCING, CHAIN LINK FENCE OR OTHER APPROVED MATERIAL
VERTICAL: WOOD MEMBER OR APPROVED MATERIAL BARRICADES PLACED AT DESIGNATED PROTECTIVE ROOT ZONE.

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY FENCE 3 FEET OUTSIDE THE DRIP LINE OF THE TREE.
3. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE POST.
4. THE FENCE MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

NOTES:

1. CONSTRUCTION TECHNIQUES TO BE USED TO MINIMIZE IMPACT TO THIS RESIDENCE ARE DENOTED ON SHEET 1 OF THIS DRAWING. CONSTRUCTION TECHNIQUES INCLUDE REDUCED PIPELINE SEPARATION (N), DRAG SECTION (D), WORKING OVER EXISTING PIPELINE (W), PIPELINE CROSSOVERS (C), REDUCED CONSTRUCTION RIGHT-OF-WAY (R).
2. EXCAVATION OF THE PIPELINE TRENCH WILL NOT BE INITIATED UNTIL THE PIPE IS READY FOR INSTALLATION. THE PIPELINE TRENCH SHALL BE BACKFILLED IMMEDIATELY UPON COMPLETION OF THE PIPELINE INSTALLATION.
3. HOMEOWNER SHALL BE NOTIFIED ONE (1) WEEK PRIOR TO EXCAVATION OF PIPELINE TRENCH.
4. CONSTRUCTION SAFETY PERIMETER FENCING SHALL BE INSTALLED AND MAINTAINED ALONG THE WORK AREA. "SEE LOCATION DETAIL THIS SHEET. REMOVE AFTER RESTORATION IS COMPLETE."
5. ALL FEATURES WITHIN THE CONSTRUCTION WORK AREA OR LIMITS OF DISTURBANCE SHALL BE REMOVED EXCEPT AS NOTED ON THE DRAWING. MATURE TREES AND LANDSCAPING WITHIN THE EDGE OF THE CONSTRUCTION WORK AREA MAY BE SAVED UNLESS NECESSARY TO REMOVE FOR SAFE OPERATION OF CONSTRUCTION EQUIPMENT.
6. CONTRACTOR SHALL MAINTAIN RESIDENTIAL ACCESS AT ALL TIMES. IF APPLICABLE, CONTRACTOR SHALL PROVIDE PRIOR NOTICE TO COMPANY WHEN THE EXISTING DRIVEWAY IS PLANNED TO BE OPEN CUT. COMPANY SHALL THEN NOTIFY THE HOMEOWNER(S). DRIVEWAY ACCESS MAY BE TEMPORARILY CLOSED FOR THE PIPELINE INSTALLATION, STEEL PLATES SHALL BE USED ACROSS THE OPEN TRENCH IF NOT BACKFILLED DURING SAME WORK DAY.
7. THIS PROPERTY
   - ☐ (DOES) ☐ (DOES NOT) HAVE A SEPTIC SYSTEM
   - ☐ (DOES) ☐ (DOES NOT) HAVE A WATER WELL
   - ☐ _____
   - ☐ _____
   - ☐ _____
8. A MOBILE WATER TRUCK WILL BE USED TO CONTROL DUST ON THE R.O.W. AS NEEDED.
9. TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC IS OFFERING PRE-CONSTRUCTION AND POST-CONSTRUCTION MONITORING PROGRAM. THE HOMEOWNER:
   ☐ ACCEPTS ☐ DECLINES TO PARTICIPATE

SAFETY FENCE



CONSTRUCTION SURVEY
PERIMETER FENCING DETAIL
N.T.S.

APPENDIX H

AREAS OF SHALLOW DEPTH TO BEDROCK FOR THE ATLANTIC SUNRISE PROJECT FACILITIES

APPENDIX H

Areas of Shallow Depth to Bedrock for the Atlantic Sunrise Project Facilities[a,b]

Facility/County	Begin Milepost[c]	End Milepost[c]	Distance (miles)	Rippability[d]
CPL North				
Columbia				
	0.6	0.8	0.2	Moderately Difficult
	0.9	1.0	0.1	Moderately Difficult
	1.5	2.3	0.8	Moderately Difficult
	2.3	2.4	0.1	Moderately Difficult
	2.5	2.6	0.1	Moderately Difficult
	3.0	3.0	<0.1	Moderately Difficult
	4.3	4.4	0.1	Moderately Difficult
Luzerne				
	5.2	5.4	0.1	Moderately Difficult
	5.6	5.6	<0.1	Moderately Difficult
	6.8	6.9	0.1	Moderately Difficult
	7.4	7.4	<0.1	Moderately Difficult
	M-0056 0.4	M-0056 0.6	0.2	Moderately Difficult
	9.2	9.4	0.2	Moderately Difficult
	9.5	9.7	0.2	Moderately Difficult
	11.4	11.8	0.4	Moderately Difficult
	11.9	12.1	0.2	Moderately Difficult
	12.3	12.5	0.2	Moderately Difficult
	12.7	12.8	0.1	Moderately Difficult
	14.1	14.3	0.2	Moderately Difficult
	14.5	14.9	0.4	Moderately Difficult
	15.2	15.6	0.4	Moderately Difficult
	16.2	16.4	0.2	Moderately Difficult
	16.8	17.2	0.4	Moderately Difficult
	17.5	17.5	<0.1	Moderately Difficult
	17.8	17.9	0.1	Moderately Difficult
	20.1	20.8	0.7	Moderately Difficult
	21.5	21.6	0.1	Moderately Difficult
	21.7	21.8	0.1	Moderately Difficult
	M-0060 0.6	M-0060 0.7	0.1	Moderately Difficult
	M-0060 0.9	M-0060 1.0	0.1	Moderately Difficult
	23.2	24.0	0.8	Moderately Difficult
	24.7	25.2	0.5	Moderately Difficult
	25.9	26.3	0.4	Moderately Difficult
	26.8	27.1	0.3	Moderately Difficult
Wyoming				
	27.7	27.8	0.1	Moderately Difficult
	28.3	28.6	0.3	Moderately Difficult
	29.0	29.4	0.4	Moderately Difficult
	29.6	30.0	0.4	Moderately Difficult
	31.2	31.3	0.1	Moderately Difficult
	31.3	32.5	1.2	Moderately Difficult
	33.3	34.5	1.2	Moderately Difficult
	36.0	36.6	0.6	Difficult
	38.0	38.4	0.4	Difficult
	41.0	42.2	1.2	Difficult

APPENDIX H (cont'd)

Areas of Shallow Depth to Bedrock for the Atlantic Sunrise Project Facilities[a,b]

Facility/County	Begin Milepost[c]	End Milepost[c]	Distance (miles)	Rippability[d]
	M-0054 0.0	M-0054 0.7	0.8	Difficult
	43.0	43.5	0.5	Difficult
	45.8	45.9	0.1	Difficult
	46.2	46.3	0.1	Difficult
	M-0058 0.0	M-0058 0.1	0.1	Difficult
	47.6	47.8	0.2	Difficult
	47.9	48.0	0.1	Difficult
	48.3	48.6	0.3	Difficult
	48.8	49.0	0.2	Difficult
Susquehanna				
	49.6	50.4	0.8	Difficult
	50.6	50.8	0.2	Difficult
	51.5	51.5	<0.1	Difficult
	52.2	52.2	<0.1	Difficult
	53.0	53.1	0.1	Difficult
	54.9	55.2	0.3	Difficult
	56.3	56.4	0.1	Difficult
CPL South				
Lancaster				
	M-0152 0.0	M-00152 0.1	0.1	Difficult
	20.0	20.0	<0.1	Difficult
	21.5	21.6	0.1	Moderately easy to Difficult
	M-0192 0.0	M-0192 0.1	0.1	Difficult
	23.4	23.8	0.4	Difficult
	30.1	30.2	0.1	Difficult
	32.8	33.0	0.2	Moderately Easy
	36.8	37.3	0.5	Difficult
Lebanon				
	40.6	42.0	1.4	Difficult
	M-0183 1.0	M-0183 2.0	1.0	Difficult
	57.6	58.0	0.4	Difficult (quartzite) to Moderately Difficult (sandstone and shale)
Schuylkill				
	68.7	70.7	2.0	Difficult (Sherman Creek) to Moderately Difficult (Clarks Ferry)
	72.9	73.5	0.6	Difficult
	75.7	75.9	0.2	Difficult
	77.4	77.7	0.3	Moderately easy to Moderately Difficult
	77.9	78.4	0.5	Moderately Easy to Moderately Difficult
	78.9	79.4	0.5	Difficult
Northumberland				
	M-0194 0.9	M-0194 1.1	0.2	Difficult
	M-0194 1.2	83.1	0.5	Difficult
	83.0	83.5	0.5	Moderately Easy to Moderately Difficult
	83.8	84.6	0.8	Difficult
	84.8	85.0	0.2	Moderately Easy to Moderately Difficult
	86.2	86.4	0.2	Difficult
	88.9	89.2	0.3	Moderately Easy to Moderately Difficult
	89.4	89.7	0.3	Difficult

APPENDIX H (cont'd)

Areas of Shallow Depth to Bedrock for the Atlantic Sunrise Project Facilities[a,b]

Facility/County	Begin Milepost[c]	End Milepost[c]	Distance (miles)	Rippability[d]
	89.9	90.2	0.3	Moderately Difficult/Easy in shale
Columbia				
	M-0174 0.0	M-0174 0.3	0.3	Moderately Difficult
	100.2	100.7	0.5	Moderately Difficult/Easy in shale
	M-0179 0.0	M-0179 0.3	0.3	Moderately Easy to Difficult
	101.4	101.6	0.2	Moderately Easy to Difficult
	M-0171 0.0	M-0171 0.7	0.7	Moderately Difficult
	106.9	107.5	0.6	Moderately Easy, Moderately Difficult, and Difficult
	117.1	117.4	0.3	Moderately Difficult
	M-0195 0.0	M-0195 0.3	0.3	Difficult
	121.4	122.6	1.2	Difficult
	122.8	123.1	0.3	Difficult
	123.5	123.7	0.2	Difficult
	124.0	124.2	0.2	Difficult
	124.9	125.2	0.3	Difficult
Unity Loop				
Lycoming				
	L120.3	L120.7	0.3	Difficult
	L120.8	L121.0	0.2	Difficult
	L121.0	L121.4	0.4	Difficult
	L121.5	L121.7	0.2	Difficult
	L122.8	L123.0	0.2	Difficult
	L122.8	L123.1	0.3	Difficult
	L123.7	L123.8	0.1	Difficult
	L123.9	L124.1	0.2	Difficult
	L124.2	L124.3	0.1	Difficult
	L124.5	L124.9	0.4	Difficult
	L125.7	L125.8	0.1	Difficult
	L126.0	L127.1	1.1	Moderately Difficult
	L127.1	L127.3	0.2	Moderately Difficult
	L127.6	L128.9	1.3	Moderately Difficult
Chapman Loop				
Clinton				
	L186.0	L186.6	0.6	Difficult
	L186.6	L187.0	0.4	Difficult to Moderately Easy
	L187.0	L188.8	1.8	Difficult
	L188.8	L188.9	0.1	Moderately Difficult to Difficult

Sources: Berg et al., 1980; Braun, 2006a, 2006c-f, 2007a-e, 2012; Field Conference of Pennsylvania Geologists, Inc., 2002, 2006; Foose and Humphreville, 1979; Geyer and Wilshusen, 1982, Miles and Whitfield, 2001; NRCS, 2013, Sevon, 1996; Wilshusen, 1979; USGS, 2005.

[a] No areas of shallow depth to bedrock were identified along Mainline A and B replacements or at the new or existing aboveground facilities.

[b] Shallow bedrock is considered within 8 feet below ground surface.

[c] Where start and end mileposts are the same, the crossing distance is less than 0.1 mile.

[d] Rippability:

- **Difficult** – typically requires drilling and blasting except where extensively fractured or weathered.
- **Intermediate** – rippable by heavy-weight power equipment to depths chiefly limited by maneuverability of equipment. Hard rock layers or zones may require drilling and blasting.

APPENDIX H (cont'd)

Areas of Shallow Depth to Bedrock for the Atlantic Sunrise Project Facilities[a,b]

Facility/County	Begin Milepost[c]	End Milepost[c]	Distance (miles)	Rippability[d]

- **Moderately difficult** – requires drilling and blasting for most deep excavations, but locally may be ripped to depths of several feet due to closely spaced joints, bedding, or weathered rock.
- **Moderately easy** – rippable by heavy-weight power equipment at least to interface with non-weathered rock interface and locally to greater depths.
- **Easy** – can be excavated by hand tools or light-weight power equipment. Some large boulders may require drilling and blasting for their removal. Dewatering or bracing of excavation walls may be required.

Note: CPL = Central Penn Line

APPENDIX I

MINERAL RESOURCES WITHIN 0.25 MILE OF THE ATLANTIC SUNRISE PROJECT FACILITIES

APPENDIX I

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
CPL North								
Columbia								
	4.0	984	NW	Oil/Gas Well	EXCO Resources PA, LLC	Plugged OG Well	Oil/Gas	
Luzerne								
	6.1	898	NW	Oil/Gas Well	Encana Oil & Gas USA, Inc.	Active	Oil/Gas	
	13.7	260	NW	Quarry	Sugarloaf Peat Co. / Sweet Valley Sugarloaf Peat Operation	Active	Peat	Surface Mine
	17.8	680	SE	Oil/Gas Well	Encana Oil & Gas USA, Inc.	Operator Reported Not Drilled	Oil/Gas	Five permitted wellheads
	19.0	80	NE	Oil/Gas Well	Encana Oil & Gas USA, Inc.	Plugged OG Well	Oil/Gas	
	19.1	841	SW	Oil/Gas Well	Encana Oil & Gas USA. Inc.	Operator Reported Not Drilled	Oil/Gas	
	25.6	0	Within Workspace	Unknown	Unknown	AML	Unknown	Vertical Mine Shaft
Wyoming								
	32.7	703	NW	Quarry	Kenneth Murach / Murach Eaton Quarry	Active	Unknown	Surface Mine: Industrial Mineral Mining Operations
	33.2	456	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Operator Reported Not Drilled	Oil/Gas	Two permitted wellheads
	34.9	1284	NW	Quarry	Vosburg Quarry / Albert M Vosburg III	Active	Unknown	
	35.8	40	SW	Quarry	Hilltop Quarry / Reading Materials	Active	Quarries/Other Mines/Pits/Plants	
	46.3	606	NW	Quarry	Royals Legacy Farm, LLC / Royals Legacy Reynolds Road Quarry	Active	Unknown	Surface Mine: Industrial Mineral Mining Operations
	49.1	1251	SW	Oil/Gas Well	Columbia GasTrans, LLC	Inactive	Oil/Gas	Plugged

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	50.0	1142	SE	Quarry	Jeremy Choplosky / Choplosky Doghole Quarry	Active	Unknown	Surface Mine: Industrial Mineral Mining Operations
	50.2	661	NE	Quarry	Algerd Choplosky Jr / Choplosky Nicholson Quarry	Reclamation Complete	Unknown	Surface Mine: Industrial Mineral Mining Operations
Susquehanna								
	51.9	303	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	4 permitted wellheads
	52.0	274	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	52.0	283	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	52.0	294	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	52.7	899	SE	Quarry	Lindley L Rood / Rood Wick Wire 1 Quarry	Active	Unknown	Surface Mine: Industrial Mineral Mining Operations
	54.3	815	SE	Oil/Gas Well	Cabot Oil & Gas Corp.	Active	Oil/Gas	1 permitted wellhead
	54.3	826	SE	Oil/Gas Well	Cabot Oil & Gas Corp.	Active	Oil/Gas	1 permitted wellhead
	54.3	835	SE	Oil/Gas Well	Cabot Oil & Gas Corp.	Active	Oil/Gas	1 permitted wellhead
	55.4	1133	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	55.4	1138	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	55.4	1143	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	55.4	1147	NW	Oil/Gas Well	Chief Oil & Gas, LLC	Active	Oil/Gas	1 permitted wellhead
	56.3	552	NW	Oil/Gas Well	Cabot Oil & Gas Corp,	Active	Oil/Gas	1 permitted wellhead
	56.3	567	NW	Oil/Gas Well	Cabot Oil & Gas Corp,	Active	Oil/Gas	1 permitted wellhead
	56.3	626	NW	Oil/Gas Well	Cabot Oil & Gas Corp,	Active	Oil/Gas	1 permitted wellhead
	56.3	642	NW	Oil/Gas Well	Cabot Oil & Gas Corp,	Active	Oil/Gas	1 permitted wellhead
CPL South								
Lancaster	23.6	529.06	NE	Quarry	Marietta Ceiling Plant	Active	Perlite	
Lebanon								

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	M-0183 1.69	0	Within Workspace	Quarry	Lebanon Rock Plant	Active	Stone, Crushed/Broken	
Schuylkill								
	M-0198 0.4	1138.82	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	M-0198 0.5	1077.15	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	M-0198 0.5	673.06	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0198 0.5	427.38	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0198 0.5	1005.98	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	M-0198 0.5	701.26	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0198 0.5	863.30	NE	Unknown	Unknown	AML	Unknown	Structure
	M-0198 0.5	144.65	NE	Unknown	Unknown	AML	Unknown	Structure
	72.2	294	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	72.5	1038	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	72.5	1200	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	72.6	1303	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	73.1	277	NE	Coal Mining Operations	New Lincoln Coal Co., Inc. / New Lincoln Coal 1 Mine	Reclamation Completed	Coal	Underground Mine
	73.3	227	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	73.4	317	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	73.6	172	NE	Coal Mining Operations	DJT Coal Co / DJT Coal 1 Slope Mine	Reclamation Completed	Coal	NPDES Discharge Point and Underground Mine
	73.7	541	NE	Coal Mining Operations	JR & L Coal Co. / JR & L Coal 2 Mine	Reclamation Completed	Coal	Underground Mine
	73.7	707	SW	Coal Mining Operations	Westwood Generation, LLC / Westwood Generation Bank	Active	Coal	Refuse Reprocessing: NPDES Discharge Point
	73.8	335	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	73.9	467	NE	Coal Mining Operations	Westwood Generation, LLC / Westwood Generation Bank	Active	Coal	Refuse Reprocessing: NPDES Discharge Point
	73.9	755	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	73.9	837	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	73.9	343	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	74.1	34	SW	Unknown	Unknown	AML	Unknown	Impacted Water Source
	74.1	402	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.0	1066	NW	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.0	746	NW	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.0	417	NW	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.1	240	SE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.2	1132	NW	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.3	41	SE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	M-0201 0.5	715	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	74.2	960	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	74.7	357	NW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	74.7	652	NW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	74.7	0	Within Workspace	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	74.7	1068	NW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	74.7	988	NW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	74.7	0	Within Workspace	Unknown	Unknown	AML	Unknown	Impacted Water Source
	74.7	1292	SW	Coal Mining Operations	Westwood Generation, LLC / Westwood Generation Bank	Active	Coal	Refuse Reprocessing: NPDES Discharge Point
	75.0	925	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	75.0	77	NE	Coal Mining Operations	Rausch Creek Land LP / Rausch Creek Penag Mine	Reclamation Completed	Coal	Surface Mine / NPDES Discharge Point
	75.0	20	NE	Coal Mining Operations	Rausch Creek Land LP / Rausch Creek Penag Mine	Reclamation Completed	Coal	Surface Mine / NPDES Discharge Point
	75.2	92	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	75.2	122	SW	Unknown	Unknown	AML	Unknown	Impacted Water Source
Northumberland								

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	84.3	913	NE	Coal Mining Operations	Reading Anthracite Company / West Spring Slope Mine	Active	Anthracite Coal	Surface Mine
	84.3	136	NE	Coal Mining Operations	Excel Coal Company	Active	Anthracite Coal	Underground Mine
	84.6	546	SW	Coal Mining Operations	High Mountain Coal Boyers Knob Mine	Reclamation Completed	Coal	Coal Surface Mine
	84.8	915	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	84.9	1069	NE	Unknown	Unknown	AML	Unknown	Impacted Water Source
	85.0	859	SW	Unknown	Unknown	AML	Unknown	Structure
	85.1	399	NE	Unknown	Unknown	AML	Unknown	Coal Surface Mine
	85.1	1303	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.1	0	Within Workspace	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.1	1183	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.2	1102	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.2	1043	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.2	959	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.2	886	NE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	85.2	820	NE	Unknown	Unknown	AML	Unknown	Coal Surface Mine
	85.4	0	Within Workspace	Unknown	Unknown	AML	Unknown	Structure
	84.6	546	SW	Coal Mining Operations	High Mtn. Coal Co. / High Mtn. Coal Boyers Knob Mine	Reclamation Completed	Coal	Surface Mine
	85.9	435	NE	Coal Mining Operations	Split Vein Coal Co., Inc. / Split Vein Coal Excelsior Mine	Active	Coal	Refuse Reprocessing
	86.0	1271	SW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	86.6	61	SW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	86.6	529	SW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	86.7	302	SW	Unknown	Unknown	AML	Unknown	Structure
	86.7	722	SW	Unknown	Unknown	AML	Unknown	Structure

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	87.2	136	SE	Coal Mining Operations	Cal Mining / Cal Mining 2 Mine	Inactive	Coal	Underground Mine
	87.3	407	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.3	924	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.4	1055	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.4	1315	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.5	162	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.5	869	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.5	1309	NW	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.9	852	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	87.9	1258	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
	88.1	750	SE	Unknown	Unknown	AML	Unknown	Entry Point/Opening
Unity Loop								
Lycoming								
	L122.4	1064	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	Four wellheads on site: one active, three operator reported not drilled
	L122.4	1054	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	
	L122.4	1044	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	
	L122.4	1035	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	
	L123.0	1239	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	
	L123.0	1209	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	
	L123.0	1206	SW	Oil/Gas Well	XTO Energy, Inc.	Active	Oil/Gas	
	L125.1	875	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.1	881	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.1	886	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.1	891	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.1	898	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	L125.1	903	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.1	909	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.6	322	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.6	288	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.6	175	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L125.6	256	SW	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L127.3	1307	NE	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L127.3	1272	NE	Oil/Gas Well	EXCO Resources PA, LLC	Active	Oil/Gas	
	L127.3	1269	NE	Oil/Gas Well	EXCO Resources PA, LLC	Proposed But Never Materialized	Oil/Gas	
	L127.3	1238	NE	Oil/Gas Well	EXCO Resources PA, LLC	Proposed But Never Materialized	Oil/Gas	
	L127.3	1203	NE	Oil/Gas Well	EXCO Resources PA, LLC	Proposed But Never Materialized	Oil/Gas	
	L127.3	1225	NE	Oil/Gas Well	EXCO Resources PA, LLC	Proposed But Never Materialized	Oil/Gas	
Chapman Loop								
Clinton								
	186.0	850	NE	Oil/Gas Well	Cabot Oil and Gas Corporation	Operator Reported Not Drilled	Oil/Gas	Three proposed wellheads on site
Mainline A & B Replacements								
Prince William								

APPENDIX I (cont'd)

Mineral Resources Within 0.25 Mile of the Atlantic Sunrise Project Facilities[a]

Facility/County	Milepost	Distance From Workspace (feet)	Direction from Centerline/ Workspace	Mineral Resource Type	Operating Company/ Facility Name (If applicable)	Site Status	Commodity	Additional Information (If applicable)
	0.2	1300	SE	Quarry	Fairfax Quarries	Past Producer	Stone, Crushed/Broken	
	1580.8	1155	SE	Quarry	Vulcan Materials Crushed Stone Quarry	Active	Stone, Crushed/Broken	

Sources: PADEP, 2014b-e; PADEP BMR, 2012; USGS, 2006.

[a] No mineral resources were identified at the new or existing aboveground facilities.

Key:

CPL = Central Penn Line

L = Leidy Line

APPENDIX J

ATLANTIC SUNRISE PROJECT SEISMIC ANALYSIS REPORT AND REVISED KARST INVESTIGATION AND MITIGATION PLAN

Transcontinental Gas Pipe Line Company, LLC

Resource Report No. 6

Geological Resources

Seismic Analysis Report

Atlantic Sunrise Project

March 2015

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SEISMIC ANALYSIS REPORT

Atlantic Sunrise Project

Date: March 19, 2015

Subject: Earthquake Ground Motions Parameters for Atlantic Sunrise Pipeline Project in Eastern Pennsylvania.

Introduction

Values of earthquake ground-motion parameters, consisting of horizontal-component peak ground acceleration (PGA), and 5% damped response spectral accelerations at natural periods of 0.2 sec and 1.0 sec, S_a(0.2s) and S_a(1.0s), were extracted from the U.S. Geological Survey (USGS) website, http://earthquake.usgs.gov/hazards/products/conterminous/2014/data/, for the pipeline route and the Chapman and Unity loops. The values correspond to a 2% probability of being exceeded in 50 years (or an average return period of 2,475 years) and pertain to a generic bedrock condition, defined as Site Class B in Chapter 20 of the ASCE 7-10 standard.

The PGA and S_a(1.0s) values were scaled by site coefficients for Site Class C in the ASCE 7-10 standard, and the resulting values were substituted in simple equations (ASCE, 1984; PRCI, 2004) to estimate ground strain and ground curvature, which are conservative estimates of the pipeline axial strain and bending curvature along straight or nearly straight sections of the pipeline.

USGS Ground Motion Values

The values of the 2,475-yr PGA, S_a(0.2s) and S_a(1.0s), extracted from the USGS website, are listed in **Table 1**. The study was conducted on 5-mile intervals. Central Penn Line (CPL) South, MP 0.0 (first row in table) to MP 125.2, represents the southern section of the route, which starts in the southern end of Lancaster County and terminates in the northern end of Columbia County. CPL North, MP 0.0 to MP 57.3, represents the northern section of the route, which terminates at MP 57.3 in the southern end of Susquehanna County. The Chapman loop is in the northern part of Clinton County, while the Unity loop is in the eastern end of Lycoming County, just west of the junction of CPL South and CPL North.

Along CPL South, the ground motions are highest at the southern end and gradually decrease to the north. The higher ground motions at the southern end, relative to those at the northern end, are the result of the Lancaster Seismic Zone, which has higher observed seismicity rates than the surrounding region.

Table 1
2014 USGS Ground Motions along Pipeline Route. Site Class B. [g]

PIPELINE	MP	PGA	S_a(0.2s)	S_a(1.0s)
CPLS	0	0.106	0.178	0.039
	5	0.107	0.180	0.039
	10	0.105	0.177	0.039
	15	0.103	0.173	0.038
	20	0.100	0.170	0.038
	25	0.098	0.167	0.038
	30	0.096	0.165	0.038
	35	0.091	0.158	0.038
	40	0.087	0.153	0.037
	45	0.083	0.148	0.037
	50	0.079	0.142	0.037
	55	0.076	0.137	0.036
	60	0.072	0.132	0.036
	65	0.072	0.132	0.036
	70	0.071	0.132	0.036
	75	0.067	0.127	0.036
	80	0.064	0.122	0.035
	85	0.062	0.118	0.035
	90	0.059	0.115	0.035
	95	0.058	0.114	0.035
	100	0.057	0.112	0.035
	105	0.055	0.110	0.035
	110	0.055	0.109	0.035
	115	0.054	0.108	0.035
	120	0.054	0.107	0.035
	125	0.053	0.107	0.035
CPLN	0	0.053	0.107	0.035
	5	0.054	0.108	0.035
	10	0.055	0.110	0.036
	15	0.056	0.112	0.036
	20	0.057	0.114	0.036
	25	0.058	0.114	0.036
	30	0.058	0.115	0.036
	35	0.057	0.114	0.037
	40	0.058	0.115	0.037
	45	0.058	0.115	0.037
	50	0.058	0.116	0.037
	55	0.058	0.116	0.037
Chapman - mid	187.4	0.045	0.092	0.033
Unity - W end	128.9	0.050	0.101	0.034
Unity - E end	120.3	0.052	0.105	0.035

The ground motions are similar along the CPL North section of the route as seen in **Table 1**. The ground motions in the Chapman and Unity loops are slightly smaller than the smallest motions along CPL North section (i.e., those at MP 0).

The ground motions in **Table 1** indicate the pipeline route and two loops are in an area of low seismic hazard. The higher ground motions in the Lancaster Seismic Zone, relative to those along the route north of this zone, do not change this conclusion.

Effect of Local Geology on Ground Motions

Surficial geologic data were available for CPL South MP 0.0 through MP 46.7, CPL South MP 110.5 through MP 125.2, and CPL North MP 0.0 through MP 57.3. The available geologic information between MP 0.0 and MP 46.7, the region covering the Lancaster Seismic Zone, are summarized in a table at the end of this report. Geologic data were also available for the two loops. Collectively, all of these geologic data indicate that the majority of the two route segments and two loops are Site Class A, B or C, according to Chapter 20 of the ASCE 7-10 standard. The geology for the remainder of the proposed route between CPL South MP 46.7 and MP 110.5 is assumed to be similar. Chapter 20 defines Site Class A as hard rock, Site Class B as rock, and Site Class C as very dense soil and soft rock. For conservatism, the entire route and both loops were designated as Site Class C.

According to the site coefficient tables in Chapter 11 of ASCE 7-10, the PGA, $S_a(0.2s)$, and $S_a(1.0s)$ values for Site Class A would be 20% less than those for Site Class B, while the PGA and $S_a(0.2s)$ values for Site Class C would be 20% greater. The $S_a(1.0s)$ values for Site Class C would be 70% greater than those for Site Class B.

Earthquake-induced Dynamic Ground Strains and Curvatures

Chapter 6 and Appendix B of the ASCE (1984) publication, "Guidelines for the Seismic Design of Oil and Gas Pipeline Systems," present simple equations for computing maximum earthquake-induced dynamic ground strains (ε_g) and curvatures (κ_g). For shear waves, which typically produce the largest ground motion, these equations are

$$\varepsilon_g = V_{max}/(2c) \quad (1)$$

$$\kappa_g = PGA/c^2 \quad (2)$$

where V_{max} is the maximum ground velocity and c is the propagation velocity for shear waves. V_{max} was estimated with the equation (Newmark and Hall, 1982)

$$V_{max} = [S_a(1.0s)]\ [9.80/(2\pi)]/1.65 \quad (3)$$

where the term, [9.80/(2π)], converts S_a(1.0s) in g to 1-sec spectral velocity in m/sec, and the 1.65 factor converts the spectral velocity to V_{max}. For the purpose of the strain and curvature calculation, the classification of the entire pipeline route and both loops as Site Class C is conservative, as noted above, except possibly in areas of stream crossings or rivers where soft soils may exist. The shear-wave velocity was assumed to be c = 560 m/s, which is the average value for Site Class C.

To compute ε_g and κ_g, the PGA and S_a(1.0s) values in **Table 1** were converted to values corresponding to Site Class C. This conversion was accomplished by multiplying the PGA and S_a(1.0s) in **Table 1** by the appropriate site coefficients for Site Class C in the ASCE 7-10 standard (F_{PGA} = 1.2 in Table 11.8-1 for PGA and F_v = 1.7 in Table 11.4-2 for S_a(1.0s)). After converting the units on the resulting PGA and S_a(1.0s) from g to m/sec^2, the ground strains and curvatures were computed and are summarized in **Table 2**. An additional unit conversion from (1/m) to (1/ft) was made in the κ_g because the pipeline radius (r) is reported in ft rather than m. Thus, the pipe bending strain can be computed as r κ_g without a unit conversion.

Discussion

The maximum ground strains and curvatures in **Table 2** are conservative estimates of the maximum pipeline compressive/tensile strain and curvature under the following assumptions: (1) the pipeline moves with the soil without offering any resistance, i.e., interaction or slippage between the pipeline and surrounding material does not occur, (2) the native material through which the pipeline passes is not softer than Site Class C, and (3) the ground does not permanently deform differentially along the alignment due to the ground motion, i.e., earthquake-induced landslides, subsidence, or ground-surface rupture do not occur. Under these assumptions, the product of the curvature and pipeline radius is the bending strain.

The pipeline passes through deposits of loose, saturated cohesionless soils, which may be present at or near stream or river crossings, wetlands, or in alluvial valleys. Although such deposits are susceptible to liquefaction, the liquefaction potential and associated risk to the pipeline are judged to be low. This is based on the low ground-motion hazard along the route and the small earthquake magnitudes that have the majority contribution to this hazard.

Table 2
Maximum Ground Strains and Curvatures along Pipeline Route. Site Class C.

PIPELINE	MP	ε_g	κ_g (1/ft)
CPLS	0	5.6E-05	1.2E-06
	5	5.6E-05	1.2E-06
	10	5.6E-05	1.2E-06
	15	5.5E-05	1.2E-06
	20	5.5E-05	1.1E-06
	25	5.5E-05	1.1E-06
	30	5.5E-05	1.1E-06
	35	5.4E-05	1.0E-06
	40	5.3E-05	9.9E-07
	45	5.3E-05	9.5E-07
	50	5.3E-05	9.1E-07
	55	5.2E-05	8.6E-07
	60	5.2E-05	8.2E-07
	65	5.2E-05	8.2E-07
	70	5.2E-05	8.1E-07
	75	5.1E-05	7.7E-07
	80	5.1E-05	7.3E-07
	85	5.1E-05	7.0E-07
	90	5.0E-05	6.8E-07
	95	5.0E-05	6.7E-07
	100	5.0E-05	6.5E-07
	105	5.0E-05	6.3E-07
	110	5.0E-05	6.3E-07
	115	5.0E-05	6.2E-07
	120	5.0E-05	6.1E-07
	125	5.0E-05	6.1E-07
CPLN	0	5.0E-05	6.1E-07
	5	5.1E-05	6.2E-07
	10	5.1E-05	6.3E-07
	15	5.1E-05	6.4E-07
	20	5.2E-05	6.6E-07
	25	5.2E-05	6.6E-07
	30	5.2E-05	6.6E-07
	35	5.2E-05	6.6E-07
	40	5.3E-05	6.6E-07
	45	5.3E-05	6.6E-07
	50	5.3E-05	6.6E-07
	55	5.4E-05	6.6E-07
Chapman - mid	187.4	4.7E-05	5.2E-07
Unity - W end	128.9	4.9E-05	5.7E-07
Unity - E end	120.3	5.0E-05	5.9E-07

References

ASCE, 1984. Guidelines for the Seismic Design of Oil and Gas Pipeline Systems. Prepared by the committee on Gas and Liquid Fuels Lifelines of the ASCE Technical Council on Lifeline Earthquake Engineering, American Society of Civil Engineers, New York, New York, 473 p.

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PRCI, 2004. Guidelines for the Seismic Design and Assessment of Natural Gas and Liquid Hydrocarbon Pipelines. Prepared for Pipeline Design, Construction & Operations Technical Committee of Pipeline Research Council International, Inc. Prepared by D.G. Honegger Consulting, and D.J. Nyman and Associates, October 1.

SURFICIAL GEOLOGY (< 100 FT BGS) ALONG CPL-S, MP 0 - MP 46.7							
PIPELINE	FROM MILEPOST	TO MILEPOST	DEPTH INTERVAL (FT)	CLASS TYPE	COMMENTS	Notes	ASCE 7-10 SITE CLASS
	0	2.0	0 to 6	IV	Colluvium - platy rock fragments in finer-grained matrix. Wetlands at MP 0.25 & from from MP 1.4 to MP 1.45.	Cultivated farmland	C
			6 to 30	III	Interspersed, weathering resistant and weathered lithofacies		
			30 to 100	II	Unweathered schist ; schistosity dips 25-30 deg.		
	2	7.05	0 to 6	III	Thin, discontinuous colluvium over bedrock		B
			6 to 100	II	Chlorite schist and quartz schist, phyllitic limestone, and quartzite with schistosity dips 0 to 10 deg.		
	7.05	7.1	0 to 10	IV	Compacted to semi-compacted fill derived from local bedrock (schist and phyllitic limestone) or surficial material		B
			10 to 100	II	Unweathered schist; schistosity dips 0 to 10 deg		
	7.1	8.15	0 to 6	IV	Colluvium - platy rock fragments in finer-grained matrix. Wetlands from 7.1 to 7.2; MP 7.5; & MP 7.75.		B
			6 to 100	II	Schist with variable lithofacies; schistosity dips 0 to 10 deg		
	8.15	8.2	0 to 10	V	Alluvium (Pequea Creek valley)	Cultivated farmland	C
			10 to 15	III	Weathered limestone, schist and quartzite		
			30 to 100	II	Folded limestone, schist, phyllite and quartzite; schistosity dips gently 0 to 10 deg.		
	8.2	9.05	0 to 100	IV to V	Carbonate residuum in karst terrain.		C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of sinkhole locally is Class V.		
	9.05	9.15	0 to 6	III	Quartzite colluvium and bedrock. Colluvium is discontinuous.		B
			6 to 100	I to II	Quartzite and quartz schist. Possible contact with phyllitic limestone between 50 and 100 ft bgs.		
	9.15	9.25	0 to 100	V to IV	Carbonate residuum in karst terrain		C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V.		
	9.25	9.4	0 to 6	III	Quartzite colluvium and bedrock. Colluvium is discontinuous.		B
			6 to 100	I to II	Quartzite and quartz schist. Possible contact with phyllitic limestone between 50 and 100 ft bgs.		
	9.4	10.1	0 to 100	V to IV	Carbonate residuum in karst terrain		C
			0 to 100	II (rock) IV & V (soil)	Dolomite pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.		
	10.1	10.85	0 to 6	III	Quartzite colluvium and bedrock. Colluvium is discontinuous.		B
			6 to 100	I to II	Quartzite and quartz schist. Possible contact with phyllitic limestone between 50 and 100 ft bgs.		
	10.85	11.25	0 to 100	V to IV	Carbonate residuum in karst terrain. Wetlands at MP 11.0.		C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone and dolomite pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.		
	11.25	12.25	0 to 6	III	Quartzite colluvium and bedrock. Colluvium is discontinuous.		B
			6 to 100	I to II	Quartzite and quartz schist. Possible contact with phyllitic limestone between 50 and 100 ft bgs.		
	12.25	12.3	0 to 10	V	Alluvium (Conestoga River valley)		C
			10 to 100	II	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.		
	12.3	13.75	0 to 100	V to IV	Carbonate residuum in karst terrain. Wetlands at MP 12.65; Mp 13.25 to Mp 13.3; MP 13.6; MP 13.75.	Cultivated farmland	C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.		
	13.75	14.35	0 to 6	IV	Colluvium - platy rock fragments in finer-grained matrix. Wetlands at MP 13.75; MP 14.25 to MP 14.95.		B
			6 to 100	II	Schist with variable lithofacies; schistosity dips 0 to 10 deg		
			0 to 100	V to IV	Carbonate residuum in karst terrain. Wetlands at MP 14.25 to 14.95.		

SURFICIAL GEOLOGY (< 100 FT BGS) ALONG CPL-S, MP 0 - MP 46.7							
PIPELINE	FROM MILEPOST	TO MILEPOST	DEPTH INTERVAL (FT)	CLASS TYPE	COMMENTS	Notes	ASCE 7-10 SITE CLASS
CPL-S	14.35	14.55	0 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.	Cultivated farmland	C
	14.55	14.6	0 to 10	V	Alluvium and limestone colluvium mix (Indian Creek valley). Wetlands at MP 14.25 to 14.95.		C
			10 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.		
	14.6	14.8	0 to 100	V to IV	Carbonate residuum in karst terrain. Wetlands 14.25 to 14.95.	Cultivated farmland	C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Possible contact with schist (Class II) between 75 to 100 ft.		
	14.8	15.8	0 to 6	IV	Colluvium - platy rock fragments in finer-grained matrix. Wetlands from MP 14.25 to MP 14.95.		B
			6 to 100	II	Schist with variable lithofacies; schistosity dips 0 to 10 deg		
	15.8	18.6	0 to 100	V to IV	Carbonate residuum in karst terrain		C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone and dolomite pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V.		
	18.6	19.5	0 to 5	III to IV	Quartzite colluvium and weathered bedrock. Colluvium is discontinuous.		B
			5 to 100	I to II	Folded and faulted quartzite and quartz schist. Schistosity dipping 30 to 40 deg.		
	19.5	20.5	0 to 5	III	Weathered limestone, shale/phyllite and quartzite colluvium. Wetlands from 19.95 to 20.0.		B
			5 to 100	I to II	Folded and faulted dolomite, shale/phyllite, and quartzite. Bedding/schistosity dipping 30 to 50 deg		
	20.5	21.7	0 to 100	V to IV	Carbonate residuum in karst terrain. Wetlands from 21.15 to MP 21.2.	Mixed cultivated and suburban with forested quartzite ridge	C
			0 to 100	II (rock) IV & V (soil)	Phyllitic limestone pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Some open solution channels may be present locally above the water table.		
	21.7	23.4	0 to 5	V to III	Quartzite and quartz schist residum. Wetlands at MP 23.0.	Primarily suburban-wooded & non-cultivated	B
			5 to 100	II to I	Tightly folded quartzite and quartz schist and phyllite.		
	23.4	29.4	0 to 5	V to III	Carbonate residuum in karst terrain.	Mostly cultivated farmland; Chickies Creek alluvium over rock at 23.9 (10 ft thick)	C
			5 to 100	I to II	Pinnacles in folded and faulted carbonate bedrock interspersed with solution-enlarged fracture slots and soil-filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V. Some open solution channels may be present locally above the water table.		
	29.4	33.0	0 to 5	V to IV	Saprolite and weathered phyllite and shale with some shaly and quartzose sandstone between MP 29.4 and 31.0. Wetlands from MP 30.35 to 30.45; MP 31.2; MP 31.55; MP 32.25.	Mostly cultivated farmland; Back Run alluvium / colluvium over weathered rock at MP 31.25.	B
			5 to 20	IV to III			
			20 to 100	II to I	Folded and faulted phyllite with some shales and sandstone		
	33.0	33.2	0 to 10	V to IV	Saprolite of Mesozoic basal conglomerate.	Mostly cultivated farmland; alluvium/colluvium in Brubaker Run at MP 33.0	B
			10 to 100	III to I	Mesozoic basal sandstone conglomerate.		
	33.2	33.95	0 to 65	V to III	Saprolite of mudstone. Wetlands from MP 33.55 to 33.7.	Cultivated farmland	C
			65 to 100	II to I	Mudstone and shale interbedded with fine sandstone and arkosic sandstone		
	33.95	34.1	0 to 10	V to IV	Saprolite of Mesozoic basal conglomerate. Wetlands at MP 34.0 to 34.05.	Cultivated farmland; MP 33.8 R-O-W crosses regional diabase dike	B
			10 to 100	III to I	Mesozoic basal sandstone conglomerate.		

SURFICIAL GEOLOGY (< 100 FT BGS) ALONG CPL-S, MP 0 - MP 46.7							
PIPELINE	**FROM MILEPOST**	**TO MILEPOST**	**DEPTH INTERVAL (FT)**	**CLASS TYPE**	**COMMENTS**	**Notes**	**ASCE 7-10 SITE CLASS**
	34.1	36.75	0 to 65	V to III	Saprolite and alluvium (MP 34.5 and MP 36.1)) of mudstone and sandstone. Wetlands at MP 34.5; MP 36.1 to MP 36.2.	Cultivated farmland; crosses regional diabase dike at MP 34.7.	C
			65 to 100	II to I	Mudstone and shale interbedded with fine sandstone and arkosic sandstone. Rock is baked hard near diabase contact at MP 36.6.		
	36.75	37.25	0 to 100	III to I	Mesozoic diabase sill and dike. Variable depth to sound rock. Diabase that has been intensely decomposed often shows a profile of over 50 feet to a complete, solid bedrock. Wetlands at MP 37.1.	Forrested, rural land.	C
	37.25	40.8	0 to 30	IV to III	Saprolite of sandstone. Alluvium at MP 37.55, MP 37.8, & MP 39.5. Wetlands at MP 37.55 and MP 37.8; and MP 38.0 to MP 38.8; MP 39.5; and MP 40.55.	Cultivated farmland	C
			30 to 100	II to I	Coarse sandstone with shale and conglomerate interbeds. Rock is baked hard near diabase contacts at MP 37.5 and MP 40.5.		
	40.8	41.5	0 to 100	III to I	Mesozoic diabase sill and dike and hornfelsic sandstone. Variable depth to sound rock. Diabase that has been intensely decomposed often shows a profile of over 50 feet to a complete, solid bedrock. Wetlands at MP 41.15 & MP 41.25.	Forrested, rural land.	C
	41.5	42.0	0 to 5 ft	IV to III	Saprolite and residuuum of weathered Mesozoic conglomerate. Wetlands at MP 41.9.		B
			5 to 100	II to I	Very coarse quartz conglomerate. Border fault with Paleozoic baked carbonate rocks at MP 42.0.		
	42.0	46.7	0 to 100	V to IV	Carbonate residuum in karst terrain. Alluvium in stream channel at 46.65. Wetlands at MP 46.65.	Cultivated farmland; MP 46.0 to 46.5 developed. Limestone mines in proximity.	C
			0 to 100	II (rock) IV & V (soil)	Limestone and dolomite pinnacles interspersed with solution-enlarged fracture slots and soil- filled sink holes. Saturated soil at throat of soil-filled sink holes can be Class V.		

Class Types:			
I	hard rock	intact, high strength	UCS: 16-32 ksi
II	rock	low to moderate strength	UCS: 4 - 16 ksi
III	weathered rock / very stiff soil	weak, soil-like rock/ barely indented by thumbnail	UCS: <4 ksi
IV	stiff soil	imprinted under pressure by fingers or indented by thumbnail	
V	loose/soft soil	easily penetrated when rod pushed by hand; or pinched in two between thumb & forefinger	

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Transcontinental Gas Pipe Line Company LLC



Atlantic Sunrise Project



Karst Investigation and Mitigation Plan

DOCUMENT ID NO.								
Project ID		Area		Discipline		Document Type		Sequence No.
AS	-	00	-	GS	-	RPT	-	00005

Rev	Date of Issue	Reason for Issue	Prepared By	Checked By	Approved By
C	27 Jul 2015	Issued for Information	Aecom	LS/BE	MJH
B	02 Jun 2015	Issued for Information	Aecom	LS/BE	MJH
A	16 Feb 2015	Issued for Information	Aecom	LS/BE	MJH

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REVISION DESCRIPTION		
Section	**Paragraph**	**Description of Changes**

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EXECUTIVE SUMMARY

The Atlantic Sunrise Project (Project) will extend through areas underlain by carbonate bedrock formations which are susceptible to solutioning by groundwater. This solutioning can lead to the formation of subsurface voids into which the overlying soil material may erode, resulting in ground subsidence and irregular terrain which is often termed karst. The origin and nature of karst makes accurate predication of its occurrence and effects challenging. Different methodologies have been developed to assess the susceptibility of various carbonate formations relative to one another, termed relative risk, to develop karst features; however, no rigid or standardized guidelines have been established. Evaluation of relative risk is therefore made using professional judgment and experience based on assessment of the physical characteristics typically associated with karst terrain.

The relative risk of future karst occurrence is principally identified by two factors: geologic formation and incidence. The geologic community has long differentiated carbonate bedrock formations by the key chemical and physical conditions affecting karst development including mineral composition, purity of carbonate content, and bedding and fracture arrangement (which is the primary factor controlling the movement of groundwater and correspondingly, the patterns of solutioning within the bedrock). The natural variability of these conditions and their combined effects within a given formation are further affected by more localized variations in ground topography/drainage, bed and fracture orientation and weathering which, in turn, lead to variable density or patterns of past occurrence within the formation which is termed incidence. Incidence is primarily expressed as karst surface features including open and closed depressions, broad topographic troughs, and lineaments. Future karst features are more likely to develop in geologic formations that exhibit a higher incidence than those formations exhibiting lower incidence. Similarly, on a more local scale, areas within a given formation exhibiting a higher density or frequency of incidence possess a higher relative risk of future karst development.

From this understanding of relative risk, it is possible and appropriate to evaluate and categorize the relative risk of karst development within the ground that will support the Project. Categories of low, moderate and high relative risk for karst development were therefore established for the 27.8 mile-long portion of the Project that will cross carbonate bedrock formations. The presence and incidence of existing karst features, manifested as ground surface subsidence, were investigated and identified using geologic site reconnaissance and aerial photograph and LiDAR data evaluation. The cumulative densities of karst features identified from these investigation methods were then established for and compared between manageable (500 feet long) sections of the Project. Based on the geologic formation and review of karst incidence within each formation, the results of the relative risk evaluation indicate the following:

- High relative risk: 4.33 miles (15.6% of that portion of the Project crossing carbonate bedrock);
- Moderate relative risk: 7.75 miles (27.9% of that portion of the Project crossing carbonate bedrock); and
- Low relative risk: 15.69 miles (56.4% of that portion of the Project crossing carbonate bedrock)

Geophysical survey methods were used to provide a continuous survey of the subsurface soil and rock materials along the centerline of the Project alignment to identify potential features (anomalies) that could be the result of karst activity and, in the future, lead to future ground subsidence that could impact the Project. However, it should be noted that the absence of a well-defined geophysical anomaly does not eliminate the risk for future karst-related ground subsidence. This is particularly true for more deeply seated solution features as well as features in the earlier stages of development where the variations in physical properties of these features relative to the surrounding geologic materials may be too subtle to detect as distinct geophysical anomalies. Conversely, a detected geophysical anomaly may be present within non-karst conditions that are not associated with potential future ground subsidence. In summary, a detected geophysical anomaly identifies the location of a potential subsurface void feature but its occurrence does not by itself represent the likelihood or risk of the feature further developing and causing future ground subsidence.

The presence of geophysical anomalies detected during the geophysical survey effort are deemed to provide a secondary evaluation of relative risk as well as the locations of potential voids and other karst features for which mitigation may be required. Geophysical anomalies detected in sections of the Project having high relative risk would be expected to have a greater potential to further develop and cause future ground subsidence than geophysical anomalies detected in sections of moderate or low relative risk. Therefore, more robust mitigation measures will be implemented for anomalies located in high relative risk areas. In addition, because a significant percentage of subsurface anomalies were detected at locations of observed karst features in moderate risk areas, anomalies within moderate risk areas will also be further assessed for potential mitigation.

Mitigation measures have been developed for the Project in a tiered fashion consistent with the categories of low, moderate and high relative risk of future karst development established for the Project. In general, these measures are intended to (1) reduce the potential for storm water infiltration that could initiate or accelerate the development of karst conditions, (2) eliminate actual soft ground or void features associated with geophysical anomalies detected in relative high risk areas as confirmed and delineated during pre-design investigation (to be completed in support of the mitigation design) or during construction, and (3) provide for long-term monitoring to identify any potential developing karst features following the Project construction.

1.0 OVERVIEW

The planned alignment of the Atlantic Sunrise Project (Project) extends through areas of potential risk for ground subsidence associated with karst conditions. Karst terrains along the Project represent areas where the landscape has been shaped by the dissolution of soluble carbonate bedrock, thereby creating karst topography. Karst topography includes features such as sinkholes, surface and closed depressions and caves. Potential karst areas may include sections of the Project in Lancaster, Lebanon and Columbia Counties totaling approximately 27.8 miles of the proposed route as shown on **Figure 1-1** (attached) and summarized in **Table 1-1** (attached).

The majority of the Project within the karst areas extends across cultivated farm fields that generally exhibit rolling topography, although portions of the alignment within the karst areas also traverse wooded areas, streams, roadways and developed land. Sinkholes are typically more prone to form in topographically low areas because the concentration of surface water run-off provides a greater potential for infiltration and, in turn, increased flow into porous rock and open fractures where dissolution of the bedrock has been occurring. However, sinkholes can also develop on slopes underlain by inclined rock formations. Because the carbonate rock formations underlying these three counties are geologically old, and consequently are structurally complex, the spatial and geographic distribution of known karst features is variable, thereby requiring completion of the multi-faceted investigation summarized in this report.

1.1 General Discussion of Karst Conditions and Sinkhole Development

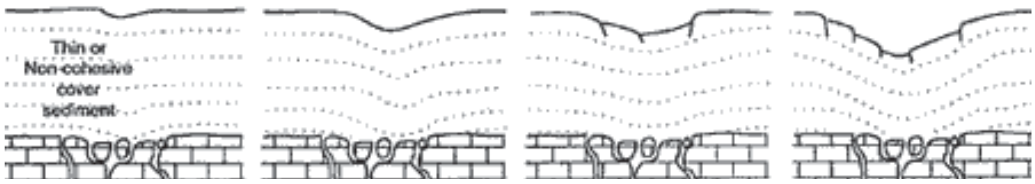
The project area is situated over karst terrain. Karst is the German form of the Slavic word "kras", which means a "bleak waterless place", and during the 19th century this term was given to a 500-meter high limestone plateau situated in Slovenia. Similar terrain has since been termed karst, which is defined as a type of topography that is formed over limestone, dolomite or gypsum by dissolving the carbonate content, and characterized by closed depressions or sinkholes, caves and underground drainage. An irregular bedrock surface is typical of most karst areas. Karst terrain ultimately owes its origins to the natural processes caused by solution and leaching of soluble rocks along joints and bedding planes.

Natural solution processes dissolve the limestone most rapidly at the surface, because the acidity of the water is greatest when it first encounters the rock. If the limestone or dolomite is situated near surface or exposed at the ground surface, water will flow over the surface until it encounters a fracture or joint and then it will drain downward into the opening. Preferential pathways for water infiltration are generally at the intersection of two fractures. As the acidified water flows through the limestone, it dissolves and widens the wall of the fracture through which it flows. Preferential pathways are widened most rapidly because more water flows through them. As they grow, they transmit more water and capture drainage from the smaller fractures permeating the surrounding rock mass. This self-accelerating process results in the formation of greatly enlarged vertical conduits that are termed solution pipes (also termed 'throats').

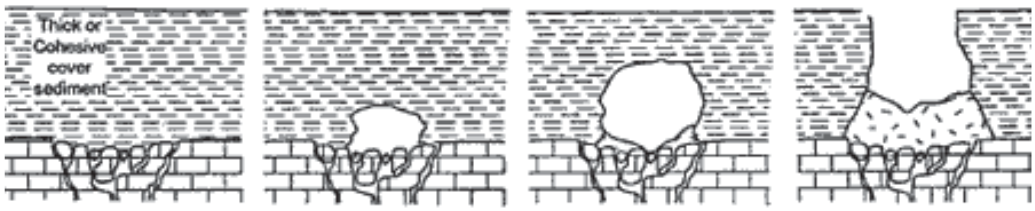
Sinkholes result from two different processes, either the transport of surficial materials downward along solution enlarged channels or the collapse of roofs over cavities. The converging flow of water toward and down the solution pipe(s) has the potential to erode the loose sediment above the pipe(s). As the unconsolidated materials erode down the solution pipe grain-by-grain, the cover soil above settles down to fill the void space. A cavity is never formed, but the sediments slowly eroded from beneath the ground surface causing slow, gradual settling of the ground. This is termed a cover subsidence sinkhole.

However, in areas where the cover sediments are cohesive, a soil cavity may form above the solution pipe in the limestone, and it may gradually enlarge upward as its roof continues to erode. More cohesive strata within the overburden sediments may temporally impede the upward erosion, causing the cavity to grow laterally with a flat roof. Eventually the upward erosion of this soil void may leave only a thin roof of sediments that are not strong enough to support their self-weight. The result is a sudden collapse that is termed a cover collapse sinkhole. However, the collapse scenario can be more innocuous. If the sediments covering the limestone are relatively non-cohesive, the soil cavity may erode upward rapidly without growing wider. As the roof of the cavity crumbles and sediments are deposited on the floor of the cavity, the cavity may simply migrate upward without increasing in size, like a bubble rising through liquid. When the cavity reaches the surface a small hole suddenly appears, and this is also termed a cover collapse sinkhole.

Figure 1-2 presents a typical schematic for the development of cover subsidence and cover collapse sinkholes.



Development of Cover Subsidence Sinkhole



Development of Cover Collapse Sinkhole

Figure 1-2: Generalized Profile of Sinkhole Development

2.0 INVESTIGATION APPROACH

Initial investigation of potential karst features has been completed where landowner access was obtained. The identified features have been categorized by general degree of relative risk and corresponding mitigation measures have been developed. The karst investigation approach utilized a combination of industry-accepted techniques implemented in complementary fashion to assess conditions that may be associated with future ground subsidence. Investigation methods included literature review of geologic setting, continuous remote sensing (i.e., surface geophysical surveys), observational methods including geologic site reconnaissance to identify nearby karst-related features (e.g., carbonate pinnacle outcrops and closed depressions) and aerial photograph and Light Detection and Ranging (LiDAR) data evaluation.

Although the investigative methods applied in this investigation use current industry-accepted tools, each tool has its limits of accuracy and precision. Geophysical surveys provide an interpreted, indirect graphical representation of a particular property of the subsurface. Anomalies in the geophysical signature of surface wave velocity or electrical resistance may represent more than one type of source feature. The resolution of historic aerial photographs varies with date and location of the fly-over due to seasonal effects and photographic specifications. The processed LiDAR is based on a Digital Elevation Model (DEM) with sensitive resolution, but DEMs have some degree of elevation inaccuracy due to elevations being averaged for each cell, therefore some actual depressions that are too shallow or too incipient may not be depicted, whereas, some depicted depressions may represent an unrelated surface condition. Ground reconnaissance can identify incipient features if they are not obscured by conditions on the ground at the time of the survey. For these reasons, multiple lines of evidence based on independent methods increases confidence in the thoroughness of the investigation, and thus the reliability of the results.

2.1 Karst Investigation

The karst investigation was designed and implemented to address the following objectives:

1. Obtain and evaluate information regarding the presence and frequency of existing visible ground subsidence features along those portions of the Project that overlie carbonate bedrock. This information was used to assess the risk for existing anomalous subsurface features (e.g., possible voids) to develop into future ground subsidence features (e.g., sinkholes) as further described in Section 5.0;
2. Conduct a geophysical survey to identify anomalous subsurface features that may require mitigation based on the risk of such features to develop into future ground subsidence features (e.g., sinkholes).

To address these objectives, the work scope of the karst investigation was completed under the following three general tasks: (1) geologic site reconnaissance and aerial photograph and LiDAR data evaluation; (2) geophysical survey and (3) evaluation of the investigation findings and development of recommended general mitigation measures, to the extent practicable. The approach and findings of these three tasks are presented below.

2.1.1 Task 1 - Aerial Photography, LiDAR, and Ground Reconnaissance Evaluation

To identify and assess the occurrence of existing visible ground subsidence features along those portions of the Project that overlie carbonate bedrock, Transco applied a multiple lines-of-evidence approach using the following non-intrusive methods:

1. Review of published literature and geologic maps together with aerial photograph evaluations using historic aerial photographs;
2. LiDAR imagery; and
3. Ground reconnaissance along the pipeline alignment.

The Project crosses eight (8) areas identified as underlain by potentially karstic geologic formations (U.S.G.S. OFR 2014-1156):

- Lancaster Carbonate Group (Conestoga Valley and Lititz Belts)
- Lebanon Valley Carbonate Belt
- Carbonates within the Hamburg Sequence (2 areas)
- Tully Limestone equivalent within the Hamilton Group (3 areas)
- Keyser-Tonoloway Formation carbonates (1 area)

The Tully Limestone equivalent of the Hamilton Group has not been differentiated as a mappable carbonate unit in the mapped areas of eastern Pennsylvania where the Project crosses the upper Hamilton Group. Heckel (1969) reported that the Tully “Limestone” equivalent in this region is composed of calcareous shale with more than 50% insoluble material and with shale and carbonate interbeds ranging from just inches to only one foot thick. Karst-related subsidence in the upper Hamilton Group Tully equivalent rocks has not been generally recognized in the Project area. Therefore, the three (3) Hamilton Group crossings are considered to constitute a very low risk of karst feature development.

Similarly, the carbonate units of the Hamburg Sequence are thin carbonate layers (inches to 1 foot) interbedded with calcareous and siliceous shales and argillaceous siltstones and sandstones (greywacke). These characteristics were confirmed by field investigations and rock core borings at the Swatara Creek crossing in Lebanon County which encountered no voids or cavities in the borings. Accordingly, it was concluded that there is a very low risk of karst feature development in the Hamburg Sequence crossed by the Project.

In view of the minimal risk of karst-related subsidence in the three Hamilton Group and the two Hamburg Sequence units, the desktop evaluation of karst terrains focused primarily on the Project route through the two carbonate belts of Lancaster County, Lebanon County, plus the Keyser–Tonoloway Formation in Columbia County.

Evaluation of Historic Aerial Photographs and Light Detection and Ranging (LiDAR) Maps

Historic aerial photographs dating from 1969 and 1970 were obtained from the Penn Pilot Project website through Pennsylvania State University. These photos were selected for evaluation because they recorded conditions that are more obscured by human land use development in the most recently available imagery. Complete aerial photo coverage of the Project route through the subject carbonate belts was examined stereoscopically for indications of pinnacles, grikes (or cutters), closed depressions, and collapsed sinkhole features. Observed features were compared with published sinkhole, cave, surface mines, springs, and closed depressions available from the Pennsylvania Geologic Survey of the Department of Conservation and Natural Resources (DCNR) from their Pennsylvania Spatial Data Access (PASDA) database. The variable resolution of the photographs contributes to variability in the number of potential depressions or sinkholes that could be identified. Tonal variations of soil areas were often identified. These variations indicate potential for karst features to be present today though not necessarily present in 1970. By comparing the observations from evaluation of aerial photographs with those of the LiDAR, geophysics, and ground reconnaissance, a high degree of congruence is considered significant evidence of a potential karst feature (PKF). The results are summarized in **Table 2-1** (attached) and discussed below in Section 4.0.

Potential subsidence or collapse features that developed between 1970 and the present were evaluated by review of high resolution LiDAR imagery from the PAMAP Program 3.2 feet DEM of Pennsylvania Department of Conservation and Natural Resources (PA DCNR, 2008). This dataset, produced by the PAMAP Program, consists of a raster DEM with a horizontal ground resolution of 3.2 feet. The model was constructed from PAMAP LiDAR elevation points. PAMAP data are organized into adjoining blocks (gaps or overlaps) that represent plan dimensions of 10,000 feet by 10,000 feet on the ground. The DEM was processed using slope shade and hillshade methods available using ArcGIS software. The scale of the LiDAR maps evaluated was 1:7,200 (1 inch equals 600 feet). The slope shade process enhances the contrast between steeply and gently sloped areas whereas the hillshade process replaces contour lines as the best way to visualize 3-D topographic surfaces, thereby allowing visualization of an elevation dataset as realistic images of the landscape. Although the karst areas evaluated consisted of mostly open farm land areas, the imagery is useful for areas where there are groves of trees as well as along stream and creek valleys. This information is therefore compared for congruence with aerial photo, geophysics, and ground reconnaissance. The results of the LiDAR evaluation are summarized in **Table 2-1** (attached) and discussed below in Section 4.0.

Ground Reconnaissance

Reconnaissance traverses along the project pipeline segments through the Lancaster, Lebanon, and Columbia County karst areas were conducted in April and May 2015, where property access was permitted, with the objective of identifying the presence/absence of the features observed on the aerial photographs and LiDAR maps. Features observed within 200 feet of the centerline were noted. The width of this study corridor was consistent with the width considered in the air photo and LiDAR map reviews. The results of the ground reconnaissance are summarized in **Table 2-1** (attached) and discussed below in Section 4.0.

2.1.2 Task 2 - MASW Geophysical Survey

Geophysical survey was completed to identify anomalous subsurface features that may be the locations of potential voids within the karstic, solution-prone carbonate bedrock that underlies the designated portions of the Project. The geophysical survey utilized the multichannel analysis of surface waves (MASW) method. The MASW method is a powerful tool for providing detailed, laterally continuous, 2-dimensional profiles of surface wave velocities of subsurface layers. In addition to providing information relative to subsurface layering, the MASW method is effective for detecting and delineating subsurface features associated with potential ground subsidence.

The MASW data are collected using manual impacts (shots) of a 10- to 16-pound sledgehammer on a metal plate as the seismic source for the MASW survey. Signal stacking from multiple shots are utilized at each location to increase the quality of the signal recorded at each shot location. The data are recorded using a Geometrics Geode 24-channel seismograph and a 24-phone land streamer with 4.5-hertz geophones. Lateral resolution of the MASW method is largely a function of the shot and geophone spacing. The planned survey design utilizes a 10-foot shot spacing and a 5-foot geophone spacing that is expected to provide lateral resolution in the range of 10 or more feet.

Transco collected positional data of surveyed locations of the geophysical transect lines. The positional data are collected using a Trimble ProXH global positioning system (GPS). Real-time differential corrections were provided by the Wide Area Augmentation System, where the resulting differential GPS have a horizontal accuracy of approximately 3 feet.

Approximately 15.5 miles of MASW data have been collected as summarized in **Table 2-2** below. Collection of MASW data is complete where survey access has been granted. MASW data will be collected on the alignment through the remaining parcels (up to 12.3 miles) as survey access becomes available.

Table 2-2: Summary of MASW Survey Performed

County	Alignment	Beginning Mile Post	Ending Mile Post	Linear Distance Covered (Miles)
LANCASTER				
	CPLS	7.10	7.12	0.02
	CPLS	7.44	7.46	0.02
	CPLS	7.49	7.65	0.16
	CPLS	7.65	7.70	0.05
	CPLS	7.70	7.74	0.04
	CPLS	7.74	7.77	0.02
	CPLS	8.04	8.07	0.04
	CPLS	8.23	8.29	0.06
	CPLS	8.29	8.50	0.21
	CPLS	8.50	8.67	0.17
	CPLS	9.54	9.56	0.02
	CPLS	9.64	9.68	0.04
	CPLS	9.68	9.87	0.19
	CPLS	9.90	9.92	0.03
	CPLS	9.99	10.07	0.09
	CPLS	10.66	10.67	0.01
	CPLS	10.68	10.80	0.11
	CPLS	10.83	10.87	0.04
	CPLS	10.91	10.91	0.01
	CPLS	10.93	11.08	0.16
	CPLS	12.43	12.73	0.30
	CPLS	12.75	13.10	0.35
	CPLS M-0152	0.00	0.01	0.01
	CPLS M-0152	0.05	0.08	0.03
	CPLS	14.65	14.72	0.07
	CPLS	14.72	14.83	0.11
	CPLS	15.80	16.06	0.26
	CPLS M-0185	0.00	0.08	0.08
	CPLS M-0185	0.11	0.15	0.04
	CPLS	16.31	16.60	0.29
	CPLS	17.14	17.23	0.09
	CPLS	17.26	17.43	0.17
	CPLS	17.43	17.48	0.04
	CPLS	17.48	17.70	0.22
	CPLS	17.70	17.82	0.12
	CPLS	17.86	18.09	0.23
	CPLS	18.12	18.26	0.14
	CPLS	18.29	18.64	0.36
	CPLS	18.76	18.83	0.06
	CPLS	18.85	18.93	0.07
	CPLS	19.51	19.55	0.04
	CPLS	19.55	19.76	0.20
	CPLS	19.76	19.79	0.04
	CPLS	20.05	20.19	0.14
	CPLS	20.19	20.25	0.06
	CPLS	20.25	20.31	0.06
	CPLS	20.54	20.61	0.07
	CPLS	20.65	20.71	0.06
	CPLS	20.71	20.80	0.08
	CPLS	20.83	20.84	0.01
	CPLS	20.84	21.12	0.29
	CPLS	21.15	21.32	0.17
	CPLS	21.32	21.34	0.02
	CPLS	23.48	23.57	0.09
	CPLS	23.60	23.76	0.16
	CPLS	23.76	23.88	0.12
	CPLS	23.93	24.14	0.22
	CPLS	24.19	24.31	0.12
LANCASTER	CPLS	24.31	24.46	0.15
	CPLS	24.50	24.64	0.15
	CPLS	24.64	24.81	0.17
	CPLS	24.81	25.29	0.48
	CPLS	25.29	25.31	0.02
	CPLS	25.38	26.07	0.69
	CPLS	26.09	26.55	0.46
	CPLS	26.58	26.77	0.18
	CPLS	26.86	27.31	0.45
	CPLS	27.31	27.37	0.06
	CPLS	27.62	27.70	0.08
	CPLS	27.70	27.91	0.21
	CPLS	28.09	28.12	0.03
	CPLS M-0162	0.00	0.03	0.03
	CPLS M-0162	0.03	0.20	0.17
	CPLS M-0162	0.20	0.22	0.02
LEBANON	CPLS	42.06	42.09	0.03
	CPLS	42.12	42.46	0.34
	CPLS	42.65	42.96	0.31
	CPLS	42.96	43.13	0.17
	CPLS	43.13	43.19	0.06
	CPLS	43.19	43.20	0.01
	CPLS	43.23	43.44	0.20
	CPLS	43.44	44.33	0.89
	CPLS	44.45	44.58	0.12
	CPLS	44.58	44.76	0.19
	CPLS	44.79	44.95	0.16
	CPLS M-0183	0.96	0.97	0.02
	CPLS M-0183	1.13	1.15	0.02
	CPLS M-0183	1.34	1.42	0.08
	CPLS M-0183	1.42	1.50	0.08
	CPLS	48.72	48.75	0.02
	CPLS	48.83	48.85	0.02
	CPLS	48.96	49.01	0.05
	CPLS	49.13	49.20	0.07
	CPLS	51.49	51.56	0.06
	CPLS M-0165	0.00	0.07	0.07
	CPLS M-0165	0.17	0.26	0.09
COLUMBIA	CPLS	94.23	94.25	0.02
	CPLS	94.38	94.40	0.02
	CPLS	101.70	101.71	0.02
	CPLS	101.75	101.81	0.05
	CPLS	102.06	102.16	0.09
	CPLS	102.16	102.20	0.05
	CPLS	102.40	102.42	0.02
	CPLS	102.44	102.58	0.14
	CPLS	103.06	103.38	0.31
	CPLS	103.38	103.47	0.09
	CPLS	103.66	103.68	0.02
	CPLS	103.94	103.95	0.01
	CPLS	104.65	104.72	0.07
	CPLS	113.10	113.31	0.20
	CPLS	113.35	113.41	0.06
	CPLS	113.45	113.48	0.02
	CPLS	113.56	113.79	0.23
	CPLS	113.82	114.04	0.22
	CPLS	114.04	114.21	0.17
	CPLS	114.73	115.19	0.46
	CPLS	115.19	115.40	0.21

CPL South Total 15.5

**Linear Distances calculated using MASW line lengths*

2.1.3 Task 3 - Evaluation and Reporting

Findings of the aerial photography, LiDAR and ground reconnaissance efforts and results of the geophysical survey have been evaluated with respect to potential future ground subsidence and its impact to the Project. The results are summarized and presented Sections 3 and 4 this report, respectively.

3.0 AERIAL PHOTOGRAPH/LIDAR/GROUND RECONNAISSANCE EVALUATION AND RESULTS

3.1 Investigation Program

The investigation program of the three karst terrains noted in Section 2.1.2 was conducted during the period from January through early June 2015. Initially, evaluation was conducted during the winter months using remote sensing techniques comprised of historic aerial photographs. LiDAR imagery along the Project alignment was performed separately afterward. The span of the desktop evaluation was limited to 200 feet on either side of the Project centerline.

Where property access permission existed at the time of the survey, ground reconnaissance was conducted along the Project centerline to observe evidence of karst-related subsidence or cover-collapse over sinkholes. Ground reconnaissance will also be conducted on Project tracts as future access becomes available. Recent aerial digital imagery and field GPS instruments were used to guide the longitudinal ground reconnaissance survey along the survey corridor.

3.2 Evaluation Results

The carbonate bedrock surface of Lancaster and Lebanon Counties typically exhibits classic karstic characteristics. These characteristics vary between formations because certain formations exhibit a relatively higher density of closed soil depressions compared with others (e.g., Kochanov and Reese, 2003). The historic aerial photographs revealed many cultivated areas traversed by the centerline exhibiting mottled soil patterns indicative of variable soil moisture retention and drainage that is characteristic of carbonate bedrock terrain. The LiDAR maps qualitatively revealed a relatively high degree of correspondence between areas with many depressions and areas exhibiting strongly mottled soil. The ground reconnaissance revealed some small recent soil collapse features too small to detect from the aerial photographs or LiDAR maps. Potential stream capture by underground solution channels is suggested by the presence of dry stream channels at two channel crossing in the area between MP-17 to 18.

The results of the survey have been summarized in **Table 3-1** (attached). Interpreted geologic features have been categorized relative to potential active karst (potential soil collapse into a depression or trough), inactive karst (closed depressions where potential soil collapse was not discerned on the imagery or during ground reconnaissance), and other features (i.e. the potential for karst subsidence is unrelated or uncertain). Sinkholes and depressions mapped by the Pennsylvania Geological Survey were incorporated to the evaluation for completeness. The observations which intersect the Project centerline or impinge within approximately 200 feet to either side of the centerline, are depicted on the MASW geophysical survey profiles which are presented as **Figures 3-1** through **3-40** (attached).

4.0 GEOPHYSICAL FIELD INVESTIGATION AND RESULTS

4.1 Geophysical Field Investigation Program

MASW survey was completed along all accessible portions of the identified karst areas where property access agreements had been secured. Additional MASW surveying is planned to be completed across the remainder of the identified karst areas upon acquiring applicable agreements for property access. The MASW survey was completed between February 2 and May 20, 2015. The results of the investigation are included in this report. Further details of their work are provided in a separate geophysical report included as **Appendix A**.

4.2 Geophysical Results

The results of the MASW survey are presented as color-enhanced 2-D shear wave velocity profiles included as **Figures 3-1** through **3-40** (attached). The locations of potential karst features (PKFs) identified from the ground reconnaissance surveys are annotated on the respective figures. Logs of limited geotechnical borings completed along the alignment are also annotated on the profiles.

The calculated shear wave velocities generally range from about 500 feet per second (ft/s) to 3,000 ft/s. Based on correlation to the results of the limited borings and seismic refraction surveying, the transition from soil to rock is interpreted to typically occur in the range of 1,200 ft/s but is expected to vary across the alignment and with rock type. Shear wave velocities below 1,200 ft/s are interpreted to represent near surface soils, highly weathered rock, or void space. Shear wave velocities greater than 1,200 ft/s are interpreted to represent moderately weathered to competent bedrock.

The modeled results indicate an interpreted uneven and variable bedrock surface commonly characteristic of karst terrain. Karst environments may consist of bedrock pinnacles, solution-enlarged joints, weathered rock, small and large voids or cavities and other complex geologic features.

Identified anomalies are annotated on the figures and summarized in **Table 3-1** (attached). For the purposes of this investigation, the identified anomalies of concern have been classified into four categories including:

1. Potential Karst Feature – Localized;
2. Potential Karst Feature – Zone;
3. Potential Karst Rock Pinnacle; and
4. Potential Bedrock Discontinuity.

The classification of Potential Karst Features (PKFs) as localized (relatively limited extent) versus zones (broader extent) is based on the indicated extent longitudinally along the respective MASW profile. It should be noted that the extents of identified features are expected to vary outward (i.e. laterally) from the axis of the profile.

5.0 RELATIVE KARST RISK EVALUATION

The origin and nature of karst makes accurate predication of its occurrence and effects challenging. Different methodologies have been developed to assess the susceptibility of various carbonate formations relative to one another, termed relative risk, to develop karst features; however, no rigid or standardized guidelines have been established. Evaluation of relative risk is therefore made using professional judgment and experience based on assessment of the physical characteristics typically associated with karst terrain.

The relative risk of future karst occurrence is most identified by two factors: geologic formation and incidence. The geologic community has long differentiated carbonate bedrock formations by the key chemical and physical conditions affecting karst development including mineral composition, purity of carbonate content, and bedding and fracture arrangement (which is the primary factor controlling the movement of groundwater and, in turn, the patterns of solutioning within the bedrock). The natural variability of these conditions and their combined effects within a given formation are further affected by more localized variations in ground topography/drainage, bed and fracture orientation and weathering which, in turn, lead to variable density or patterns of past occurrence within the formation. This natural variability is termed incidence, which is primarily expressed as karst surface features including open and closed depressions, broad topographic troughs, and lineaments. Future karst features are more likely to develop in geologic formations that exhibit a higher incidence than those formations exhibiting lower incidence. Similarly, on a more local scale, areas within a given formation exhibiting a higher density or frequency of incidence possess a higher relative risk of future karst development.

The analyses of the relative karst susceptibility with respect to the geologic units and proximity to existing karst features (occurrence) are detailed below in sections 5.1 and 5.2, respectively. The results of the analyses provided a means of scoring the relative karst susceptibility and occurrence which are presented as **Tables 5-1** and **5-2** (attached), respectively. The scores were subsequently summed to provide an overall evaluation of the relative risk for development of karst related subsidence discussed in Section 5-4 and summarized in **Table 5-5** (attached).

5.1 Geology Category (Susceptibility)

Geologic formations have varying levels of karst susceptibility. For example, a massively bedded relatively pure crystalline limestone may generally be less susceptible to the development of karst compared to a more thinly bedded limestone interbedded with shale due to increased groundwater flow. The evaluation of the relative susceptibility of the geologic units to karst development within portions of the Project alignment crossing through identified karst areas consisted of quantifying the relative density of identified karst features within the applicable portions of the published geologic map outcrop areas of each of the respective geologic bedrock units.

The count of karst features included features identified based on the results of the aerial photograph, LiDAR, and ground reconnaissance evaluations discussed in Section 4 above as well as the partial inventory of karst features from the PA DCNR, 2007 point dataset. The relative

density of karst features was calculated based on the number of features divided by the outcrop area of the respective geologic units within the Pennsylvania counties where karst feature mapping data is available.

The results of the relative susceptibility to karst development by geologic unit based on density of features are summarized in **Table 5-1** (attached). From this relative susceptibility evaluation we assigned scores of 1, 3, 6, 9 and 12 for the lowest to highest relative karst susceptibility per geologic unit. The five scoring values are based on evaluation of the relative density distribution using the natural breaks (Jenks) classification, which is a data clustering method specifically designed to determine the best arrangement of values into different classes and is widely used in the evaluation of GIS datasets.

These results indicate that the Stonehenge, Richenbach, Milbach and Schaefferstown, Epler Formation and Millbach Formations are characterized by the highest relative susceptibility to karst development. The units characterized by the lowest relative susceptibility include the Keyser, Cocalico, Harpers, Antietam, Hamburg Sequence, Onandaga and Old Port, Wills Creek, Bloomsburg and Mifflintown, Octoraro, Harrell, Bloomsburg, Onondaga, Hammer Creek, Hammer Creek Conglomerate, Chickies, Trimmers Rock, Limestone of Hamburg Sequence and Clinton Group formations.

The results of the relative susceptibility of karst development by stationing along the alignment are provided as **Table 5-2** (attached). The results indicate that of the 27.8 miles of the alignment and re-located sections, approximately 7 miles of the alignment extends through areas characterized by the lowest relative susceptibility of karst (score of 1) while approximately 6.5 miles of the alignment extends through areas characterized by the highest relative susceptibility of karst (score of 12).

5.2 Proximity to Existing Karst Features Category (Occurrence)

Sinkholes are most likely to occur in regions where sinkholes have occurred before. Spatial distribution of sinkhole locations may indicate that locations are clustered, and an interaction exists between them. Therefore, an area where a new sinkhole is more likely to develop is delineated within the radius of interaction from all sinkholes in the cluster. The evaluation of the relative occurrence of karst features is based on an assessment of the density of mapped karst features within a series of windows (400 feet wide by 500 feet long) centered on the centerline of the alignment. The density is based on karst features from the PA DCNR, 2007 data set as well as those identified from the Transco desktop and site recon studies. The selected 400 feet wide window corresponds to the corridor width of the ground reconnaissance survey. The 500 feet length is a reasonable match to the width while also keeping corridors at a manageable size relative to implementing the applicable risk mitigation measures.

For the relative occurrence evaluation, scores of 1, 3, 6, 9 and 12 were assigned for the corresponding lowest to highest relative karst occurrence within each window. The five scoring divisions were based on evaluation of the relative occurrence distributions using the natural breaks (Jenks) classification.

The results of the relative occurrence evaluation by stationing along the alignment are provided as **Table 5-3** (attached). The results indicate that of the 27.8 miles of the alignment and re-route sections, approximately 19 miles of the alignment extends through areas characterized by the lowest relative occurrence of karst (score of 1) while approximately 1.2 miles of the alignment extends through areas characterized by the highest relative occurrence of karst (score of 12).

5.3 Geophysical Anomalies

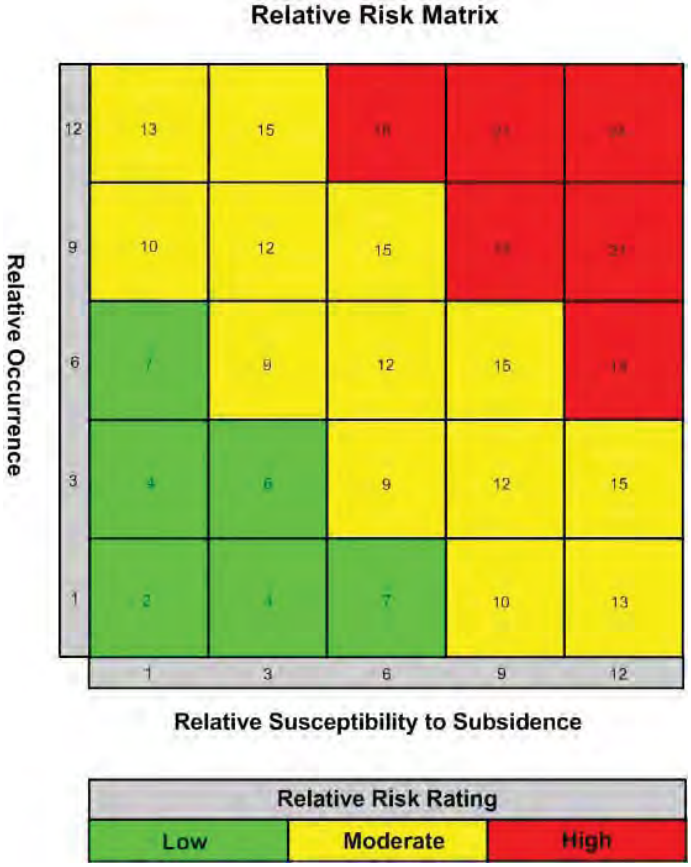
Geophysical results are indicative of subsurface conditions and provide a means of delineating anomalies that represent variable conditions with respect to the general condition. These anomalies can indicate potential voids and other karst features. However, it should be noted that the absence of a well-defined geophysical anomaly may not necessarily discount the potential for risk for future karst-related ground subsidence. This is particularly true for more deeply seated solution features as well as subsidence features in the earlier stages of development where the variations in physical properties of these features relative to the surrounding geologic materials may be too subtle to resolve as distinct geophysical anomalies. Conversely, a detected geophysical anomaly may be present within non-karst conditions that are not associated with potential future ground subsidence. In summary, a detected geophysical anomaly identifies the location of a potential subsurface void feature but does not indicate the likelihood or risk of the feature further developing and causing future ground subsidence.

However, as discussed in Section 5.5 below, the presence of geophysical anomalies are deemed to provide a secondary evaluation of relative risk as well as the locations of potential voids and other karst features, and will therefore be considered as a factor in the designation of karst mitigation measures as discussed in Section 6.

5.4 Relative Karst Risk

The scores of the geology (susceptibility) category and the proximity to existing karst features (occurrence) category were summed to provide an overall evaluation of the relative risk for development of karst-related subsidence. The relative risk scoring is system is summarized in matrix provided as **Table 5-4** below and consists of three categories of relative risk designated as high, medium and low.

Table 5-4 Relative Risk Scoring System



The results of the primary relative risk evaluation are provided as **Table 5-5** (attached). The results indicate that the approximately 27.8 miles of designated karst is divided into the following relative hazard rankings:

- High Relative Risk: 4.33 miles (15.6% of alignment in karst areas)
- Moderate Relative Risk: 7.75 miles (27.9% of alignment in karst areas)
- Low Relative Risk: 15.69 miles (56.4% of alignment in karst areas)

5.5 Secondary Risk Evaluation By Geophysical Anomalies

In addition to identifying the locations of potential subsurface voids or other karst features, the results of the geophysical investigation are deemed to provide a secondary means of evaluating the relative risk of development of karst related subsidence. **Table 3-1** (attached) provides a summary of the geophysical anomalies. The presence of geophysical anomalies within the designated high relative risk areas is somewhat expected. However, the presence of identified anomalies within the low relative risk zones represents an elevated level of interest and where deemed warranted will trigger an elevated level of mitigation in respective low relative risk areas.

The secondary risk evaluation will guide additional intrusive investigations with the objective of further characterizing identified potential karst-related features. This investigation will aid in further evaluating mitigation measures to be implemented for the project. The intrusive investigation will consist of probe hole drilling using air-track drilling. The investigation will include probe hole drilling at geophysical anomalies identified as potential karst features (excluding pinnacles) that are located within the high relative risk zones. The intrusive investigations may be further supplemented by non-intrusive methods including microgravity, particularly in areas where existing surface conditions such as dense vegetation or wet conditions may preclude access with the air-track drill rig. Additional investigation of anomalies within the moderate relative risk zone will also be conducted to further evaluate if they represent features that pose a significant additional risk that is not sufficiently addressed using the mitigation measures applicable to the moderate relative risk areas.

Site-specific mitigation measures, commensurate with the features identified in the Secondary Risk Evaluation, will be provided in the Implementation Plan prior to construction. Also, a Karst Monitoring Plan will be established based on site-specific conditions encountered during construction. This Plan will include type, location and frequency of monitoring measures and will be available immediately following construction.

6.0 MITIGATION

Mitigation measures have been developed for the Project in a tiered fashion consistent with the categories of low, moderate and high relative risk of future karst development established for the Project. In general, these measures are intended to (1) reduce the potential for storm water infiltration that could initiate or accelerate the development of karst conditions, (2) eliminate actual soft ground or void features associated with geophysical anomalies detected in relative high risk areas as confirmed and delineated during pre-design investigation (to be completed in support of the mitigation design) or during construction, and (3) provide for long-term monitoring to identify any potential developing karst features following the Project construction. These measures are further described below.

6.1 General Mitigation Measures

The various data sets collected from the initial and planned additional karst investigation will be evaluated and compared to identify, classify and delineate PKFs. Consistent with the site-specific subsurface conditions identified by these investigation efforts, the construction type (thick-walled steel pipe) and industry-standard methods for addressing carbonate bedrock, the following general measures will be incorporated into the Project design and implementation for the entire section of the alignment that will extend across carbonate bedrock:

- Design the pipeline to maximize its intrinsic ability to span sinkhole features. See Appendix B (Freespan Assessment) for engineering analysis of the pipeline spanning capability.
- Minimize the extent and time that open-cut trench excavations are left open, to the extent practicable.

- Reduce the potential for surface water run-on and ponding in open trenches. Direct surface water runoff away from work areas, and remove ponded water from open excavations as soon as practicable. Standard erosion & sediment control best management practices (BMPs) that will be implemented during the construction (e.g., upslope diversion berms, bypass flumes) will provide for this surface water control.
- For each stream crossing located within the limits of carbonate bedrock, Transco will evaluate during the design phase of the Project the geologic and geotechnical characteristics at the crossing and develop special care procedures to be implemented during pipeline construction including the placement of low-permeability backfill soil or a geosynthetic barrier (e.g., geosynthetic clay liner) beneath the pipeline to limit surface water infiltration.
- Perform visual monitoring of the alignment on a regular basis during construction to observe for signs of potentially developing sinkhole features. If found, these features will be monitored on a more frequent/enhanced basis. In addition, measures may be implemented to further evaluate the features (e.g., settlement monitoring via fixed survey points) and, based on evaluation results, perform remediation of these features as needed.
- Where shallow bedrock is found to be present near a shallow PKF that may require blasting during pipeline construction, Transco will work closely with its licensed blasting contractor to utilize blasting procedures and a site-specific blasting plan for such locations that consider the presence of shallow PKFs. If necessary, measures other than blasting (e.g., expansive grouts, mechanical excavation, etc.) will be implemented.
- A qualified geotechnical engineering firm that is familiar with the subsurface conditions and the construction mitigation measures associated with karst features will provide full-time construction monitoring during sinkhole mitigation and open-cut trench construction within and in the vicinity of each PKF to minimize the potential for a PKF to affect pipeline integrity. Owing to the nature of karst terrain combined with the daily logistics of the construction, it is not possible to identify all site-specific measures that may be needed to properly mitigate PKFs and other karst features (e.g., sinkholes) encountered during construction. Accordingly, the field professional(s) conducting the construction monitoring will be knowledgeable and experienced in identifying and providing technical guidance for mitigating such karst features.

6.2 Areas With Low Relative Risk

The areas discussed in Section 5 and summarized in **Table 5-5** (attached) as Low Relative Risk are believed to have low susceptibility to the development of karst conditions. Long-term monitoring will be in accordance with the Karst Monitoring Plan. The general mitigation activities listed above will be implemented.

6.3 Areas With Moderate Relative Risk

The areas discussed in Section 5 and summarized in **Table 5-5** (attached) as Moderate Relative Risk are believed to have moderate susceptibility to the development of karst conditions. The

general mitigation activities as necessary listed above will be implemented. No additional measures will likely need to be implemented for these areas prior to construction. During construction, low-permeability pipeline trench backfill comprised of compacted clayey soil, 'flowable fill' or compacted, bentonite-amended sandy soil may need to be utilized if shallow karst conditions are encountered. The construction documents will detail the preparation and placement of these low-permeability materials which will involve the use of conventional earthwork equipment; no specialized equipment will be necessary. Following construction, long-term settlement monitoring should also be conducted in these areas consisting of a site walk and recording field observations of any developing subsidence features in proximity of the Project.

6.4 Areas With High Relative Risk

The areas discussed in Section 5 and summarized in **Table 5-5** (attached) as High Relative Risk are believed to have a high susceptibility to the development of karst conditions. The general mitigation activities as necessary listed above will be implemented. In addition, the following mitigation measures may be implemented as appropriate:

6.4.1 Shallow PKF Mitigation Measures

In general, shallow potential PKFs are expected to have greater potential to affect pipeline integrity than deep PKFs. Accordingly, shallow PKFs may need to be mitigated. For mitigation, the lateral limits of each shallow PKF will be delineated during construction by a combined use of probing (e.g., with excavator bucket) along the bottom of the trench and visual observation methods. Once the limits of each shallow PKF have been established, appropriate shallow PKF mitigation measures may need to be implemented that may include excavating and plugging with grout a sinkhole 'throat' (i.e., a solution-enlarged conduit commonly filled with soil that extends down into possibly a larger open cavity in the carbonate bedrock below), excavating and fracture filling, or excavating and replacing with low-permeability backfill.

6.4.2 Deep PKF Mitigation Measures

At deep PKF locations, the potential for further sinkhole formation along the pipeline alignment will be addressed prior to pipeline installation. This will be accomplished by initially completing investigation at each deep PKF location to better understand the extent of the PKF and its site-specific subsurface conditions, including soil type and relative density/strength, depth to groundwater, and depth to bedrock. Such investigation is expected to include air-track probing, geotechnical test borings, and geophysical survey. Results of the PKF-specific investigation will be evaluated relative to soil and groundwater characteristics to assess the need for and type of specific mitigation measures to be implemented prior to pipeline installation. In the event that mitigation of deep PKFs becomes necessary, one or more of the following measures would be considered:

- Compaction grouting of loose/soft subsoils - inject highly viscous (low-mobility) grout into subsoils with pressure to displace and densify the surrounding soils. Depending on the depth and extent of soils to be mitigated, design of the compaction grout measures may include proof-test compaction grouting to better understand soil behavior.

- Supporting the pipe with a concrete cradle capable of spanning an extended area - provide a concrete cradle to support the pipe for the case where soils underlying the pipe may subside and therefore cannot provide reliable bearing support to the pipe above.
- Long-term settlement monitoring utilizing fixed survey points - install fixed survey monuments near the pipe and survey them periodically for evidence of long-term settlement. The details of this settlement monitoring would be provided in the Karst Monitoring Plan.

In addition, as described above for areas of relative moderate risk, pipeline trench backfill comprised of compacted clayey soil, 'flowable fill' or compacted, bentonite-amended sandy soil may be utilized and long-term settlement monitoring consisting of a site walk and recording field observations of any developing subsidence features in proximity of the pipeline may need to be implemented.

Following the completion of any PKF mitigation found to be necessary, backfilling of the pipeline trench will be completed such that the compacted backfill surface is crowned (if permissible by landowners) and sealed with low-permeability soils to promote positive drainage of surface water run-off away from the area. Similarly, final grading may need to be completed to provide for positive drainage of run-off. All disturbed areas will be restored consistent with existing land use.

7.0 PATH FORWARD

The sites that did not have property owner access granted at the time of the site reconnaissance will be evaluated in the same manner as the sites described in this report as property access becomes available. The investigation and mitigation plan for the additional sites will be provided as an addendum to this report. In addition, Transco is in the process of implementing an additional intrusive investigation program to validate and delineate identified potential karst-related features in areas of high relative karst risk. The additional intrusive investigation will consist of probe hole drilling using air-track drilling. Based on the findings of the air-track drilling, additional intrusive investigation via test borings and/or non-intrusive methods (including microgravity) may be implemented. The non-intrusive methods may be especially necessary in areas where existing surface conditions such as dense vegetation or wet conditions may preclude access with the air-track drill rig.

Site-specific mitigation measures, commensurate with the features identified in the additional intrusive investigation program, will be provided in the Implementation Plan prior to construction. Also, the Karst Monitoring Plan will be written with baseline conditions established during construction. This Plan will include type, location and frequency of monitoring measures and will be available during and following construction.

8.0 REFERENCES

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The attachments to this report are too voluminous to include in this document. They are available for viewing on the Federal Energy Regulatory Commission's website at http://www.ferc.gov. Using the "eLibrary" link, select "General Search" from the eLibrary menu, enter the selected date range and "Docket No." excluding the last three digits (i.e., CP15-138), and follow the instructions. For assistance please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact 202-502-8659. The Category/Accession number for this submittal is 20150729-5077.

APPENDIX K

WATERBODY TABLES

TABLE K-1

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
PENNSYLVANIA									
CPL North									
Pipeline Facilities									
WW-T02-15002	UNT to Fishing Creek	0.6	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15004	UNT to Fishing Creek	0.9	NA	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T02-15006	UNT to Fishing Creek	1.2	12	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15007/ WW-RS- 15006	Fishing Creek	1.3	68	Perennial	Intermediate	CWF, MF	Approved Trout Waters, Wild Trout Waters	Jan. 1–Sept 30	Dam-and-pump
WW-T02-15008	UNT to Coles Creek	2.0	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15009	UNT to Coles Creek	2.3	NA	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T02-15010	Hess Hollow	2.9	≤ 5	Perennial	Minor	CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Wet open cut
WW-T02-15011	UNT to Hess Hollow	2.9	≤ 5	Perennial	Minor	CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T02-15013	UNT to Coles Creek	3.4	10	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15014	Ashelman Run	3.8	10	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15012C	UNT to Coles Creek	4.1	6	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15012	Coles Creek	4.1	24	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15016	Marsh Run	5.1	19	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T02-15017	Maple Run	6.0	13	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume
WW-T02-15017A	UNT to Maple Run	6.0	≤ 5	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T02-15018	Kitchen Creek	7.3	8	Perennial	Minor	HQ-CWF, MF	Approved Trout Waters, Class A Wild Trout Waters	April 2–Sept 30	Wet open cut
WW-T24-15001	Crooked Creek	7.5	30	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T02-16001	UNT to Phillips Creek	9.2	≤ 5	Intermittent	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T02-16002	Phillips Creek	9.3	22	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T05-16003	Lick Branch	10.2	8	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume
WW-T11-16001D	UNT to Arnold Creek	11.2	5	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T11-16001	Arnold Creek	11.2	20	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T11-16001B	UNT to Arnold Creek	11.2	NA	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	NA
WB-T13-16002	UNT to Shingle Run	11.5	NA	Pond	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	NA
WW-T13-16002	UNT to Shingle Run	11.8	≤ 5	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume
WW-T13-16001	Shingle Run	12.2	22	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T05-16002	UNT to Mitchler Run	12.9	17	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T05-16001	Mitchler Run	13.1	15	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T05-16001A	UNT to Mitchler Run	13.1	≤ 5	Ephemeral	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T03-16003C	UNT to Huntington Creek	13.9	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Conventional bore
WW-T03-16004	UNT to Huntington Creek	13.9	NA	Intermittent	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T03-16003F	UNT to Huntington Creek	14.4	NA	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	NA

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T03-16003B	Huntington Creek	14.5	25	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T03-16003	UNT to Huntington Creek	14.5	16	Ephemeral	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T03-16002A	UNT to Huntington Creek	14.9	≤ 5	Intermittent	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T03-16002	UNT to Huntington Creek	15.0	≤ 5	Ephemeral	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T03-16001	Fades Creek	15.8	18	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T03-17008	Pikes Creek	16.6	14	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Conventional bore
WW-T03-17007	UNT to Pikes Creek	16.7	≤ 5	Ephemeral	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume
WB-T03-17002	Unnamed pond (contiguous with Paint Spring Run)	17.2	17	Pond	Intermediate	None	None	Year-round	Dam-and-pump
WW-T03-17006	UNT to Paint Spring Run	17.2	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T03-17005	Paint Spring Run	17.6	0	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T03-17004	Harveys Creek	18.1	43	Perennial	Intermediate	HQ-CWF, MF	Approved Trout Waters, Wild Trout Waters	Jan. 1–Sept 30	Dam-and-pump
WW-T03-17003	UNT to Harveys Creek	18.8	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T03-17001	UNT to Harveys Creek	19.4	12	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T03-17002	UNT to Harveys Creek	19.8	≤ 5	Intermittent	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-17001	UNT to Harveys Creek	19.9	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Wet open cut
WW-T07-17002C	UNT to Huntsville Creek	M-0060 0.2	15	Intermittent	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T08-17001	UNT to Huntsville Creek	M-0060 0.4	9	Intermittent	Minor	CWF, MF	None	Year-round	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-RS-2008	UNT to Huntsville Creek	M-0060 0.8	NA	Ephemeral	Minor	CWF, MF	None	Year-round	NA
WW-T22-2002	UNT to Huntsville Creek	M-0060 0.9	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T07-17004	Leonard Creek	24.5	14	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T17-18001	UNT to Leonard Creek	25.6	12	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Wet open cut
WW-RS-18007	UNT to Leonard Creek	26.6	≤ 5	Intermittent	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-RS-18001A	UNT to Leonard Creek	26.6	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18001	UNT to Leonard Creek	26.7	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18005	UNT to Leonard Creek	27.1	20	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18002	UNT to Leonard Creek	27.5	≤ 5	Intermittent	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18006	UNT to Leonard Creek	28.3	8	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18004	Whitelock Creek	28.9	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18003A	UNT to Whitelock Creek	30.3	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18003B	UNT to Whitelock Creek	30.3	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-18003	UNT to Whitelock Creek	30.3	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T05-18001	Mill Creek	31.2	12	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T13-19001	UNT to Martin Creek	32.5	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T13-19002	UNT to Martin Creek	32.7	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T13-19003	UNT to Martin Creek	32.7	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T21-19001/ WW-RS- 19003	Susquehanna River	35.0	615	Perennial	Major	WWF, MF	WWCW Fisheries Stream	Year-round	HDD

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T21-19002	UNT to Susquehanna River	35.9	15	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T19-19002	UNT to Susquehanna River	36.8	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T19-19001	UNT to Susquehanna River	37.1	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T15-4001	UNT to Susquehanna River	37.3	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-T15-4002	UNT to Susquehanna River	37.3	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-RS-19002	UNT to Susquehanna River	37.7	12	Perennial	Intermediate	CWF, MF	None	Year-round	Wet open cut
WW-RS-19002A	UNT to Susquehanna River	37.7	NA	Perennial	Intermediate	CWF, MF	None	Year-round	NA
WW-RS-19002B	UNT to Susquehanna River	37.7	NA	Perennial	Intermediate	CWF, MF	None	Year-round	NA
WW-T19-19003	UNT to Susquehanna River	38.1	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-RS-19001	UNT to Mill Run	38.5	≤ 5	Intermittent	Minor	CWF, MF	None	Jan. 1–Sept. 30	Dam-and-pump
WW-T12-19002	UNT to Beaver Creek	40.0	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T19-20005	Trout Brook	M-0054 0.1	16	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T14-20004	UNT South Branch Tunkhannock Creek	43.6	NA	Ephemeral	Minor	TSF, MF	Approved Trout Waters, Trout Stocked Stream	June 16–Feb. 28	NA
WW-T14-20003	South Branch Tunkhannock Creek	43.7	74	Perennial	Intermediate	TSF, MF	Approved Trout Waters, Trout Stocked Stream	June 16–Feb. 28	Dam-and-pump
WW-T14-20002	UNT to South Branch Tunkhannock Creek	44.4	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream	June 16–Feb. 28	Dam-and-pump
WW-T14-20002A	UNT to South Branch Tunkhannock Creek	44.5	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream	June 16–Feb. 28	Dam-and-pump
WW-T19-20004	UNT to South Branch Tunkhannock Creek	45.3	5	Perennial	Minor	CWF, MF	Approved Trout Waters	June 16–Feb. 28	Dam-and-pump

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T10-20001	UNT to South Branch Tunkhannock Creek	45.8	≤ 5	Intermittent	Minor	CWF, MF	Approved Trout Waters	Year-round	Dam-and-pump
WW-T10-20002	UNT to South Branch Tunkhannock Creek	45.9	6	Perennial	Minor	CWF, MF	Approved Trout Waters	Year-round	Dam-and-pump
WW-RS-20001	UNT to South Branch Tunkhannock Creek	46.1	NA	Intermittent	Minor	CWF, MF	Approved Trout Waters	Year-round	NA
WW-RS-20002	UNT to South Branch Tunkhannock Creek	46.2	≤ 5	Intermittent	Minor	CWF, MF	Approved Trout Waters	Year-round	Dam-and-pump
WW-T10-20003	UNT to South Branch Tunkhannock Creek	M-0058 0.2	22	Perennial	Intermediate	CWF, MF	Approved Trout Waters	June 16– Feb. 28	Dam-and-pump
WW-T19-20002	UNT to South Branch Tunkhannock Creek	46.9	≤ 5	Ephemeral	Minor	CWF, MF	Approved Trout Waters	June 16– Feb. 28	Dam-and-pump
WW-T19-20003	UNT to South Branch Tunkhannock Creek	47.2	7	Perennial	Minor	CWF, MF	Approved Trout Waters	June 16– Feb. 28	Dam-and-pump
WW-T19-20001	UNT to Tunkhannock Creek	48.7	11	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-RS-20003	Tunkhannock Creek	49.3	120	Perennial	Major	TSF, MF	Approved Trout Waters, WWCW Fisheries Stream	Year-round d	Dam-and-pump
WW-T30-21001	UNT to Willow Brook	51.4	6	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T12-21004A	UNT to Willow Brook	51.7	NA	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T12-21004	UNT to Willow Brook	51.7	14	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T12-21001	Willow Brook	52.4	13	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-21001	Millard Creek	54.1	25	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T12-21007	UNT to Millard Creek	55.1	NA	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T12-21009A	UNT to Tower Branch	M-0061 0.1	6	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-21002	UNT to Tower Branch	56.8	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-RS-21002A	Tower Branch	56.8	10	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T17-21001/ WW-RS- 21003/ WW-RS-21004	UNT to Tower Branch	57.2	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
Access Roads									
WW-T03-17008A	UNT to Pikes Creek	AR-LU-010	NA	Intermittent	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	NA
WW-T03-17005	Paint Spring Run	AR-LU-012	NA	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T33-17001	UNT to Huntsville Creek	LU-247.1	NA	Intermittent	Minor	CWF, MF	None	Year-round	NA
WW-T24-18001	UNT to Leonard Creek	AR-LU-020	NA	Perennial	Intermediate	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
CPL South									
Pipeline Facilities									
WW-T10-001A	UNT to Fishing Creek	0.2	NA	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16– Sept. 30 & Jan. 1–Feb 28	NA
WW-T10-001	UNT to Fishing Creek	0.3	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16– Sept. 30 & Jan. 1–Feb 28	Flume
WW-T10-003	Muddy Run	M-0147 0.6	10	Perennial	Intermediate	TSF, MF	None	Year-round	Flume
WW-T10-003A	UNT to Muddy Run	M-0147 0.6	8	Perennial	Minor	TSF, MF	Approved Trout Waters	June 16– Feb. 28	Flume
WW-T10-004	Tucquan Creek	M-0184 0.9	≤ 5	Perennial	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-001	UNT to Trout Run	5.3	≤ 5	Intermittent	Minor	HQ-CWF, MF	Class A Wild Trout Waters	Jan. 1–Sept 30	Flume
WW-T10-100	UNT to Climbers Run	7.2	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters	June 16– Feb. 28	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T20-002	Climbers Run	7.5	14	Perennial	Intermediate	CWF, MF	Approved Trout Waters	June 16–Feb. 28	Flume
WW-T31-002	UNT to Pequea Creek	8.0	12	Perennial	Intermediate	WWF, MF	None	Year-round	Flume
WW-T31-002A	UNT to Pequea Creek	8.0	≤ 5	Ephemeral	Minor	WWF, MF	None	Year-round	Flume
WW-T31-003	Pequea Creek	8.2	89	Perennial	Intermediate	WWF, MF	None	Year-round	Dam-and-pump
WW-T35-1001A	UNT to Pequea Creek	9.2	6	Intermittent	Minor	WWF, MF	None	Year-round	Dam-and-pump
WW-T35-1001	UNT to Pequea Creek	9.2	NA	Ephemeral	Minor	WWF, MF	None	Year-round	NA
WW-RS-1002	UNT to Pequea Creek	9.4	15	Perennial	Intermediate	WWF, MF	None	Year-round	Flume
WW-T10-1001	UNT to Pequea Creek	9.6	≤ 5	Ephemeral	Minor	WWF, MF	None	Year-round	Flume
WW-T10-1002	UNT to Pequea Creek	10.0	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T10-1003	UNT to Pequea Creek	10.1	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T35-1002	UNT to Conestoga River	10.9	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T35-1002A	UNT to Conestoga River	11.0	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-RS-1001	UNT to Conestoga River	11.1	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T20-1001	Conestoga River	12.3	142	Perennial	Major	WWF, MF	None	Year-round	HDD
WW-T36-1001A	UNT to Conestoga River	12.4	7	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-RS-1008	UNT to Witmer Run	M-0152 0.1	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T36-1002/ WW-RS-1004	UNT to Witmer Run	M-0152 0.2	15	Perennial	Intermediate	WWF, MF	None	Year-round	Flume
WW-T36-1002A/ WW-RS-1009	UNT to Witmer Run	M-0152 0.2	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T36-1006	UNT to Witmer Run	13.9	6	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T36-1007	Indian Run	14.6	11	Perennial	Intermediate	WWF, MF	None	Year-round	Flume
WW-RS-1006	UNT to Indian Run	15.3	8	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T24-1001	Witmers Run	17.0	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T11-2001	Stamans Run	18.1	9	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T11-2002	UNT to Stamans Run	18.9	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T24-2001	Strickler Run	20.0	22	Perennial	Intermediate	WWF, MF	None	Year-round	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T10-2005	UNT to Strickler Run	20.8	7	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T32-2002	UNT to Strickler Run	21.1	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-RS-2002	UNT to Shawnee Run	21.8	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T10-2004/ WW-RS-2003	Shawnee Run	22.4	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T10-2002	UNT to Chiques Creek	23.0	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-RS-2005	UNT to Chiques Creek	23.6	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Conventional bore
WW-RS-2004	Chiques Creek	23.9	60	Perennial	Intermediate	WWF, MF	None	Year-round	Dam-and-pump
WW-T31-3003	UNT to Back Run	30.1	≤ 5	Perennial	Minor	TSF, MF	None	Year-round	Dam-and-pump
WW-T31-3004	Back Run	30.4	13	Perennial	Intermediate	TSF, MF	None	Year-round	Dam-and-pump
WW-T31-3009	UNT to Back Run	30.6	≤ 5	Perennial	Minor	TSF, MF	None	Year-round	Flume
WW-T31-3008	UNT to Back Run	31.2	11	Perennial	Intermediate	TSF, MF	None	Year-round	Flume
WW-T31-3007	UNT to Back Run	31.6	≤ 5	Perennial	Minor	TSF, MF	None	Year-round	Flume
WW-T31-3006	UNT to Brubaker Run	32.3	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T31-3005	Brubaker Run	33.0	36	Perennial	Intermediate	WWF, MF	None	Year-round	Dam-and-pump
WW-T31-3002	UNT to Little Chiques Creek	33.6	16	Perennial	Intermediate	TSF, MF	None	Year-round	Flume
WW-T31-3002A	UNT to Little Chiques Creek	33.6	NA	Intermittent	Minor	TSF, MF	None	Year-round	Flume
WW-T31-3001	UNT to Little Chiques Creek	34.0	≤ 5	Ephemeral	Minor	TSF, MF	None	Year-round	Flume
WW-T24-3001	Little Chiques Creek	34.5	14	Perennial	Intermediate	TSF, MF	Approved Trout Waters, Trout Stocked Stream	Year-round d	Dam-and-pump
WW-T30-4001	Shells Run	36.0	≤ 5	Perennial	Minor	TSF, MF	None	Year-round	Flume
WW-T30-4003	UNT to Conewago Creek	37.3	≤ 5	Ephemeral	Minor	TSF, MF	Approved Trout Waters, Trout Stocked Stream	June 16– Feb. 28	Flume
WW-T30-4002	Conewago Creek	37.5	18	Perennial	Intermediate	TSF, MF	Approved Trout Waters, Trout Stocked Stream	June 16– Feb. 28	Dam-and-pump
WW-T18-4002	UNT to Little Conewago Creek	38.8	NA	Ephemeral	Minor	TSF, MF	None	Year-round	NA

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T13-4002A	UNT to Little Conewago Creek	41.1	≤ 5	Ephemeral	Minor	TSF, MF	None	Year-round	Flume
WW-T13-4002	UNT to Little Conewago Creek	41.1	≤ 5	Intermittent	Minor	TSF, MF	None	Year-round	Flume
WW-T13-4005	UNT to Little Conewago Creek	41.1	11	Perennial	Intermediate	TSF, MF	None	Year-round	Flume
WW-T13-4004	UNT to Little Conewago Creek	41.3	23	Perennial	Intermediate	TSF, MF	None	Year-round	Flume
WW-T13-4003	UNT to Gingrich Run	41.9	≤ 5	Perennial	Minor	TSF, MF	None	Year-round	Flume
WW-T33-4001	UNT to Gingrich Run	42.0	≤ 5	Ephemeral	Minor	TSF, MF	None	Year-round	Flume
WW-RS-4001	Gingrich Run	42.6	7	Perennial	Minor	TSF, MF	None	Year-round	Flume
WW-T13-5001/ WW-RS-5006	Quittapahilla Creek	M-0183 1.3	40	Perennial	Intermediate	TSF, MF	Approved Trout Waters, Trout Stocked Stream	June 16– Feb. 28	Dam-and-pump
WW-RS-5004A	UNT to Quittapahilla Creek	M-0183 1.6	≤ 5	Intermittent	Minor	TSF, MF	Approved Trout Waters	June 16– Feb. 28	Flume
WW-T14-5003	UNT to Swatara Creek	48.1	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5004	UNT to Swatara Creek	48.6	36	Perennial	Intermediate	WWF, MF	None	Year-round	Flume
WW-T14-5005	UNT to Swatara Creek	48.8	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5006	Swatara Creek	49.3	145	Perennial	Major	WWF, MF	None	Year-round	Flume
WW-T14-5007	UNT to Swatara Creek	50.1	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5008	UNT to Swatara Creek	50.5	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5009A	UNT to Swatara Creek	51.2	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5010	UNT to Reeds Creek	52.7	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5011	UNT to Reeds Creek	52.8	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5011A	UNT to Reeds Creek	52.8	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5013	Reeds Creek	53.0	6	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T14-5013A	UNT Reeds Creek	53.1	6	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T10-6002	UNT to Swatara Creek	53.7	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-RS-6001A	UNT to Qureg Run	54.9	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-RS-6010	UNT to Qureg Run	M-0168 0.1	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T30-6004	UNT to Qureg Run	55.5	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Conventional bore
WW-T30-6005	UNT to Qureg Run	55.7	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-T32-6001	Forge Creek	56.3	≤ 5	Perennial	Minor	WWF, MF	None	Year-round	Flume
WW-RS-6005A	UNT to Forge Creek	56.9	≤ 5	Ephemeral	Minor	WWF, MF	None	Year-round	Flume
WW-RS-6005	UNT to Forge Creek	57.0	≤ 5	Ephemeral	Minor	WWF, MF	None	Year-round	Flume
WW-T23-6003	Trout Run	58.8	7	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume
WW-T33-6001	UNT to Trout Run	59.3	16	Perennial	Intermediate	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume
WW-RS-6009	UNT to Trout Run	M-0176 0.1	8	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-6002	UNT to Trout Run	M-0200 0.3	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-RS-6003	UNT to Trout Run	M-0200 0.3	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T23-6001	UNT to Swatara Creek	60.7	14	Perennial	Intermediate	CWF, MF	None	Year-round	Flume
WW-T23-6002	UNT to Swatara Creek	61.1	21	Perennial	Intermediate	CWF, MF	None	Year-round	Flume
WW-T20-7002	UNT to Swatara Creek	61.2	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T20-7001	UNT to Swatara Creek	61.4	16	Perennial	Intermediate	CWF, MF	None	Year-round	Flume
WW-T10-7004/ WW-RS-7003	UNT to Swatara Creek	62.5	40	Perennial	Intermediate	CWF, MF	None	Year-round	Flume
WW-T10-7003/ WW-RS-7002	UNT to Swatara Creek	63.7	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T10-7002	UNT to Swatara Creek	63.9	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T10-7001	UNT to Swatara Creek	64.1	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T34-7001	UNT to Mill Creek	65.0	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WB-T35-7001	Unnamed pond	65.3	44	Pond	Intermediate	None	None	Year-round	Wet open cut

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T35-7002	Mill Creek	65.4	25	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T34-7002	UNT to Mill Creek	65.5	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T34-8001/ WW-RS-8002	UNT to Swatara Creek	M-0177 0.3	18	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T34-8001A	UNT to Swatara Creek	M-0177 MP 0.3	NA	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T18-7007C	UNT to Swatara Creek	68.4	NA	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T18-7007A	UNT to Swatara Creek	68.4	11	Perennial	Intermediate	CWF, MF	None	Year-round	Flume
WW-T18-7007B	UNT to Swatara Creek	68.4	NA	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-T18-7007	UNT to Swatara Creek	68.4	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T21-7001	UNT to Swatara Creek	69.0	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T21-7002	UNT to Swatara Creek	69.1	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T31-8001	Lorberry Creek	M-0181 0.2	39	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T31-8001A/ WW-RS-8004	UNT to Lorberry Creek	M-0181 0.2	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-RS-5007	UNT to Lower Rausch Creek	M-0198 0.3	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-T24-8003	UNT to Lower Rausch Creek	72.7	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T24-8002	UNT to Lower Rausch Creek	73.5	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T24-8002A	UNT to Lower Rausch Creek	73.5	NA	Perennial	Minor	CWF, MF	None	Year-round	NA
WW-T24-8001	Lower Rausch Creek	73.5	17	Intermittent	Intermediate	CWF, MF	None	Year-round	Flume
WW-T35-8001	Good Spring Creek	74.7	10	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T20-8001A	UNT to Pine Creek	76.1	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters, Wild Trout Waters	June 16– Sept. 30 & Jan. 1–Feb 28	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T20-8001	Pine Creek	76.1	13	Perennial	Intermediate	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume
WW-T20-9001	UNT to Pine Creek	76.5	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume
WW-T16-9001	UNT to Pine Creek	M-0170 0.0	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WB-T10-9001	Unnamed pond	M-0170 0.0	NA	Pond	Intermediate	None	None	Year-round	NA
WW-T16-9003	Deep Creek	78.0	35	Perennial	Intermediate	CWF, MF	Approved Trout Waters, Trout Stocked Stream	June 16–Feb. 28	Flume
WW-T11-9001	Mahantango Creek	80.3	40	Perennial	Intermediate	CWF, MF	Approved Trout Waters	Year-round d	Dam-and-pump
WW-T09-9002	UNT to Little Mahantango Creek	81.2	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T09-9001/ WW-RS-9001	Little Mahantango Creek	M-0194 0.2	≤ 5	Perennial	Minor	CWF, MF	Approved Trout Waters	Year-round d	Flume
WW-T01-10001	Mahanoy Creek	83.4	56	Perennial	Intermediate	WWF, MF	None	Year-round	Flume
WW-T04-10002	UNT to Shamokin Creek	85.5	≤ 5	Intermittent	Minor	WWF, MF	None	Year-round	Flume
WW-RS-10001	Shamokin Creek	86.0	25	Perennial	Intermediate	WWF, MF	None	Year-round	Dam-and-pump
WW-T18-10002	Quaker Run	86.6	8	Perennial	Minor	CWF, MF	None	Year-round	Flume
WB-RS-10002	Unnamed pond	87.0	47	Pond	Intermediate	None	None	Year-round	Wet open cut
WW-RS-11001	South Branch Roaring Creek	91.8	35	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume
WW-RS-11002	South Branch Roaring Creek	92.3	15	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Flume
WW-T31-11001	UNT to Mugser Run	94.1	10	Intermittent	Minor	HQ-CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T04-11001	Mugser Run	94.4	24	Perennial	Intermediate	HQ-CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume
WW-T04-11001A	UNT to Mugser Run	94.4	≤ 5	Intermittent	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept 30	Flume
WW-T04-11001B	UNT to Mugser Run	94.4	NA	Intermittent	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept 30	Flume
WW-T04-11002	UNT to Roaring Creek	95.0	≤ 5	Perennial	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T28-12005	UNT to Roaring Creek	95.3	≤ 5	Intermittent	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T28-12004/ WW-RS-12001	UNT to Roaring Creek	95.4	≤ 5	Intermittent	Minor	TSF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Flume
WB-T35-11001	Unnamed slough	95.8	34	Open Water	Intermediate	None	None	None	Conventional bore
WW-T35-11001	Roaring Creek	95.9	54	Perennial	Intermediate	TSF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb 28	Dam-and-pump
WW-T04-12001/ WW-RS-12003	Susquehanna River	99.7	939	Perennial	Major	CWF, WWF, MF	WWCW Fisheries Stream	Year-round	HDD
WW-T04-12002	UNT to Montour Run	101.6	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T04-12003	UNT to Montour Run	101.6	NA	Intermittent	Minor	CWF, MF	None	Year-round	NA
WW-T04-12005/ WW-RS-12007	Montour Run	101.7	21	Perennial	Intermediate	CWF, MF	None	Year-round	Flume
WW-T04-12005A/ WW-RS-12008	UNT to Montour Run	101.7	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T04-12006	UNT to Montour Run	102.0	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T34-12001A	UNT to Montour Run	102.8	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume
WW-T34-12001	UNT to Montour Run	102.8	≤ 5	Ephemeral	Minor	CWF, MF	None	Year-round	Flume

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T34-12002	UNT to Montour Run	102.8	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T34-12002A	UNT to Montour Run	102.8	NA	Intermittent	Minor	CWF, MF	None	Year-round	NA
WW-T21-CS610Di01A/WW-RS- CS610Di01A	UNT to Frozen Run	103.7	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T21-CS610Di01	UNT to Frozen Run	103.7	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T01-12001A	UNT to Frozen Run	103.9	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-RS-12009	Frozen Run	104.1	8	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T01-12003	Hemlock Creek	104.8	13	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T01-12003B	UNT to Hemlock Creek	104.9	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-RS-12002	Little Fishing Creek	107.0	40	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-RS-13002	UNT to Little Fishing Creek	M-0195 0.1	15	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T01-13002	UNT to Little Fishing Creek	108.7	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T01-13003	UNT to Little Fishing Creek	108.8	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T06-13001	UNT to Deerlick Run	109.9	≤ 5	Intermittent	Minor	CWF, MF	None	Year-round	Flume
WW-T06-13002	UNT to Deerlick Run	110.2	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T35-13002	Deerlick Run	111.2	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T35-13001	UNT to Deerlick Run	111.6	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Flume
WW-T21-13001	Mud Run	113.4	14	Perennial	Intermediate	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T21-13001A	UNT to Mud Run	113.5	13	Perennial	Intermediate	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T16-14003	Little Green Creek	115.4	25	Perennial	Intermediate	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T16-14001	UNT to Little Green Creek	116.0	NA	Ephemeral	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T16-14002	UNT to Green Creek	118.1	≤ 5	Perennial	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T15-14003	UNT to Green Creek	119.3	≤ 5	Perennial	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T15-14005	UNT to Green Creek	119.9	≤ 5	Intermittent	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T15-14006	UNT to Green Creek	119.9	≤ 5	Intermittent	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T15-14007	Green Creek	120.1	14	Perennial	Intermediate	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T15-14007A	UNT to Green Creek	120.1	NA	Perennial	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T15-14008	UNT to Green Creek	121.3	≤ 5	Intermittent	Minor	TSF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T17-14001	UNT to York Hollow	122.6	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T17-14002	UNT to York Hollow	123.1	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T17-14003	York Hollow	123.2	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T06-14002	West Creek	124.6	41	Perennial	Intermediate	CWF, MF	Approved Trout Waters, Wild Trout Waters	Jan. 1–Sept. 30	Flume
WW-T06-14001	UNT to West Creek	124.7	22	Perennial	Intermediate	CWF, MF	Approved Trout Waters, Wild Trout Waters	Jan. 1–Sept. 30	Flume
Access Roads									
WW-T28-12003	UNT to Montour Run	AR-CO-	NA	Perennial	Minor	CWF, MF	None	Year-round	NA
WW-T25-2001	UNT to Strickler Run	AR-LA-020	NA	Perennial	Intermediate	WWF, MF	None	Year-round	NA
WW-T25-4002	Shells Run	AR-LA-030	NA	Perennial	Minor	TSF, MF	None	Year-round	NA
WW-T25-5002	UNT to Quittapahilla Creek	AR-LE-041	NA	Perennial	Intermediate	TSF, MF	Approved Trout Waters	June 16–Feb. 28	NA
WW-T25-5003	UNT to Quittapahilla Creek	AR-LE-041	NA	Intermittent	Minor	TSF, MF	Approved Trout Waters	June 16–Feb. 28	NA

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T25-5001	UNT to Quittapahilla Creek	AR-LE-041	NA	Intermittent	Minor	TSF, MF	Approved Trout Waters	June 16–Feb. 28	NA
WW-T31-5003	UNT to Swatara Creek	AR-LE-044	NA	Perennial	Minor	WWF, MF	None	Year-round	NA
WW-T25-6001	UNT to Trout Run	AR-LE-052	NA	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb. 28	NA
WW-T33-6001	UNT to Trout Run	AR-LE-052.1	NA	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb. 28	NA
WW-T33-6001A	UNT to Trout Run	AR-LE-052.1	NA	Perennial	Minor	CWF, MF	Approved Trout Waters, Trout Stocked Stream, Wild Trout Waters	June 16–Sept. 30 & Jan. 1–Feb. 28	NA
WW-T24-8003	UNT to Lower Rausch Creek	AR-SC-066	NA	Intermittent	Minor	CWF, MF	None	Year-round	NA
	UNT to Little Mahantango Creek	AR-SC-074	NA	Perennial	Minor	CWF, MF	None	Year-round	NA
Chapman Loop									
WW-T21-27002	Post Hollow	L186.3	6	Intermittent	Minor	HQ-CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T21-27001	UNT to Mudlick Run	L187.2	≤ 5	Ephemeral	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T30-27001	UNT to Mudlick Run	L187.4	11	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
Unity Loop									
Pipeline Facilities									
WW-T01-22016	West Branch Little Muncy Creek	L120.6	31	Perennial	Intermediate	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T01-22016A	UNT to West Branch Little Muncy Creek	L120.6	≤ 5	Ephemeral	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T01-22015A	UNT to West Branch Little Muncy Creek	L120.6	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	NA
WW-T01-22015	UNT to West Branch Little Muncy Creek	L120.6	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T01-22014	Little Indian Run	L121.5	7	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T01-22012	UNT to Little Indian Run	L122.1	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T01-22012A	UNT to Little Indian Run	L122.1	6	Intermittent	Minor	CWF, MF	Wild Trout Waters	Jan. 1–Sept. 30	Dam-and-pump
WW-T01-22011	UNT Beaver Run	L122.6	6	Intermittent	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T01-22010	UNT Beaver Run	L123.2	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T01-22009	Beaver Run	L123.8	30	Perennial	Intermediate	CWF, MF	None	Year-round	Dam-and-pump
WW-T01-22008A	UNT to Beaver Run	L124.4	NA	Intermittent	Minor	CWF, MF	None	Year-round	NA
WW-T01-22008	UNT to Beaver Run	L124.4	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Dam-and-pump
WW-T01-22008B	UNT to Beaver Run	L124.4	≤ 5	Perennial	Minor	CWF, MF	None	Year-round	Wet open cut
WW-T01-22006	UNT Big Run	L125.1	NA	Intermittent	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	NA
WW-T01-22006B	UNT Big Run	L125.3	10	Perennial	Minor	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T01-22007	Big Run	L125.3	17	Perennial	Intermediate	HQ-CWF, MF	Class A Wild Trout Waters	April 2–Sept. 30	Dam-and-pump
WW-T01-22003	UNT to Sugar Run	L126.4	≤ 5	Intermittent	Minor	CWF, MF	Wild Trout Waters (under review)	Jan. 1–Sept. 30	Dam-and-pump
WW-T01-22002	Sugar Run	L127.1	14	Perennial	Intermediate	CWF, MF	Wild Trout Waters (under review)	Jan. 1–Sept. 30	Dam-and-pump
WW-RS-22001	UNT to Sugar Run	L127.3	≤ 5	Perennial	Minor	CWF, MF	Wild Trout Waters (under review)	Jan. 1–Sept. 30	Dam-and-pump
Access Roads									
WW-T24-22003	UNT Beaver Run	AR-LY-007	NA	Perennial	Minor	CWF, MF	None	Year-round	NA

TABLE K-1 (cont'd)

Waterbodies Crossed by the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Width (feet) [c]	Stream Type	Federal Energy Regulatory Commission Classification [c]	State Water Quality Use Classification – Designated Use	State Fishery Classification [d]	Crossing Window [d]	Crossing Method
WW-T24-22002	UNT to Sugar Run	AR-LY-010	NA	Perennial	Minor	CWF, MF	Wild Trout Waters (under review)	Jan. 1–Sept. 30	NA
WW-T01-22002	Sugar Run	AR-LY-012	NA	Perennial	Intermediate	CWF, MF	Wild Trout Waters (under review)	Jan. 1–Sept. 30	NA
WW-T24-22001	Sugar Run	AR-LY-013	NA	Perennial	Minor	CWF, MF	Wild Trout Waters (under review)	Jan. 1–Sept. 30	NA
VIRGINIA									
Mainline A and B Replacements									
WW-T26-23001A	UNT Broad Run	1578.7	NA	Perennial	Intermediate	3A [f]	None	Year-round	Dam-and-pump
WW-T26-23001C	Dawkins Branch	1578.9	25	Perennial	Intermediate	3A [f]	None	Year-round	Dam-and-pump
WW-T26-23002	UNT Broad Run	1579.6	12	Perennial	Minor	3A [f]	None	Year-round	Dam-and-pump
WW-T26-23002A	UNT Broad Run	1579.7	8	Ephemeral	Minor	3A [f]	None	Year-round	Dam-and-pump

[a] Waterbody IDs with "RS" designations are in a non-surveyed area and are based on remote sensing analysis.

[b] Where route modifications have been incorporated into the proposed route, new mileposts have been developed. The new mileposts are identified by inclusion of the associated route modification number (M-####) preceding the milepost value. Mileposts along the Chapman Loop are identified with an "L" because they are part of Transco's Leidy Line system.

[c] The crossing length and Federal Energy Regulatory Commission's classification for non-surveyed waterbodies (as noted with an "RS" ID) are based on remote sensing analysis.

[d] State fishery classifications and crossing windows were reviewed by Pennsylvania Fish and Boat Commission staff.

[e] "3A" indicates that the Virginia Department of Environmental Quality has not completed the assessment required to determine whether any designated uses are met.

Notes: The crossing length is based on the ordinary high water mark field delineation. "NA" indicates waterbodies that would not be crossed by the centerline but may be crossed by equipment.

CPL = Central Penn Line
CWF = Coldwater Fishes
EV = Exceptional Value
HQ = High Quality
MF = Migratory Fishes
Tier II = State water quality standards apply
TSF = Trout Stocked Fishery
UNT = Unnamed Tributary
WWCW = Warmwater/Coolwater
WWF = Warmwater Fishes

TABLE K-2

Waterbodies with Steep and/or Eroding Banks for the Atlantic Sunrise Project

State/Facility	Waterbody ID [a]	Waterbody Name	Milepost [b]
Pennsylvania			
CPL North			
	WW-T02-15006	UNT to Fishing Creek	1.2
	WW-T02-15007 / WW-RS-15006	Fishing Creek	1.3
	WW-T02-15008	UNT to Coles Creek	2.0
	WW-T02-15010	Hess Hollow	2.9
	WW-T02-15011	UNT to Hess Hollow	2.9
	WW-T02-15014	Ashelman Run	3.8
	WW-T02-15012C	UNT to Coles Creek	4.1
	WW-T02-15012	Coles Creek	4.1
	WW-T02-15016	Marsh Run	5.1
	WW-T02-15017	Maple Run	6.0
	WW-T02-15017A	UNT to Maple Run	6.0
	WW-T02-15018	Kitchen Creek	7.3
	WW-T24-15001	Crooked Creek	7.5
	WW-T02-16001	UNT to Phillips Creek	9.2
	WW-T02-16002	Phillips Creek	9.3
	WW-T05-16003	Lick Branch	10.2
	WW-T11-16001D	UNT to Arnold Creek	11.2
	WW-T11-16001	Arnold Creek	11.2
	WW-T11-16001B	UNT to Arnold Creek	11.2
	WW-T13-16002	UNT to Shingle Run	11.8
	WW-T13-16001	Shingle Run	12.2
	WW-T05-16002	UNT to Mitchler Run	12.9
	WW-T05-16001	Mitchler Run	13.1
	WW-T05-16001A	UNT to Mitchler Run	13.1
	WW-T03-16003B	Huntington Creek	14.5
	WW-T03-16002A	UNT to Huntington Creek	14.9
	WW-T03-16002	UNT to Huntington Creek	15.0
	WW-T03-16001	Fades Creek	15.8
	WW-T03-17008	UNT to Pikes Creek	16.6
	WW-T03-17005	Paint Spring Run	17.6
	WW-T03-17004	Harveys Creek	18.1
	WW-T03-17001	UNT to Harveys Creek	19.4
	WW-T03-17002	UNT to Harveys Creek	19.8
	WW-T08-17001	UNT to Huntsville Creek	M-0060 0.4
	WW-T07-17004	Leonard Creek	24.5
	WW-T17-18001	UNT to Leonard Creek	25.6
	WW-T13-19001	UNT to Martin Creek	32.5
	WW-T13-19002	UNT to Martin Creek	32.7
	WW-T13-19003	UNT to Martin Creek	32.7
	WW-T21-19001	Susquehanna River	35.0
	WW-T21-19002	UNT to Susquehanna River	35.9
	WW-T19-19002	UNT to Susquehanna River	36.8
	WW-T19-19001	UNT to Susquehanna River	37.1
	WW-T15-4001	UNT to Susquehanna River	37.3
	WW-T15-4002	UNT to Susquehanna River	37.3
	WW-T12-19002	UNT to Beaver Creek	40.0

TABLE K-2 (cont'd)

Waterbodies with Steep and/or Eroding Banks for the Atlantic Sunrise Project

State/Facility	Waterbody ID [a]	Waterbody Name	Milepost [b]
	WW-T19-20005	Trout Brook	MP-0054 0.1
	WW-T14-20003	South Branch Tunkhannock Creek	43.7
	WW-T14-20002	UNT to South Branch Tunkhannock Creek	44.4
	WW-T14-20002A	UNT to South Branch Tunkhannock Creek	44.5
	WW-T19-20004	UNT to South Branch Tunkhannock Creek	45.3
	WW-T10-20001	UNT to South Branch Tunkhannock Creek	45.8
	WW-T10-20002	UNT to South Branch Tunkhannock Creek	45.9
	WW-T10-20003	UNT to South Branch Tunkhannock Creek	M-0058 0.2
	WW-T19-20002	UNT to South Branch Tunkhannock Creek	46.9
	WW-T19-20003	UNT to South Branch Tunkhannock Creek	47.2
	WW-T19-20001	UNT to Tunkhannock Creek	48.7
	WW-T30-21001	UNT to Willow Brook	51.4
	WW-T12-21004A	UNT to Willow Brook	51.7
	WW-T12-21004	UNT to Willow Brook	51.7
	WW-T12-21001	Willow Brook	52.4
	WW-T12-21007	UNT to Millard Creek	55.1
	WW-T17-21001 / WW-RS-21003 / WW-RS-21004	UNT to Tower Branch	57.2

[a] Waterbody IDs with "RS" designations are in non-surveyed area and are based on remote sensing analysis.

[b] Where route modifications have been incorporated into the proposed route, new mileposts have been developed. The new mileposts are identified by inclusion of the associated route modification number (M-####) preceding the milepost value.

Note: UNT = unnamed tributary

TABLE K-3

Waterbody Crossings Located Within Federal Emergency Management Agency-Designated Special Hazard Flood Areas for the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Length (feet)	County	FEMA Flood Zone	Flood Zone Description
WW-T02-15007/ WW-RS-15006	Fishing Creek	1.3	966	Columbia	A	100-year floodplain, flood water elevations not established
WW-T02-15012C	Unnamed tributary to Coles Creek	4.1	338	Columbia	A	100-year floodplain, flood water elevations not established
WW-T02-15012	Coles Creek	4.1	338	Columbia	A	100-year floodplain, flood water elevations not established
WW-T02-15016	Marsh Run	5.1	72	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T02-15017	Maple Run	6.0	1,132	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T02-15017A	Unnamed tributary to Maple Run	6.0	1,132	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T02-15018	Kitchen Creek	7.3	1,132	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T24-15001	Crooked Creek	7.5	1,132	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T02-16002	Phillips Creek	9.3	90	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T05-16003	Lick Branch	10.2	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T11-16001D	Unnamed tributary to Arnold Creek	11.2	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T11-16001	Arnold Creek	11.2	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T11-16001B	Unnamed tributary to Arnold Creek	11.2	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T05-16001	Mitchler Run	13.1	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T05-16001A	Unnamed tributary to Mitchler Run	13.1	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T03-16003C	Unnamed tributary to Huntington Creek	13.9	804	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T03-16003F	Unnamed tributary to Huntington Creek	14.4	110	Luzerne	AE	100-year floodplain, established flood water elevations
WW-T03-16003B	Huntington Creek	14.5	110	Luzerne	AE	100-year floodplain, established flood water elevations
WW-T03-16003	Unnamed tributary to Huntington Creek	14.5	272	Luzerne	AE	100-year floodplain, established flood water elevations
WW-T03-17008	Pikes Creek	16.6	91	Luzerne	AE	100-year floodplain, established flood water elevations
WW-T03-17005	Paint Spring Run	17.6	111	Luzerne	A	100-year floodplain, flood water elevations not established
WW-TO3-17004	Harveys Creek	18.1	196	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T17-18001	Unnamed tributary to Leonard Creek	25.6	36	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T05-18001	Mill Creek	31.2	36	Wyoming	A	100-year floodplain, flood water elevations not established
WW-T21-19001/ WW-RS-19003	Susquehanna River	35.0	773	Wyoming	AE	100-year floodplain, established flood water elevations
WW-T21-19002	Unnamed tributary to Susquehanna River	35.9	146	Wyoming	A	100-year floodplain, flood water elevations not established
WW-T19-20005	Trout Brook	M-0054 0.1	195	Wyoming	A	100-year floodplain, flood water elevations not established

TABLE K-3 (cont'd)

Waterbody Crossings Located Within Federal Emergency Management Agency-Designated Special Hazard Flood Areas for the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Length (feet)	County	FEMA Flood Zone	Flood Zone Description
WW-T14-20003	South Branch Tunkhannock Creek	43.7	285	Wyoming	AE	100-year floodplain, established flood water elevations
WW-T12-21001	Willow Brook	52.4	50	Susquehanna	A	100-year floodplain, flood water elevations not established
WW-T12-21009A	Unnamed tributary to Tower Branch	M-0061 0.1	31	Susquehanna	A	100-year floodplain, flood water elevations not established
WW-T24-18001	Unnamed tributary to Leonard Creek	25.7 [c]	36	Luzerne	A	100-year floodplain, flood water elevations not established
WW-T20-002	Climbers Run	7.5	2,202	Lancaster	AE	100-year floodplain, established flood water elevations
WW-T31-002	Unnamed tributary to Pequea Creek	8.0	2,202	Lancaster	AE	100-year floodplain, established flood water elevations
WW-T31-002A	Unnamed tributary to Pequea Creek	8.0	2,202	Lancaster	AE	100-year floodplain, established flood water elevations
WW-T31-003	Pequea Creek	8.2	479	Lancaster	AE	100-year floodplain, established flood water elevations
WW-T20-1001	Conestoga River	12.3	479	Lancaster	AE	100-year floodplain, established flood water elevations
WW-T24-2001	Strickler Run	20.0	63	Lancaster	AE	100-year floodplain, established flood water elevations
WW-RS-2004	Chiques Creek	23.9	383	Lancaster	AE	100-year floodplain, established flood water elevations
WW-T31-3004	Back Run	30.4	444	Lancaster	A	100-year floodplain, flood water elevations not established
WW-T31-3008	Unnamed tributary to Back Run	31.2	444	Lancaster	A	100-year floodplain, flood water elevations not established
WW-T31-3005	Brubaker Run	33.0	276	Lancaster	A	100-year floodplain, flood water elevations not established
WW-T24-3001	Little Chiques Creek	34.5	35	Lancaster	A	100-year floodplain, flood water elevations not established
WW-T30-4002	Conewago Creek	37.5	701	Lebanon	A	100-year floodplain, flood water elevations not established
WW-T14-5006	Swatara Creek	49.3	409	Lebanon	AE	100-year floodplain, established flood water elevations
WW-T32-6001	Forge Creek	56.3	201	Lebanon	A	100-year floodplain, flood water elevations not established
WW-T23-6003	Trout Run	58.8	182	Lebanon	A	100-year floodplain, flood water elevations not established
WW-T35-7002	Mill Creek	65.4	65	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T34-7002	Unnamed tributary to Mill Creek	65.5	228	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T34-8001/ WW-RS-8002	Unnamed tributary to Swatara Creek	M-0177 0.3	228	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T34-8001A	Unnamed tributary to Swatara Creek	M-177 0.3	215	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T31-8001A/ WW-RS-8004	Unnamed tributary to Lorberry Creek	M-0181 0.2	215	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T24-8002	Unnamed tributary to Lower Rausch Creek	73.5	638	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-24-8002A	Unnamed tributary to Lower Rausch Creek	73.5	638	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T20-8001A	Unnamed tributary to Pine Creek	76.1	305	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T20-8001	Pine Creek	76.1	305	Schuylkill	A	100-year floodplain, flood water elevations not established

TABLE K-3 (cont'd)

Waterbody Crossings Located Within Federal Emergency Management Agency-Designated Special Hazard Flood Areas for the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Length (feet)	County	FEMA Flood Zone	Flood Zone Description
WW-T16-9003	Deep Creek	78.0	271	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T11-9001	Mahantango Creek	80.3	473	Schuylkill	A	100-year floodplain, flood water elevations not established
WW-T01-10001	Mahanoy Creek	83.4	392	Northumberland	A	100-year floodplain, flood water elevations not established
WW-RS-10001	Shamokin Creek	86.0	196	Northumberland	A	100-year floodplain, flood water elevations not established
WW-RS-11001	South Branch Roaring Creek	91.8	207	Northumberland	AE	100-year floodplain, established flood water elevations
WW-RS-11002	South Branch Roaring Creek	92.3	207	Northumberland	A	100-year floodplain, flood water elevations not established
WW-T04-11001	Mugser Run	94.4	271	Columbia	AE	100-year floodplain, established flood water elevations
WW-T04-11001A	Unnamed tributary to Mugser Run	94.4	271	Columbia	AE	100-year floodplain, established flood water elevations
WW-T04-11001B	Unnamed tributary to Mugser Run	94.4	271	Columbia	AE	100-year floodplain, established flood water elevations
WB-T35-11001	Unnamed slough	95.8	310	Columbia	AE	100-year floodplain, established flood water elevations
WW-T35-11001	Roaring Creek	95.9	391	Columbia	AE	100-year floodplain, established flood water elevations
WW-T04-12001/ WW-RS-12003	Susquehanna River	99.7	1,016	Columbia	AE	100-year floodplain, established flood water elevations
WW-T04-12005/ WW-RS-12007	Montour Run	101.7	152	Columbia	A	100-year floodplain, flood water elevations not established
WW-T04-12005A/ WW-RS-12008	Unnamed tributary to Montour Run	101.7	152	Columbia	A	100-year floodplain, flood water elevations not established
WW-RS-12009	Frozen Run	104.1	1,801	Columbia	A	100-year floodplain, flood water elevations not established
WW-T01-12003	Hemlock Creek	104.8	1,801	Columbia	A	100-year floodplain, flood water elevations not established
WW-T01-12003B	Unnamed tributary to Hemlock Creek	104.9	1,801	Columbia	A	100-year floodplain, flood water elevations not established
WW-T21-13001	Mud Run	113.4	796	Columbia	A	100-year floodplain, flood water elevations not established
WW-T21-13001A	Unnamed tributary to Mud Run	113.5	796	Columbia	A	100-year floodplain, flood water elevations not established
WW-T16-14003	Little Green Creek	115.4	399	Columbia	A	100-year floodplain, flood water elevations not established
WW-T06-14002	West Creek	124.6	526	Columbia	A	100-year floodplain, flood water elevations not established
WW-T06-14001	Unnamed tributary to West Creek	124.7	526	Columbia	A	100-year floodplain, flood water elevations not established
WW-T01-22016	West Branch Little Muncy Creek	L120.6	371	Lycoming	A	100-year floodplain, flood water elevations not established
WW-T01-22016A	Unnamed tributary to West Branch Little Muncy Creek	L120.6	371	Lycoming	A	100-year floodplain, flood water elevations not established
WW-T01-22014	Little Indian Run	L121.5	371	Lycoming	A	100-year floodplain, flood water elevations not established
WW-T01-22010	Unnamed tributary to Beaver Run	L123.2	371	Lycoming	A	100-year floodplain, flood water elevations not established

TABLE K-3 (cont'd)

Waterbody Crossings Located Within Federal Emergency Management Agency-Designated Special Hazard Flood Areas for the Atlantic Sunrise Project

State/Facility/ Waterbody ID [a]	Waterbody Name	Milepost [b]	Crossing Length (feet)	County	FEMA Flood Zone	Flood Zone Description
WW-T01-22009	Beaver Run	L123.8	371	Lycoming	A	100-year floodplain, flood water elevations not established
WW-T01-22002	Sugar Run	L127.1	242	Lycoming	A	100-year floodplain, flood water elevations not established
WW-T0122002	Sugar Run	L127.1[c]	242	Lycoming	A	100-year floodplain, flood water elevations not established
WW-T26-23001A	Unnamed tributary Broad Run	1578.7	1,970	Prince William	AE	100-year floodplain, established flood water elevations
WW-T26-23001C	Dawkins Branch	1578.9	520	Prince William	AE	100-year floodplain, established flood water elevations

[a] Waterbody IDs with "RS" designations are in non-surveyed areas and are based on remote sensing analysis.

[b] Where route modifications have been incorporated into the proposed route, new mileposts have been developed. The new mileposts are identified by inclusion of the associated route modification number (M###) preceding the milepost value. The locations of access road wetland crossings are identified by the access road workspace ID.

[c] Access road crossing.

TABLE K-4

Waterbodies with Shallow Depth to Bedrock [a,b,c] Crossed by the Atlantic Sunrise Project

Facility/County	Milepost	Waterbody ID	Crossing Length (feet)	Waterbody Name	Soil Map Unit	Rippability [d]
Pennsylvania CPL North						
Columbia	0.6	WW-T02-15002	≤5	Unnamed tributary to Fishing Creek	OsB – Oquafa very stony silt loam, 0 to 12 percent slopes	Moderately difficult
	2.0	WW-T02-15008	≤5	Unnamed tributary to Coles Creek	OcC2 – Oquaga channery silt loam, 12 to 20 percent slopes, moderately eroded	Moderately difficult
Luzurne	9.2	WW-T02-16001	≤5	Unnamed tributary to Phillips Creek	OXF – Oquaga and Lordstown extremely stony silt loams steep	Moderately difficult
	9.3	WW-T02-16002	≤5	Phillips Creek	OXF – Oquaga and Lordstown extremely stony silt loams steep	Moderately difficult
	11.8	WW-T13-16002	≤5	Unnamed tributary to Shingle Run	OsB – Oquaga very stony silt loam, 0 to 12 percent slope	Moderately difficult
	14.5	WW-T03-16003B	25	Huntington Creek	Bf, Basher soils	Moderately difficult
	14.5	WW-T03-16003	16	Unnamed tributary to Huntington Creek	Bf, Basher soils	Moderately difficult
	14.9	WW-T03-16002A	≤5	Unnamed tributary to Huntington Creek	WmD – Wellsboro very stony silt loam, 8 to 25 percent slopes	Moderately difficult
	17.2	WB-T03-17002	17	Unnamed pond (contiguous with Paint Spring Run)	OpD –Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes	Moderately difficult
	17.2	WW-T03-17006	≤5	Unnamed tributary to Paint Spring Run	OpD –Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes	Moderately difficult
	M-0060.0.9	WW-T22-2002	≤5	Unnamed tributary to Huntsville Creek	WmD – Wellsboro very stony silt loam, 8 to 25 percent slopes	Moderately difficult
	27.1	WW-RS-18005	20	Unnamed tributary to Leonard Creek	Bf – Basher soils	Moderately difficult
Wyoming	28.3	WW-RS-18006	8	Unnamed tributary to Leonard Creek	MxB – Morris extremely stony loam, 0 to 8 percent slopes	Moderately difficult
	31.2	WW-T05-18001	12	Mill Creek	NcA – Norwich and Chippewa channery silt loams, 0 to 3 percent slopes	Moderately difficult
	32.5	WW-T13-19001	≤5	Unnamed tributary to Martin Creek	MrC – Morris channery loam, 8 to 18 percent slopes	Moderately difficult
	38.1	WW-T19-19003	≤5	Unnamed tributary to Susquehanna River	OxD – Oquaga extremely stony loam, 8 to 25 percent slopes	Difficult
	M-0054 0.1	WW-T19-20005	16	Trout Brook	FA – Fluvents and Fluvaquents	Difficult
	45.8	WW-T10-20001	≤5	Unnamed tributary to South Branch Tunkhannock Creek	NxB – Norwich and Chippewa extremely stony silt loams, 0 to 8 percent slopes	Difficult

TABLE K-4 (cont'd)

Waterbodies with Shallow Depth to Bedrock [a,b,c] Crossed by the Atlantic Sunrise Project

Facility/County	Milepost	Waterbody ID	Crossing Length (feet)	Waterbody Name	Soil Map Unit	Rippability [d]
	45.9	WW-T10-20002	6	Unnamed tributary to South Branch Tunkhannock Creek	NxB – Norwich and Chippewa extremely stony silt loams, 0 to 8 percent slopes	Difficult
	46.2	WW-RS-20002	≤5	Unnamed tributary to South Branch Tunkhannock Creek	NxB – Norwich and Chippewa extremely stony silt loams, 0 to 8 percent slopes	Difficult
CPL South						
Lancaster	0152 0.1	WW-RS-1008	≤5	Unnamed tributary to Witmer Run	PeD – Pequea silt loam, 15 to 25 percent slopes	Difficult
	20	WW-T24-2001	22	Strickler Creek	Ff – Fluvaquents and Udifluvents	Difficult
	23.6	WW-RS-2005	≤5	Unnamed tributary Chiques Creek	GdB – Glenelg silt loam, 3 to 8 percent slopes	Difficult
	30.1	WW-T31-3003	≤5	Unnamed tributary to Back Run	BeD – Bedington channery silt loam, 15 to 25 percent slopes	Moderately easy
	33	WW-T31-3005	36	Brubaker Run	Rd – Rowland silt loam	Moderately easy
Lebanon	41.1	WW-T13-4002A	≤5	Unnamed tributary to Little Conewago Creek	Nhc – Neshaminy extremely stony silt loam, 8 to 25 percent slopes	Difficult
	41.1	WW-T13-4002	≤5	Unnamed tributary to Little Conewago Creek	Nhc – Neshaminy extremely stony silt loam, 8 to 25 percent slopes	Difficult
	41.1	WW-T13-4005	11	Unnamed tributary to Little Conewago Creek	MsB – Morris very stony silt loam, 0 to 8 percent slopes	Difficult
	41.3	WW-T13-4004	23	Unnamed tributary to Little Conewago Creek	Nhc – Neshaminy extremely stony silt loam, 8 to 25 percent slopes	Difficult
	41.9	WW-T13-4003	≤5	Unnamed tributary to Gingrich Run	UoC – Ungers loam, 8 to 25 percent slopes, extremely stony	Difficult
	42.0	WW-T33-4001	≤5	Unnamed tributary to Gingrich Run	UoC – Ungers loam, 8 to 25 percent slopes, extremely stony	Difficult
	M-0183 1.3	WW-T13-5001/ WW-RS-5006	40	Quittapahilla Creek	Ls – Lindside silt loam	Difficult
	M-0183 1.6	WW-RS-5004A	≤5	Unnamed tributary to Quittapahilla Creek	BeB2 – Belmont silt loam, 3 to 12 percent slopes, moderately eroded	Difficult
Schuylkill	69.0	WW-T21-7001	≤5	Unnamed tributary to Swatara Creek	MkC – Meckesville very stony loam, 8 to 25 percent slopes	Moderately difficult to difficult
	69.1	WW-T21-7002	≤5	Unnamed tributary to Swatara Creek	MkC – Meckesville very stony loam, 8 to 25 percent slopes	Moderately difficult to difficult
	73.5	WW-T24-8002	≤5	Lower Rausch Creek	WaB – Washington silt loam, 3 to 8 percent slopes	Difficult
	78.0	WW-T16-9003	35	Deep Creek	Ba – Barbour fine sandy loam	Moderately easy to Moderately difficult
Northumber-land	83.4	WW-T01-10001	56	Mahanoy Creek	Hs – Holly silt loam	Moderately easy to Moderately difficult

TABLE K-4 (cont'd)

Waterbodies with Shallow Depth to Bedrock [a,b,c] Crossed by the Atlantic Sunrise Project

Facility/County	Milepost	Waterbody ID	Crossing Length (feet)	Waterbody Name	Soil Map Unit	Rippability [d]
Columbia	101.6	WW-T04-12002	≤5	Unnamed tributary to Montour Run	Hs – Holly silt loam	Moderately easy to difficult
	107.0	WW-RS-12002	40	Little Fishing Creek	Ts – Tioga silt loam	Moderately easy, moderately difficult, and difficult
	M-0195 0.1	WW-RS-13002	15	Unnamed tributary to Little Fishing Creek	KkE – Klinesville and leck kill shaly silt loams, 35 to 70 percent slopes	Difficult
	122.6	WW-T17-14001	≤5	Unnamed tributary to York Hollow	LkB2 – Leck kill channery silt loam, 3 to 12 percent slopes, moderately eroded	Difficult
	123.1	WW-T17-14002	≤5	Unnamed tributary to York Hollow	LkB2 – Leck kill channery silt loam, 3 to 12 percent slopes, moderately eroded	Difficult
Chapman Loop						
Clinton	L186.3	WW-T21-27002	6	Post Hollow	HmD – Hazleton-Clymer channery loams, 8 to 25 percent slopes, extremely stony	Difficult
	L187.2	W-T21-27001	≤5	Unnamed tributary to Mudlick Run	JlE – Hazleton channery sandy loam, 25 to 80 percent slopes, rubbly	Difficult
	L187.4	WW-T30-27001	11	Unnamed tributary to Mudlick Run	CpB – Cookport channery loam, 0 to 8 percent slopes, extremely stony	Difficult
Unity Loop						
Lycoming	L120.6	WW-T01-22016	31	West Branch Little Muncy Creek	Bd – Basher fine sandy loam	Difficult
	L120.6	WW-T01-22016A	≤5	Unnamed tributary to West Branch Little Muncy Creek	Bd – Basher fine sandy loam	Difficult
	L120.6	WW-T01-22015A	≤5	Unnamed tributary to West Branch Little Muncy Creek	Bd – Basher fine sandy loam	Difficult
	L120.6	WW-T01-22015	≤5	Unnamed tributary to West Branch Little Muncy Creek	Bd – Basher fine sandy loam	Difficult
	L121.5	WW-T01-22014	7	Little Indian Run	AbB – Abbottstown silt loam, 15 to 25 percent slopes	Difficult
	123.8	WW-T01-22009	30	Beaver Run	Ho – Holly silt loam	Difficult
	L126.4	WW-T01-22003	≤5	Unnamed tributary to Sugar Run	OgD – Oquaga channery loam, 15 to 25 percent slopes	Difficult
	L127.1	WW-T01-22002	14	Sugar Run	WmB- Wellsboro very stony silt loam, 3 to 8 percent slopes	Moderately difficult
	L127.3	WW-RS-22001	≤5	Unnamed tributary to Sugar Run	WlC – Wellsboro channery silt loam, 8 to 15 percent slopes	Moderately difficult

TABLE K-4 (cont'd)

Waterbodies with Shallow Depth to Bedrock [a,b,c] Crossed by the Atlantic Sunrise Project

Facility/County	Milepost	Waterbody ID	Crossing Length (feet)	Waterbody Name	Soil Map Unit	Rippability [d]

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TABLE K-4 (cont'd)

Waterbodies with Shallow Depth to Bedrock [a,b,c] Crossed by the Atlantic Sunrise Project

Facility/County	Milepost	Waterbody ID	Crossing Length (feet)	Waterbody Name	Soil Map Unit	Rippability [d]

[a] Transco preliminarily identified areas of shallow depth to bedrock using available mapping and soils data. Data would be field-verified prior to construction.

[b] Where route modifications have been incorporated into the proposed route, new mileposts have been developed. The new mileposts are identified by inclusion of the associated route modification number (M#####) preceding the milepost value

[c] Shallow bedrock is considered to be within 8 feet below ground surface.

[d] Rippability

- **Difficult** – typically requires drilling and blasting except where extensively fractured or weathered.
- **Moderately difficult** – requires drilling and blasting for most deep excavations, but locally may be ripped to depths of several feet due to closely spaced joints, bedding or weathered rock.
- **Intermediate** – rippable by heavy-weight power equipment to depths chiefly limited by maneuverability of equipment. Hard rock layers or zones may require drilling and blasting.
- **Moderately easy** – rippable by heavy-weight power equipment at least to interface with non-weathered rock interface and locally or greater depths.
- **Easy** – can be excavated by hand tools or light-weight power equipment. Some large boulders may require drilling and blasting for their removal. Dewatering or bracing of excavation walls may be required. Some intervals transect a formation with a range of excavation difficulties (e.g., moderately easy to difficult). In these instances, the formation has variable excavation characteristics because the formation consists of a range of lithologies, susceptibility to weathering, layer thickness, and fracture orientation and frequency.

Notes: CPL = Central Penn Line
L = Leidy Line system milepost

TABLE K-5

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
CPL North					
Columbia					
	CO-008.2	WW-RS-15003	1.1	The ATWS would be required for stockpiling the additional excavated material for the proposed pipeline crossover. To complete this crossover under the existing pipeline, a deeper trench would be needed to ensure that the proposed pipeline would be a safe distance from the existing pipeline to ensure pipeline integrity is maintained.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-010	WW-T02-15006	1.2	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. The ATWS would provide spoil storage within the wetland and would result in less impacts than transporting the material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-013	WW-RS-15006	1.3	To minimize additional impacts to the adjacent resource features and due to area constraints and proximity of resource features this ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-014	**WW-RS-15006**	**1.4**	**To minimize additional impacts on the adjacent resource features and due to area constraints and proximity of resource features, this ATWS would be required for stockpiling the additional material excavated due to the extra trench depth required to maintain the minimal depth of cover of 5 feet under the stream.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
Luzerne					
	LU-059	WW-T02-15016	5.0	This ATWS would be required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-080	WW-T02-15017	6.0	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. The ATWS would provide storage for spoil within the wetland and result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-103	**WW-T24-15001**	**7.5**	**This ATWS would be required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Provide additional site-specific information regarding why this ATWS cannot be located 50 feet from the waterbody.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LU-136	WW-T05-16003	10.2	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-192.1	WW-T03-17008A	16.6	AR-LU-010 is located on the opposite side of SR 29 from the waterbody. The access road would provide access to the pipeline corridor and a turnaround area through use of an existing driveway. The project is minimizing impacts to the area by utilizing the existing driveway rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-192.2	WW-T03-17008A	16.6	AR-LU-010 is located on the opposite side of SR 29 from the waterbody. The access road would provide access to the pipeline corridor and a turnaround area through use of an existing driveway. The project is minimizing impacts to the area by utilizing the existing driveway rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-194	WW-T03-17008	16.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-195	WB-T03-17006	16.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-197	WW-T03-17007	16.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-209.1	WW-T03-17005	17.6	AR-LU-012 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-209.2	WW-T03-17005	17.6	AR-LU-012 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LU-211	**WB-T03-17004**	**17.6**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Appears to be greater than 50 feet from waterbody. Please confirm.**
	LU-214	WW-T03-17004	18.1	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-234.1	WW-RS-17001	19.9	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-247.1	WW-T33-17001	21.2	AR-LU-012 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-247.2	WW-T33-17001	21.2	AR-LU-012 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-276	WW-T07-17003	24.3	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-278	WW-T07-17003	24.4	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-281	WW-T07-17004	24.5	The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient stream crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-285	WB-T22-2002	25.4	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LU-286	WB-T22-2002	25.5	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-294.1	**WW-T24-18001**	**25.7**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**This appears to be intended for use as an access road and not for storage of excavated material. Please provide revised site-specific justification for the ATWS as appropriate.**
	LU-294.2	**WW-T24-18001**	**25.7**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**This appears to be intended for use as an access road and not for storage of excavated material. Please provide revised site-specific justification for the ATWS as appropriate.**
	LU-297.2	WW-RS-18001	26.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LU-302.1	WW-RS-18005	27.1	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
Wyoming					
	WY-313	**WW-RS-18003A**	**30.1**	**The ATWS would be required for stockpiling excavated topsoil.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	WY-319	**WB-T05-18002**	**31.2**	**The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient stream crossing.**	**Confirm location of stream.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	WY-346	WW-RS-19003	34.9	The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient HDD.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-347	WW-RS-19003	34.9	The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient HDD.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-376	WW-RS-19002	37.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. The ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-396.1	**WB-T12-19001**	**39.4**	**A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. The ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.**	**Provide additional site-specific information regarding why an additional buffer cannot be provided immediately adjacent to the waterbody.**
	WY-419	WW-T19-20005	M-0054 0.1	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-420	**WW-T19-20005**	**M-0054 0.1**	**A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.**	**Provide additional site-specific information. Could ATWS be moved west to impact less of the waterbody?**
	WY-424	WW-T14-20003	43.7	The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient stream crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-425	WW-T14-20003	43.7	The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient stream crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-426	WW-T14-20003	43.8	The ATWS would be required for stockpiling of excavated materials and storage of equipment to facilitate a safe and efficient stream crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	WY-427	WW-T14-20003	43.8	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-437	WW-T14-20002	44.4	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient foreign pipeline crossing	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-438	WW-T14-20002	44.4	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-440	WW-T14-20002	44.5	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-466	WW-RS-20001	46.1	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-480	WW-T19-20003	47.3	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-499	WW-RS-20003	M-0051 0.07	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-500	WW-RS-20003	M-0051 0.07	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	WY-500.1	WW-RS-20003	49.4	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	WY-501	**WW-RS-20003**	**49.4**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	WY-502	**WW-RS-20003**	**49.4**	**The ATWS would be required for stockpiling excavated topsoil.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
Susquehanna					
	SU-516	WW-T12-21004A	51.6	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SU-572.1	**WW-RS-21002**	**56.7**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	SU-582	**WW-RS-21003**	**57.2**	**The ATWS is required for stock piling the additional excavated material, for the proposed pipeline crossover. To complete this crossover the proposed pipeline would require a trench with extra depth to cross under the existing pipeline. This would ensure that the proposed pipeline would maintain a safe distance from the existing pipeline in order to maintain the integrity to both pipelines.**	**Provide additional site-specific information regarding why an additional buffer cannot be provided immediately adjacent to the waterbody.**
	SU-583.2	**WW-RS-21003**	**57.2**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient construction of Zick Meter Station.**	**Provide additional justification for why the ATWS cannot be located greater than 50 feet from the waterbody.**
	SU-583.3	**WW-RS-21003**	**57.3**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient construction of Zick Meter Station.**	**Provide additional justification for why the ATWS cannot be located greater than 50 feet from the waterbody.**
	SU-583.3	**WW-RS-21003**	**57.3**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient construction of Zick Meter Station.**	**Appears to be duplicate entry. Please confirm.**
CPL South					
Lancaster					
	LA-110	WW-T31-002A	8.0	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LA-111	**WW-T31-002**	**8.0**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	LA-112	**WW-T31-002**	**8.1**	**The ATWS would be required for stockpiling of excavated topsoil.**	**Could ATWS be moved east to reduce impacts on the waterbody? Additional justification needed.**
	LA-114	WW-T31-003	8.1	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. And to minimize tree clearing for ATWS.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-117	WW-T31-003	8.2	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-116	WW-T31-003	8.2	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-115	WW-T31-003	8.2	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. And to minimize tree clearing for ATWS.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-119	WW-T31-003	8.7	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-135	**WW-T10-1003**	**10.1**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LA-138	WW-T36-1003	10.4	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LA-145	WW-T35-1002	10.9	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-147	**WW-T35-1002**	**10.9**	**The ATWS would be required for stockpiling excavated topsoil.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LA-145	**WW-T35-1002B**	**10.9**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LA-199.1	**WW-T36-1007**	**14.6**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LA-227	WW-T24-1001	17.0	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area, and to minimize tree clearing for ATWS.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-226	WW-T24-1001	17.0	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area, and to minimize tree clearing for ATWS.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-253	**WW-T11-2002**	**18.9**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LA-262.2	WW-T25-2001	19.9	AR-LA-020 utilizes an existing dirt road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-262.1	WW-T25-2001	19.9	AR-LA-020 utilizes an existing dirt road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LA-286.1	WW-T32-2002	21.1	AR-LA-023.1 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The existing road runs parallel to the stream for approximately 450 feet. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-301	**WW-T10-2004**	**22.3**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	LA-312	WW-T10-2002	23.0	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient PI	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-327	WW-RS-2004	23.9	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. And ATWS is also needed because of the feature on the north side of stream which has limited workspace.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-409.1	WW-T31-3004	30.4	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-467	WW-T31-3002	33.6	To minimize additional impacts to the adjacent resource features and due to area constraints and proximity of resource features this ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LA-485.2	WW-T25-4002	35.4	AR-LA-030 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LA-485.1	WW-T25-4002	35.4	AR-LA-030 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
Lebanon					
	LE-505	WW-T30-4003	37.3	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-506	WW-T30-4003	37.3	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-509	WW-T30-4002A	37.5	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-508	WW-T30-4002A	37.5	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-545	WW-T13-4005A	41.1	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient PI	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-547	**WW-RS-4002**	**41.2**	**The ATWS is required for stockpiling the additional excavated material, for the proposed pipeline crossover. To complete this crossover the proposed pipeline would require a trench with extra depth to cross under the existing pipeline. This would ensure that the proposed pipeline would maintain a safe distance from the existing pipeline in order to maintain the integrity to both pipelines.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LE-551	WW-T13-4004	41.3	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI and a foreign pipeline crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LE-561	**WW-RS-4001**	**42.3**	**The ATWS would be required for stockpiling excavated topsoil.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	LE-563	WW-RS-4001	42.5	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-603.1	WW-RS-5006	M-0183 1.3	Saturated wetland crossing. Unconsolidated soils in area. Wetland is associated with stream. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-608.1	WW-T25-5002	M-0183 1.7	AR-LE-41 utilizes an existing paved road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-608.2	WW-T25-5003	M-0183 1.7	AR-LE-41 utilizes an existing paved road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-641.1	WW-T14-5004	48.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-665.1	WW-T14-5007	50.1	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LE-685.2	WW-T31-5003	50.8	AR-LE-52 utilizes an existing dirt road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-685.1	WW-T31-5003	50.8	AR-LE-52 utilizes an existing dirt road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-693	WW-T14-5009A	51.2	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI and top soil storage.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-725	**WW-T14-5011A**	**52.8**	**The ATWS would be required for stockpiling excavated topsoil.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	LE-777	**WW-T30-6005**	**55.6**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	LE-814.1	WW-T25-6001	**-58.3**	AR-LE-044 utilizes an existing dirt road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-814.2	WW-T25-6001	**-58.3**	AR-LE-044 utilizes an existing dirt road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LE-832.1	WW-T33-6001A	59.3	AR-LE-052.1 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LE-832.2	WW-T33-6001	59.3	AR-LE-052.1 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
Schuylkill					
	SC-901.1	**WW-T35-7001**	**65.3**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the waterbody crossing.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	SC-901.2	WB-T35-7001	65.3	AR-SC-060.4 is a loop road around WB-T35-7001 and W-T35-7001. The project is minimizing impacts to the area by providing a detour around the waterbody and wetland	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-901.3	WB-T35-7001	65.3	AR-SC-060.4 is a loop road around WB-T35-7001 and W-T35-7001. The project is minimizing impacts to the area by providing a detour around the waterbody and wetland	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-907	WW-T34-7002	65.5	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. And ATWS is also needed because of the feature on the north side of stream which has limited workspace.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-983	**WW-T24-8003**	**72.6**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	SC-982	**WW-T24-8003**	**72.6**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	SC-984	**WW-T24-8003**	**72.7**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	SC-983.1	WW-T24-8003	**-72.7**	AR-SC-066 utilizes an existing dirt road that connects to the pipeline corridor adjacent to WW-T24-8003. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-983.2	WW-T24-8003	**-72.7**	AR-SC-066 utilizes an existing dirt road that connects to the pipeline corridor adjacent to WW-T24-8003. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-991	**WW-T24-8002**	**73.4**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient PI**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	SC-996	**WW-T24-8001**	**73.5**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Provide additional site-specific information regarding why an additional buffer cannot be provided immediately adjacent to the waterbody.**
	SC-997	**WW-T24-8002**	**73.5**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	SC-996	WW-T24-8002A	73.5	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-1005	**WB-T20-8001**	**74.1**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing**	**Waterbody does not appear to be shown on alignment sheets. Confirm location.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	SC-1000.1	WB-T28-8001	**-73.9**	AR-SC-068 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-1000.2	WB-T28-8001	**-73.9**	AR-SC-068 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-1009	WW-T35-8001	**M-0201 0.48**	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-1026.1	WW-T20-8001A	76.1	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	SC-1042	**WB-T10-9001**	**M-0170 0.0**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the waterbody crossing. This ATWS is also needed for the installation of the PI.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	SC-1044	**WB-T10-9001**	**M-0170 0.1**	**The ATWS would be required for stockpiling of excavated topsoil**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	SC-1089	**WW-T09-9001**	**M-0194 0.1**	**The ATWS would be required for stockpiling of excavated topsoil**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
Northumberland					
	NO-1120	**WW-T04-10002**	**85.5**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	NO-1123	WW-RS-10001	85.9	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area and railroad crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	NO-1124.1	WW-RS-10001	**-85.9**	AR-NO-78 utilizes an existing gravel road that is adjacent to W-RS-10001. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	NO-1124	WW-RS-10001	85.9	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area and railroad crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	NO-1129	**WW-T18-10002**	**86.6**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the road crossing.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	NO-1130	**WW-T18-10002**	**86.6**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the road crossing.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	NO-1136.1	**WB-RS-10002**	**87.0**	**AR-NO-081 utilizes an existing clearing. The project is minimizing impacts to the area by utilizing the existing clearing rather than constructing a new access road corridor.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
Columbia					
	CO-1183.1	WW-RS-11002	92.3	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1227	WW-T28-12004	95.5	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1229	WB-T35-11001	95.8	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1285.1	WW-T28-12003	101.6	AR-CO-095.1 utilizes an existing dirt road and clearing. The project is minimizing impacts to the area by utilizing the existing dirt road and clearing rather than constructing a new access road corridor.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1285.2	WW-T28-12003	101.6	AR-CO-095.1 utilizes an existing dirt road and clearing. The project is minimizing impacts to the area by utilizing the existing dirt road and clearing rather than constructing a new access road corridor.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1287	**WB-T04-12007**	**101.6**	**To minimize additional impacts to the adjacent resource features and due to area constraints and proximity of resource features this ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	CO-1289	**WW-RS-12008**	**101.7**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	CO-1313	**WW-T01-12001A**	**104.0**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	CO-1330	WW-T01-12003	104.7	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1331	WW-T01-12003	104.8	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1332	WW-T01-12003	104.8	The ATWS would be required for stockpiling excavated topsoil.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1333.1	WW-T01-12003	104.8	AR-C-096 utilizes an existing dirt road that connects to the pipeline corridor adjacent to WW-T01-12003. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1334	**WW-T01-12003**	**104.8**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. And ATWS is also needed because of the feature on the south side of stream which has limited workspace.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	CO-1337	**WW-T01-12003B**	**105.0**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed for the installation of the PI.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	CO-1344	**WB-T36-12001**	**M-0156 0.1**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing**	**Waterbody does not appear to be shown on the alignment sheets. Confirm location.**
	CO-1354.1	WW-T01-12006	106.8	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient installation of the pipeline alongside slopes	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	CO-1354.3	WW-T01-12006	M-0171 0.6	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate safe and efficient PI	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1362	WW-RS-12002	107.1	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. And ATWS is also needed because of a feature in which there is limited workspace on the south side of feature.	Appears greater than 50 feet from waterbody. Please confirm.
	CO-1371	WW-T21-13004 WW-RS-13002	M-0195 0.0	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1371.1	WW-RS-13002	M-0195 0.1	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1371.2	WW-RS-13002	M-0195 0.1	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1372.2	WW-T21-13004 WW-RS-13002	M-0195 0.1	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1373	WW-T21-13004 WW-RS-13002	M-0195 0.1	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1387	WW-T01-13003	108.7	This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1394	**WW-T01-13004**	**109.1**	**This ATWS is required for stockpiling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	CO-1415	WW-T06-13002	110.2	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1449	WB-T21-13001	113.1	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1457	**WW-T21-13001**	**113.5**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	CO-1459	WW-T21-13001	113.5	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1462	WW-T21-13001A	113.5	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1466	**WW-T21-13001A**	**113.7**	**The ATWS would be required for stockpiling excavated topsoil.**	**The ATWS appears sufficiently large to accommodate additional stockpiled material while maintaining a 50-foot setback from the waterbody. Additional site-specific information should be provided to justify the need for the portion of the workspace within 50 feet of the waterbody.**
	CO-1520	**WW-T15-14003**	**119.2**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	CO-1521	WW-T15-14003	119.3	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	CO-1522	WW-T15-14003	119.3	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	CO-1529	**WW-T15-14005**	**119.9**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Does not appear to be within 50 feet of the waterbody. Please confirm.**
	CO-1539	**WW-T15-14007**	**120.1**	**This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.**	**Provide additional site-specific information regarding why this ATWS cannot be located 50 feet from the waterbody.**
	CO-1564	WW-T17-14001	122.6	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
Chapman Loop					
Clinton					
	CL-010.1	WW-T30-27001	187.4	The ATWS would be required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream crossing	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
Unity Loop					
Lycoming					
	LY-003	WW-T01-22016 WW-T01-22016A	120.6	To minimize additional impacts to the adjacent resource features and due to area constraints and proximity of resource features this ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-004	WW-T01-22015 WW-T01-22015A	120.6	Saturated wetland crossing. Unconsolidated soils in area. Wetland is associated with stream. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-013	**WW-T01-22014**	**121.4**	**Saturated wetland crossing. Unconsolidated soils in area. Wetland is associated with stream. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.**	**Provide additional site-specific information regarding why this ATWS cannot be located 50 feet from the waterbody.**
	LY-026	WW-T01-22011	122.6	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LY-037.1	WW-T24-22003	123.3	AR-LY-007 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-041	WW-T01-22009	123.8	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-044	WW-T01-22008	124.3	This ATWS is required for stock piling the additional material excavated due to the extra depth required to maintain the minimal depth of 5 feet under a stream. This ATWS is also needed due to the topography of the area.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-046	WW-T01-22008B	124.4	A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-054	WW-T01-22006	125.1	The ATWS is required for stockpiling the additional excavated material, for the proposed pipeline crossover. To complete this crossover the proposed pipeline would require a trench with extra depth to cross under the existing pipeline. This would ensure that the proposed pipeline would maintain a safe distance from the existing pipeline in order to maintain the integrity to both pipelines.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-056.1	**WW-T01-22007**	**125.3**	**A saturated wetland crossing with unconsolidated soils is present in the area. The wetland is associated with the waterbody. ATWS would provide storage for spoil within the wetland and would result in less impact than transporting material to a stockpile area outside the wetland.**	**Provide additional site-specific information regarding why this ATWS cannot be located 50 feet from the waterbody.**
	LY-060.1	**WW-T01-22004**	**M-0003 0.1**	**The ATWS would be required for stockpiling of excavated materials and equipment to facilitate safe and efficient PI**	**Does not appear to be on the alignment sheets. Confirm location.**
	LY-067.1	WW-T24-22002	-126.4	AR-LY-010 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

TABLE K-5 (cont'd)

Additional Temporary Workspace Justification for Waterbodies for the Atlantic Sunrise Project

Facility/ County	ATWS No.	Waterbody Feature ID	Approx. Milepost	Justification for Modification	Federal Energy Regulatory Commission Comments
	LY-067.2	WW-T24-22002	126.4	AR-LY-010 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-067.3	WW-T24-22002	126.4	AR-LY-010 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-067.4	WW-T24-22002	-126.4	AR-LY-010 utilizes an existing gravel road with an existing culvert. The right-of-way has been necked down at the culvert crossing to minimize disturbance. The project is minimizing impacts to the area by utilizing the existing road rather than constructing a new access road.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-075.1	WW-T01-22002	127.1	AR-LY-012 utilizes an existing dirt road and clearing. The project is minimizing impacts to the area by utilizing the existing dirt road and clearing rather than constructing a new access road corridor.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.
	LY-075.2	WW-T01-22002	127.1	AR-LY-012 utilizes an existing dirt road and clearing. The project is minimizing impacts to the area by utilizing the existing dirt road and clearing rather than constructing a new access road corridor.	The request for ATWS within 50 feet of the waterbody appears justified and potential impacts would be minimized by the proposed mitigation.

Note: ATWS = additional temporary workspace

APPENDIX L

WETLAND TABLES

TABLE L-1

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper. [f]
CPL North											
W-T02-15001	0.2	Columbia	Sugarloaf	300.6	PEM/PFO	0.4	0.0	<0.1	<0.1	0.5	<0.1
W-T02-15002	0.6	Columbia	Sugarloaf	5.4	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T02-15003 [g]	0.6	Columbia	Sugarloaf	122.5	PEM/PFO	<0.1	0.0	<0.1	<0.1	<0.1	<0.1
W-T02-15004	0.9	Columbia	Sugarloaf	684.9	PEM/PFO	0.1	0.0	0.3	0.2	0.5	0.2
W-T02-15005	1.1	Columbia	Sugarloaf	179.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T02-15006 [g]/ W-T02-15007 [g]/ W-RS-15001 [g]	1.2	Columbia	Sugarloaf	265.6	PEM/PFO	0.1	0.0	0.1	<0.1	0.2	<0.1
W-T02-15008	2.1	Columbia	Sugarloaf	1,084.8	PEM/PSS/PFO	0.2	0.2	0.2	0.1	0.6	0.1
W-T02-15009	2.3	Columbia	Sugarloaf	460.5	PEM/PFO	0.2	0.0	0.1	<0.1	0.2	<0.1
W-T02-15010 [g]	2.9	Columbia	Sugarloaf	619.7	PEM/PFO	0.3	0.0	0.1	<0.1	0.4	<0.1
W-T02-15013 [g]	3.3	Columbia	Sugarloaf	210.5	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T02-15014 [g]	3.8	Columbia	Sugarloaf	456.0	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T02-15015	4.0	Columbia	Sugarloaf	1,051.9	PEM/PFO	0.4	0.0	0.1	<0.1	0.5	<0.1
W-T02-15012	4.2	Columbia	Sugarloaf	142.3	PEM/PFO	<0.1	0.0	<0.1	<0.1	0.1	<0.1
W-T02-15016	4.7	Columbia	Sugarloaf	843.3	PEM/PFO	0.3	0.0	<0.1	0.0	0.3	0.0
W-T02-15017 [g]	5.1	Luzerne	Fairmount	285.6	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-T02-15019 [g]	5.9	Luzerne	Fairmount	2,495.3	PEM/PSS/PFO	0.8	0.6	0.2	0.1	1.6	0.1
W-T24-15002	6.4	Luzerne	Fairmount	483.3	PFO		0.0	0.9	0.5	0.9	0.5
W-T02-15022	6.9	Luzerne	Fairmount	1,022.3	PEM/PFO	0.5	0.0	0.1	<0.1	0.6	<0.1
W-T02-15023	7.2	Luzerne	Fairmount	809.7	PEM/PFO	0.3	0.0	0.2	0.1	0.5	0.1
W-T24-15001 [g]	7.5	Luzerne	Fairmount	117.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T02-16001	8.3	Luzerne	Fairmount	302.5	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T02-16002 [g]	9.2	Luzerne	Fairmount	169.1	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T05-16004 [g]	10.2	Luzerne	Fairmount	756.5	PEM	0.8	0.0	0.0	0.0	0.8	0.0
W-T05-16005	10.7	Luzerne	Ross	166.0	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T11-16001	11.0	Luzerne	Ross	378.0	PEM/PFO	0.2	0.0	0.1	<0.1	0.3	<0.1
W-T11-16002 [g]	11.2	Luzerne	Ross	275.0	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T13-16002	11.5	Luzerne	Ross	290.7	PEM/PFO	<0.1	0.0	0.2	0.1	0.2	0.1
W-T13-16001 [g]	11.8	Luzerne	Ross	67.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-T05-16003 [g]	13.1	Luzerne	Ross	577.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-16001	13.4	Luzerne	Ross	24.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T05-16002	13.7	Luzerne	Ross	313.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T05-16001	13.7	Luzerne	Ross	165.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T03-16005 [g]	13.8	Luzerne	Ross	564.6	PEM	0.4	0.0	0.0	0.0	0.4	0.0
W-T03-16004 [g,h]	14.0	Luzerne	Ross	512.5	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T03-16003	14.1	Luzerne	Ross	92.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T03-16002 [g]	14.9	Luzerne	Ross	707.4	PEM/PSS	0.2	0.1	0.0	0.0	0.3	0.0
W-T03-16001 [g]	15.8	Luzerne	Lake	224.4	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T03-17012 [g,h]	16.6	Luzerne	Lake	190.3	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T03-17011 [g]	16.6	Luzerne	Lake	193.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T03-17010 [g]	17.2	Luzerne	Lake	57.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T03-17009 [g]	17.6	Luzerne	Lake	89.5	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T03-17008 [g]	18.1	Luzerne	Lake	695.5	PEM/PFO	0.1	0.0	0.5	0.2	0.6	0.2
W-T03-17007 [g]	18.8	Luzerne	Lake	502.0	PEM/PFO	0.2	0.0	<0.1	<0.1	0.2	<0.1
W-T03-17006	19.1	Luzerne	Lake	49.2	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T03-17005	19.5	Luzerne	Lehman	136.4	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T05-17001 [g]/ W-RS-17001 [g]	19.9	Luzerne	Lehman	1,029.3	PEM	1.1	0.0	0.0	0.0	1.1	0.0
W-T03-17003	21.0	Luzerne	Lehman	136.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T03-17001	21.2	Luzerne	Lehman	212.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T07-17001	21.4	Luzerne	Lehman	687.4	PFO	0.0	0.0	1.3	0.7	1.3	0.7
W-T07-17003	M-0060 0.0	Luzerne	Lehman	219.6	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-RS-17004	M-0060 0.5	Luzerne	Lehman	59.2	PFO	0.0	0.0	0.1	<0.1	0.1	<0.1
W-RS-2002N	23.6	Luzerne	Dallas	24.7	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-RS-2001N	23.6	Luzerne	Dallas	426.5	PSS/PFO	0.0	0.2	0.1	<0.1	0.3	<0.1
W-T07-17005	24.4	Luzerne	Dallas	83.9	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T07-17006	25.4	Luzerne	Dallas	136.3	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T17-18001/ W-RS-18001	25.7	Luzerne	Dallas	118.4	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-18002	26.2	Luzerne	Dallas	149.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-RS-18003	26.4	Luzerne	Dallas	58.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-18005	26.4	Luzerne	Dallas	112.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-18007	26.6	Luzerne	Dallas	283.6	PEM/PSS	0.4	<0.1	0.0	0.0	0.4	0.0
W-RS-18008	27.1	Luzerne	Dallas	117.0	PFO	0.0	0.0	0.1	0.1	0.1	0.1
W-RS-180012	28.3	Wyoming	Northmoreland	188.1	PFO	0.0	0.0	0.1	<0.1	0.1	<0.1
W-RS-180013	28.9	Wyoming	Northmoreland	210.4	PFO	0.0	0.0	0.3	0.2	0.3	0.2
W-RS-180014	29.0	Wyoming	Northmoreland	185.5	PFO	0.0	0.0	0.1	<0.1	0.1	<0.1
W-RS-180019	30.3	Wyoming	Northmoreland	282.2	PEM/PFO	0.1	0.0	0.1	0.1	0.2	0.1
W-T08-18004/ W-RS-180020	30.5	Wyoming	Northmoreland	128.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T08-18001	31.1	Wyoming	Northmoreland	15.3	PEM	<0.1	0.0	0.0	0.0	<0.01	0.0
W-T05-18002 [g]	31.2	Wyoming	Northmoreland	253.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T13-19001	32.7	Wyoming	Eaton	1,174.1	PEM	0.9	0.0	0.0	0.0	0.9	0.0
W-T21-19001[h]/ W-RS-19009[h]	35.1	Wyoming	Falls	18.4	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T19-19007	35.9	Wyoming	Falls	144.5	PSS		0.2	0.0	0.0	0.2	0.0
W-T19-19006	36.4	Wyoming	Falls	111.5	PEM	<0.1	0.0	0.0	0.0	0.0	0.0
W-T19-19004	36.9	Wyoming	Falls	85.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T19-19003	36.9	Wyoming	Falls	190.2	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T19-19002	37.1	Wyoming	Falls	143.2	PEM/PSS	0.1	<0.1	0.0	0.0	0.1	0.0
W-T19-19001	37.3	Wyoming	Falls	193.1	PFO	0.0	0.0	0.2	0.2	0.2	0.2
W-T15-4001	37.6	Wyoming	Falls	752.7	PEM/PSS	0.7	0.3	0.0	0.0	0.9	0.0
W-RS-19002	37.9	Wyoming	Falls	25.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-19004	38.5	Wyoming	Overfield	152.9	PFO	0.0	0.0	0.2	0.1	0.2	0.1
W-T12-19001	39.3	Wyoming	Overfield	437.6	PEM	0.7	0.0	0.0	0.0	0.7	0.0
W-T12-19002	40.0	Wyoming	Overfield	327.3	PEM	0.5	0.0	0.0	0.0	0.5	0.0
W-T12-19003	40.9	Wyoming	Overfield	296.3	PEM/PFO	0.1	0.0	<0.1	<0.1	0.1	<0.1
W-T12-19004/ W-RS-19003	41.0	Wyoming	Overfield	215.0	PFO	0.0	0.0	0.2	0.1	0.2	0.1
W-T19-20004	M-0054 0.2	Wyoming	Clinton	533.7	PEM/PFO	0.3	0.0	0.1	0.1	0.4	0.1
W-T14-20004	43.6	Wyoming	Clinton	64.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-T14-20003 [h]	43.9	Wyoming	Clinton	64.3	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T14-20002	44.4	Wyoming	Clinton	273.4	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-T19-20003	45.3	Wyoming	Clinton	261.8	PEM/PSS	0.2	<0.1	0.0	0.0	0.2	0.0
W-T10-20001	45.8	Wyoming	Clinton	368.3	PEM/PSS/PFO	<0.1	0.4	<0.1	0.0	0.4	0.0
W-T28-20001	46.3	Wyoming	Nicholson	4.1	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-RS-20001	48.2	Wyoming	Nicholson	126.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T19-20001	48.7	Wyoming	Nicholson	353.8	PEM	0.4	0.0	0.0	0.0	0.4	0.0
W-RS-20003	49.4	Wyoming	Nicholson	39.9	PFO		0.0	0.1	<0.1	0.1	<0.1
W-T17-20001	49.5	Wyoming	Nicholson	106.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T31-21002/ W-RS-210034	50.4	Wyoming	Nicholson	77.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T31-21001 / W-RS-210033/ W- RS-210032	50.5	Wyoming	Nicholson	70.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T30-21001 [g]	51.4	Susquehanna	Lenox	13.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T30-21002	51.5	Susquehanna	Lenox	69.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T12-21001	52.3	Susquehanna	Lenox	537.8	PEM	0.8	0.0	0.0	0.0	0.8	0.0
W-RS-21008	53.4	Susquehanna	Lenox	82.2	PFO	0.0	0.0	0.1	<0.1	0.1	<0.1
W-RS-210027	54.1	Susquehanna	Lenox	139.3	PFO	0.0	0.0	0.2	0.1	0.2	0.1
W-T12-21007	54.4	Susquehanna	Lenox	244.8	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T12-21009 [g]/ W-RS-210031 [g]	M-0061 0.0	Susquehanna	Lenox	779.7	PEM/PFO	0.7	0.0	0.6	0.4	1.2	0.4
W-RS-210013	M-0062 0.1	Susquehanna	Lenox	375.5	PEM	0.4	0.0	0.0	0.0	0.4	0.0
W-RS-210015	M-0062 0.2	Susquehanna	Lenox	34.3	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-210023	M-0062 0.2	Susquehanna	Lenox	99.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-210025	M-0062 0.3	Susquehanna	Lenox	25.7	PSS	0.0	<0.1	0.0	0.0	<0.1	0.0
W-RS-210030	56.7	Susquehanna	Lenox	303.2	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-RS-210029	56.8	Susquehanna	Lenox	111.0	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-20004	AR-WY-036.1	Wyoming	Nicholson	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-RS-20005	AR-WY-036.1	Wyoming	Nicholson	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-T02-15023	AR-LU-008	Luzerne	Fairmount	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-T03-17009	AR-LU-012	Luzerne	Lake	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-T07-17001	AR-LU-014	Luzerne	Lehman	NA	PFO	0.0	0.0	0.0	0.0	0.0	0.0
W-T24-17001	AR-LU-015	Luzerne	Dallas	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
					Subtotal [h]	**17.3**	**1.9**	**7.0**	**3.7**	**26.1**	**3.7**
CPL South											
W-T31-001	M-0147 0.5	Lancaster	Drumore township	0.0	PSS	0.0	<0.01	0.0	0.0	<0.1	0.0
W-T10-003	M-0147 0.6	Lancaster	Martic	74.0	PFO	0.0	0.0	0.1	0.1	0.1	0.1
W-T10-101	7.1	Lancaster	Martic	411.9	PEM/PFO	0.1	0.0	0.3	0.2	0.5	0.2
W-T10-100	7.2	Lancaster	Martic	22.5	PFO	0.0	0.0	<0.1	0.0	<0.1	0.0
W-T20-002	7.5	Lancaster	Martic	5.9	PSS	0.0	<0.1	0.0	0.0	<0.1	0.0
W-T35-1001	11.0	Lancaster	Conestoga	96.2	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-1001	11.1	Lancaster	Conestoga	34.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-1003	11.1	Lancaster	Conestoga	33.3	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-1007	M-0152 0.1	Lancaster	Manor	92.1	PFO	0.0	0.0	0.1	0.1	0.1	0.1
W-T36-1002	13.6	Lancaster	Manor	59.7	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T36-1003	13.7	Lancaster	Manor	37.8	PSS	0.0	<0.1	0.0	0.0	<0.1	0.0
W-T36-1004	M-0188 0.0	Lancaster	Manor	171.2	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T36-1005/ W- RS-1005	M-0188 0.2	Lancaster	Manor	90.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T32-2004	20.0	Lancaster	West Hempfield	17.7	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T32-2001	21.1	Lancaster	West Hempfield	62.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T32-2002	21.1	Lancaster	West Hempfield	23.1	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-2001S	22.0	Lancaster	West Hempfield	15.6	PFO	0.0	0.0	<0.1	0.0	<0.1	0.0
W-RS-2005	23.6	Lancaster	West Hempfield	119.4	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-2002S	23.9	Lancaster	Rapho	183.6	PEM	0.4	0.0	0.0	0.0	0.4	0.0
W-T31-3003	30.4	Lancaster	Rapho	165.6	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T31-3006	31.2	Lancaster	Rapho	110.5	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T31-3005	31.6	Lancaster	Rapho	73.4	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T31-3004	32.3	Lancaster	Rapho	62.5	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T31-3002	33.6	Lancaster	Rapho	215.0	PEM	0.4	0.0	0.0	0.0	0.4	0.0
W-T31-3001	34.0	Lancaster	Rapho	167.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T30-4001	36.1	Lancaster	Mount Joy	98.4	PEM	0.1	0.0	0.0	0.0	0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-T11-4004	37.8	Lebanon	South Londonderry	128.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T11-4003	38.5	Lebanon	South Londonderry	150.3	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T18-4003	38.6	Lebanon	South Londonderry	38.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T11-4002/ W-RS-4005	38.8	Lebanon	South Londonderry	360.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T32-4001	39.5	Lebanon	South Londonderry	143.0	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T13-4001	40.6	Lebanon	South Londonderry	149.6	PFO	0.0	0.0	0.2	0.1	0.2	0.1
W-T13-4005	41.2	Lebanon	South Londonderry	20.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T13-4004	41.3	Lebanon	South Annville	28.5	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T13-4002	41.9	Lebanon	South Annville	56.8	PSS	0.0	<0.1	0.0	0.0	<0.1	0.0
W-RS-5003	M-0183 1.3	Lebanon	Union	431.8	PFO	0.0	0.0	0.8	0.4	0.8	0.4
W-T14-5002	47.9	Lebanon	North Annville	88.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T14-5003	48.1	Lebanon	North Annville	39.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T14-5004	48.6	Lebanon	North Annville	32.7	PFO		0.0	<0.1	<0.1	<0.1	<0.1
W-T14-5005 / W-RS-5001	48.8	Lebanon	North Annville	135.7	PEM/PFO	0.1	0.0	<0.1	0.0	0.1	0.0
W-T14-5008	50.1	Lebanon	East Hanover	67.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T14-5010	50.5	Lebanon	East Hanover	72.3	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T32-5001	M-0165 0.0	Lebanon	East Hanover	18.6	PEM	<0.01	0.0	0.0	0.0	<0.1	0.0
W-T14-5014	52.6	Lebanon	East Hanover	47.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T14-5015	53.0	Lebanon	Union	91.9	PEM/PSS	<0.1	0.1	0.0	0.0	0.1	0.0
W-T13-6002	53.5	Lebanon	Union	70.0	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-6002	53.5	Lebanon	Union	68.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T10-6004	53.6	Lebanon	Union	89.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T10-6003	53.7	Lebanon	Union	419.8	PEM/PSS	0.1	<0.1	0.0	0.0	0.1	0.0
W-T10-6002	54.3	Lebanon	Union	396.5	PEM/PFO	0.2	0.0	0.2	0.1	0.4	0.1
W-T30-6001 [h]	55.5	Lebanon	Union	82.4	PFO	0.0	0.0	0.1	0.1	0.1	0.1
W-T30-6003	M-0180 0.0	Lebanon	Union	85.3	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T32-6001	56.3	Lebanon	Union	57.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T23-6002 [g]	58.8	Lebanon	Union	568.1	PFO		0.0	0.7	0.4	0.7	0.4
W-T33-6001 [g]	59.3	Lebanon	Union	73.3	PEM	0.1	0.0	0.0	0.0	0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-RS-6007	M-0176 0.1	Lebanon	Union	76.2	PFO	0.0	0.0	0.1	0.1	0.1	0.1
W-T23-6001	60.7	Lebanon	Union	48.8	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T20-7001	61.2	Lebanon	Union	33.0	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T35-7001 [g]	65.4	Schuylkill	Pine Grove	72.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T34-7002 [g]	65.5	Schuylkill	Pine Grove	56.9	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T34-8001	M-0177 0.3	Schuylkill	Pine Grove	69.7	PFO	0.0	0.0	0.1	0.1	0.1	0.1
W-T31-7001	M-0196 0.0	Schuylkill	Pine Grove	125.2	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T18-7005	67.6	Schuylkill	Pine Grove	72.2	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T21-7001	67.9	Schuylkill	Pine Grove	63.6	PSS		<0.1	0.0	0.0	<0.1	0.0
W-T24-8005	M-0198 0.2	Schuylkill	Tremont	11.7	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T24-8004	73.5	Schuylkill	Frailey	13.3	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T24-8003	73.6	Schuylkill	Frailey	87.8	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T24-8002	74.1	Schuylkill	Frailey	8.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T20-8006	M-0201 0.0	Schuylkill	Frailey	104.3	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T20-8007/ W-RS-8002	M-0201 0.0	Schuylkill	Frailey	198.5	PFO	0.0	0.0	0.1	<0.1	0.1	<0.1
W-T35-8001/ W-RS-8003/ W-T20-8005/ W-RS-8001	M-0201 0.3	Schuylkill	Frailey	3,407.6	PSS	0.0	6.0	0.0	0.0	6.0	0.0
W-T20-8003 [g]/ W-RS-8006 [g]	76.1	Schuylkill	Hegins	432.0	PEM/PFO	0.4	0.0	<0.1	0.0	0.4	0.0
W-T20-8001 [g]	76.5	Schuylkill	Hegins	33.3	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T16-9001 [g]	M-0170 0.0	Schuylkill	Hegins	35.1	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T16-9003	78.0	Schuylkill	Hegins	160.3	PEM/PFO	<0.1	0.0	0.1	<0.1	0.1	<0.1
W-T11-9002	80.2	Schuylkill	Eldred	70.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T11-9001	80.3	Schuylkill	Eldred	260.0	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T09-9002	81.2	Schuylkill	Eldred	77.3	PFO		0.0	0.1	0.1	0.1	0.1
W-T09-9001	M-0194 0.2	Schuylkill	Eldred	11.4	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-10005	87.0	Northumberland	Coal	72.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-10007	87.0	Northumberland	Coal	53.4	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-10006	87.8	Northumberland	Coal	12.3	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-RS-11001	91.0	Columbia	Cleveland	132.8	PSS	0.0	0.2	0.0	0.0	0.2	0.0
W-RS-11002	91.7	Columbia	Cleveland	160.2	PFO	0.0	0.0	0.2	0.1	0.2	0.1
W-RS-11003	92.3	Columbia	Cleveland	162.7	PFO	0.0	0.0	0.2	0.1	0.2	0.1
W-T04-11004	94.3	Columbia	Cleveland	27.4	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-12005	M-0174 0.1	Columbia	Franklin	33.8	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T04-12001 [h] / W-RS-12001 [h]	99.8	Columbia	Montour	53.1	PFO	0.0	0.0	<0.1	<0.1	<0.1	<0.1
W-T04-12002	101.6	Columbia	Montour	694.9	PFO	0.0	0.0	0.8	0.5	0.8	0.5
W-T04-12004	101.7	Columbia	Montour	65.9	PSS	0.0	<0.1	0.0	0.0	<0.1	0.0
W-T34-12001	102.8	Columbia	Montour	74.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T01-12001	104.2	Columbia	Hemlock	1,345.2	PEM/PSS/PFO	1.6	<0.1	0.1	<0.1	1.8	<0.1
W-T01-12002	104.5	Columbia	Hemlock	150.6	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T01-12003 [g]	105.0	Columbia	Hemlock	386.0	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-RS-12003	107.1	Columbia	Mt. Pleasant	205.4	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T01-13001	109.2	Columbia	Mt. Pleasant	26.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T06-13002	110.0	Columbia	Mt. Pleasant	75.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T06-13003	110.2	Columbia	Mt. Pleasant	201.5	PEM/PSS/PFO	<0.1	<0.1	0.1	<0.1	0.1	<0.1
W-T06-13005	110.5	Columbia	Mt. Pleasant	148.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-RS-13002	111.2	Columbia	Mt. Pleasant	61.2	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-13001	111.2	Columbia	Mt. Pleasant	95.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T35-13002	111.2	Columbia	Mt. Pleasant	48.8	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T35-13001	111.6	Columbia	Mt. Pleasant	258.0	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T21-13002	113.4	Columbia	Greenwood	92.8	PSS	0.0	0.1	0.0	0.0	0.1	0.0
W-T21-13001	113.4	Columbia	Greenwood	35.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T16-14001 [g] / W-RS-14001 [g]	115.5	Columbia	Greenwood	142.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T10-14001 [g]	118.1	Columbia	Greenwood	136.5	PSS	0.0	0.1	0.0	0.0	0.1	0.0
W-RS-14002	M-0159 0.2	Columbia	Jackson	82.8	PEM/PFO	0.1	0.0	<0.1	0.0	0.2	0.0
W-T15-14003 [g]	120.1	Columbia	Jackson	37.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T15-14004 [g]	121.3	Columbia	Jackson	56.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T02-14001	123.4	Columbia	Jackson	114.6	PEM	0.1	0.0	0.0	0.0	0.1	0.0

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
W-T06-14001	124.7	Columbia	Jackson	57.6	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-10001	AR-NO-078	Northumberland	Coal	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-T25-5001	AR-LE-041	Lebanon	Annville	NA	PFO	0.0	0.0	0.0	0.0	0.0	0.0
W-T28-12001	AR-CO-095.1	Columbia	Montour	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-T33-6001AR	AR-LE-052.1	Lebanon	Union	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
W-T35-7001AR	AR-SC-060.4	Schuylkill	Pine Grove	NA	PEM	0.0	0.0	0.0	0.0	0.0	0.0
					Subtotal [h]	**8.2**	**6.7**	**4.5**	**2.6**	**19.4**	**2.6**
Chapman Loop											
W-T30-27001 [g]	L187.4	Clinton	Chapman	34.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-27001	L188.0	Clinton	Chapman	239.7	PEM/PFO	0.1	0.0	0.1	<0.1	0.2	<0.1
					Subtotal [h]	**0.1**	**0.0**	**0.1**	**<0.1**	**0.2**	**<0.1**
Unity Loop											
W-T01-22016 [g]	L120.6	Lycoming	Jordan	147.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T01-22015 [g]	L120.6	Lycoming	Jordan	232.2	PEM/PFO	0.2	0.0	<0.1		0.2	0.0
W-T01-22014 [g]	L121.4	Lycoming	Franklin	597.6	PEM/PFO	0.3	0.0	0.2	0.1	0.4	0.1
W-T01-22013 [g]	L122.1	Lycoming	Franklin	226.7	PEM/PFO	0.1	0.0	0.1	<0.1	0.1	<0.1
W-T01-22012	L122.6	Lycoming	Franklin	284.4	PEM	0.4	0.0	0.0	0.0	0.4	0.0
W-T01-22011	L123.2	Lycoming	Franklin	38.3	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T01-22010	L123.8	Lycoming	Franklin	234.7	PEM/PFO	0.1	0.0	0.1	<0.1	0.1	<0.1
W-T01-22009	L124.4	Lycoming	Penn	283.9	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-T01-22008 [g]	L124.9	Lycoming	Penn	10.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T01-22007 [g]	L125.0	Lycoming	Penn	62.6	PFO	0.0	0.0	<0.1	0.0	<0.1	0.0
W-T01-22004 [g]	L125.1	Lycoming	Penn	124.1	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T01-22006 [g]	L125.2	Lycoming	Penn	256.0	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T01-22005 [g]/ W-RS-22002 [g]	L125.3	Lycoming	Penn	268.2	PEM/PFO	0.5	0.0	<0.1	0.0	0.5	0.0
W-T01-22002 [g]	L125.5	Lycoming	Penn	17.5	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T01-22001 [g]	L126.4	Lycoming	Penn	37.9	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-RS-22001	L127.3	Lycoming	Penn	38.2	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T24-22001	AR-LY-007	Lycoming	Franklin	NA	PSS	0.0	0.0	0.0	0.0	0.0	0.0
					Subtotal [h]	**2.1**	**0.0**	**0.3**	**0.1**	**2.4**	**0.1**

TABLE L-1 (cont'd)

Wetlands Crossed by the Atlantic Sunrise Project

Wetland ID [a]	Milepost [b]	County	Township	Crossing Length [c] (feet)	Cowardin Class	Wetland Impact [d,e] (acres)					
						PEM	PSS	PFO		Total	
						Cons.	Cons.	Cons.	Oper.	Cons.	Oper.
Mainline A and B Replacements											
W-T26-23001	1578.8	Prince William	Brentsville	357.1	PEM	0.5	0.0	0.0	0.0	0.5	0.0
W-T26-23002	1578.9	Prince William	Brentsville	355.9	PEM	0.3	0.0	0.0	0.0	0.3	0.0
W-T26-23003	1579.1	Prince William	Brentsville	75.7	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T26-23004	1579.2	Prince William	Brentsville	97.9	PEM	0.1	0.0	0.0	0.0	0.1	0.0
W-T26-23005	1579.4	Prince William	Brentsville	111.7	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T26-23006	1579.6	Prince William	Brentsville	16.0	PEM	<0.1	0.0	0.0	0.0	<0.1	0.0
W-T26-23007	1579.7	Prince William	Brentsville	573.9	PEM	0.8	0.0	0.0	0.0	0.8	0.0
W-T26-23008	1579.8	Prince William	Brentsville	283.0	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T26-24002/ W-RS-24002	1580.8	Prince William	Brentsville	203.1	PEM	0.2	0.0	0.0	0.0	0.2	0.0
W-T26-24001	AR-PW-002	Prince William	Brentsville	NA	PEM						
					Subtotal [i]	**2.2**	**0.0**	**0.0**	**0.0**	**2.2**	**0.0**

[a] Wetland IDs with "RS" designations are in non-surveyed areas and are based on remote sensing analysis.

[b] Where route modifications have been incorporated into the proposed route, new mileposts have been developed. The new mileposts are identified by inclusion of the associated route modification number (M-####) preceding the milepost value. The locations of access road wetland crossings are identified by the access road workspace ID.

[c] Crossing Length is the total linear feet of pipeline within the wetland boundaries. "NA" indicates wetlands that are not crossed by the pipeline but would be crossed by equipment in temporary access roads.

[d] Construction impacts include the construction right-of-way, additional temporary workspace, and access roads.

[e] Operational impacts are limited to a 10-foot-wide corridor centered on the pipeline that may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way.

[f] Total operational impacts shown includes PFO wetlands only.

[g] Pennsylvania wetlands designated under Chapter 93 as Exceptional Value.

[h] Direct impacts on the wetland would be avoided by use of the conventional bore or horizontal directional drill crossing methods.

[i] Total may not match the sum of addends due to rounding.

Notes: PEM = palustrine emergent
PFO = palustrine forested
PSS = palustrine scrub-shrub

TABLE L-2

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
PENNSYLVANIA								
CPL North								
Columbia								
CO-008	W-T02-15006A W-T02-15005	North	1.1	0.2	42	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-010	**W-T02-15006A W-RS-15001A W-T0215006A-1**	**South**	**1.2**	**< 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**
CO-013	W-T02-15007	South	1.3	0.1	4	Due to area constraints between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-045	W-T02-15015C	North	4.0	0.1	42	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
Luzerne								
LU-060	**W-T02-15017**	**North**	**5.1**	**< 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-080	**W-T02-15019A W-T02-15019B W-T02-15019C**	**South**	**6.0**	**0.2**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this forested wetland.**
LU-085.1	**W-T24-15002C**	**South**	**6.4**	**0.2**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this this Hemlock/Mixed Hardwood forested wetland.**
LU-098	**W-T02-15023A-1**	**North**	**7.3**	**0.1**	**21**	**Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this forested wetland.**
LU-098.1	**W-T02-15023A-1**	**North**	**7.3**	**1.4**	**Within**	**ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.**	**Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this forested wetland.**
LU-098.2	**W-T02-15023A-1**	**North**	**7.3**	**1.5**	**24**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-136	**W-T05-16004**	**North**	**10.2**	**0.2**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LU-165	W-RS-16001	South	13.4	0.3	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-166.1	**W-T03-16005**	**North**	**13.8**	**> 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile are outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LU-167	**W-T03-16005**	**North**	**13.9**	**0.1**	**27**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value emergent wetland.**
LU-192.1	**W-T03-17012**	**North**	**16.6**	**> 0.1**	**47**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value emergent wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-192.2	**W-T03-17012**	**North**	**16.6**	**> 0.1**	**36**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value emergent wetland.**
LU-194	**W-T03-17012**	**South**	**16.6**	**> 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LU-195	**W-T03-17012**	**South**	**16.6**	**< 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LU-197	**W-T03-17011**	**South**	**16.6**	**< 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-209.1	**W-T03-17009 W-T03-17009-1**	**North**	**17.6**	**0.1**	**Within**	**ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.**	**Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LU-209.2	**W-T03-17009 W-T03-17009-1**	**North**	**17.6**	**0.1**	**Within**	**ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.**	**Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LU-214	**W-T03-17008C**	**North**	**18.1**	**0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this this Exceptional Value Hemlock/Mixed Hardwood forested wetland.**
LU-234.1	**W-T05-17001A W-RS-17001**	**South**	**19.9**	**0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-235.1	W-T05-17001A	South	20.0	< 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-236	W-T05-17001B	South	20.0	0.1	38	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-251.1	W-T07-17001	West	21.4	0.2	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-252	W-T07-17001	East	21.6	0.4	32	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient PI.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-252.2	W-T07-17001	East	21.6	0.4	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-275	W-T24-17001	West	24.2	0.1	25	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-275.1	W-T07-17001	East	21.6	0.4	24	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-275.2	W-T24-17001	West	24.2	0.1	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-278	W-T07-17005	West	24.4	0.1	25	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient foreign pipeline crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-284	W-T07-17006	South	25.3	0.4	44	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LU-285	W-T07-17006	North	25.4	0.1	41	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LU-297.2	W-RS-18007A	North	26.6	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LU-302	W-RS-18008	West	27.0	0.1	31	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LU-302.1	W-RS-18008	West	27.1	< 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
Wyoming								
WY-313	W-RS-180017 W-RS-180016	West	30.1	0.5	19	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-319	**W-T05-18002**	**East**	**31.2**	**0.1**	**10**	**ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
WY-376	W-T15-4001A W-T15-4001B	West	37.6	0.2	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
WY-396.1	W-T12-19001	North	39.4	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-397	W-T12-19001-1	West	39.4	0.1	19	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-398	W-T12-19001-1	West	39.4	0.1	24	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-404	W-T12-19002	North	39.9	0.1	34	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-418	W-T19-20004A	West	M-0054 0.0	0.2	41	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
WY-419	W-T19-20004A	East	M-0054 0.1	0.1	5	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of the wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-420	W-T19-20004A W-T19-20004C	West	M-0054 0.1	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-432	W-T14-20003	East	43.9	0.1	43	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-433	W-T14-20003	West	43.9	< 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-434	W-T14-20003	East	43.9	0.4	31	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
WY-438	W-T14-20002	South	44.4	< 0.1	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-440	W-T14-20002	West	44.4	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile are outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-453.1	W-T10-20001A W-T10-20001B	North	45.8	0.1	4	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-453.3	W-T10-20001A W-T10-20001B	North	45.8	0.2	37	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-455	W-T10-20001A	South	45.8	0.1	42	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
WY-456	W-T10-20001A	North	45.8	0.1	13	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
WY-466.1	W-RS-20004 W-RS-20005	South	46	0.9	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-466.2	W-RS-20004 W-RS-20005	South	46	0.9	15	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-500.1	W-RS-20003	West	49.4	< 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-501	W-RS-20003	South	49.4	0.6	20	Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-502	W-RS-20003	South	49.4	0.3	20	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
WY-502.2	W-T17-20001	West	49.5	0.3	40	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
WY-510	W-RS-210033	West	50.4	0.2	41	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
Susquehanna								
SU-571	W-RS-210030	East	56.7	0.2	30	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient crossing of foreign pipelines.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SU-572	W-RS-210030	East	56.7	0.3	30	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SU-575	W-T17-21001	West	57	0.3	15	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient crossing of foreign pipelines	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
CPL South								
Lancaster								
LA-020	W-T10-003	North	M-0147 0.5	0.1	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream and wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LA-021	W-T10-003	South	M-0147 0.6	0.2	44	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream crossing	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-097	W-T10-101A W-T10-101C	West	7.1	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-103	W-T20-002	West	7.4	0.1	44	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-180	W-RS-1007	South	M-0152 0.1	0.1	35	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing. This ATWS is also needed for the installation of the point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-186	W-T36-1004	West	14.2	0.1	29	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LA-188	W-T36-1004	South	M-0188 0.1	0.1	1	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient installation of the point of inflection, and the ATWS is to facilitate safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LA-196.1	W-RS-1005 W-T36-1005	North	M-0188 0.2	0.1	35	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-196.2	W-RS-1005 W-T36-1005	North	M-0188 0.2	0.1	25	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient installation of the point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-197	W-T36-1005	East	M-0188 0.3	0.1	25	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-264	W-T32-2003	East	20.0	0.1	31	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-265	W-T32-2004	West	20.0	0.1	11	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LA-286.1	W-T32-2002	South	21.2	0.2	10	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-286.2	W-T32-2002	South	21.2	0.3	44	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-312	W-T10-2001	South	23.0	0.1	44	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-318.1	W-RS-2005	East	23.6	>0.1	Within	Saturated wetland crossing. Unconsolidated soils in area. Wetland is associated with stream. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. ATWS is also required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LA-328.1	W-RS-2002	South	23.9	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LA-409.1	W-T31-3003	East	30.4	0	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. ATWS is also required for stockpiling of excavated materials and equipment to facilitate safe and efficient road stream crossing. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LA-441	W-T31-3004	East	32.1	0.6	35	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LA-444	W-T31-3004	East	32.2	0.1	40	Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LA-467.1	W-T31-3002	East	33.6	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
Lebanon								
LE-512	W-T11-4004	East	37.7	0.8	32	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LE-513	W-T11-4004	West	37.8	0.1	35	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LE-603.1	W-RS-5003	South	M-0183 1.3	0.1	Within	Saturated wetland crossing. Unconsolidated soils in area. Wetland is associated with stream. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-605	W-RS-5006	South	M-0183 1.4	0.5	25	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-607	W-RS-5006	South	M-0183 1.5	0.1	25	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LE-608.1	W-T25-5001 W-T25-5001-1	East	M-0183 1.7	1.2	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-608.2	W-T25-5001 W-T25-5001-1	East	M-0183 1.7	1,2	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-641.1	W-T14-5004	East	48.6	0	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-650	W-T14-5005A	East	48.8	0.1	43	Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LE-665.1	W-T14-5008A W-T14-5008C	East	50.1	0	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LE-671	W-T14-5009	South	50.1	0.1	42	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient road crossing. ATWS is also needed to facilitate safe and efficient installation of the point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LE-716	W-T14-5014	East	52.6	0.2	36	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-762	W-T10-6002A W-T-10-6002C	East	54.3	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-781.1	W-T30-6003	East	M-0180 0.0	0.1	33	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LE-801	W-RS-6005	West	56.8	0.1	47	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LE-820	W-T23-6002-2	North	58.7	0.1	1	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient crossing of foreign pipelines.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LE-821	**W-T23-6002**	**South**	**58.8**	**0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**
LE-832.2	**W-T33-6001**	**East**	**59.3**	**0.3**	**15**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value emergent wetland.**
LE-832.1	**W-T33-6001**	**East**	**59.3**	**0.3**	**Within**	**ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.**	**Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge**	**Provide site-specific justification for clearing this Exceptional Value wetland and mitigation measures to offset this impact. Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
Schuylkill								
SC-901.2	W-T35-7001	South	65.3	0.2	17	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of this Exceptional Value wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
SC-901.3	W-T35-7001	South	65.3	0.1	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within 50 feet of this Exceptional Value wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
SC-902	**W-T35-7001**	**South**	**65.4**	**0.1**	**15**	**Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
SC-908	**W-T34-7002**	**South**	**65.6**	**0.1**	**35**	**Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
SC-909	**W-T34-7002-1**	**North**	**65.6**	**0**	**16**	**Due to area constrains between stream and wetland, ATWS is required for stockpiling excavated materials and equipment and to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
SC-1005	W-T20-8006	West	74.1	0.1	22	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
SC-1006	W-T35-8001 W-T20-8007	West	74.1	0.1	39	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1002.1	W-T24-8002	West	74.1	0	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1007	W-T20-8005B	North	M-0201 0.0	0.2	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient railroad crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1008	W-T35-8001 W-T20-8005B W-RS-8001	North	M-0201 0.1	0.8	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1009	W-T35-8001	West	M-0201 0.48	0.4	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
SC-1026.1	**W-T20-8003A**	**West**	**76.1**	**0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**
SC-1028	W-T20-8002	East	76.2	0.1	46	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
SC-1029	W-T20-8003A-2	West	76.2	0.2	44	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
SC-1042	W-RS-9008	West	M-0170 0.0	0.1	36	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream crossing	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1043	W-RS-9008	West	M-0170 0.0	0.2	11	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
SC-1059	W-T18-9001	East	78.5	0	31	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1089	W-T09-9001	West	M-0194 0.1	0.1	38	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1090	W-RS-9007	East	M-0194 0.2	0.1	35	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream crossing	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
SC-1091	W-T09-9001	West	M-0194 0.2	0.1	45	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient stream crossing	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
Northumberland								
NO-1105	W-T18-10001	West	83.4	0.2	34	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
NO-1124.1	W-RS-10001	East	85.9	1.2	12	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
NO-1124.3	W-RS-10001	East	85.9	1.2	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
NO-1131	W-RS-10003	West	86.8	0.1	36	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
Columbia								
CO-1176	W-RS-11002	West	91.7	0.1	44	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1177	W-RS-11002	West	91.7	0.1	44	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient point of inflection.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1183.1	W-RS-11003	North	92.3	< 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1259	W-RS-12005	West	M-0174 0.0	1.2	Within	ATWS required for stockpiling of excavated topsoil	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
CO-1286	W-T04-12002	West	101.5	0.2	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1285.1	W-T28-12001	East	101.6	0.8	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1285.2	W-T28-12001	West	101.6	0.8	Within	ATWS is associated with access road construction. Impact to wetland will be avoided by using free-span bridge at the wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland and temporary free-span bridge	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1319	W-T01-12001C	West	104.2	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1322	W-T01-12001A	North	104.3	0.2	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1361.1	W-RS-12003A	West	107.1	< 0.1	47	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
CO-1394	W-T01-13001	West	109.1	0.1	44	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1415	W-T06-13003B	West	110.2	< 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1419	W-T06-13005	West	110.6	0.4	47	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1423	W-RS-13002	West	111.0	0.6	41	ATWS required for stockpiling excavated topsoil.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1424	W-RS-13002	West	111.1	0.1	46	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
CO-1425	W-RS-13003	East	111.1	0.1	43	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1455	W-T21-13001 / W-T15-14003	West	113.4	0.1	44	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
CO-1454	W-T21-13002	East	113.4	0.1	42	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
CO-1485	**W-T16-14001**	**North**	**115.5**	**0.1**	**47**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
CO-1521	W-T15-14001	East	119.3	0.1	46	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
CO-1538	**W-T15-14002**	**South**	**120.1**	**0.1**	**22**	**ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
CO-1539	**W-T15-14002**	**South**	**120.1**	**< 0.1**	**46**	**ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
Unity Loop								
Lycoming								
LY-003	**W-T01-22016 W-T01-22015A**	**South**	**120.6**	**> 0.1**	**21**	**ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within 50 feet of this Exceptional Value forested wetland.**
LY-004	**W-T01-22015A**	**North**	**120.6**	**> 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LY-013	**W-T01-22014C**	**North**	**121.4**	**> 0.1**	**Within**	**Saturated wetland crossing. Unconsolidated soils in area. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**
LY-014	W-T01-22014A	South	121.5	> 0.1	34	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LY-026	W-T01-22012	North	122.6	0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LY-037.1	W-T24-22001	South	123.3	0.9	12	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LY-037.3	W-T24-22001	North	123.3	> 0.1	20	ATWS is associated with access road construction.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LY-041	W-T01-22010C	North	123.8	> 0.1	Within	Saturated wetland crossing. Unconsolidated soils in area. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LY-044	W-T01-22009	South	124.3	> 0.1	40	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LY-046	W-T01-22009	North	124.4	> 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
LY-047	W-T01-22009	North	124.4	> 0.1	20	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
LY-052.1	**W-T01-22008**	**South**	**125.0**	**0.2**	**2**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
LY-052.2	**W-T01-22008**	**South**	**125.0**	**0.3**	**27**	**ATWS is associated with access road construction.**	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value emergent wetland.**
LY-053.1	W-T01-22004	South	125.1	0.1	25	ATWS required for stockpiling of excavated materials and equipment to facilitate safe and efficient Wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of this Exceptional Value wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LY-053.2	W-T01-22004	South	125.1	> 0.1	Within	Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland. [a]	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within this Exceptional Value wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
LY-056.1	**W-T01-22005A**	**South**	**125.3**	**> 0.1**	**Within**	**Saturated wetland with unconsolidated soils and an associated watercourse. ATWS provides storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.** [a]	**Sediment barriers at edge of ATWS parallel to wetland**	**Additional site-specific information and mitigation measures should be provided to justify the additional clearing within this Exceptional Value forested wetland.**
LY-076.3	W-RS-22001	North	127.3	0.1	40	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
VIRGINIA								
Mainline A and B Replacements								
Prince Williams								
PW-002	W-T26-23001	East	1,578.8	0.3	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
PW-003	W-T26-23001	East	1,578.8	0.1	21	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within 50 feet of wetland appears justified and potential impact would be minimized by proposed mitigation.
PW-004	W-T26-23002A	East	1,578.9	0.2	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
PW-005	W-T26-23003	East	1,579.1	0.3	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
PW-007	W-T26-23005	East	1,579.4	0.3	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
PW-008	W-T26-23006	East	1,579.6	0.1	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient stream crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.

TABLE L-2 (cont'd)

Additional Temporary Workspaces (ATWS) Requested Within 50 Feet of Wetlands for the Atlantic Sunrise Project

Facility/ State/County/ ATWS No.	Wetland Feature ID	ATWS Location	Approx. Milepost	ATWS Size (acres)	Proposed Distance of ATWS from Resource (feet)	Justification for Modification	Proposed Measure(s) To Protect Resource and Minimize Impacts	Federal Energy Regulatory Commission Comments
PW-009	W-T26-23007A	East	1,579.7	0.2	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
PW-010	W-T26-23008 / W-T26-23008-1	East	1,579.8	0.1	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient wetland crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.
PW-012	W-T26-24002	East	1,580.8	0.1	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland in a cultivated field appears justified and potential impact would be minimized by proposed mitigation.
PW-013	W-T26-24002-1	East	1,580.9	0.2	Within	ATWS required for stockpiling of excavated materials and equipment to facilitate a safe and efficient road crossing.	Sediment barriers at edge of ATWS parallel to wetland	Request for ATWS within wetland appears justified and potential impact would be minimized by proposed mitigation.

[a] Due to unconsolidated saturated wetland soils, the trench will likely be wider than standard trench width in non-saturated wetland areas. To minimize the mixing of wetland and upland soils to the best extent possible, ATWS is required to store this soil. This ATWS will allow additional workspace for stockpiling of the spoil away from the edge of the excavated trench. Additionally, without this ATWS, the saturated soil may have to be relayed into an adjacent upland area for storage, which could require additional equipment.

Note: Bold entries indicate that additional justification or explanation is required to complete the evaluation of the request for ATWS in some wetland areas.

APPENDIX M

DRAFT MIGRATORY BIRD PLAN

Transcontinental Gas Pipe Line Company, LLC

Draft Migratory Bird Plan: Version 3

Atlantic Sunrise Project

December 2015

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List of Acronyms

ATWS	additional temporary workspaces
BCC	Birds of Conservation Concern
BCR	Bird Conservation Regions
CPL	Central Penn Line
ECP	Transco's Project-specific Environmental Construction Plan
EO	Executive Order
ESA	Endangered Species Act of 1973
FERC	Federal Energy Regulatory Commission
IBA	Important Bird Area
MBTA	Migratory Bird Treaty Act of 1918
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
PADEP	Pennsylvania Department of Environmental Protection
PGC	Pennsylvania Game Commission
Plan	draft Migratory Bird Plan
Project	Atlantic Sunrise Project
PSS	palustrine scrub-shrub wetland
ROW	right-of-way
SGL	Pennsylvania State Game Land
Transco	Transcontinental Pipe Line Company, LLC
Transco Plan	Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1 INTRODUCTION

1.1 Purpose and Scope

Transcontinental Gas Pipe Line Company, LLC (Transco), an indirect subsidiary of Williams Partners L.P., prepared this draft Migratory Bird Plan (Plan) to support its application to the Federal Energy Regulatory Commission (FERC) for a Certificate of Public Convenience and Necessity for the proposed Atlantic Sunrise Project (Project) pursuant to Section 7 of the Natural Gas Act. The Project is an expansion of the existing Transco natural gas transmission system that will enable Transco to provide natural gas from northern Pennsylvania to its existing market areas in the southeastern United States.

The Project will disturb existing land cover, which will, in turn, impact birds protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code 703-718) and Executive Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001). The MBTA makes it unlawful for anyone to take migratory birds or their parts, nests, or eggs unless permitted to do so by regulations (United States Fish and Wildlife Service [USFWS] 2014a). Per the MBTA, "take" is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations §10.12). Migratory birds, as defined by the MBTA, include nearly all species (1,026 in total) that may occur in the United States, with the exceptions of some upland game birds (e.g., northern bobwhite [*Colinus virginianus*] and wild turkey [*Meleagris gallopavo*]) and non-native species (e.g., European starling [*Sturnus vulgaris*], house sparrow [*Passer domesticus*], and rock pigeon [*Columba livia*]) that occur in the United States by way of human introduction (USFWS 2013).

The MBTA does not explicitly include provisions for permits to authorize incidental take of migratory birds that results from an otherwise legal activity but is not the purpose of the activity. Instead, the USFWS encourages individuals, companies and industries to use best practices established to help reduce and avoid the unpermitted take of MBTA species. Although the MBTA does not specifically protect habitat, the alteration or disturbance of habitat during construction or operation of any project that results in the take of an MBTA-protected species would constitute a violation of the MBTA.

EO 13186 requires that all federal agencies undertaking activities that may negatively impact migratory birds take a prescribed set of actions to further implement the MBTA. EO 13186 directs federal agencies to develop a Memorandum of Understanding (MOU) with the USFWS that promotes the conservation of migratory birds. In accordance with the development

of the MOU, and to the extent possible as per law and budgetary considerations, EO 13186 encourages agencies to implement a series of conservation measures aimed at reinforcing and strengthening the MBTA. These conservation measures include provisions that require agencies to support migratory bird conservation, minimize and mitigate effects on and take of migratory birds, restore and enhance habitat, prevent pollution, incorporate conservation principles into agency plans and ensure their consistency with and support of existing migratory bird planning efforts, and properly evaluate migratory birds as part of the National Environmental Policy Act process.

In March 2011, FERC entered into an MOU with the USFWS. This MOU does not waive legal requirements under the MBTA, Bald and Golden Eagle Protection Act, or the Endangered Species Act of 1973 (ESA), nor does it authorize the take of migratory birds. Rather, it outlines the missions of both agencies and their roles and responsibilities as they pertain to the development of the Nation's energy infrastructure in a manner that protects the natural environment. The MOU identifies the specific obligations related to migratory bird conservation that are to be implemented as part of the MOU, as well as the agency responsible for implementing each obligation. Finally, the MOU outlines the terms of the agreement and the process by which disputes may be resolved (FERC and USFWS 2011).

Though all migratory birds are afforded protection under the MBTA, EO 13186 and the MOU require that Birds of Conservation Concern (BCC) are prioritized when considering impacts on migratory birds. BCCs are a subset of MBTA-protected species identified by the USFWS as those in the greatest need of additional conservation action to avoid future listing under the ESA. BCCs have been identified at three geographic scales: National, USFWS Regions, and Bird Conservation Regions (BCRs). BCRs are the smallest geographic scale at which BCCs have been identified, and the lists of BCC species at this scale are expected to be the most useful for resource management agencies to consider in complying with the MBTA and EO 13186 (USFWS 2008).

In an effort to comply with the MBTA, EO 13186, and the MOU, Transco initiated consultations with the USFWS and the Pennsylvania Game Commission (PGC). PGC does not implement the MBTA, EO 13186, or the MOU; however, Transco is including this agency in the consultations to ensure that the Commonwealth's Project-related migratory bird concerns also are addressed. Transco met with the USFWS Pennsylvania Field Office and the PGC to discuss potential Project-related MBTA issues. The meetings held to date are listed below, along with any key discussion points.

- March 12, 2014 – Project introduction meeting.
- July 22, 2014 – Project overview, threatened and endangered species, migratory birds, mitigation, and conservation measures.
- February 10, 2015 – MBTA consultation.
- March 2, 2015–March 23, 2015 – USFWS review of draft Plan.
- July 21, 2015 – Presented Version 2 of the draft Plan to USFWS

This document is the third version of the Plan, based on the collaborative effort between Transco, the USFWS, and the PGC. It incorporates additional input provided by the USFWS regarding bald eagles (*Haliaeetus leucocephalus*), the northern long-eared bat (*Myotis septentrionalis*), and restoration seed mixes.

This Plan focuses on migratory birds in Pennsylvania because they have the greatest potential to be impacted by the construction and operation of the Project facilities. Effects on migratory bird habitat from construction of Project facilities in Maryland, Virginia, North Carolina, and South Carolina are anticipated to be negligible because the Project's facilities will be located primarily within existing rights-of-way (ROWs) or other developed areas.

1.2 Project Overview

The Project will provide 1.7 million dekatherms per day of incremental firm transportation of natural gas from the Marcellus Shale production areas in northern Pennsylvania to existing market areas, extending as far south as the Station 85 Pooling Point in Choctaw County, Alabama. The Project will include modifications of the existing Transco Mainline system to reverse the direction of flow, thus enabling new north-to-south capabilities (bi-directional flow) to transport this new source of natural gas to existing markets. Project facilities in Pennsylvania include approximately 184 miles of new 30-inch and 42-inch diameter pipeline; approximately 12 miles of 42-inch and 36-inch diameter pipeline loops, various aboveground facilities; and temporary and permanent access roads (Table 1-1). Figure 1-1 shows the location of the proposed Project facilities in Pennsylvania.

The Project will include two new greenfield pipelines (Central Penn Line [CPL] North and CPL South) and two pipeline loops (Unity Loop and Chapman Loop) in Pennsylvania. Table 1-1 summarizes the proposed pipelines within each county.

Table 1-1
Summary of Pipeline Facilities in Pennsylvania

Facility	County	Municipality	Beginning/End Milepost[a]	Miles
Pennsylvania				
CPL North				
30-inch-diameter pipeline	Columbia	Sugarloaf Township	0.0–5.0	5.0
	Luzerne	Fairmount Township	5.0–10.3	5.4
		Ross Township	10.3–15.0	4.7
		Lake Township	15.0–19.3	4.3
		Lehman Township	19.3–M-0060 0.2	3.1
		Dallas Township	M-0060 0.2–27.2	4.8
	Wyoming	Monroe Township	27.2–27.9	0.7
		Northmoreland Township	27.9–32.6	4.7
		Eaton Township	32.6–35.0	2.4
		Falls Township	35.0–37.9	3.0
		Overfield Township	37.9–41.6	3.7
		Clinton Township	41.6–46.2	4.6
		Nicholson Township	46.2–50.6	**4.3**
	Susquehanna	Lenox Township	50.6–57.3	6.7
			CPL North Total	**57.4**
CPL South				
42-inch-diameter pipeline	Lancaster	Drumore Township	0.0–1.8	1.6
		Martic Township	1.8–8.2	6.7
		Conestoga Township	8.2–12.3	4.1
		Manor Township	12.3–19.6	7.4
		West Hempfield Township	19.6–23.9	4.3
		Rapho Township	23.9–27.4	3.5
		Mount Joy Borough	27.4–27.6	0.2
		Rapho Township	27.6–34.5	7.0
		Mount Joy Township	34.5–36.5	2.0
	Lebanon	South Londonderry Township	36.5–41.3	4.8
		South Annville Township	41.3–M-0183 0.7	4.9
		North Annville Township	M-0183 0.7–49.3	3.7
		East Hanover Township	49.3–52.8	3.6
		Union Township	52.8–62.4	11.2
		Cold Springs Township	62.4–64.3	0.2

Table 1-1
Summary of Pipeline Facilities in Pennsylvania

Facility	County	Municipality	Beginning/End Milepost[a]	Miles
42-inch-diameter pipeline	Schuylkill	Pine Grove Township	64.3–70.5	6.3
		Tremont Township	70.5–73.1	2.6
		Frailey Township	73.1–M-0201 0.4	1.4
		Porter Township	M-0201 0.4–75.0	0.5
		Hegins Township	75.0–79.1	4.1
		Eldred Township	79.1–M-0194 1.1	3.5
	Northumberland	East Cameron Township	M-0194 1.1–84.8	2.1
		Coal Township	84.8–89.7	4.9
		Ralpho Township	89.7–91.0	1.1
	Columbia	Cleveland Township	91.0–91.7	4.0
		Ralpho Township	91.7–95.4	0.7
		Franklin Township	95.4–99.7	4.2
		Montour Township	99.7–103.0	3.4
		Hemlock Township	103.0–107.0	4.0
		Mount Pleasant Township	107.0–112.0	5.0
		Orange Township	112.0–112.9	0.8
		Greenwood Township	112.9–118.2	5.4
		Jackson Township	118.2–125.0	6.8
		Sugarloaf Township	125.0–125.2	0.1
			CPL South Total[b]	**126.3**
Chapman Loop				
36-inch-diameter pipeline	Clinton	Chapman Township	186.0–188.9	2.9
			Chapman Loop Total	**2.9**
Unity Loop				
42-inch-diameter pipeline	Lycoming	Jordan Township	120.3–121.4	1.1
		Franklin Township	121.4–123.8	2.4
		Penn Township	123.8–128.9	5.1
			Unity Loop Total	**8.6**
			Pennsylvania [a]	**195.2**

[a] Where route modifications have been incorporated into the proposed route, new MPs have been developed. The new MPs are identified by inclusion of the associated route modification number (M-####) preceding the MP value. Beginning and ending MPs are approximate; therefore, the difference between beginning and ending mileposts in these areas does not necessarily equal the total length.

[b] Numbers may not sum exactly for CPL South due to rounding.

Key:

CPL = Central Penn Line

MP= Milepost

Aboveground facilities for the Project in Pennsylvania include modification of two existing compressor stations, two new compressor stations, two new meter stations, and three new regulator stations. Table 1-2 provides a summary, by location, of the proposed modified and new aboveground facilities in Pennsylvania. New aboveground facilities for the Project will include means for communication, which may include towers. All communication towers will be free-standing, with no guy wires; will not include any lighting, in compliance with Federal Aviation Administration (FAA) regulations; and will be less than 199 feet in height.

Table 1-2
Summary of Pennsylvania Aboveground Facilities

Facility	Type	Municipality	County
Pennsylvania			
New Aboveground Facilities			
Compressor Station 605	New Compressor Station	Clinton Township	Wyoming
Compressor Station 610	New Compressor Station	Orange Township	Columbia
Zick Meter Station	New Meter Station	Lenox Township	Susquehanna
Springville Meter Station	New Meter Station	Northmoreland Township	Wyoming
North Diamond Regulator Station	New Regulator Station	Lehman Township	Luzerne
West Diamond Regulator Station	New Regulator Station	Sugarloaf Township / Jackson Township	Columbia
River Road Regulator Station	New Regulator Station	Drumore Township	Lancaster
Modifications to Existing Aboveground Facilities			
Compressor Station 520	Upgrade existing compressor station	Mifflin Township	Lycoming
Compressor Station 517	Upgrade existing compressor station	Benton Township	Columbia
Puddlefield Meter and Regulator Station	Modify existing meter and regulator station	Northmoreland Township	Wyoming

1.3 Pipeline Construction and Operation

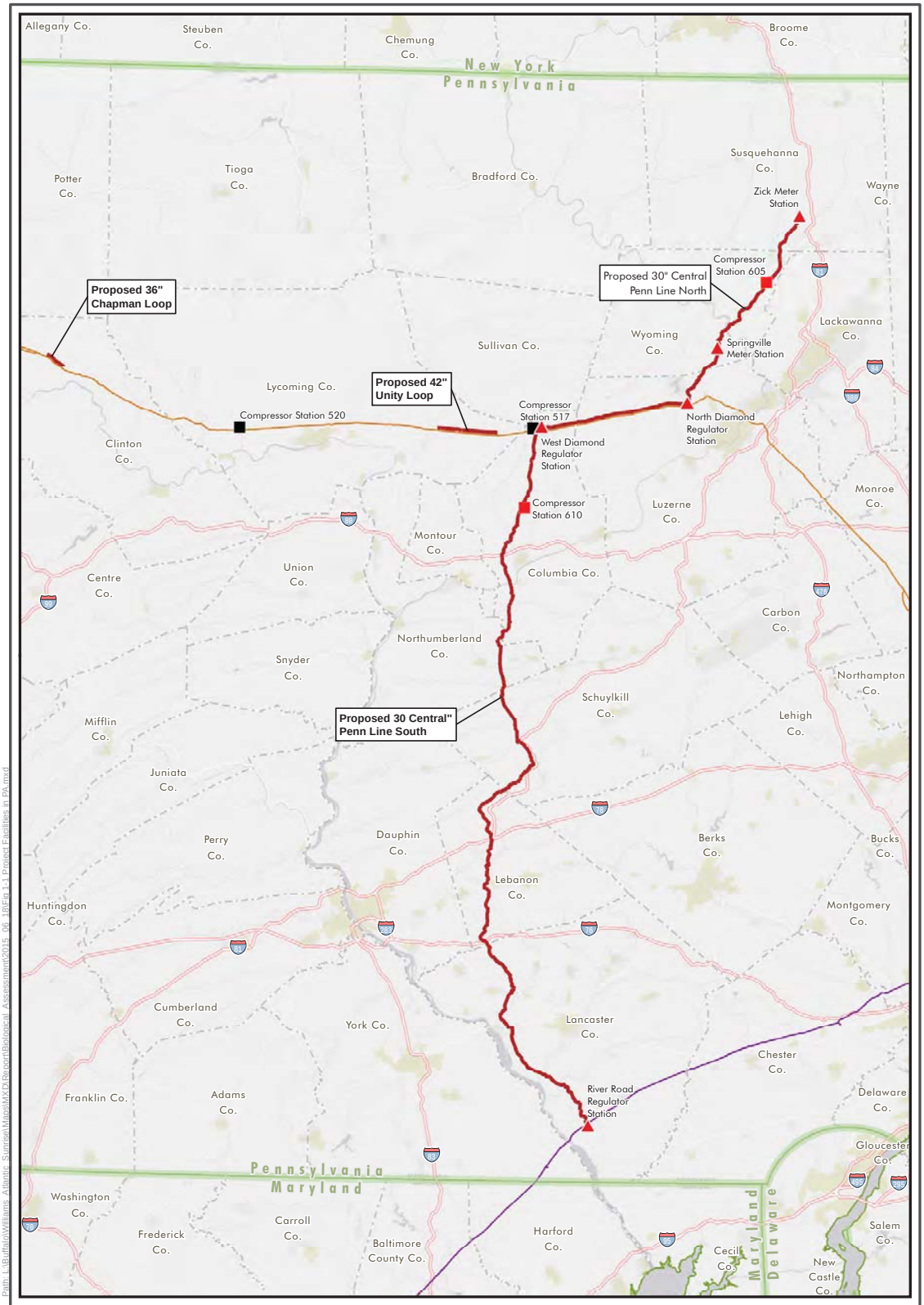
The workspaces for the Project will include temporary construction ROWs, permanent ROWs, additional temporary workspaces (ATWS), aboveground facilities, temporary and permanent access roads, contractor/pipe yards, and contractor staging areas. A 90-foot-wide construction ROW will be used for installation of the CPL North pipeline and Chapman Loop, and a 100-foot-wide construction ROW will be used for installation of the CPL South pipeline

and Unity Loop. These construction ROWs will be reduced, where practicable, at various locations to address specific environmental or residential issues along the proposed pipelines.

Transco proposes to maintain a 50-foot-wide permanent ROW along the greenfield segments of CPL North and CPL South that are not co-located with existing utility ROWs. At mainline valves, the width of permanent ROW in greenfield segments will be expanded up to 92 feet to allow for access around the facility during operations. Transco will also maintain a 50-foot-wide permanent ROW where CPL North is co-located with Williams Field Services (midstream) pipelines and other foreign utility ROWs. Transco proposes to maintain additional 25-foot-wide permanent ROWs adjacent to the existing ROWs along the proposed Chapman Loop, Unity Loop, and portions of CPL North that will be co-located with the Transco Leidy Line system. In these areas, 25 feet of the existing Transco ROWs will also be used for operation of the pipelines.

Temporary ROWs will be restored to pre-construction conditions per landowner and applicable permit conditions. Permanent ROWs will be maintained in an herbaceous state for the operational life of the pipelines, with the exception of forested wetlands, where partial regrowth of woody vegetation will be permitted to within 15 feet of either side of the centerlines. Transco will use 118 temporary access roads and 40 permanent access roads to access the Project ROW, which Transco will maintain for the life of the related facility.

Transco filed its certificate application with FERC on March 31, 2015, and FERC assigned the Project Docket No. CP15-138. The Project has a proposed in-service date of July 1, 2017.



Path: I:\Buffalo\Williams Atlantic Sunrise\Maps\MXD\Report\Biological Assessment\2015_06_18\Fig 1-1 Project Facilities in PA.mxd

Figure 1-1
Project Facilities in Pennsylvania
Atlantic Sunrise Project

Date: 7/13/2015

2 MIGRATORY BIRDS IN THE PROJECT AREA

In total, 426 bird species have been documented in Pennsylvania, of which 290 are considered to occur regularly in the state (Pennsylvania Ornithological Records Committee 2011). The regular occurrence of 290 bird species in Pennsylvania does not mean that all of these species are present year-round, every year. Rather, a species only needs to be documented in the state 8 of the last 10 years to achieve "regular" status. The remaining 136 species are infrequently recorded in Pennsylvania and, in some cases, are extirpated or extinct. Some species are year-round residents, while others may only occur seasonally during spring and/or fall migrations, the breeding season, and/or winter. Most of these species, whether as rare or common occurrences in the state, are protected under the MBTA. The term "migratory birds" hereafter refers to species that are protected under the MBTA, which includes both migrating and non-migrating species.

The Project has the potential to impact migratory birds during all seasons, as construction will occur over the course of 12 months. Likewise, the operations and maintenance phase will occur year-round for the life of the Project. Therefore, this Plan identifies measures to avoid and minimize impacts (Section 4), as well as impacts that may still occur after implementation of these measures (Section 5). Breeding migratory birds, however, are of particular concern as Project-related impacts may affect their ability to reproduce successfully. Similarly, BCCs are of added concern. For these reasons, this section and Section 3 "Migratory Bird Habitat in the Project Area" address breeding migratory birds and BCCs, and their habitats, in more detail.

2.1 Breeding Birds

In the breeding season, successful reproduction is the primary purpose of adult birds. During this period, birds in the Project area will be engaged in courtship, nest-building, parental care, foraging, and nest/territory defense to increase the chances of survival for themselves and their young.

The USFWS Pennsylvania Field Office has indicated that field surveys for migratory birds are not necessary, as birds are expected to occur in all Project habitats (Zimmerman 2014). Furthermore, migratory bird occurrence data are ample in the counties crossed by the Project, allowing for the development of a comprehensive list of the species that regularly occur in the area. Experienced avian ecologists reviewed occurrence data from eBird (2014), the United States Geological Survey (USGS) Breeding Bird Survey (Sauer et al. 2014), and the Pennsylvania Breeding Bird Atlas (Wilson et al. 2012) and developed a table of migratory bird

species potentially breeding in the Project area by county (Appendix A, Table A-1). The species lists for each county were compared to the land cover of the Project area using field-collected data and desktop data for areas where on-site access has not yet been granted. Species were removed from county lists where suitable nesting habitat will not be traversed by the Project. Habitat information for each species was compiled from The Birds of North America Online (Poole 2005). See Section 4 for details on land cover/habitats in the Project area.

The review of available occurrence data revealed 157 migratory bird species that are regular breeders in counties crossed by the Project (Table A-1). Table A-1 in Appendix A includes information on median fledge dates and breeding date ranges. These species represent many major bird taxa, including, but not limited to, waterfowl, raptors, shorebirds, nightjars, woodpeckers, and passerines. Many of the species are possible breeders throughout most, if not all, counties crossed by the Project, while others are limited to just a few counties. Species limited to small portions of the Project area may be restricted by available nesting habitat, like the peregrine falcon (*Falco peregrinus*), which now occurs primarily in urban areas in Pennsylvania (Brauning 2014). Other species are restricted by range. The Carolina chickadee (*Poecile carolinensis*), for example, reaches the northern extent of its range in the southernmost counties crossed by the Project (Mostrom et al. 2002; eBird 2014; Sauer et al. 2014). Conversely, the magnolia warbler's (*Setophaga magnolia*) breeding range extends only as far south as Columbia County (Dunn and Hall 2010; Wilson et al. 2012; eBird 2014; Sauer et al. 2014).

2.2 Wintering Birds

During the winter, birds are primarily focused on finding food and shelter, particularly in areas with harsher winter climates such as the Project area. More than 120 migratory bird species regularly overwinter in counties crossed by the Project (eBird 2014). Most of these species are year-round residents, although about one-third of them are primarily winter residents. Waterfowl, such as cackling goose (*Branta hutchinsii*) and American wigeon (*Anas americana*), make up more than half of the winter-only residents. The remaining regular winter-only residents include raptors (e.g., rough-legged hawk [*Buteo lagopus*]), gulls (e.g., great black-backed gull [*Larus marinus*]), and passerines (e.g., northern shrike [*Lanius excubitor*] and common redpoll [*Acanthis flammea*]).

2.3 Migrating Birds

During spring and fall migrations, birds travel from areas of low or decreasing resources (i.e., nesting sites and/or food) to areas of high or increasing resources (Cornell Lab of

Ornithology 2007). Migrating birds, especially long-distance migrants, may stop over at various locations *en route* to their breeding or wintering grounds to forage and rest. However, birds migrating through the Project area during spring and fall are likely to be present for only a short period of time to rest and feed.

There are more than 200 migratory bird species that regularly occur in the counties crossed by the Project during the spring and fall migration periods (eBird 2014). Migrating birds that are present in the Project area may be arriving to breed (spring) or to overwinter (fall), or they may be passing through on their way to other breeding or wintering grounds. Some species will be departing the Project area for breeding grounds further north or at higher elevations in the spring, or to wintering grounds further south or at lower elevations in the fall. Year-round residents also will be present in the Project area during spring and fall migrations.

A number of species typically only occur in the counties crossed by the Project during spring and/or fall migrations. Shorebirds (e.g., dunlin [*Calidris alpine*]), terns (e.g., Caspian tern [*Hydroprogne caspia*]), and warblers (e.g., Tennessee warbler [*Oreothlypis peregrine*]) make up the bulk of these migrant visitors (eBird 2014). Some of these migrant species are substantially more likely to occur in the Project area during the fall than during the spring—most notably, shorebirds. In most cases, these species follow different migration routes in the fall than in the spring. For example, buff-breasted sandpipers (*Calidris subruficollis*) and Baird's sandpipers (*Calidris bairdii*) follow a relatively narrow corridor through the central United States en route to Arctic breeding grounds but travel a similar but wider corridor in the fall (Lanctot and Laredo 1994; Moskoff and Montgomerie 2002).

The Project will also traverse a major pathway for migrating raptors. Kittatinny Ridge is an Important Bird Area (IBA) through which 16 species of raptors, comprising tens of thousands of individuals, migrate each year (PGC 2013). For example, in the fall of 2014, more than 24,000 raptors were recorded migrating through the Waggoner's Gap Hawkwatch site, a ridgeline approximately 40 miles west of the Project (Hawk Migration Association of North America 2014). Refer to Section 3.2.1 for more discussion of the Kittatinny Ridge IBA.

2.4 Birds of Conservation Concern

Though all migratory birds are afforded protection under the MBTA, EO 13186 and the FERC MOU require that BCCs are prioritized when considering impacts on migratory birds. The Project area is located in the northern portions of BCRs 28 (Appalachian Mountains) and 29 (Piedmont) (USFWS 2008). A list of BCCs within the Project area was developed by cross-referencing the migratory birds that are known to occur in the Project area (using data from

eBird [2014], the USGS Breeding Bird Survey [Sauer et al. 2014], and the Pennsylvania Breeding Bird Atlas [Wilson et al. 2012]) with the BCC lists for BCRs 28 and 29 (USFWS 2008). Transco determined that 18 BCCs regularly occur in the Project area, including four non-breeding species; these species are listed in Appendix A, Table A-2. Additional species were considered but excluded as presented below.

- The northern saw-whet owl (*Aegolius acadicus*), yellow-bellied sapsucker (*Sphyrapicus varius*), black-capped chickadee (*Poecile atricapillus*), and red crossbill (*Loxia curvirostra*) were excluded from Table A-2 because only the Southern Appalachian breeding populations are listed as BCCs and the Project is not within the southern portion of the Appalachian Mountains.
- Non-breeding populations of the sedge wren (*Cistothorus platensis*) are listed as BCC in BCR 28. This species is listed as a BCC in BCR 29 for all seasons. However, the sedge wren was excluded from Table A-2 because it does not regularly occur in the Project area at any time of year.
- The following species and subspecies are listed as BCCs in BCRs 28 and/or 29 but were excluded from Table A-2 because their ranges do not overlap with the Project area: loggerhead shrike (*Lanius ludovicianus*), Swainson's warbler (*Limnothlypis swainsonii*), black rail (*Laterallus jamaicensis*), brown-headed nuthatch (*Sitta pusilla*), Bachman's sparrow (*Peucaea aestivalis*), and the *bewickii* subspecies of the Bewick's wren (*Thryomanes bewickii*).

Fourteen of the listed BCCs in the Project area, including the bald eagle, are regular breeders in one or more counties crossed by the Project. According to the Pennsylvania Bald Eagle Nest Locations and Buffer Zones mapped by the USFWS (USFWS 2015), the closest known bald eagle nest to the Project is approximately 0.6 miles (3,160 feet) west of CPL South in Schuylkill County. A second nest was identified through a comment submitted to FERC. In February 2015, the nest was identified in the field by Transco-contracted personnel. This nest was confirmed as a probable bald eagle nest, although its status (i.e., active or not active) was not determined during the field visit. The nest is approximately 0.4 miles (2,110 feet) east of CPL South in Lancaster County. There are no other known bald eagle nests within 1 mile of any of the other Project facilities.

3 MIGRATORY BIRD HABITAT IN THE PROJECT AREA

3.1 General Habitat

This section describes the land cover types traversed by the Project that provide habitat for migratory birds (Table 3-1). Transco identified land cover in the Project area with a combination of field surveys, interpretation of recent aerial photography, and state geographic information system land cover/land use data layers (Pennsylvania Department of Conservation and Natural Resources [PADCNR] 2013a,b). Land cover was categorized during field surveys using a natural community classification system based on the *Terrestrial and Palustrine Plant Communities of Pennsylvania* (Fike 1999) for uplands and the *Classification of Wetlands and Deepwater Habitats in the United States* (Cowardin et al. 1979) for wetlands. Land cover in the Project area includes the following six broad types: upland forest, open land, wetland, open waters, agricultural land, and developed land, including industrial or commercial land, transportation land, and residential land. All land cover types, natural and human-modified, support migratory birds, but the species composition and abundances vary due to a variety of factors such as the time of year and resources available to birds (e.g., nest/roost sites, food). The general land cover types (i.e., migratory bird habitats) occurring in the Project area are discussed in further detail in Sections 3.1.1 to 3.1.6.

3.1.1 Upland Forest

In Pennsylvania, upland (terrestrial, non-palustrine) forest is defined as land dominated by trees over 16 feet tall and having at least 60% aerial cover (Fike 1999). Woodlands, which have trees over 16 feet tall but with as little as 10% aerial cover, are also grouped into this general land cover type. The Project will cross 72.4 miles of upland forests; deciduous forests account for approximately 60% of the upland forest areas traversed by the Project, and mixed and coniferous forests make up approximately 35% and 5%, respectively. Conifers, such as eastern hemlock (*Tsuga canadensis*) and eastern white pine (*Pinus strobus*), have been reduced by selective cutting. Red maple (*Acer rubrum*), black birch (*Betula lenta*), and eastern white pine are becoming more common in Pennsylvania, while sugar maple (*Acer saccharum*), eastern hemlock, and oak species (*Quercus* spp.) are declining (PADCNR 2010). The PADCNR (2010, 2014) reports that old-growth forests (forests that are near climax and have suffered few, if any, intrusions by humans) in Pennsylvania are uncommon. This is consistent with Transco's 2014 field observations. In general, CPL North and the northern part of CPL South contain the least amount of forest fragmentation, while forested land along the southern part of CPL South is the most fragmented, with numerous small patches and minimal interior forest.

Table 3-1

Land Use Types Crossed by the Pennsylvania Pipeline Facilities

Facility	Agricultural Land		Upland Forest/ Woodland		Industrial/ Commercial Land		Transportation Land		Residential Land		Open Land		Wetlands		Open Water		Total[a]	
	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
Pennsylvania																		
CPL North	11.7	6.0	30.5	15.6	0.1	0.1	0.6	0.3	1.5	0.8	10.1	5.2	2.6	1.3	0.4	0.2	57.4	100.0
CPL South	75.2	38.5	38.3	19.6	0.2	0.1	1.5	0.8	2.1	1.1	7.1	3.6	1.8	0.9	0.5	0.3	126.3	100.0
Chapman Loop	0.0	0.0	0.4	0.2	0.0	0.0	<0.1	0.0	0.0	0.0	2.4	1.2	<0.1	0.0	0.0	0.0	3.0	100.0
Unity Loop	2.9	1.5	3.1	1.6	0.0	0.0	0.1	0.1	<0.1	0.0	2.1	1.1	0.2	0.1	<0.1	0.0	8.5	100.0
PA Total	**89.8**	46.0	**72.3**	37.0	**0.3**	0.2	**2.2**	1.1	**3.6**	1.8	**21.7**	11.1	**4.6**	2.4	**0.9**	0.5	**195.2**	**100.0**

[a] All values rounded to the nearest tenth; numbers may not sum exactly due to rounding.

Key:
CPL = Central Penn Line
PA = Pennsylvania

M-20

Examples of migratory birds commonly occurring in upland forested areas in counties crossed by the Project include the red-bellied woodpecker (*Melanerpes carolinus*), a year-round resident, and the black-and-white warbler (*Mniotilta varia*), which migrates to the area to breed. Two BCCs are year-round residents of upland forests in counties crossed by the Project: the bald eagle and red-headed woodpecker (*Melanerpes erythrocephalus)*. An additional seven BCCs migrate to counties crossed by the Project to breed in upland forests each spring: wood thrush (*Hylocichla mustelina*), eastern whip-poor-will (*Antrostomus vociferous*), worm-eating warbler (*Helmitheros vermivorum*), Louisiana waterthrush (*Parkesia motacilla*), Kentucky warbler (*Geothlypis formosa*), cerulean warbler (*Setophaga cerulean*), and Canada warbler (*Cardellina canadensis*). The olive-sided flycatcher (*Contopus cooperi*) is a BCC that may use upland forests in counties crossed by the Project during spring and/or fall migrations (see Table A-1).

3.1.1.1 Deciduous Forest

Deciduous forests and woodlands consist of broadleaf trees (e.g., oaks and maples) that provide at least 75% of the overall canopy cover (Fike 1999). As previously noted, deciduous forest is the predominant forest community crossed by the Project, particularly in Columbia, Lebanon, Luzerne, Northumberland, Schuylkill, and Wyoming Counties. In total, the Project will cross approximately 40 miles of upland deciduous forest. Red maple was most commonly reported during the 2014 field surveys, along with multiple stands of red oak (*Quercus rubra*), white oak (*Quercus alba*), black walnut (*Juglans nigra*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), green ash (*Fraxinus pennsylvanica*), and various hickory (*Carya* spp.) species. Several occurrences of black cherry (*Prunus serotina*), gray birch (*Betula populifolia*), tuliptree (*Liriodendron tulipifera*), box elder (*Acer negundo*), and quaking aspen (*Populus tremuloides*) also were observed within this community type in the Project area. A limited number of sugar maple stands were identified in deciduous forest areas during the 2014 surveys.

3.1.1.2 Coniferous Forest

Coniferous forests and woodlands in Pennsylvania consist of cone-bearing trees with needle-like leaves, especially eastern hemlock and eastern white pine that generally exceed 75% of the overall canopy cover (Fike 1999). Associated species include a variety of northern hardwoods and oaks. Coniferous forests make up a relatively small portion of the total upland forest area crossed by the Project and account for approximately 3 miles of crossings. This forest type is most prominent in Luzerne and Columbia Counties. The trees most commonly

encountered in this forest community during the 2014 field surveys included eastern hemlock and eastern red cedar (*Juniperus virginiana*).

3.1.1.3 Mixed Deciduous/Coniferous Forests

Mixed forests and woodlands are defined as those whose canopy covers of both deciduous trees and coniferous trees exceed 25% (Fike 1999). Mixed forest communities were frequently encountered during the 2014 field surveys, as this forest type makes up approximately 25 miles of upland forest crossed by the Project. This forest type is prominent in the counties of Columbia, Luzerne, and Wyoming. Commonly observed mixed-forest species included eastern white pine, red maple, eastern hemlock, black walnut, American beech, and several birch (*Betula* spp.) species. Black cherry, red cedar, and oak species also were occasional components of the mixed forest communities. Some pine and oak appear to be planted in rows, but field conditions indicate that these areas are not part of an active silviculture operation.

3.1.2 Open Lands

The open land cover type includes all non-forested and non-wetland vegetated areas that are not landscaped or in agricultural production. It includes terrestrial herbaceous openings such as terrestrial grasslands (including non-palustrine meadows), successional old fields (i.e., previously active agricultural land), and maintained utility ROWs, as well as non-palustrine shrublands. In Pennsylvania, these terrestrial herbaceous openings and shrublands are generally defined as having less than 25% tree cover that is 16 feet or more tall (Fike 1999). Open lands have typically been cleared for farming, utility construction, or other developments but are not subject to frequent maintenance or disturbance. A majority of open lands within the Project are existing utility ROWs (accounting for approximately 52 miles) and shrublands (accounting for approximately 7 miles). Utility ROW lands were common in Luzerne, Lycoming, Columbia, and Chapman Counties, whereas shrublands were more frequently encountered in Wyoming, Schuylkill, and Columbia Counties.

Dominant plant species identified in the maintained ROWs during Transco's 2014 field surveys included timothy grass (*Phleum pretense*), Virginia strawberry (*Fragaria virginiana*), hayscented fern (*Dennstaedtia punctilobula*), creeping buttercup (*Ranunculus repens*), goldenrod (*Solidago* spp.), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), Kentucky blue grass (*Poa pratensis*), and smooth brome (*Bromus inermis*). Vegetation encountered in non-ROW open lands included reed canary grass (*Phalaris arundinacea*), goldentop (*Euthamia* spp.), multiflora rose (*Rosa mulitflora*), and clover species.

Examples of migratory birds commonly occurring in open land habitats in counties crossed by the Project include the American goldfinch (*Spinus tristis*), a year-round resident, and the gray catbird (*Dumetella carolinensis*), which migrates to the area to breed. An additional four BCCs migrate to counties crossed by the Project to breed in open lands each spring: blue-winged warbler (*Vermivora cyanoptera*), golden-winged warbler (*Vermivora chrysopter*), prairie warbler (*Setophaga discolor*), and Henslow's sparrow (*Ammodramus henslowii*). The upland sandpiper (*Bartramia longicauda*) and short-eared owl (*Asio flammeus*) are BCCs that may use open lands in counties crossed by the Project but are not known breeders in the area (see Table A-1).

3.1.3 Wetlands

During 2014 and 2015 field surveys, Transco classified wetlands in the Project area as palustrine forested (PFO), palustrine scrub-shrub (PSS), or palustrine emergent (PEM) (Cowardin et al. 1979). Palustrine systems include all non-tidal wetlands that are dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. The palustrine system was developed to group vegetated wetlands, commonly referred to as marshes, swamps, bogs, and prairies. Transco routed the proposed pipeline facilities and work areas to avoid wetlands to the greatest extent practicable, resulting in 4.8 miles of wetlands crossed by the Project. Wetlands are most prominent in Wyoming, Luzerne, Columbia, and Lebanon Counties.

Examples of migratory birds commonly occurring in wetlands in counties crossed by the Project are the swamp sparrow (*Melospiza georgiana*) and the red-winged blackbird (*Agelaius phoeniceus*), which are year-round residents. Two BCCs use wetlands during migration and winter only: short-eared owl and rusty blackbird (*Euphagus carolinus*) (see Table A-1).

3.1.3.1 Palustrine Emergent Wetlands

PEM wetlands are non-tidal wetlands characterized by erect, rooted, herbaceous hydrophytes, although some woody vegetation may be present. Hydrologic conditions may vary temporally in wetlands, with a sustained presence of water in the growing season that may increase or decrease during other parts of the year. Therefore, the vegetation found in PEM wetlands can be highly dynamic, with turnovers in the plant community based on changes in the season and hydrologic regime. Typically, hydrophytic vegetation is present for a majority of the growing season in most years (Cowardin et al. 1979). PEM wetlands are the most frequently encountered wetland type in the Project area, accounting for approximately 60% of the wetlands traversed by the Project.

Commonly observed species in PEM wetlands during Transco's surveys include spotted jewelweed (*Impatiens capensis*), fringed sedge (*Carex crinita*), lurid sedge (*Carex lurida),* common fox sedge (*Carex vulpinoidea*), sensitive fern (*Onoclea sensibilis*), Japanese stilt-weed (*Microstegium vimineum*), soft rush (*Juncus effusus*), and reed canary grass.

3.1.3.2 Palustrine Scrub-shrub Wetlands

PSS wetlands are freshwater wetlands dominated by woody vegetation less than 20 feet in height or with trunks less than 3 inches in diameter at breast height. The woody vegetation found in PSS wetlands is typically composed of true shrubs, saplings, young trees, and other stunted trees or shrubs (Cowardin et al. 1979). PSS wetlands account for approximately 15% of the wetlands traversed by the Project. Frequently observed shrub species observed during Transco's field surveys and associated with PSS wetlands include highbush blueberry (*Vaccinium corymbosum*), spicebush (*Lindera benzoin*), and multiflora rose.

3.1.3.3 Palustrine Forested Wetlands

PFO wetlands are commonly dominated by hydrophytic trees such as black willow (*Salix nigra*). Notable exceptions include wetlands that contain non-hydrophytic trees displaying buttressed roots (Environmental Laboratory 1987). In addition, some non-hydrophytic shrubs and trees can dominate PFO wetlands by rooting on raised microtopography throughout the wetland. PFO wetlands account for approximately 25% of the wetlands traversed by the Project, primarily in the CPL North and to a lesser extent in CPL South and the Unity Loop sections. Commonly observed tree species found in PFO wetlands during Transco's field surveys include eastern hemlock, black willow, and red maple.

3.1.4 Open Waters

Open water includes rivers, streams, creeks, canals, and other linear waterbodies, as well as lakes, ponds, and other non-flowing waterbodies. The Project ROWs will traverse a relatively small amount of open water, making up less than 1% of the total area and less than 1 mile. The Project will traverse a total of 207 linear perennial waterways. Based on FERC's classification system, the majority of waterways to be crossed by the Project are minor and/or intermediate, that is, less than 100 feet wide. The Project will traverse four major waterways, classified as those greater than 100 feet wide: the Susquehanna River (two crossings), the Conestoga River, Tunkhannock Creek, and Swatara Creek. The Project will traverse six non-linear waterbodies, such as lakes or ponds, accounting for less than 200 feet. Two of these non-linear waterbodies are located along CPL North, and four are located along CPL South.

Examples of migratory birds commonly occurring in open water habitats in counties crossed by the Project include the mallard *(Anas platyrhynchos)* and the double-crested cormorant *(Phalacrocorax auritus*). There are no BCCs that breed in open water habitats; however, open water habitats are vital components of the breeding territories of several BCCs occurring in counties crossed by the Project, such as the bald eagle, wood thrush, Louisiana waterthrush, and Kentucky warbler (see Table A-1).

3.1.5 Agricultural Lands

Agricultural land includes land associated with active cultivation of row and field crops; areas of grasses planted for livestock grazing or for the production of hay crops; orchards; and specialty crops, including vineyards, Christmas trees, fruits, and vegetables. Agricultural lands make up 45% of the lands crossed by the Project, for a total of 89.9 miles. Agricultural lands are the dominant land use along CPL South and make up a smaller portion of CPL North and the Unity Loop. No agricultural lands are crossed by the Chapman Loop. Agricultural lands crossed by CPL South in Lancaster and Lebanon Counties are primarily large tracts of row and field crops such as corn, soybeans, wheat, and hay. Agricultural lands crossed by CPL South in Schuylkill and Columbia Counties; CPL North in Columbia, Luzerne, Wyoming, and Susquehanna Counties; and Unity Loop in Lycoming County, are primarily hay fields with limited areas of row crops.

Examples of migratory birds commonly occurring in agricultural lands in counties crossed by the Project are the red-tailed hawk (*Buteo jamaicensis*) and the vesper sparrow (*Pooecetes gramineus*). The short-eared owl, red-headed woodpecker, and rusty blackbird are BCCs that may use agricultural lands in counties crossed by the Project (see Table A-1).

3.1.6 Developed Lands

Developed land includes land that has been modified or adapted from its original use. For the purposes of this Plan, developed land includes industrial and commercial lands, transportation lands, and residential lands. Industrial land used for mines, quarries, or manufacturing or other industrial facilities, and commercial land that has been developed for commercial or retail uses account for a total of 0.5 miles of the Project area. The Project will cross 2.3 miles of transportation land, most of which is located in CPL South and is composed of interstate highways; state, county, and local highways and roads; and railroad lines. Residential land, including any land or structure associated with residential areas, accounts for a total of 3.6 miles of the Project area.

Examples of migratory birds commonly occurring in developed lands in counties crossed by the Project are the house finch (*Haemorhous mexicanus*), a year-round resident, and the chimney swift (*Chaetura pelagica*), a summer breeding resident. Peregrine falcons are a BCC that nest in developed lands in counties crossed by the Project (see Appendix A, Table A-1).

3.2 Migratory Bird Key Habitat Areas

Transco identified specific areas where BCCs are known or assumed to occur in the Project area or are recognized as having greater value to birds. These areas, referred to as key habitat areas, were identified in an effort to establish the locations where vegetation clearing may have the greatest potential to result in adverse impacts on BCCs and where enhanced avoidance, minimization, and mitigation measures would be implemented. The areas considered key habitat areas are: Audubon Pennsylvania IBAs, Pennsylvania State Forests, Pennsylvania State Game Lands (SGLs), eBird (2014) hotspots, and interior forests. Habitats connected to these areas (i.e., not fragmented by major roads or other man-made features) also were considered. Interior forests were identified because they are assumed to provide suitable breeding habitat for the six interior forest BCCs occurring in the Project area. These migratory bird key habitat areas are discussed in further detail below and presented in Appendix A, Table A-3 and Figure B-1 in Appendix B.

3.2.1 Important Bird Areas

The IBA program is a global bird conservation initiative of BirdLife International and is implemented in the United States by the National Audubon Society (NAS 2014; Pennsylvania NAS 2013) and its local partners. Its purpose is to identify and conserve sites that provide essential habitats for breeding, wintering, and/or migrating birds. IBAs vary in size and may occur on public or private lands. Sites designated as IBAs must support one or more of the following: 1) special-status species, 2) restricted-range species, 3) species that are vulnerable because their populations are concentrated in one general habitat type or biome, and/or 4) species, or groups of similar species that are vulnerable because they congregate at high densities.

In Pennsylvania, IBAs are designated by the Pennsylvania Ornithological Technical Committee and encompass more than two million acres (Pennsylvania NAS 2013). The Project will traverse portions of four IBAs (Table A-3 and Figure B-1). CPL North will cross 0.5 miles of the Ricketts Glen – Crevelling Lake Area IBA; however, the Project will be co-located with Transco's existing Leidy Line through this IBA. Two segments of CPL South will cross 4.7 miles of the St. Anthony's Wilderness – SGL 211 IBA. A majority of these two crossings impact

continuous mixed forest or deciduous forest habitat. CPL South will cross 3.3 miles of the Kittatinny Ridge IBA, and impacted habitats will be continuous deciduous forest, mixed forest habitat, and cropland/pastureland, with some patches of open and developed land. CPL South also will cross 0.2 miles of the Lower Susquehanna River Gorge – Conowingo/Muddy Run IBA, through a mixture of forest, agricultural, and developed land. The Project also will cross forest lands (i.e., "Connecting Habitats") that are connected to the Tamarack Swamp IBA near the Chapman Loop and the Lower Susquehanna River Gorge – Conowingo/Muddy Run IBA near CPL South.

3.2.2 Pennsylvania State Forests

There are 2.2 million acres of land in the Pennsylvania state forest system. The goal of the state forest system is to retain forests' wild character and biological diversity while providing pure water and emphasizing opportunities for dispersed recreation, habitats for plants and animals, sustained yields of quality timber, and environmentally sound use of mineral resources (PADNCR 2014b).

The Chapman Loop will traverse Sproul State Forest adjacent to the existing Leidy Line system ROW. Approximately 0.9 miles of the state forest will be crossed during construction, including approximately 0.3 miles of open land on the existing Leidy Line ROW and approximately 0.6 miles of upland forest that is adjacent to the existing ROW. Forest habitats adjacent to the existing ROW are connected to the Tamarack Swamp IBA. Refer to Table A-3 and Figure B-1 for more details on the specific Project locations and bird species observed in Sproul State Forest and connected forest habitats.

3.2.3 Pennsylvania State Game Lands

The PGC administers 305 individual SGLs that make up over 1.4 million acres, of which about 1.2 million acres are categorized as forest (Jacobson et al. 2010). The SGLs are primarily managed for the protection, propagation, and preservation of game and non-game wildlife. During development of the CPL North and CPL South pipeline routes, Transco attempted to avoid all SGLs. In cases where avoidance was not practicable, Transco attempted to co-locate the proposed route with existing utility ROWs to minimize effects on wildlife habitat in SGLs where possible. Portions of four Pennsylvania SGLs are crossed by the Project: SGL 206, SGL 084, SGL 132, and SGL 211 (Table A-3 and Figure B-1).

CPL North will cross the northern edge of SGL 206 at two locations in Luzerne County where it is co-located with Transco's existing Leidy Line. The Project will cross approximately

1.0 mile of the SGL, comprising mostly open land on the existing ROW and upland forest adjacent to the ROW. The area also includes two intermediate-size stream crossings along the route: Shingle Run and Arnold Creek.

CPL South will cross approximately 0.3 miles of SGL 211 in Lebanon County, all of which is upland forest. The Project will cross the Appalachian Trail within a forested portion of SGL 211. Transco plans to cross the trail and adjacent portion of SGL 211 using a directional bore.

CPL South will cross approximately 0.8 miles of SGL 132 adjacent to an existing oil pipeline ROW. This crossing consists of open land on the existing ROW and upland forest outside of the maintained ROW.

CPL South will cross approximately 0.8 miles of SGL 084 adjacent to an existing electric transmission line ROW. This crossing consists mostly of upland forest adjacent to the open land on the existing ROW.

3.2.4 eBird Hotspots

eBird (2014) is the world's largest repository for bird observation data launched by the National Audubon Society and Cornell Lab of Ornithology in 2002. It houses hundreds of millions of bird observations, with millions more arriving each month. eBird has designated many birding areas as hotspots and summarizes data for these locations. All eBird hotspots near the Project were reviewed, and those with a minimum of 100 species recorded were included in the list of key habitat areas in the Project area. The presence of eBird hotspots with at least 100 species observed indicates two things: 1) that many bird species use this area throughout the year; and 2) the area is important/popular with birders and representative of the public's value of this site/habitat. All eBird hotspots with at least 100 recorded species were part of established IBAs and SGLs, with the exception of Safe Harbor/Conestoga River Park. In a few cases, an SGL or IBA was associated with an eBird hotspot that did not have at least 100 recorded species; however, eBird data were still used to identify the potential presence of BCCs. Refer to Table A-3 and Figure B-1 for more details on the specific locations and bird species observed for eBird hotspots in the Project area.

3.2.5 Interior Forests

Transco identified interior forest habitats in the vicinity of the Project and routed the Project to avoid them to the greatest extent practicable. Interior forests provide habitat that is not substantially influenced by edge habitat conditions, such as light penetration, wind, humidity,

and exposure to predators (Slonecker et al. 2012). For the purposes of this evaluation, Transco defined interior forest as forest patches that are located more than 300 feet from a non-forested edge (Harper et al. 2005).

3.2.5.1 Minimum Area Requirements for Birds of Conservation Concern

Six BCCs that breed in the Project area are interior forest birds that are considered area-sensitive: wood thrush, Louisiana waterthrush, worm-eating warbler, Kentucky warbler, cerulean warbler, and Canada warbler. These species require large areas of interior forest to breed successfully. Robbins (1979) examined minimum area requirements for forest birds in Maryland using Breeding Bird Survey data and provided preliminary estimated areas needed to sustain viable breeding populations for several of the species noted above, including wood thrush (250 acres), Louisiana waterthrush (250 acres), worm-eating warbler (750 acres), and Kentucky warbler (80 acres). Later, Robbins et al. (1989) examined the minimum area requirements for forest birds in Maryland and adjacent counties in Pennsylvania, Virginia, and West Virginia based on the relative abundances of each species established from point count surveys. The authors suggest that the minimum forest patches required for the six BCCs noted above to breed are as follows: wood thrush (2.5 acres), worm-eating warbler (370 acres), Louisiana waterthrush (865 acres), Kentucky warbler (42 acres), cerulean warbler (1,730 acres), and Canada warbler (988 acres). These requirements were identified using the forest size at which the probability of a species occurring is 50%.

Robbins et al. (1989) note that species may occur in forest patches smaller than their suggested minimum area requirements, but that presence alone is not an indication that the species is successfully breeding in those areas. Several studies have attempted to refine Robbins et al.'s estimates and have focused specifically on some of the BCCs that breed in the Project area. For example, Hoover et al. (1995) examined nesting success of wood thrushes relative to the forest area categories used by Robbins et al. (1989) to study minimum area requirements. Hoover et al. found that wood thrushes had about 35% nesting success in forest patches 25 to 75 acres in size, despite Robbins et al. determining that the species had a 70% probability of being detected in a forest in that size range. Nesting success was not examined for forests 250 acres in size, which Robbins et al. (1989) identified as having a 75% chance of detecting a wood thrush and which Robbins (1979) estimated was the minimum area required to sustain a viable population of the species.

Wenny et al. (1993) evaluated minimum area requirements for worm-eating warblers and Kentucky warblers in Missouri and found that Robbins et al.'s (1989) minimum area

requirements may be too small for these species. Worm-eating warblers were not present in a 741-acre site and were present, but not breeding, in an 840-acre site. The authors also suggest that 741-acre forests may not be suitable for sustaining a minimum viable population of Kentucky warblers. Robbins et al. had previously suggested the minimum area requirements for these species were 370 acres and 42 acres, respectively.

Research indicates that not all interior forest areas are of the same value, particularly as they pertain to the forest interior BCC species occurring in the Project area. While it is possible that these species may occur in smaller forest patches during the breeding season, it appears that they may have limited reproductive success (Wenny et al. 1993; Hoover et al. 1995). Based on the work of Robbins (1979), Robbins et al. (1989), Wenny et al. (1993), and Hoover et al. (1995), the smallest minimum area requirement of the six interior forest BCCs belongs to the wood thrush. Hoover et al. (1995) found that this species has limited success breeding in smaller forests (i.e., 25 to 75 acres) but, unlike Robbins et al. (1989), did not test forests of 250 acres and greater. Robbins (1979) also indicated that 250 acres was the minimum area required to sustain a viable population of wood thrushes.

Based on this literature review, and for the purposes of this evaluation, Transco has conservatively estimated 250 acres as the minimum forest patch requirement for the six forest interior BCCs to nest successfully. As a conservative approach, Transco identified interior forests traversed by the Project that are part of a forest patch (including interior and edge forest) approximately 225 acres or greater, as discussed below. These are the interior forests anticipated to have the highest potential for breeding BCCs and, therefore, impacts from construction of the Project may have adverse effects on forest interior birds.

3.2.5.2 Delineating Interior Forests

Transco used recent aerial photography (Google Earth September 12, 2012–September 26, 2014 [Google Earth 2015] and Transco aerial imagery dated April 2014) to delineate the amount of interior forests associated with forest patches 225 acres or greater crossed by the pipeline facilities. Forest patches were delineated by their non-forested edges. Edge was defined as the “Interface between forested and non-forested ecosystems or between two forests of contrasting composition or structure. In practice, a forest edge can be defined as the limit of the continuous canopy or the boundary in canopy composition” (Harper et al. 2005).

Forest patches included mid-successional or mature forests of any species composition. Christmas tree farms, early successional/shrub vegetation, tree “wind rows,” and trees in

residential yards or landscaping were not included as forest patches. Individual forest patches were delineated by other non-forested cover types (e.g., agricultural, residential), paved roads, maintained dirt or gravel roads, utility ROWS, and large water features. Unmaintained dirt or gravel roads with intact tree canopy cover, wetlands, small "natural" forest openings, overgrown utility ROWs, and small water features were included within forest patches. After delineating forest patches, interior forests were based on a 300-foot buffer of the forest patch edges. Forest interiors were considered independent of each other, regardless of if they were connected by a common contiguous forest patch.

3.2.5.3 Interior Forests in the Project Area

Based on this analysis, the Project will cross 45 interior forests. No proposed new aboveground facilities are located within interior forests. Interior forests are listed in Appendix A, Table A-3 and shown on Figure B-1 in Appendix B.

4 AVOIDANCE AND MINIMIZATION MEASURES

Transco has implemented avoidance and minimization measures during the planning and pre-construction phases of the Project. Avoidance measures have been developed to reduce direct and indirect environmental impacts, including migratory birds and their habitats. To the extent practicable, Transco avoided and minimized sensitive habitats during Project routing, including SGLs, interior forest habitats, and wetlands.

4.1 Avoidance Measures during Project Siting

The first routing mechanism developed to avoid or minimize effects on sensitive habitats, including forests, was the co-location of pipeline routes with existing utility and transportation infrastructure via a desktop analysis. Approximately 45% of CPL North will be co-located with the existing Transco Leidy Line system, Williams' Field Services (midstream) pipelines, and electric power line ROW; approximately 8% of CPL South will be co-located with electrical power line ROWs; and the Chapman Loop and Unity Loop will be 100% co-located with the existing Transco Leidy Line system. Where co-location with existing infrastructure was not possible, Transco minimized the amount of forested land crossed wherever possible. To the extent feasible, Transco proposes to reduce temporary construction workspace from 90 or 100 feet to 75 feet in wetlands to minimize impacts.

Transco also implemented a series of measures to minimize the potential effects of the Project when routing through forests was unavoidable. Field routing surveys were conducted within a 600-foot-wide study corridor along a centerline that was determined based on desktop data. The field routing survey was designed to further refine the proposed centerline within that corridor to minimize effects on sensitive resources, including interior forest, while developing a constructible route. Large contiguous forest stands (with more interior forest area) were given a greater value, or weight, than smaller fragmented stands, such that routing the pipeline through a smaller noncontiguous forest stand was preferable to routing through a larger contiguous forest stand. This approach was implemented to minimize forest fragmentation, maintain forest and habitat contiguity, protect wildlife movement and dispersal corridors, and maintain higher ratios of interior forest to forest edge. In addition, forest stands with a continuous tree canopy were avoided preferentially over those that had some level of internal fragmentation or discontinuity with respect to tree cover.

In addition, the shape of the forest patch was taken into account to minimize the amount of tree clearing that will be required to construct, operate, and maintain the pipeline. Routing

through a forest patch was accomplished by locating the ROW as far from the interior portion of the forest stand as practicable. Adjusting the route and associated tree clearing effects toward the edges of a forest patch will maximize preservation of interior forest habitat. In addition, more linear forest patches with shorter crossing distances were preferentially selected over forest stands with longer crossing distances due to their shape or geometry. These criteria were implemented to minimize how the effects were spread across a forest stand and to reduce the proportion of the forest stand that will be affected by tree clearing. Furthermore, the routing distance through a forest patch was minimized by locating the pipeline between internal sections of a forest stand that were already disturbed, cleared, or fragmented with respect to forest cover to minimize the total tree clearing impacts within the stand. Lastly, the pipeline was routed to exit the forest stand as soon as feasible to further minimize the length over which forest impacts will occur within a particular stand.

4.2 Impact Minimization Measures

Measures developed to avoid or minimize environmental impacts on sensitive resources during construction and restoration of the Project are also being incorporated into various Project construction and mitigation plans. The Transco Project-specific Environmental Construction Plan (ECP) outlines measures, best management practices, and plans to minimize construction and operational impacts on the environment and other public resources. Avoidance and minimization measures developed by Transco to date that indirectly benefit or relate to migratory birds are listed in this Plan as “General Measures.” Each avoidance and minimization General Measure will be applied throughout the entire Project area for each construction phase where these measures would apply.

In addition to the General Measures, specific measures have been developed to avoid and minimize impacts on migratory birds. These measures are listed in this document as “Migratory Bird-Specific Measures.” Due to the sensitivity of key habitat areas (including larger tracts of interior forest), additional “Key Habitat Area–Specific Measures” have been developed to further reduce Project impacts on migratory bird populations. “Other Resource Specific Measures” have also been included, as they indirectly benefit migratory birds.

A summary of the proposed avoidance and minimization measures is presented below. The document from which each measure was adopted or modified is referenced in parentheses unless otherwise stated in the text of the measure.

4.2.1 General Measures

GM1: Environmental inspectors for each construction spread will be on site during construction and restoration (ECP).

GM2: Clearing will be restricted to only the approved ROW and ATWS areas necessary to complete construction (ECP).

GM3: Transco will clearly delineate the approved workspace boundaries (ECP).

GM4: Where applicable, waterbody setbacks will be maintained at all times (ECP).

GM5: Transco has developed site-specific wetland crossing plans to be implemented during construction (ECP).

GM6: Trees will be felled into the ROWs to prevent damage to trees adjacent to the ROWs (ECP).

GM7: Construction debris (e.g., garbage timber, slash, mats, drilling fluids, excess rock, etc.) will be disposed of according to federal, state, and local regulations (ECP).

GM8: Access to the ROW during construction and restoration activities is permitted only by approved new or existing access roads identified on the construction drawings (ECP).

GM9: Transco will restrict travel from non-essential vehicles, including off-highway vehicles, on the Project ROW and other operations areas (ECP).

GM10: Transco will determine methods and locations for the disposal of tree and other vegetation removed during clearing before initiating construction activities (ECP).

GM11: Speed limits on Project ROWs and access roads will be posted and enforced.

GM12: Erosion control measures will be carefully described in the ECP and Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (Transco Plan).

GM13: Transco will implement a site-specific Noxious and Invasive Plant Management Plan for the construction activities associated with the Project.

GM14: Transco will implement a Spill Plan for Oil and Hazardous Materials to prevent any spills that may occur during the Project and to respond to any spills that do occur (ECP).

GM15: Transco will implement fire prevention planning throughout all stages of construction and maintenance (ECP).

GM16: Any herbicides used will be applied according to manufacturer specifications and any applicable regulations (ECP).

GM17: Open ends of agricultural drain tile will be covered to prevent ingress of wildlife (ECP).

GM18: The use of synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat is prohibited, unless the product is specifically designed to minimize harm to wildlife (ECP).

GM19: Vehicles, equipment, and materials (including equipment mats) will be inspected and cleaned of soils, vegetation, and debris before they are brought to the Project area or moved to another work area within the construction ROW to prevent the spread of invasive species (Resource Report 3).

4.2.2 Migratory Bird Specific Measures

MB1: Transco will not conduct clearing activities in migratory bird key habitats from April 1 to July 31 to avoid impacts on breeding migratory birds in these areas (Measure KHA1). Transco will implement all reasonable measures to avoid clearing other, non-key habitat areas during the breeding season (April 1 through July 31) to further minimize impacts. However, for the reasons outlined in Section 4.6, Transco may not be able to complete clearing for all approximately 167 miles of non-key habitat area affected by the Project during the breeding season.

MB2: Protection buffers around active, known bald eagle nests will be used to avoid adverse impacts on the species from construction activities. These buffers include:

- 330-foot buffer if the construction activity will not be visible from the nest
- 660-foot buffer if the construction activity will be visible from the nest
- 0.5-mile buffer from blasting activities (USFWS 2007).

Note: Transco will continue to work closely with the USFWS, monitor the bald eagle nest database maintained by the USFWS, and take appropriate actions if

any new nests are documented near the construction area, especially if blasting may occur. In the event that new nests are documented near the construction area, Transco will also complete a Bald Eagle Project Screening Form, as recommended by the USFWS (USFWS 2014b; Shellenberger 2015).

MB3: Transco will conduct post-construction routine ROW vegetation maintenance from August 1 to April 14 to avoid potential impacts on the migratory bird breeding season in accordance with the FERC Upland Erosion Control, Revegetation, and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures (FERC 2013a,b), as amended by the Transco Plan and Project-specific Wetland and Waterbody Construction and Mitigation Procedures (Transco Procedures). In no cases will routine vegetation maintenance clearing occur between April 15 and July 31 of any year, unless otherwise approved by the appropriate regulatory agencies.

MB4: Transco will provide environmental compliance training that includes specific information related to migratory birds to all construction and operations personnel (ECP).

MB5: Night construction operations will not allow lighting to project upward during migratory periods (approximately August through November and March through May) (ECP).

MB6: For the Project's communication towers, Transco will follow the guidelines set forth in the USFWS (2000) Memorandum *Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers*, to the extent possible. These guidelines include the following:

- Communication towers will be 199 feet or less above ground level.
- No lighting will be used on communication towers.
- Communication towers will be free standing without the support of guy wires.
- Communication towers will be constructed in areas co-located with other Project facilities (e.g., compressor and regulator stations).
- Any security lighting will be down-shielded.

4.2.3 Key Habitat Area Specific Measures

KHA1: Transco will not conduct clearing activities in migratory bird key habitat areas from April 1 to July 31 to avoid impacts on breeding migratory birds in these areas. Key habitat areas cover approximately 28.5 miles or 15% of the Project length in Pennsylvania. April 1 to July 31 represents the entire breeding season for BCCs that breed within the Project's key habitat areas. The breeding seasons for BCCs in key habitat areas are defined in Table A-2.

KHA2: Transco will clearly delineate the boundaries of key habitat areas with signs during all construction phases, and fencing will be used when clearing trees in adjacent areas during restricted periods to ensure compliance (ECP).

KHA3: Night construction operations will not allow lighting to project upward during migratory periods (approximately August through November and March through May) (ECP).

4.2.4 Other Resource-Specific Measures

Fisheries

The Pennsylvania Fish and Boat Commission imposes timing restrictions for construction in Trout Stocked Waters, Wild Trout Waters, and Class A Wild Trout Streams. The Project will cross several waterbodies with one or more of these trout classifications, including several crossings within migratory bird key habitat areas. The Pennsylvania Boat and Fish Commission timing restrictions (e.g., period when in-stream work is not allowed) for these waterbodies are as follows:

- Trout Stocked Waters: March 1–June 15
- Wild Trout Waters: October 1–December 31
- Class A Wild Trout Streams: October 1–April 1

Northern Long-eared Bat

Northern long-eared bats, a species recently designated as threatened under the ESA, were captured during 2014–2015 summer mist netting and radio-tracking surveys in the Project area. Seasonal vegetation clearing restrictions will be required around roost sites and will vary depending on the Project's proximity to maternity roosts and existing conditions of workspaces (i.e., greenfield vs. existing ROW). Vegetation clearing restrictions for northern long-eared bats are,

in some cases, more conservative than those for migratory birds. In locations within known northern long-eared bat summer habitat and less than 0.25 miles from a documented occupied maternity roost, clearing would not occur between June 1 and July 31 which overlaps with the clearing restriction in MB1 (see Section 4.3). In other areas within 0.25 miles of a known bat hibernaculum, vegetation clearing will be restricted from April 1 to May 14 and from August 16 to November 15. Refer to Figure D-2 in Transco's *Draft Biological Assessment* (Ecology & Environment, Inc. 2015a) for detailed northern long-eared bat vegetation clearing window locations.

4.3 Other Pipeline Construction Considerations

Transco will implement all reasonable measures to avoid potential impacts on migratory birds during the breeding season. Construction contractors will be directed to prioritize clearing of migratory bird habitats. Key habitat areas (defined in Table A-1, and shown on Figure B-1) will be given the highest priority to ensure clearing is completed in these areas during the non-breeding season. Following key habitat areas, priority will be given to any other patches of mature forest. If permit conditions or other restrictions prohibit the use of mechanized equipment or limit access to key habitat areas, Transco will require contractors to use non-mechanized equipment to ensure trees in key habitat areas are felled in the non-breeding season.

Transco will also require the construction contractor to expedite clearing of migratory bird habitats by mobilizing multiple clearing crews for each construction spread. The number of crews assigned to each spread and the starting points will be determined according to site access and the prioritization outlined above.

These measures are intended to ensure that clearing of key habitat areas is completed before April 1. In the unlikely event that a key habitat area is not cleared prior to April 1, Transco will consult with USFWS and FERC to develop a plan to minimize and mitigate potential impacts to migratory birds. Transco has taken all reasonable steps to complete clearing of other migratory bird habitats during the non-breeding season. However, there are multiple challenges to the Project schedule that might prevent clearing in limited sections of the ROW prior to April 1. These include other time of year restrictions, permitting delays and resource availability. The sections below provide a more detailed summary of these potential risks. As described in Section 6, Transco is consulting with USFWS regarding compensatory mitigation for impacts to migratory birds across the Project area. This mitigation will benefit

migratory birds across the region and will be designed to offset any potential impacts resulting from clearing during breeding season.

4.3.1 Time of Year Restrictions

Under normal conditions, pipeline construction activities are completed in sequence where clearing activities are immediately followed by grading, trenching, pipeline installation, backfilling, grading and final restoration. This sequencing minimizes environmental and land use impacts by reducing the amount of time the construction ROW is disturbed. However, for this Project, there are a number of other considerations which significantly restrict Transco's ability to sequence construction in this manner.

The proposed pipeline segments cross 43 streams designated as Class A wild trout streams, and an additional 118 streams designated as wild trout streams. Twenty-four of the Class A wild trout and wild trout streams are also trout stocked streams. These streams are most prevalent in the northern half of the Project along CPL North, the northern half of CPL South, and the Unity Loop. The PAFBC prohibits in-stream construction activities from October 1 through April 1 in Class A wild trout streams, from October 1 through December 31 in wild trout streams, and from March 1 through June 15 in trout stocked streams.

Equipment crossings must be installed across these streams to establish a travel lane along the length of the construction ROW. The installation of these equipment bridges for streams that cannot be spanned will require in-stream disturbance. The inability to install equipment crossings during the restricted period will cutoff access to sections of the construction ROW. As a result, these time of year restrictions, while only technically applicable to in-stream construction, prevent access to sections of the ROW between affected stream crossings and limit all construction activities in these areas.

The available construction window in areas with Class A wild trout streams, when combined with the typical clearing restriction for breeding migratory birds (April 1 through July 31), is limited to August 1 through September 30. For areas with designated wild trout streams, the available construction windows are August 1 through September 30 and January 1 through March 31. The duration of construction activities will vary depending on site and geological conditions, land access, terrain, weather, etc. but, given the size of this Project, it is not practical to complete construction activities within these narrow windows.

4.3.2 Permitting and ROW Acquisition Delays

Transco may not proceed with clearing activities until the FERC approves the project and issues Notice to Proceed. The necessary land rights and applicable permits and clearances must also be obtained prior to clearing. Transco anticipates receiving these items in time to complete clearing of migratory bird habitats before April 2017. However, there is a possibility that one or more of these approvals could delay clearing activities.

Transco continues to negotiate with landowners to obtain the easement necessary to construct the Project. To date, Transco has not been able to negotiate easements with a number of these landowners. If the FERC approves the Project and no agreement with a landowner is reached, Transco may acquire the easement under eminent domain (a right given by statute to take private land for FERC-authorized use) with a court determining compensation. If necessary, the eminent domain process would not begin until the FERC approves the project and can take several months.

Environmental surveys have not been completed on some of the majority of these inaccessible properties. These surveys will be completed once Transco gains access to these properties. If environmental resources, such as wetlands or waterbodies, are identified on a property, then Transco may need to modify or obtain certain permits and clearances prior to initiating clearing activities. This permit modification process may take several months.

A delay in the FERC and/or the other downstream risk factors outlined above (e.g., eminent domain process, environmental surveys or permit modifications) has the potential to delay the start of clearing activities. Depending on the extent of these potential delays, it may not be possible to complete clearing activities in some areas prior to April 1.

4.3.3 Resource Availability

Construction of the Project is planned to occur in 2016-2017. Regionally, there are multiple pipeline projects that are expected to be under construction during this timeframe. These projects will be subject to similar time of year restrictions, which will limit the resources (e.g., equipment and qualified personnel) available to complete clearing prior to April 1.

4.4 Restoration and Revegetation

Restoration and revegetation measures included in Transco's ECP are developed to reduce environmental impacts, including impacts on migratory bird habitats. Transco is currently starting restoration planning and is considering the functionality of seed mixes as they relate to migratory birds. Transco has selected optimal seed mixes that will not only reestablish

vegetation cover and stabilize the ROW but will also benefit migratory birds and other wildlife species (e.g., butterflies, pollinators). Seed mixes include plant species that are native to the region.

For restoration of temporary workspaces, Transco is evaluating and consulting with applicable agencies and organizations (e.g., USFWS, Natural Resources Conservation Service, and National Wild Turkey Federation) regarding activities that will maximize wildlife habitat and food sources.

5 PROJECT EFFECTS ON MIGRATORY BIRDS AND THEIR HABITATS

This section outlines potential Project-related impacts on migratory birds. Impacts are classified as short term (less than 5 years), long term (greater than 5 years), or permanent (lasting at least the life of the Project) and are described as having direct or indirect effects. This section also discusses the relative intensity of the residual impacts after the proposed avoidance and minimized measures have been implemented (refer to Section 4). The impacts evaluation below is divided into three separate discussions: 1.) potential impacts due to Project activities that occur during the breeding season, 2.) potential impacts associated with Project-related removal or modification of habitat, and 3.) potential impacts associated with the Project's proposed communication towers.

5.1 Breeding Season Impacts

Transco is implementing all reasonable measures to avoid clearing during the breeding season. However, as outlined above, it may be necessary to clear in some non-key habitat areas during the migratory bird breeding season. Some maintenance activities may also be necessary in the breeding seasons of subsequent years during operations. This section describes the potential impacts associated with Project activities occurring during the breeding season, with the exception of impacts related to the removal or modification of breeding habitat, which are addressed in Section 5.2 "Habitat-related Impacts."

Mortality/Injury

Some mortalities or injuries of migratory birds may occur as a direct result of Project activities during breeding season; however, Transco will minimize these impacts to the extent practicable. Adult migratory birds are generally highly mobile and would be able to avoid Project vehicles and equipment during clearing, grading, excavation, and maintenance activities. Eggs and young birds would be more susceptible to crushing, mortality, or injury, and adult birds may potentially suffer mortality or injury while defending their nests or young. Transco will avoid mortalities or injuries of breeding birds and their eggs or young by clearing vegetation outside of the breeding season to the extent practicable, particularly in key habitat areas (see MB1 and KHA1 in Sections 4.3 and 4.4, respectively). By clearing outside of the breeding season in key habitat areas, Transco will avoid impacts on BCCs, especially those that are associated with interior forests. Transco will also conduct vegetation maintenance activities during the operations phase of the Project outside of the breeding season (see MB3 in Section 4.3).

Transco will implement several additional avoidance and minimization measures to greatly reduce the likelihood of migratory bird mortalities and/or injuries from Project activities (refer to Section 4). Transco will also restrict travel on approved Project ROWs and access roads to essential vehicles only (GM8 and GM9) and will impose speed limits (GM11) to reduce the potential for bird collisions with vehicles and equipment. Transco will implement a series of measures to minimize the potential for mortalities or injuries occurring because of Project-related contaminants or fires. Transco will implement a Spill Plan for Oil and Hazardous Materials to minimize the likelihood of spills occurring during construction and operation of the Project and to respond to any spills that do occur (see GM14 in Section 4.2). Likewise, Transco will apply herbicides according to manufacturer specifications and any applicable regulations to reduce spills or overspray (see GM16 in Section 4.2). Transco will implement fire prevention planning throughout all stages of construction and maintenance to minimize the risk of accidental fires (see GM15 in Section 4.2).

In summary, Transco will substantially reduce the likelihood of migratory bird mortalities or injuries related to vegetation clearing, vehicle collisions, contaminants, and fires with the implementation of the proposed avoidance and minimization measures.

Sensory Disturbance

The increased presence of humans, noise, and vibrations associated with Project activities would likely cause sensory disturbances of migratory birds. The resulting negative impacts are expected to be intermittent and short term, occurring during work hours and ceasing after construction activities have moved from a given area. Displacement, nest abandonment, and avoidance of the area are direct responses to sensory disturbances. Birds may be injured or suffer mortality as an indirect impact of fleeing an area of disturbance. Stress also is a potential direct impact on migratory birds, which may lead to subsequent indirect impacts on the health of individuals and local populations. Stress and displacement/avoidance associated with disturbances take time and energy away from important activities like feeding, reproduction, and parental care (Frid and Dill 2002). As a result, individuals and their young may exhibit a reduction in overall fitness and may be more susceptible to illness and predation. The fitness of local populations may also be at risk if disturbances impact a relatively large number of individuals and/or occur over a relatively long period of time.

Artificial lights associated with the night-lighting of Project activities occurring between sunset and sunrise may disorient migratory birds. Some birds use natural light sources and patterns for navigation, interspecific interactions, and other critical biological behaviors

(Longcore and Rich 2004). If night construction operations are required, Transco will ensure that lighting is not projected upward during migratory periods, which is approximately August through November and March through May (MB5). In general, construction and operation activities will be conducted during daylight hours. Impacts associated with light pollution are expected to be minimal given the Project's commitment to limiting night-lighting activities.

In most cases, Project activities would be short term and episodic. As such, sensory disturbance impacts associated with these activities may affect individuals but would not likely have notable impacts on any local populations of migratory birds. Permanent aboveground structures such as compressor stations would create potential localized disturbances for the life of the Project, thus resulting in more permanent impacts. However, compressor stations were sited in areas that were already subject to anthropogenic disturbances and away from key habitat areas. Transco avoided sensitive habitats during Project routing (see Section 4.1) and, to the extent possible, will clear vegetation outside of the breeding season for many migratory birds (MB1) to avoid or minimize sensory disturbances. Given the Project's anticipated construction start date and in-service date, the majority of construction activities can be expected to occur outside of the migratory bird breeding season. Transco has also committed to conducting routing ROW maintenance outside of the breeding season (MB3).

Increased Predation

Transco does not expect Project construction or maintenance activities to result increased predation of migratory birds. Trash from Project personnel has the potential to attract predators like gulls, American crows (*Corvus brachyrhynchos*), and raccoons (*Procyon lotor*), sometimes in large numbers. Transco will dispose of construction debris according to federal, state, and local regulations (GM7), and construction crews will practice good housekeeping to prevent garbage from attracting predators. Transco will also train personnel accordingly (MB4) to completely avoid and minimize the potential for these impacts, and have Environmental Inspectors on site to ensure compliance (GM1).

5.2 Habitat-related Impacts

Habitat removal and/or modification of existing habitats during Project construction would have impacts on migratory birds. The construction and operational impacts on land use types are summarized in Table 5-1. In many cases, grading, clearing, and excavation of open lands, non-forested wetlands, open water, agricultural lands, and developed lands would result in short-term impacts, as these land use types would likely be restored to pre-construction

conditions within five years. Upland and wetland forested lands would not be restored to pre-construction conditions potentially for decades, if at all. Therefore, impacts resulting from clearing of forested land would be long term or permanent. The removal of interior forests would also indirectly result in all connected interior forest within 300 feet effectively losing its function as interior, as these areas would now be subject to edge effects (see discussion of fragmentation and edge effects below for full detail). The construction of permanent structures would also result in the permanent loss of habitat. The largest permanent structures (e.g., the compressor stations) would permanently remove 14.4 acres of upland forest, 16.3 acres of open land, and 72.9 acres of agricultural land.

5.2.1 Interior Forests

Direct impacts on interior forest associated with the construction and operation of the Project are based on the direct removal of interior forest habitat. The Project would directly impact 270.4 acres of interior forest during construction, of which 118.9 acres would be permanently maintained as open habitat during operations (Table 5-2).

Transco calculated indirect impacts on interior forests by two methods. First, indirect impacts were calculated as a measurement of the acreage 300 feet laterally from the edges of the construction workspaces into interior forests. During construction, the Project would indirectly impact 1,993.8 acres of interior forest in this manner. Second, indirect impacts on interior forests were calculated due to loss of functionality from Project-related fragmentation. Forest patches may be segmented by the construction workspace into areas that no longer meet the size criteria (225 acres or greater) for containing an interior forest suitable for the successful breeding of area-sensitive forest BCCs. While the construction workspace often impacts only the edge of a forest patch, it could result in division of a forest patch into two or more patches that may not be 225 acres or greater. Project construction would impact 66 forest patches 225 acres or larger and divide them into 118 forest patches. Of the resulting 118 forest patches, 73 maintain the size criteria to support an interior forest habitat within the forest patch. Forty-five would no longer meet the size criteria for supporting interior forest habitat. Table A-4 quantifies the fragmentation of each forest patch 225 acres or greater crossed by the Project. Figure B-2 provides a pre- and post-construction depiction of the fragmentation of each forest patch 225 acres or greater by the Project.

Table 5-1
Land Use Acreage Affected by Construction and Operation of Pennsylvania Pipeline Facilities

Facility/County	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total[a]	
	Cons[b]	Op[c]	Cons[b]	Op[c]	Cons[b]	Op[c]	Cons[b]	Op[c]	Cons[b]	Op[c]	Cons[b]	Op[c]	Cons[b]	Op[c,d]	Cons[b]	Op[c]	Cons[b]	Op[c]
Pennsylvania																		
CPL North																		
Columbia	8.3	1	34.9	10.1	0	0	0.2	0.1	2.6	0.5	17.7	4.6	3.3	1.1	0.4	0.1	67	17.4
Luzerne	44.4	10.8	167.2	59.3	0.6	0.1	5.6	1.2	9.4	2.2	80.8	9.3	11.9	3.8	1	0.3	320.9	86.8
Wyoming	102.6	39.2	162	78.9	23	0.2	4.7	1	6.4	2.2	40.9	12.9	7.3	4.6	1.2	0.8	317.6	139.7
Susquehanna	43.6	13	29.2	14.3	0	0	1.3	0.3	5.6	2.2	18.2	8.9	3.3	2.1	0.2	0.1	101.5	40.9
Subtotal CPL North[a]	**198.9**	**64**	**393.3**	**162.6**	**23.6**	**0.3**	**11.8**	**2.6**	**24**	**7.1**	**157.6**	**35.7**	**25.8**	**11.6**	**2.8**	**1.3**	**807**	**284.8**
CPL South																		
Lancaster	546.9	177.1	71.3	30	18.3	0	10.9	3.4	16.8	6	15.6	4.8	2.7	1.5	1.8	1	683.9	223.6
Lebanon	427.9	113.1	114.6	47.6	0.9	0	13.6	3.5	6.3	1.7	17.7	5.9	3.7	2.2	1.3	0.7	586.2	175
Schuylkill	153.5	38.2	172.1	52.7	25.8	0.2	8.4	1.5	5.7	1.7	54.8	16.1	7.5	4.2	0.7	0.4	429.2	115.1
Northumberland	10	4.1	118.9	45.3	0.9	0	11.1	3.9	4.1	1.3	14.3	3.4	0.3	0.1	0.4	0.2	160.1	58.3
Columbia	383	122.3	126.4	53.7	1.9	0.5	5.4	2.3	12.9	2.2	48	15.4	5.4	3	1.5	0.9	586.4	200.3
Subtotal CPL South[a]	**1,521.3**	**454.8**	**603.3**	**229.3**	**47.8**	**0.7**	**49.4**	**14.6**	**45.8**	**12.9**	**150.4**	**45.6**	**19.6**	**11**	**5.7**	**3.2**	**2,445.8**	**772.3**
Chapman Loop																		
Clinton	0	0	26.5	6.3	31.1	0	4.5	0	0.2	0.1	34.2	6.4	0.2	0.1	0	0	97.1	12.8
Subtotal Chapman Loop[a]	**0**	**0**	**26.5**	**6.3**	**31.1**	**0**	**4.5**	**0**	**0.2**	**0.1**	**34.2**	**6.4**	**0.2**	**0.1**	**0**	**0**	**97.1**	**12.8**
Unity Loop																		
Lycoming	80.2	10.3	44.8	11.7	0	0	3.1	0.4	2.9	0.4	31	3.6	2.3	0.4	0.3	0.1	164.9	27.1
Subtotal Unity Loop[a]	**80.2**	**10.3**	**44.8**	**11.7**	**0**	**0**	**3.1**	**0.4**	**2.9**	**0.4**	**31**	**3.6**	**2.3**	**0.4**	**0.3**	**0.1**	**164.9**	**27.1**
Total	**800.4**	**529.1**	**1,067.9**	**409.9**	**102.5**	**1.0**	**68.8**	**17.6**	**72.9**	**20.5**	**373.2**	**91.3**	**47.9**	**23.1**	**8.8**	**4.6**	**3,514.8**	**1,097**

[a] All values rounded to the nearest tenth; numbers may not sum exactly due to rounding.
[b] Construction impacts include area within permanent ROW.
[c] Operation impacts associated with maintenance of permanent ROW
[d] Includes all wetlands within the permanent ROW.
Key:
Cons = construction
CPL = Central Penn Line
Op = Operation

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Table 5-2
Interior Forest Habitat Within Large Forest Patches Affected by the Project[a]

Pennsylvania County	Number of Interior Forest Patches Crossed[b]	Length of Interior Forest Crossed by Pipeline Route (miles)	Total Length of Pipeline Route (miles)	Percentage of Route Crossing Interior Forest	Area of Interior Forest Impact (acres)	
					Construction[c]	Operation[d]
Pennsylvania						
CPL North						
Columbia	0	0	5.0	0.0%	0.0	0.0
Luzerne	4	1.0	22.4	4.7%	12.2	6.3
Wyoming	12	6.1	23.3	26.0%	72.8	36.8
Susquehanna	1	0.2	6.7	3.1%	2.2	1.3
Total CPL North	17	7.3	57.4	12.7%	87.2	44.4
CPL South						
Lancaster	1	<0.1	36.8	<0.1%	0.3	0.1
Lebanon	5	3.1	28.3	11.0%	45.1	19.9
Schuylkill	8	3.4	18.5	18.3%	53.7	20.6
Northumberland	9	3.7	8.9	42.2%	58.7	22.7
Columbia	7	1.8	33.8	5.2%	23.3	10.6
Total CPL South	30	12.0	126.3	9.5%	181.1	73.9
Chapman Loop						
Clinton	1	0.0[e]	2.9	0.0%	2.1	0.6
Unity Loop						
Lycoming	0	0.0	8.6	0.0%	0.0	0.0
Project Total (PA)	**45[f]**	**19.3**	**195.2**	**9.9%**	**270.4**	**118.9**

[a] For the purposes of this analysis, large forest patches are contiguous forested areas 225 acres or greater in size, which can support nesting habitat for BCCs.
[b] Includes all interior forest patches crossed by construction and operation workspaces. Multiple crossings of a single continuous interior forest patch are counted once, but interior forests that are crossed in two counties are counted twice (i.e., once in each affected county row).
[c] Construction impacts include temporary construction workspaces and area within permanent rights-of-way.
[d] Operation impacts associated with maintenance of permanent rights-of-way.
[e] No interior forest patches crossed by centerline in Clinton County. Impact acreage reflects interior forest crossed by access road.
[f] Sum for counties does not equal Project total. Project total reflects number of unique interior forests crossed by the Project when not double-counting those that are crossed in two separate counties.

Key:
BCC = Birds of Conservation Concern
CPL = Central Penn Line
PA = Pennsylvania

While some interior forest species (e.g., hooded warblers [*Wilsonia citrina*]) would still be able or willing to traverse the cleared area to travel between patches (Norris and Stutchbury 2001); others (e.g., black-capped chickadees, ovenbird [*Seiurus aurocapilla*]) may not (Desrochers and Hannon 1997; St. Clair et al. 1998; Gobeil and Villard 2002). As discussed in Section 3.2.5.1, the six BCCs that may breed in the Project area are area-sensitive and require larger forest tracks to breed successfully. Fragmentation and reduction in the size of forest patches may impact the suitability of breeding habitat for the aforementioned species. These impacts may be short term, long term, or permanent, depending on the time required for a specific habitat type to recover to pre-construction conditions and Project land use (e.g., permanent structures).

As forest fragmentation increases, so too does the amount of forest edge habitats. Habitat edges are transition areas between two disparate plant communities or successional stages (Masters et al. 2002). Increases in forest edges may benefit or have no effect on some species, but are detrimental to others. Species such as the eastern phoebe (*Sayornis phoebe*) and rose-breasted grosbeak (*Pheucticus ludovicianus*) that require more than one habitat type or successional stage often benefit from the proximity of two habitat types at edges. Conversely, species such as the worm-eating warbler that require forest interiors or larger, contiguous tracts of forests are typically negatively impacted. Forest edges increase the likelihood of nest predation and brood parasitism (Robinson et al. 1995). Birds are also more exposed to common predators that frequent the edges (Masters et al. 2002; Kays et al. 2008). These topics are covered in detail below in Section 5.2.2.

While the removal or modification of interior forested areas would have long-term or permanent impacts on some migratory birds, the creation of new open lands would provide habitat for a different suite of species. Three BCCs that breed in the Project area may benefit from the addition of open or successional habitats: blue-winged warbler, golden-winged warbler, and prairie warbler. Early-successional habitats are also of importance to species that breed in forest interiors (Stoleson 2013). After breeding, many interior-nesting species will shift their habitat use to successional habitats, which may be a result of birds seeking out habitats with high food abundance (e.g. berries) or dense vegetation to hide from predators. Of the 270.4 acres of interior forests that will be directly impacted during construction, 151.5 acres will be allowed to return to successional habitat and eventually forested.

5.2.2 Other Habitat-Related Impacts

Project construction will require ground disturbance that could result in impacts on migratory bird habitat through erosion, contaminants, fires, and the introduction and/or spread of invasive species; however, Transco will implement a series of avoidance and minimization measures to substantially reduce the likelihood of these impacts. Transco will implement measures in the ECP (GM12) to stabilize soils and prevent erosion, develop a Spill Plan for Oil and Hazardous Materials to minimize the likelihood of spills occurring during construction and operation of the Project and to respond to any spills that do occur (GM14), and implement fire prevention planning throughout all stages of construction and maintenance to minimize the risk of accidental fires (GM15). Transco will minimize the potential for the introduction and/or spread of invasive plants by implementing a site-specific Noxious and Invasive Plant Management Plan for Project construction activities (GM13), and by inspecting and cleaning Project vehicles, equipment, and materials of soils, vegetation, and debris before they are brought to Project workspaces or moved to another work area within the Project ROW (GM19).

A longer-term impact would result from the creation of new edge habitats, which also can attract predators of migratory birds. Common predators including American crows, blue jays (*Cyanocitta cristata*), and raccoons are considered "edge species" and use edges to facilitate movement and improve hunting efficiency (Masters et al. 2002). Coyotes are often most abundant in areas of disturbance within forests (Kays et al. 2008) and may travel extensive distances on linear pathways, including utility ROWs (Way and Eatough 2006).

Brown-headed cowbirds (*Molothrus ater*) are brood parasites that may affect migratory birds in the Project area. Female cowbirds may lay 40 eggs per season in the nests of other migratory birds, which then outcompete the hosts' young for food (Lowther 1993). As such, this species can have a negative impact on host species. Brown-headed cowbirds are generally considered an "edge species" and prefer woodland and field transitional habitats. Parasitism by brown-headed cowbird has been documented in a number of breeding BCCs found in the Project area, including wood thrush (Hoover and Brittingham 1993; Dececco et al. 2000), worm-eating warbler (Dececco et al. 2000), Louisiana waterthrush (Smith and Cook 2000), golden-winged warbler (Confer et al. 2003), Kentucky warbler (Sargent et al. 1997), and cerulean warbler (Rogers 2006). Brown-headed cowbirds are currently widespread and common throughout the Project and vegetation clearing, particularly forested areas, could facilitate their expansion into new localized areas (eBird 2014). However, patterns of brown-headed cowbird parasitism can be unpredictable in different habitat types and due to other environmental

variables. The proximity to human residences and agriculture (i.e., food lots) may better correlate to brown-headed cowbird densities and parasitism rates of songbird nests (Gustafson et al. 2002; Hahn and Hatfield 2002; Tewksbury et al. 2006).

Transco made a concerted effort to limit the amount of new edge habitats created by siting the Project along existing edges where feasible (see Section 4.1). These siting efforts were accomplished, in large part, by co-locating the Project along more than 38 miles of existing utility ROWs and avoiding large patches of forest where possible. Transco's siting efforts will minimize the potential for increased predation and nest parasitism on migratory birds associated with the Project's creation of edge habitats.

5.3 Other Impacts

Collisions

Migratory birds, especially those that migrate at night (e.g., neotropical songbirds), are susceptible to collisions with man-made structures, which is a significant source of anthropogenic bird mortality in North America (Longcore et al. 2012). Susceptibility to collisions with communication towers is also influenced by FAA lighting; birds may be disoriented or attracted to tower lighting, especially during inclement weather (Gauthreaux and Belser 2006). Communication towers lit with non-flashing red FAA lights versus flashing white or red FAA lights appear to have a greater incident of bird collusions (Gehring et al. 2009). Compared to taller structures, communication towers less than 197 feet (60 meters) in height have a negligible contribution to bird mortality from collisions with communication towers (Longcore et al. 2012). However, communication towers of any height can cause major mortality events if they or surrounding facilities are improperly lit.

To avoid and minimize impacts on migratory birds, Transco will implement several guidelines as recommended by the USFWS (2000; MB3). All Project communication towers will be less than 190 feet in height. The communication towers will not be lit with FAA lighting, and any nearby facility lighting (e.g., security) will be down-shielded. Project communication towers will be free standing without the support of guy wires and will be constructed in areas co-located with other Project facilities. These measures will greatly reduce the potential for migratory bird collisions with Project communication towers.

6 MITIGATION

Transco is consulting with the USFWS to identify compensatory mitigation requirements for impacts on migratory bird habitats. The USFWS is in the process of completing a Habitat Equivalency Analysis (HEA) using impact data provided by Transco. The results of the HEA will be used to quantify impacts on migratory bird habitats and the compensatory mitigation required to offset these effects. Transco will develop a detailed compensatory mitigation plan addressing impacts on USFWS-managed resources upon receipt of the HEA results and recommendations from the USFWS.

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The attachments to this report are too voluminous to include in this document. They are available for viewing on the Federal Energy Regulatory Commission's website at http://www.ferc.gov. Using the "eLibrary" link, select "General Search" from the eLibrary menu, enter the selected date range and "Docket No." excluding the last three digits (i.e., CP15-138), and follow the instructions. For assistance please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact 202-502-8659. The Category/Accession number for this submittal is 20151218-5234.

APPENDIX N

VEGETATION COVER AFFECTED BY CONSTRUCTION AND OPERATION OF THE ATLANTIC SUNRISE PROJECT

APPENDIX N

Vegetation Cover Affected by Construction and Operation of the Atlantic Sunrise Project

	Agricultural Land		Upland Forest		Open Land		Wetlands	
Facility/County/ Workspace Type	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.
PENNSYLVANIA								
CPL North								
Columbia								
Pipeline	2.2	0.7	30.2	10.1	16.3	4.5	3.3	0.4
ATWS	0.5	0	4.5	0	0.6	0	0	0
Mainline valves and tie-in	0.3	0.3	0	0	0.1	0.1	0	0
Access roads	0	0	0.2	0	0	0	0	0
Contractor staging areas	5.3	0	0	0	0.7	0	0	0
Contractor and pipe yards	0	0	0	0	0	0	0	0
Luzerne								
Pipeline	26.7	10.7	147.5	59.1	41	8.8	11	1.9
ATWS	8.5	0	15.4	0	3.6	0	0.9	0
Mainline valves	0	0	0.1	0.1	0.1	0.1	0	0
Access roads	1	0.1	4.1	0.1	1.6	0.4	0	0
Contractor staging areas	8.2	0	0.1	0	0	0	0	0
Contractor and pipe yards	0	0	0	0	34.5	0	0	0
Cathodic protection	0	0	<0.1	0	0	0	0	0
Wyoming								
Pipeline	70	39.1	144	78.8	20.8	12.5	6.9	0.9
ATWS	23.1	0	9.7	0	6	0	0.4	0
Mainline valves	0	0	0.1	0.1	0	0	0	0
Access roads	5	0.1	8.2	0	3.2	0.4	0	0
Contractor staging areas	4.5	0	0	0	0	0	0	0
Contractor and pipe yards	0	0	0	0	10.9	0	0	0
Cathodic protection	0.1	0	0	0	0	0	0	0
Susquehanna								
Pipeline	24.7	12.6	25.9	14.3	13.8	8.9	3.3	0.6
ATWS	8.1	0	2.9	0	1.4	0	0	0
Mainline valves	0	0	0	0	0	0	0	0
Access roads	2	0.4	0.4	0	3	0	0	0
Contractor staging areas	8.8	0	0	0	0	0	0	0
Contractor and pipe yards	0	0	0	0	0	0	0	0
Cathodic protection	0.3	0.1	0	0	0	0	0	0
Subtotal CPL North	**194**	**63.7**	**392.9**	**162.3**	**157.3**	**35.5**	**26.1**	**3.7**
CPL South								
Lancaster								
Pipeline	346.9	174.7	60.7	29.9	8.9	4.8	2.4	0.3
ATWS	115.5	0	8.9	0	3.5	0	0.3	0
Mainline valves	1.1	1.1	0	0	0	0	0	0
Access roads	11.5	1.3	1.2	0.1	1.8	0	0	0
Contractor staging areas	36.9	0	0.5	0	1.4	0	0	0
Contractor and pipe yards	35	0	0	0	0	0	0	0
Cathodic protection	0.3	0.1	0	0	0	0	0	0

APPENDIX N (cont'd)

Vegetation Cover Affected by Construction and Operation of the Atlantic Sunrise Project

	Agricultural Land		Upland Forest		Open Land		Wetlands	
Facility/County/ Workspace Type	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.
Lebanon								
Pipeline	223.9	112.1	93	46.9	11.8	5.9	3.4	1.3
ATWS	74	0	11.8	0	3.4	0	0.3	0
Mainline valves	0.7	0.7	0	0	0	0	0	0
Access roads	6.3	0.3	9.8	0.7	2.5	0	0	0
Contractor staging areas	21.9	0	0	0	0	0	0	0
Contractor and pipe yards	101.1	0	0	0	0	0	0	0
Cathodic protection	0.3	0.1	0	0	0	0	0	0
Schuylkill								
Pipeline	73.8	37.4	104.6	51.7	29.4	15.2	6.3	0.2
ATWS	23.2	0	16.1	0	5.4	0	1.2	0
Mainline valves	0.7	0.7	0.1	0.1	0	0	0	0
Access roads	5.1	0.1	24.2	0.9	20	0.9	0	0
Contractor staging areas	25.6	0	<0.1	0	0	0	0	0
Contractor and pipe yards	25.1	0	27.1	0	0	0	0	0
Cathodic protection	0.4	0.1	0	0	0	0	0	0
Northumberland								
Pipeline	7.1	3.6	88.8	44.5	6.7	3.3	0.3	0
ATWS	2.4	0	8.1	0	1.7	0	<0.1	0
Mainline valves	0.4	0.4	0	0	0	0	0	0
Access roads	0.1	0.1	22	0.8	5.9	0.1	0	0
Contractor staging areas	0	0	0	0	0	0	0	0
Contractor and pipe yards	0	0	0	0	0	0	0	0
Columbia								
Pipeline	241.2	121.7	107.6	53.7	31.7	15.4	4.7	0.8
ATWS	72.8	0	11.6	0	7.4	0	0.4	0
Mainline valves	0.5	0.5	0	0	0	0	0	0
Access roads	10.1	0.1	6.5	0	1.9	0	0.3	0
Contractor staging areas	15.9	0	0.7	0	7	0	0	0
Contractor and pipe yards	42.5	0	0	0	0	0	0	0
Cathodic protection	0.6	0.2	0	0	0.2	0.1	0	0
Subtotal CPL South	**1,521.1**	**451.9**	**602.3**	**229**	**148.9**	**45.7**	**19.4**	**2.6**
Chapman Loop								
Clinton								
Pipeline	0	0	13.9	2.7	16.4	5.2	0.2	<0.1
ATWS	0	0	0.8	0	0.9	0	0	0
Mainline valves and tie-in assembly	0	0	0.3	0.3	0.8	0.8	0	0
Access roads	0	0	10.3	3.3	3.9	0.4	0	0
Contractor staging areas	0	0	1.2	0	2.6	0	0	0
Contractor and pipe yards	0	0	0	0	9.6	0	0	0
Subtotal Chapman Loop	**0**	**0**	**26.3**	**6**	**33.4**	**5.6**	**0.2**	**<0.1**

APPENDIX N (cont'd)

Vegetation Cover Affected by Construction and Operation of the Atlantic Sunrise Project

	Agricultural Land		Upland Forest		Open Land		Wetlands	
Facility/County/ Workspace Type	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.
Unity Loop								
Lycoming								
Pipeline	35.3	9.5	40.4	11.7	22.2	3.6	2.1	0.1
ATWS	9.5	0	2.2	0	2.7	0	0.2	0
Mainline valves and tie-in assembly	0.7	0.7	0	0	0	0	0	0
Access roads	1.4	0.1	2.2	0	1.7	0	0	0
Contractor staging areas	2.4	0	0	0	4.4	0	0	0
Contractor and pipe yards	30.9	0	0	0	0	0	0	0
Subtotal Unity Loop	**79.4**	**9.6**	**44.8**	**11.7**	**30.9**	**3.6**	**2.4**	**0.1**
VIRGINIA								
Mainline A and B Replacements								
Prince William								
Pipeline	0	0	1.5	0	20.2	0	2	0
ATWS	0	0	0.6	0	0.7	0	0.2	0
Mainline valves	0	0	0	0	0.3	0.2	0	0
Access roads	0	0	0.1	0	1.4	0.3	0	0
Contractor staging areas	0	0	0	0	0	0	0	0
Contractor and pipe yards	0	0	0	0	0	0	0	0
Fairfax								
Pipeline	0	0	0	0	0	0	0	0
ATWS	0	0	0	0	0	0	0	0
Mainline valves	0	0	0	0	0	0	0	0
Access roads	0	0	0	0	0	0	0	0
Contractor staging areas	0	0	0	0	0	0	0	0
Contractor and pipe yards	0	0	0	0	0	0	0	0
Subtotal Mainline A and B Replacements	**0**	**0**	**2.2**	**0**	**22.6**	**0.3**	**2.2**	**0**
PIPELINE FACILITIES TOTAL	**1,820.5**	**525.3**	**1,068.5**	**409.1**	**393.1**	**90.7**	**50.4**	**6.4**
NEW ABOVEGROUND FACILITIES								
New Compressor Station 605	45	36	5.1	3.2	0	0	0	0
New Compressor Station 610	32.8	32.8	0.7	0.7	0	0	0	0
Zick Meter Station with pig launcher and receiver	9.1	4.1	0	0	0	0	0	0
Springville Meter Station	0	0	4.8	3.1	<0.1	<0.1	0	0
North Diamond Regulator Station	0	0	1.6	1.5	0.7	0.3	0	0
West Diamond Regulator Station with pig launcher and receiver	0	0	3	3	1.8	1.4	0	0
River Road Regulator Station with pig receiver	0	0	2.1	2.1	0.3	0.3	0	0
Subtotal	**86.9**	**72.9**	**17.3**	**13.6**	**2.8**	**2**	**0**	**0**
MODIFIED COMPRESSOR STATIONS								
Compressor Station 517 b	0	0	6.3	0.8	6.7	0.6	0	0
Compressor Station 520 b	0	0	0	0	23.8	15.5	0	0
Compressor Station 190	0	0	0	0	5.7	3.5	0	0
Compressor Station 185	0	0	0	0	0	0	0	0

APPENDIX N (cont'd)

Vegetation Cover Affected by Construction and Operation of the Atlantic Sunrise Project

	Agricultural Land		Upland Forest		Open Land		Wetlands	
Facility/County/ Workspace Type	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.
Compressor Station 170	0	0	0	0	0	0	0	0
Compressor Station 160	0	0	0	0	4.5	0	0	0
Compressor Station 155	0	0	0	0	0	0	0	0
Compressor Station 150	0	0	0	0	0	0	0	0
Compressor Station 145	0	0	0	0	0	0	0	0
Subtotal	**0**	**0**	**6.3**	**0.8**	**43.8**	**19.6**	**0**	**0**
MODIFIED M&R								
Puddlefield Meter Station	0	0	0	0	0	0	0	0
Grover Meter Station	0	0	0	0	0.1	0	0	0
Shelby M&R Station	0	0	0. 0	0	0.1	<0.1	0	0
Cleveland County Meter Station	0	0	0	0	0.1	0	0	0
Asheville M&R Station	0	0	0	0	0.1	<0.1	0	0
Foote Mineral M&R Station	0	0	0	0	0.1	<0.1	0	0
Kings Mountain M&R Station	0	0	0	0	0.1	<0.1	0	0
Lithium Meter Station	0	0	0	0	0.1	<0.1	0	0
Gastonia Meter Station	0	0	0	0	0.1	<0.1	0	0
Bessemer City M&R Station	0	0	0	0	0	0	0	0
Stanley Meter Station	0	0	0.1	0	0	0	0	0
Hickory Meter Station	0	0	0	0	0	0	0	0
Duke Lincoln Meter Station	0	0	0	0	0	0	0	0
Lowesville Meter Station	0	0	0	0	0.2	0.1	0	0
Charlotte Meter Station	0	0	0	0	0.7	<0.1	0	0
Davidson Meter Station	0	0	0	0	0	0	0	0
NC Natural Tidewater Meter Station	0	0	0	0	0	0	0	0
Iredell Meter Station	0	0	0	0	0.6	0	0	0
Hicks Crossroads Meter Station	0	0	0	0	0.3	0	0	0
Mooresville Meter Station	0	0	0	0	0.2	0.1	0	0
Linwood Road Meter Station	0	0	0	0	0.3	0	0	0
Statesville Meter Station	0	0	0	0	0.5	0.1	0	0
Park Road Power Plant Meter Station	0	0	0	0	0.3	<0.1	0	0
Salisbury M&R Station	0	0	0	0	0.1	0	0	0
Frontier Appalachian Meter Station	0	0	0	0	0	0	0	0
Spencer Buck Meter Station	0	0	0	0	0.2	<0.1	0	0
West Lexington M&R Station	0	0	0	0	0.4	<0.1	0	0
Lexington M&R Station	0	0	0	0	0.2	<0.1	0	0
Winston Salem M&R Station	0	0	0	0	<0.1	<0.1	0	0
Kernersville Meter Station	0	0	0	0	0.1	<0.1	0	0
Greensboro M&R station	0	0	0	0	0.3	<0.1	0	0
Stokesdale Meter Station	<0.1	<0.1	0	0	0.1	0	0	0
Bethany M&R Station	0	0	<0.1	<0.1	0	<0.1	0	0
Rockingham Meter Station	0	0	0	0	0	0	0	0
Timken M&R Station	0	0	0	0	0.2	<0.1	0	0
Gaffney M&R Station	0	0	0	0	0.1	<0.1	0	0
Cherokee Co-Gen Meter Station	0	0	<0.1	0	0.2	<0.1	0	0

APPENDIX N (cont'd)

Vegetation Cover Affected by Construction and Operation of the Atlantic Sunrise Project

	Agricultural Land		Upland Forest		Open Land		Wetlands	
Facility/County/ Workspace Type	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.
Skygen Co-Gen Meter Station	0	0	0	0	0	0	0	0
Deering Milliken M&R Station	0	0	0	0	0	0	0	0
Blacksburg M&R Station	0	0	<0.1	<0.1	0	<0.1	0	0
Broad River Meter Station	0	0	0	0	0.2	<0.1	0	0
York Road Meter Station	0	0	0	0	0.2	0	0	0
Mill Creek Meter Station	0	0	0	0	0	0	0	0
Subtotal	**<0.1**	**<0.1**	**0.1**	**0**	**5.9**	**0.4**	**0**	**0**
EXISTING MLVs								
MLV 145-10	0	0	0	0	0.4	0	0	0
MLV N545	0	0	0	0	0.5	0	0	0
MLV 145-20	0	0	0	0	0.4	0	0	0
MLV 145-21	0	0	0	0	0.5	0	0	0
MLV 150-D5	0	0	0	0	0.4	0	0	0
MLV 150-10	0	0	0	0	0.3	0	0	0
MLV 150-D15	0	0	0	0	1	0	0	0
MLV 150-20	0	0	0	0	0.4	0	0	0
MLV 155-D2	0	0	0	0	0.3	0	0	0
MLV 155-B2	0	0	0	0	0.3	0	0	0
MLV 155-B5	0	0	0	0	0.2	0	0	0
MLV 155-10	0	0	0	0	0.3	0	0	0
MLV 155-20	0	0	0	0	0.5	0	0	0
MLV 140-D15	0	0	0	0	0	0	0	0
MLV 140-20	0	0	0	0	0.5	0	0	0
Subtotal	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**
ABOVEGROUND FACILITIES TOTAL	**86.9**	**72.9**	**23.7**	**14.4**	**58.5**	**22**	**0**	**0**
PROJECT TOTAL	**1,907.4**	**598.2**	**1,092.2**	**423.5**	**451.6**	**112.7**	**50.4**	**6.4**

APPENDIX O

LAND USE TABLES

TABLE O-1

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
PENNSYLVANIA																		
Central Penn Line (CPL) North																		
Columbia																		
Pipeline	2.2	0.7	30.2	10.1	0.0	0.0	0.2	0.1	1.6	0.5	16.3	4.5	3.3	1.1 (0.4)	0.4	0.1	54.2	17.0
ATWS	0.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.6	0.0	0.0	0.0	0.0	0.0	6.2	0.0
Mainline valves and tie-in	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.4
Access roads	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Contractor staging areas	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.7	0.0	0.0	0.0	0.0	0.0	6.0	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luzerne																		
Pipeline	26.7	10.7	147.5	59.1	0.4	0.1	2.4	1.0	6.8	2.2	41.0	8.8	11.0	3.8 (1.9)	0.9	0.3	236.7	85.9
ATWS	8.5	0.0	15.4	0.0	0.2	0.0	0.3	0.0	1.1	0.0	3.6	0.0	0.9	0.0	0.1	0.0	30.1	0.0
Mainline valves	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2
Access roads	1.0	0.1	4.1	0.1	0.0	0.0	2.9	0.2	1.5	0.0	1.6	0.4	0.0	0.0	0.0	0.0	11.1	0.7
Contractor staging areas	8.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.5	0.0	0.0	0.0	0.0	0.0	34.5	0.0
Cathodic protection	0.0	0.0	<0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Wyoming																		
Pipeline	70.0	39.1	144.0	78.8	0.3	0.2	1.8	1.0	3.8	2.1	20.8	12.5	6.9	4.6 (0.9)	1.2	0.8	248.7	139.0
ATWS	23.1	0.0	9.7	0.0	0.3	0.0	0.3	0.0	1.1	0.0	6.0	0.0	0.4	0.0	0.0	0.0	40.8	0.0
Mainline valves	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Access roads	5.0	0.1	8.2	0.0	2.9	0.0	2.6	0.0	1.5	0.1	3.2	0.4	0.0	0.0	0.0	0.0	23.5	0.6
Contractor staging areas	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	19.5	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	0.0	0.0	30.3	0.0
Cathodic protection	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
Susquehanna																		
Pipeline	24.7	12.6	25.9	14.3	0.0	0.0	0.5	0.3	3.8	2.2	13.8	8.9	3.3	2.1 (0.6)	0.2	0.1	72.3	40.5
ATWS	8.1	0.0	2.9	0.0	0.0	0.0	0.1	0.0	1.1	0.0	1.4	0.0	0.0	0.0	0.0	0.0	13.5	0.0
Mainline valves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Access roads	2.0	0.4	0.4	0.0	0.0	0.0	0.7	0.0	0.7	0.0	3.0	0.0	0.0	0.0	0.0	0.0	6.9	0.4
Contractor staging areas	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cathodic protection	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Subtotal CPL North	**194.0**	**63.7**	**392.9**	**162.3**	**23.6**	**0.3**	**11.9**	**2.5**	**24.0**	**7.0**	**157.3**	**35.5**	**26.1**	**11.5 (3.8)**	**2.8**	**1.3**	**838.2**	**284.9**
CPL South																		
Lancaster																		
Pipeline	346.9	174.7	60.7	29.9	0.0	0.0	6.6	3.1	11.2	5.6	8.9	4.8	2.4	1.5 (0.3)	1.8	1.0	438.1	220.4
ATWS	115.5	0.0	8.9	0.0	0.0	0.0	0.5	0.0	2.8	0.0	3.5	0.0	0.3	0.0	<0.1	0.0	131.3	0.0
Mainline valves	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
Access roads	11.5	1.3	1.2	0.1	1.5	0.0	3.2	0.3	2.4	0.4	1.8	0.0	0.0	0.0	0.0	0.0	21.6	2.1
Contractor staging areas	36.9	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	39.3	0.0
Contractor and pipe yards	35.0	0.0	0.0	0.0	16.8	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.5	0.0
Cathodic protection	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Lebanon																		
Pipeline	223.9	112.1	93.0	46.9	0.0	0.0	4.2	2.1	3.8	1.6	11.8	5.9	3.4	2.2 (1.3)	1.3	0.7	341.9	171.8
ATWS	74.0	0.0	11.8	0.0	0.0	0.0	1.4	0.0	1.6	0.0	3.4	0.0	0.3	0.0	0.0	0.0	92.4	0.0
Mainline valves	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
Access roads	6.3	0.3	9.8	0.7	0.9	0.0	8.0	1.4	0.9	0.1	2.5	0.0	0.0	0.0	0.0	0.0	28.2	2.5
Contractor staging areas	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.9	0.0
Contractor and pipe yards	101.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101.1	0.0
Cathodic protection	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
Schuylkill																		
Pipeline	73.8	37.4	104.6	51.7	0.5	0.2	2.0	1.0	3.5	1.7	29.4	15.2	6.3	4.2 (0.2)	0.7	0.4	220.9	111.8
ATWS	23.2	0.0	16.1	0.0	0.1	0.0	0.3	0.0	1.1	0.0	5.4	0.0	1.2	0.0	<0.1	0.0	47.4	0.0
Mainline valves	0.7	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8
Access roads	5.1	0.1	24.2	0.9	0.1	0.0	6.1	0.5	1.1	0.0	20.0	0.9	0.0	0.0	0.0	0.0	57.2	2.5
Contractor staging areas	25.6	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.6	0.0
Contractor and pipe yards	25.1	0.0	27.1	0.0	25.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.3	0.0
Cathodic protection	0.4	0.1	0.0	0.0	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.5
Northumberland																		
Pipeline	7.1	3.6	88.8	44.5	0.0	0.0	1.4	0.7	2.7	1.3	6.7	3.3	0.3	0.1 (0.0)	0.4	0.2	107.4	53.7
ATWS	2.4	0.0	8.1	0.0	0.0	0.0	0.1	0.0	0.9	0.0	1.7	0.0	<0.1	0.0	<0.1	0.0	13.3	0.0
Mainline valves	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
Access roads	0.1	0.1	22.0	0.8	0.9	0.0	9.6	3.2	0.5	0.0	5.9	0.1	0.0	0.0	0.0	0.0	39.0	4.2
Contractor staging areas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Columbia																		
Pipeline	241.2	121.7	107.6	53.7	1.0	0.5	2.7	2.3	4.5	2.2	31.7	15.4	4.7	3.0 (0.8)	1.5	0.9	396.9	199.7
ATWS	72.8	0.0	11.6	0.0	0.0	0.0	0.4	0.0	1.7	0.0	7.4	0.0	0.4	0.0	0.0	0.0	94.3	0.0
Mainline valves	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
Access roads	10.1	0.1	6.5	0.0	0.0	0.0	2.1	0.0	2.6	0.0	1.9	0.0	0.3	0.0	0.0	0.0	23.4	0.1
Contractor staging areas	15.9	0.0	0.7	0.0	0.9	0.0	0.2	0.0	4.1	0.0	7.0	0.0	0.0	0.0	0.0	0.0	28.8	0.0
Contractor and pipe yards	42.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.5	0.0
Cathodic protection	0.6	0.2	0.0	0.0	0.0	0.0	<0.1	<0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.9	0.3
Subtotal CPL South	**1,521.1**	**451.9**	**602.3**	**229.0**	**48.6**	**1.1**	**51.4**	**14.6**	**46.0**	**13.0**	**148.9**	**45.7**	**19.4**	**11.2 (2.6)**	**5.5**	**2.5**	**2,446.7**	**773.5**

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
Chapman Loop																		
Clinton																		
Pipeline	0.0	0.0	13.9	2.7	0.0	0.0	0.1	0.0	0.0	0.0	16.4	5.2	0.2	0.1 (<0.1)	<0.1	0.0	30.7	8.0
ATWS	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	1.7	0.0
Mainline valves and tie-in assembly	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	1.1	1.1
Access roads	0.0	0.0	10.3	3.3	0.0	0.0	0.4	0.0	0.2	0.1	3.9	0.4	0.0	0.0	0.0	0.0	14.8	3.7
Contractor staging areas	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	4.1	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	31.1	0.0	4.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	0.0	0.0	44.7	0.0
Subtotal Chapman Loop	**0.0**	**0.0**	**26.3**	**6.0**	**31.1**	**0.0**	**4.5**	**0.0**	**0.2**	**0.1**	**33.4**	**5.6**	**0.2**	**0.1 (<0.1)**	**<0.1**	**0.0**	**97.1**	**12.8**
Unity Loop																		
Lycoming																		
Pipeline	35.3	9.5	40.4	11.7	0.0	0.0	1.5	0.4	1.3	0.4	22.2	3.6	2.1	0.4 (0.1)	0.3	0.1	103.2	26.0
ATWS	9.5	0.0	2.2	0.0	0.0	0.0	0.2	0.0	0.3	0.0	2.7	0.0	0.2	0.0	0.0	0.0	15.1	0.0
Mainline valves and tie-in assembly	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9
Access roads	1.4	0.1	2.2	0.0	0.0	0.0	1.4	0.0	1.3	0.0	1.7	0.0	0.0	0.0	0.0	0.0	8.1	0.2
Contractor staging areas	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	6.7	0.0
Contractor and pipe yards	30.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9	0.0
Subtotal Unity Loop	**79.4**	**9.6**	**44.8**	**11.7**	**0.0**	**0.0**	**3.1**	**0.4**	**2.9**	**0.4**	**30.9**	**3.6**	**2.4**	**0.4 (0.1)**	**0.3**	**0.1**	**164.9**	**27.1**
VIRGINIA																		
Mainline A & B Replacements																		
Prince William																		
Pipeline	0.0	0.0	1.5	0.0	1.4	0.0	1.6	0.0	0.2	0.0	20.2	0.0	2.0	0.0	0.2	0.0	27.1	0.0
ATWS	0.0	0.0	0.6	0.0	0.1	0.0	0.1	0.0	0.5	0.0	0.7	0.0	0.2	0.0	0.0	0.0	2.0	0.0
Mainline valves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.3	0.2
Access roads	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	0.0	0.0	0.0	0.0	1.5	0.4
Contractor staging areas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
Fairfax																		
Pipeline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATWS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mainline valves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Access roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Contractor staging areas	0.0	0.0	0.0	0.0	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.9	0.0
Contractor and pipe yards	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Mainline A & B Replacements	**0.0**	**0.0**	**2.2**	**0.0**	**23.4**	**0.0**	**1.7**	**0.0**	**0.7**	**0.0**	**22.6**	**0.3**	**2.2**	**0.0**	**0.2**	**0.0**	**52.8**	**0.6**
PIPELINE FACILITIES TOTAL	**1,820.5**	**525.3**	**1,068.5**	**409.1**	**125.7**	**1.4**	**72.6**	**17.5**	**73.7**	**20.4**	**393.1**	**90.7**	**50.4**	**23.2 (6.5)**	**8.8**	**4.4**	**3,599.7**	**1,098.9**
NEW ABOVEGROUND FACILITIES																		
New Compressor Station 605	45.0	36.0	5.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**50.1**	**39.2**
New Compressor Station 610	32.8	32.8	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**33.5**	**33.5**
Zick Meter Station with pig launcher and receiver	9.1	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**9.1**	**4.1**
Springville Meter Station	0.0	0.0	4.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	**4.8**	**3.1**
North Diamond Regulator Station	0.0	0.0	1.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.0	0.0	0.0	**2.3**	**1.8**
West Diamond Regulator Station with pig launcher and receiver	0.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.4	0.0	0.0	0.0	0.0	**4.8**	**4.4**
River Road Regulator Station with pig receiver	0.0	0.0	2.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	**2.4**	**2.4**
Subtotal	**86.9**	**72.9**	**17.3**	**13.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**107.0**	**88.5**

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
MODIFIED COMPRESSOR STATIONS																		
Compressor Station 517	0.0	0.0	6.3	0.8	19.0	0.0	0.0	0.0	0.0	0.0	6.7	0.6	0.0	0.0	0.0	0.0	**32.0**	**1.4**
Compressor Station 520	0.0	0.0	0.0	0.0	12.3	0.0	0.0	0.0	0.0	0.0	23.8	15.5	0.0	0.0	0.0	0.0	**36.1**	**15.5**
Compressor Station 190	0.0	0.0	0.0	0.0	24.3	0.0	0.0	0.0	0.0	0.0	5.7	3.5	0.0	0.0	0.0	0.0	**30.0**	**3.5**
Compressor Station 185	0.0	0.0	0.0	0.0	13.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**13.7**	**0.0**
Compressor Station 170	0.0	0.0	0.0	0.0	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**10.7**	**0.0**
Compressor Station 160	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	**10.5**	**0.0**
Compressor Station 155	0.0	0.0	0.0	0.0	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**17.7**	**0.0**
Compressor Station 150	0.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**11.2**	**0.0**
Compressor Station 145	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**9.0**	**0.0**
Subtotal	**0.0**	**0.0**	**6.3**	**0.8**	**119.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**43.8**	**19.6**	**0.0**	**0.0**	**0.0**	**0.0**	**170.9**	**20.4**
MODIFIED M&R																		
Puddlefield Meter Station	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.8**	**0.0**
Grover Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	**0.1**	**0.0**
Shelby M&R Station	0.0	0.0	0. 0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.2**	**0.1**
Cleveland County Meter Station	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	**0.7**	**0.0**
Asheville M&R Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.2**	**<0.1**
Foote Mineral M&R Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.2**	**<0.1**
Kings Mountain M&R Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.2**	**<0.1**
Lithium Meter Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.2**	**0.0**
Gastonia Meter Station	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
Bessemer City M&R Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
Stanley Meter Station	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.4**	**0.0**
Hickory Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
Duke Lincoln Meter Station	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.7**	**0.0**
Lowesville Meter Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	**0.3**	**0.1**
Charlotte Meter Station	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.7	<0.1	0.0	0.0	0.0	0.0	**1.7**	**<0.1**
Davidson Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
NC Natural Tidewater Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
Iredell Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	**0.6**	**0.0**
Hicks Crossroads Meter Station	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**1.1**	**<0.1**
Mooresville Meter Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	**0.3**	**0.1**
Linwood Road Meter Station	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**0.5**	**0.0**
Statesville Meter Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	**0.6**	**0.1**
Park Road Power Plant Meter Station	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.0	**0.6**	**<0.1**
Salisbury M&R Station	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	**0.5**	**0.0**
Frontier Appalachian Meter Station	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
Spencer Buck Meter Station	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	**0.5**	**<0.1**
West Lexington M&R Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	<0.1	0.0	0.0	0.0	0.0	**0.5**	**<0.1**
Lexington M&R Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
Winston Salem M&R Station	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
Kernersville Meter Station	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.4**	**<0.1**
Greensboro M&R station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	<0.1	0.0	0.0	0.0	0.0	**0.4**	**<0.1**
Stokesdale Meter Station	<0.1	<0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	**0.2**	**<0.1**
Bethany M&R Station	0.0	0.0	<0.1	<0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
Rockingham Meter Station	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.3**	**0.0**
Timken M&R Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
Gaffney M&R Station	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	0.0	0.0	**0.2**	**<0.1**
Cherokee Co-Gen Meter Station	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
Skygen Co-Gen Meter Station	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.4**	**0.0**
Deering Milliken M&R Station	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.2**	**0.0**

TABLE O-1 (cont'd)

Land Use Acreage Affected by Construction and Operation of the Atlantic Sunrise Project

Facility/County/ Workspace Type	Agricultural Land		Upland Forest		Industrial / Commercial Land		Transportation		Residential Land		Open Land		Wetlands		Open Water		Total [b]	
	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper.	Cons.	Oper. [a]	Cons.	Oper.	Cons.	Oper.
Blacksburg M&R Station	0.0	0.0	<0.1	<0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	**0.2**	**<0.1**
Broad River Meter Station	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	<0.1	0.0	0.0	0.0	0.0	**0.3**	**<0.1**
York Road Meter Station	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	**0.8**	**0.0**
Mill Creek Meter Station	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.7**	**0.0**
Subtotal	**<0.1**	**<0.1**	**0.1**	**0.0**	**10.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5.9**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**16.8**	**0.5**
EXISTING MLVs																		
MLV 145-10	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	**1.0**	**0.0**
MLV N545	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	**0.8**	**0.0**
MLV 145-20	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	**0.9**	**0.0**
MLV 145-21	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	**1.2**	**0.0**
MLV 150-D5	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	**0.8**	**0.0**
MLV 150-10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**0.6**	**0.0**
MLV 150-D15	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	**1.0**	**0.0**
MLV 150-20	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	**0.9**	**0.0**
MLV 155-D2	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**0.7**	**0.0**
MLV 155-B2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**0.5**	**0.0**
MLV 155-B5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	**0.3**	**0.0**
MLV 155-10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**0.6**	**0.0**
MLV 155-20	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	**0.9**	**0.0**
MLV 140-D15	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**<0.1**	**0.0**
MLV 140-20	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	**1.3**	**0.0**
Subtotal	**0.0**	**0.0**	**0.0**	**0.0**	**5.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**11.4**	**0.0**
ABOVEGROUND FACILITIES TOTAL	**86.9**	**72.9**	**23.7**	**14.4**	**135.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**58.5**	**22.0**	**0.0**	**0.0**	**0.0**	**0.0**	**306.1**	**109.4**
PROJECT TOTAL [b]	**1,907.4**	**598.2**	**1,092.2**	**423.5**	**260.9**	**1.4**	**72.6**	**17.5**	**73.7**	**20.4**	**451.6**	**112.7**	**50.4**	**23.2 (6.5)**	**8.8**	**4.4**	**3,905.8**	**1,208.3**

[a] Total includes all wetlands including palustrine scrub-shrub wetlands. Values shown in parentheses include palustrine forested wetlands only.

[b] Total may not match sum of addends due to rounding.

Notes: ATWS = additional temporary workspace, M&R = metering and regulating, MLV = mainline valve

TABLE O-2

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Central Penn Line (CPL) North					
Columbia County					
PA-CO-254.000	0.1	0.2	0.1	8.2	1.8
PA-CO-255.000	0.2	0.2	0.1	1.4	0.4
PA-CO-256.000	0.5	0.6	0.1	2.2	0.6
PA-CO-257.000	0.6	0.7	0.1	0.6	0.2
PA-CO-258.000	0.7	0.9	0.3	3.1	1.1
PA-CO-273.000	1.8	2.1	0.3	4.2	1.0
PA-CO-274.000	2.1	2.4	0.3	4.2	1.0
PA-CO-275.000	2.4	2.6	0.2	6.2	1.6
PA-CO-278.000	3.0	3.6	0.6	2.6	0.7
PA-CO-279.000	3.6	3.6	<0.1	13.4	3.5
PA-CO-278.000	3.6	3.6	<0.1	13.6	4.7
PA-CO-284.000	4.4	4.4	0.1	0.6	0.2
PA-CO-285.000	4.4	4.5	0.1	1.1	0.3
PA-CO-286.000	4.5	5.0	0.4	8.3	2.2
Luzerne County					
PA-LU-003.000	5.0	5.3	0.3	3.6	1.9
PA-LU-006.000	5.7	5.7	0.1	0.9	0.2
PA-LU-007.000	5.7	5.8	<0.1	2.8	0.3
PA-LU-009.000	6.4	6.4	<0.1	0.3	0.1
PA-LU-012.000	6.4	6.7	0.3	3.1	1.1
PA-LU-015.000	6.7	6.7	<0.1	0.2	<0.1
PA-LU-018.000	7.1	7.4	0.3	5.7	1.2
PA-LU-019.000	7.4	7.4	<0.1	0.1	0
PA-LU-022.000	7.9	8.2	0.3	3.0	0.8
PA-LU-023.000	8.2	8.4	0.2	2.4	0.6
PA-LU-027.000	M-0056 0.0	M-0056 0.7	0.7	9.0	4.4
PA-LU-028.000	9.0	9.3	0.3	3.3	0.7
PA-LU-029.000	9.3	9.3	<0.1	0.7	0.1
PA-LU-036.000	10.1	10.7	0.6	13.6	3.6
PA-LU-037.000	10.7	10.7	0.1	0.8	0.2
PA-LU-050.000	12.4	12.5	0.1	2.0	0.6
PA-LU-070.000	13.2	13.3	0.1	1.2	0.4
PA-LU-098.000	14.3	14.4	0.2	1.8	0.5
PA-LU-102.000	14.4	14.4	<0.1	0.5	0.1
PA-LU-103.000	14.4	14.6	0.2	2.1	0.5
PA-LU-104.000	14.6	14.7	0.1	1.3	0.4
PA-LU-106.000	14.9	15.2	0.2	1.8	0.5
PA-LU-111.000	15.1	15.4	0.2	2.6	0.7
PA-LU-116.000	15.7	15.8	0.2	2.1	0.5
PA-LU-119.000	15.8	16.0	0.2	3.3	0.7
PA-LU-126.000	16.1	16.2	0.1	1.4	0.4
PA-LU-128.000	16.2	16.3	0.1	1.4	0.4
PA-LU-129.000	16.3	16.4	0.1	1.3	0.3
PA-LU-141.000	16.9	17.1	0.2	1.9	0.5

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LU-142.000	17.2	17.2	<0.1	0.9	0.1
PA-LU-149.000	17.5	17.6	0.2	2.1	0.5
PA-LU-153.000	17.6	18.1	0.5	5.7	1.5
PA-LU-154.000	18.1	18.2	0.1	0.8	0.2
PA-LU-155.000	18.2	18.3	0.1	1.3	0.3
PA-LU-158.000	18.3	18.3	0.1	1.2	0.3
PA-LU-157.000	18.3	18.4	0.1	0.5	0.1
PA-LU-161.000	18.4	18.6	0.2	2.0	0.6
PA-LU-165.000	18.7	18.8	0.1	1.2	0.3
PA-LU-167.000	18.8	19.1	0.3	3.5	0.9
PA-LU-172.000	19.1	19.3	0.2	2.3	0.6
PA-LU-174.000	19.3	19.3	<0.1	0.5	0.1
PA-LU-175.000	19.3	19.4	0.1	1.5	0.3
PA-LU-176.000	19.4	19.5	0.1	0.7	0.2
PA-LU-180.000	19.5	19.9	0.4	6.1	1.3
PA-LU-181.000	19.9	20.0	0.1	3.0	0.8
PA-LU-187.000	20.2	20.7	0.4	5.2	1.3
PA-LU-193.000	21.1	21.3	0.2	1.9	0.6
PA-LU-194.000	21.3	21.4	0.1	2.6	1.1
PA-LU-195.000	21.4	21.5	0.1	1.0	0.5
PA-LU-217.000	M-0060 0.3	M-0060 0.6	0.3	3.9	1.8
PA-LU-224.000	23.3	23.9	0.5	5.8	3.2
PA-LU-233.000	24.1	24.5	0.4	5.8	2.4
PA-LU-234.000	24.5	24.7	0.1	1.2	0.7
PA-LU-254.000	25.6	25.8	0.1	2.2	0.8
Wyoming County					
PA-WY-008.000	29.9	30.6	0.7	3.3	1.7
PA-WY-023.000	31.3	31.5	0.2	8.5	3.9
PA-WY-025.000	31.7	32.0	0.3	2.1	1.1
PA-WY-028.000	32.0	32.2	0.2	2.7	1.3
PA-WY-027.000	32.2	32.2	<0.1	1.4	0.5
PA-WY-029.000	32.2	32.6	0.4	2.0	1.1
PA-WY-030.000	32.6	32.8	0.2	8.3	3.7
PA-WY-029.000	32.8	33.0	0.2	1.7	0.5
PA-WY-031.000	33.0	33.3	0.5	15.0	6.3
PA-WY-037.000	33.6	33.7	0.2	1.9	1.1
PA-WY-040.000	33.7	33.8	0.1	2.2	1.2
PA-WY-042.000	33.8	34.3	0.4	9.0	5.0
PA-WY-043.000	34.3	34.3	<0.1	0.3	0.1
PA-WY-044.000	34.3	34.5	0.2	2.2	1.2
PA-WY-050.000	35.0	36.6	1.6	24.7	9.1
PA-WY-059.000	36.6	36.9	0.3	2.0	4.0
PA-WY-065.000	37.0	37.1	0.1	0.5	1.6
PA-WY-071.000	37.6	38.0	0.4	2.4	5.0
PA-WY-076.200	38.0	38.1	0.1	0.6	1.2
PA-WY-084.100	38.6	38.8	0.3	0.4	0.7
PA-WY-090.000	38.8	39.1	0.3	4.4	2.0
PA-WY-091.000	39.1	39.8	0.6	8.0	3.7

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-WY-100.000	39.8	40.1	0.4	4.7	2.2
PA-WY-114.000	41.1	41.4	0.3	6.6	3.6
PA-WY-115.000	41.4	41.7	0.3	6.4	3.2
PA-WY-118.000	M-0054 0.0	M-0054 0.4	0.4	18.3	8.2
PA-WY-120.001	M-0054 0.4	M-0054 0.8	0.4	7.5	4.2
PA-WY-124.000	43.2	43.7	0.5	5.4	14.0
PA-WY-127.000	43.7	44.3	0.6	3.6	9.5
PA-WY-131.000	44.3	45.0	0.6	2.5	10.4
PA-WY-132.000	45.0	45.3	0.4	4.5	2.2
PA-WY-137.000	45.3	45.7	0.4	4.2	2.3
PA-WY-144.000	M-0058	M-0058	0.1	2.3	1.2
	0.0	0.1			
PA-WY-156.000	47.2	47.2	<0.1	0.7	0.1
PA-WY-157.000	47.4	47.5	0.1	1.5	0.7
PA-WY-158.000	47.5	47.8	0.3	3.9	1.8
PA-WY-159.000	47.8	48.0	0.2	2.8	1.2
PA-WY-160.000	48.0	48.6	0.4	5.4	2.6
PA-WY-162.000	M-0051	M-0051	0.1	8.4	3.9
	0.0	0.1			
PA-WY-171.000	50.1	50.3	0.2	1.8	1.0
Susquehanna County					
PA-SU-001.000	50.3	50.7	0.4	2.3	1.2
PA-SU-002.000	50.7	50.8	0.1	2.6	1.3
PA-SU-003.000	50.8	51.1	0.3	3.1	1.7
PA-SU-004.000	51.1	51.5	0.4	5.4	2.6
PA-SU-008.000	51.7	51.8	0.1	1.2	0.6
PA-SU-009.000	51.8	52.9	0.11	16.8	6.8
PA-SU-016.000	52.9	53.0	0.1	1.5	0.8
PA-SU-018.000	53.0	53.4	0.4	5.5	2.6
PA-SU-020.000	53.5	53.8	0.3	8.5	3.6
PA-SU-021.000	53.8	53.9	0.1	2.2	0.8
PA-SU-023.000	54.1	54.2	0.1	1.0	0.5
PA-SU-025.000	54.2	54.3	0.1	0.7	0.4
PA-SU-027.000	54.4	54.8	0.4	4.5	2.2
PA-SU-030.000	54.8	55.1	0.2	2.8	1.4
PA-SU-035.000	55.4	55.5	0.1	0.7	0.4
PA-SU-036.000	M-0061	M-0061	0.1	1.5	0.8
	0.1	0.2			
PA-SU-039.000	M-0062	M-0062	<0.1	1.6	0.9
	0.0	0.0			
PA-SU-040.000	M-0062	M-0062	0.3	4.7	2.5
	0.0	0.3			
PA-SU-041.000	56.3	56.7	0.4	5.5	2.5
PA-SU-044.000	56.8	56.9	0.1	0.9	0.5
PA-SU-050.000	57.2	57.3	0.2	6.3	1.2
CPL South					
Lancaster County					
PA-LA-002-B.000	0.0	0.1	0.1	6.5	0.6

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LA-003-B.000	0.1	0.3	0.2	5.6	1.9
PA-LA-007-B.000	0.4	0.5	<0.1	2.2	0.2
PA-LA-052-B.100	M-0184	M-0184	0.1	1.5	0.6
	0.9	1.0			
PA-LA-055-B.100	M-0184	M-0184	<0.1	0.5	0.1
	0.9	0.9			
PA-LA-056-B.200	M-0184	M-0184	0.1	4.4	2.0
	1.0	1.1			
PA-LA-062-B.000	4.7	4.8	0.2	2.5	1.0
PA-LA-063-B.000	4.8	4.9	0.1	2.2	0.4
PA-LA-068-B.000	5.1	5.2	0.1	2.0	0.7
PA-LA-075-B.000	5.7	6.1	0.4	6.3	2.4
PA-LA-078-B.000	6.2	6.6	0.5	7.9	2.9
PA-LA-091-B.000	7.3	7.4	0.1	1.9	0.7
PA-LA-095-B.000	7.5	7.9	0.4	6.1	2.5
PA-LA-099-B.000	8.2	8.7	0.5	7.1	2.8
PA-LA-117-B.000	9.9	10.1	0.2	2.8	1.1
PA-LA-118-B.000	10.1	10.2	0.2	2.5	0.9
PA-LA-122-B.000	10.2	10.3	0.1	1.5	0.6
PA-LA-123-B.000	10.3	10.6	0.3	4.8	1.9
PA-LA-124-B.000	10.7	11.1	0.4	7.0	2.6
PA-LA-125-B.000	11.1	11.2	0.1	1.0	0.5
PA-LA-133-B.000	11.4	11.7	0.2	3.6	1.3
PA-LA-135-B.000	11.7	12.2	0.6	10.5	3.5
PA-LA-139-B.000	12.4	12.4	<0.1	0.1	<0.1
PA-LA-140-B.000	12.4	12.7	0.4	4.2	2.1
PA-LA-145-B.000	M-0152	M-0152	<0.1	7.3	2.4
	0.0	0.0			
PA-LA-155-B.000	M-0185	M-0185	0.1	4.6	1.9
	0.0	0.1			
PA-LA-187.000	13.8	14.2	0.4	6.0	2.4
PA-LA-193.000	14.9	15.3	0.4	11.2	2.3
PA-LA-195.001	15.3	15.6	0.2	3.1	1.3
PA-LA-209.200	M-0185	M-0185	0.1	2.0	0.5
	0.0	0.1			
PA-LA-215.000	16.7	16.9	0.2	4.1	1.3
PA-LA-221.000	17.5	17.7	0.3	4.4	1.6
PA-LA-224.000	17.9	18.3	0.4	6.9	2.6
PA-LA-225.000	18.3	18.8	0.5	8.6	3.3
PA-LA-227.000	18.8	19.3	0.5	7.6	2.9
PA-LA-236.000	19.3	19.6	0.2	3.8	1.5
PA-LA-236.001	19.6	19.6	0.1	0.7	0.3
PA-LA-236.002	19.6	19.9	0.3	4.0	1.5
PA-LA-239.000	19.9	19.9	0.1	1.8	0.7
PA-LA-246.000	20.5	20.4	0.8	20.0	5.0
PA-LA-298-B.000	24.5	24.8	0.3	4.6	1.7
PA-LA-299-B.000	24.8	25.1	0.3	5.1	2.0
PA-LA-302-B.000	25.1	25.7	0.5	12.5	3.9

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LA-304-B.000	25.7	26.1	0.3	5.3	2.1
PA-LA-308-B.000	26.1	26.5	0.4	5.9	2.3
PA-LA-309-B.000	26.5	26.8	0.3	5.5	2.0
PA-LA-310-B.000	26.8	27.0	0.2	2.9	1.2
PA-LA-312-B.000	27.0	27.3	0.3	4.6	1.8
PA-LA-329-B.000	M-0162	M-0162	0.6	8.4	3.2
	0.5	1.1			
PA-LA-334-B.000	29.7	29.9	0.2	3.6	1.2
PA-LA-342-B.000	30.1	30.1	0.1	1.5	0.6
PA-LA-366-B.000	33.1	33.4	0.3	5.6	2.0
PA-LA-368-B.000	33.4	33.6	0.1	4.8	1.6
PA-LA-370-B.000	33.6	34.0	0.5	14.2	5.6
PA-LA-372-B.000	M-0164	M-0164	0.4	7.5	2.8
	0.0	0.4			
PA-LA-373-B.000	34.5	34.5	<0.1	0.1	0.1
PA-LA-374-B.000	34.5	34.6	0.1	1.4	0.6
PA-LA-375-B.000	34.6	34.8	0.2	3.9	1.4
PA-LA-376-B.000	34.8	35.1	0.3	4.1	1.6
PA-LA-377-B.000	35.1	35.5	0.4	6.8	2.5
PA-LA-379-B.000	35.5	35.6	0.1	1.8	0.7
PA-LA-380-B.000	35.6	36.1	0.5	7.4	2.8
PA-LA-381-B.000	36.1	36.2	0.2	2.8	1.0
Lebanon County					
PA-LE-011.000	37.3	37.9	0.6	24.8	3.9
PA-LE-014.000	37.9	38.5	0.6	10.0	3.8
PA-LE-016.200	38.5	39.2	0.7	10.0	4.0
PA-LE-026.000	39.2	40.0	0.8	0.5	0.1
PA-LE-031.000	40.0	40.3	0.3	4.0	1.6
PA-LE-033.000	40.3	40.6	0.3	4.9	2.0
PA-LE-037.000	40.6	40.7	0.1	0.9	0.4
PA-LE-043.000	41.0	41.0	0.1	0.6	0.3
PA-LE-046.000	41.1	41.7	0.6	7.5	3.4
PA-LE-048.000	41.7	41.9	0.2	3.7	1.6
PA-LE-051.000	41.9	42.5	0.6	8.2	3.4
PA-LE-062.000	43.2	43.8	0.6	9.5	3.8
PA-LE-063.000	43.8	44.3	0.4	6.7	2.7
PA-LE-067.000	44.4	45.0	0.5	8.4	3.2
PA-LE-082.000	M-0183 1.9	M-0183 2.0	0.1	1.9	0.6
PA-LE-080.001	46.9	47.0	0.1	0.7	0.3
PA-LE-086.000	47.1	47.6	0.5	9.3	3.2
PA-LE-092.000	48.0	48.5	0.6	8.4	3.3
PA-LE-094.000	48.5	48.6	<0.1	0.2	0.1
PA-LE-096.000	48.6	49.2	0.7	10.4	4.0
PA-LE-097.100	49.2	49.3	0.1	1.4	0.5
PA-LE-100.000	49.4	49.6	0.2	4.2	1.1
PA-LE-101.000	49.6	50.0	0.4	6.7	2.5
PA-LE-100.000	50.0	50.1	0.1	2.1	0.5
PA-LE-108.000	50.1	50.5	0.4	6.2	2.3

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LE-109.000	50.5	50.6	0.1	1.9	0.5
PA-LE-110.000	50.6	50.8	0.2	4.0	1.3
PA-LE-112.000	50.8	51.1	0.3	5.7	2.0
PA-LE-119.000	51.3	51.4	0.1	2.2	0.9
PA-LE-120.000	51.4	51.5	0.2	2.5	0.9
PA-LE-123.000	M-0165	M-0165	0.1	1.5	0.6
	0.0	0.1			
PA-LE-124.000	M-0165	M-0165	0.4	7.4	2.8
	0.1	0.5			
PA-LE-125.000	52.1	52.4	0.3	5.7	2.0
PA-LE-128.000	52.4	52.5	0.1	1.7	0.6
PA-LE-129.000	52.5	52.9	0.4	6.6	2.1
PA-LE-132.000	52.9	53.1	0.2	4.1	1.5
PA-LE-133.000	53.1	53.2	0.1	1.0	0.5
PA-LE-137.000	53.2	53.4	0.1	2.3	0.8
PA-LE-143.000	53.5	53.6	0.1	1.6	0.6
PA-LE-146.000	M-0199	M-0199	0.1	3.6	1.3
	0.0	0.1			
PA-LE-153.000	54.1	54.2	0.1	0.8	0.4
PA-LE-154.000	54.2	54.7	0.5	13.6	6.4
PA-LE-154.100	54.7	54.9	0.2	5.8	2.2
PA-LE-173.000	M-0180	M-0180	<0.1	20.0	7.0
	0.1	0.1			
PA-LE-183.100	57.0	57.4	0.3	8.7	4.3
PA-LE-183.200	57.4	57.5	0.1	3.2	0.8
PA-LE-188.000	57.7	58.2	0.5	13.1	6.0
PA-LE-190.000	58.2	58.4	0.2	10.0	4.4
PA-LE-197.000	58.8	58.9	0.1	1.0	0.5
PA-LE-208.000	M-0200	M-0200	0.3	3.6	1.5
	0.2	0.5			
PA-LE-209.000	M-0200	M-0200	0.1	2.4	1.0
	0.5	0.6			
PA-LE-210.000	M-0200	M-0200	0.2	2.0	0.9
	0.6	0.8			
PA-LE-212.000	61.2	61.4	0.2	5.6	1.4
PA-LE-228.200	62.5	62.5	<0.1	1.0	0.4
PA-LE-229.100	62.5	63.0	0.5	13.2	6.4
PA-LE-230.100	63.0	63.3	0.2	5.4	2.6
PA-LE-230.200	63.3	63.4	0.2	4.2	2.0
Schuylkill County					
PA-SC-001.000	64.2	64.5	0.3	10.9	1.9
PA-SC-001.001	64.5	64.9	0.4	8.7	2.4
PA-SC-009.000	65.4	65.8	0.4	6.3	2.6
PA-SC-013.200	M-0177	M-0177	0.1	2.3	0.9

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
	0.4	0.5			
PA-SC-014.100	M-0177	M-0177	0.1	5.0	1.9
	0.5	0.6			
PA-SC-017.000	M-0196	M-0.19	<0.1	3.7	1.3
	0.0	0.0			
PA-SC-019.000	M-0196	M-0196	0.4	6.4	2.4
	0.0	0.4			
PA-SC-020.000	67.3	67.8	0.5	7.0	2.9
PA-SC-025.000	68.0	68.2	0.2	3.4	1.3
PA-SC-030.000	68.2	68.8	0.6	8.7	3.5
PA-SC-041.000	69.3	69.7	0.4	10.0	2.5
PA-SC-077.000	75.8	76.1	0.3	5.6	1.9
PA-SC-079.000	76.1	76.1	0.1	0.9	0.5
PA-SC-079.001	76.2	76.6	0.5	7.7	2.8
PA-SC-082.000	76.6	76.7	0.1	7.1	0.6
PA-SC-082.001	76.7	76.8	0.1	1.8	0.6
PA-SC-084.000	M-0170	M-0170	<0.1	3.6	1.2
	0.0	0.0			
PA-SC-084.001	M-0170	M-0170	0.1	2.5	0.8
	0.1	0.2			
PA-SC-087.000	M-0170	M-0170	0.1	3.8	1.7
	0.2	0.3			
PA-SC-089.000	77.5	77.5	<0.1	0.2	0.1
PA-SC-090.000	77.5	77.7	0.2	4.8	2.2
PA-SC-090.001	77.7	78.5	0.8	40.2	9.2
PA-SC-090.002	78.5	78.9	0.4	10.2	5.0
PA-SC-101.000	79.9	79.9	<0.1	2.4	0.1
PA-SC-102.000	79.9	80.3	0.4	5.6	2.5
PA-SC-108.000	80.3	80.5	0.2	2.6	1.0
PA-SC-109.000	80.5	80.7	0.2	2.9	1.1
PA-SC-111.000	80.7	80.9	0.2	3.7	1.3
PA-SC-111.001	80.9	81.0	0.1	2.0	0.7
PA-SC-114.000	81.0	81.4	0.3	5.2	2.1
PA-SC-115.000	M-0194	M-0194	0.1	5.0	1.9
	0.0	0.1			
PA-SC-115.001	M-0194	0194	0.2	2.6	0.8
	0.1	0.3			
PA-SC-116.000	M-0194	M-0194	0.2	3.9	1.5
	0.3	0.5			
PA-SC-118.000	M-0194	M-0194	0.1	1.6	0.6
	0.5	0.6			
PA-SC-118.001	M-0194	-0194	0.2	2.4	0.6
	0.6	0.8			
PA-SC-120.000	M-0194	M-0194	0.2	2.5	1.3
	0.8	1.0			
Columbia County					
PA-CO-002.000	91.0	91.2	0.2	4.0	1.5
PA-CO-004.000	91.2	91.5	0.3	3.8	1.5

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-CO-004.200	91.5	92.0	0.6	4.2	1.6
PA-CO-016.000	92.3	92.4	0.1	1.5	0.6
PA-CO-017.000	92.4	92.8	0.3	4.7	2.0
PA-CO-021.000	92.9	93.0	0.1	4.7	1.8
PA-CO-020.000	93.0	93.1	0.1	1.3	0.5
PA-CO-021.000	93.1	93.3	0.2	4.7	1.8
PA-CO-022.000	93.3	93.4	0.1	1.5	0.6
PA-CO-023.000	93.4	93.5	0.1	1.4	0.5
PA-CO-026.000	93.5	93.8	0.3	3.1	1.6
PA-CO-027.000	93.8	94.0	0.3	4.6	1.8
PA-CO-028.000	94.0	94.2	0.2	2.4	1.0
PA-CO-030.000	94.5	94.7	0.2	3.1	1.2
PA-CO-032.000	94.7	94.8	0.1	1.6	0.7
PA-CO-033.000	94.8	94.9	0.2	2.5	1.0
PA-CO-036.000	94.9	95.2	0.3	20.2	3.0
PA-CO-040.200	95.7	96.2	0.5	6.9	2.8
PA-CO-043.400	96.2	96.3	0.1	2.0	0.8
PA-CO-046.000	M-0197	M-0197	0.5	21.0	8.1
	0.0	0.5			
PA-CO-050.000	97.0	97.4	0.2	12.8	4.8
PA-CO-054.000	97.5	97.9	0.4	10.4	4.2
PA-CO-056.000	M-0174	M-0174	0.1	5.3	2.0
	0.0	0.1			
PA-CO-057.000	M-0174	M-0174	0.3	12.4	4.8
	0.4	0.7			
PA-CO-058.000	98.8	99.1	0.3	4.6	1.8
PA-CO-060.000	99.1	99.6	0.5	4.6	1.5
PA-CO-062.000	99.8	99.8	0.1	0.1	0.1
PA-CO-064.000	99.9	100.5	0.6	9.4	3.3
PA-CO-067.000	100.5	101.0	0.4	7.7	2.6
PA-CO-069.000	M-0179	M-0179	0.1	3.3	0.8
	0.0	0.1			
PA-CO-070.000	M-0179	M-0179	<0.1	2.0	1.3
	0.0	0/0			
PA-CO-082.000	101.9	102.0	0.1	3.6	1.6
PA-CO-083.000	102.0	102.2	0.2	2.6	1.1
PA-CO-085.100	102.7	103.1	0.4	6.1	2.4
PA-CO-086.200	103.1	103.4	0.3	7.4	3.6
PA-CO-089.000	103.7	103.9	0.3	3.5	1.5
PA-CO-091.000	104.0	104.1	0.1	4.1	0.6
PA-CO-095.000	104.5	104.6	0.1	1.2	0.6
PA-CO-106.000	M-0156	M-0156	0.1	5.6	2.3
	0.0	0.1			
PA-CO-113.200	M-0156	M-0156	0.1	2.0	0.8
	0.1	0.2			
PA-CO-121.300	105.6	106.0	0.4	5.5	2.3
PA-CO-134.000	106.0	106.3	0.3	4.8	1.8
PA-CO-130.000	M-0171	M-0171	0.2	2.0	0.7

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
	0.1	0.3			
PA-CO-133.000	M-0171	M-0171	0.4	7.3	2.7
	0.3	0.7			
PA-CO-134.000	M-0171	M-0171	<0.1	4.2	1.6
	0.0	0.0			
PA-CO-135.000	106.8	106.9	<0.1	1.0	0.3
PA-CO-137.000	106.9	107.3	0.4	6.1	2.3
PA-CO-138.000	M-0195	M-0195	<0.1	2.4	0.9
	0.1	0.1			
PA-CO-140.000	M-0195 0.0	M-0195 0.1	0.1	2.8	1.0
PA-CO-141.000	107.3	107.3	<0.1	0.6	0.2
PA-CO-143.001	M-0195 0.1	M-0195 0.9	0.8	13.2	5.6
PA-CO-144.001	108.5	108.6	0.1	2.4	0.6
PA-CO-146.000	108.6	108.7	0.2	2.3	0.9
PA-CO-148.000	108.7	109.0	0.2	4.9	1.5
PA-CO-149.000	109.0	109.4	0.5	7.0	2.8
PA-CO-154.000	109.5	109.6	0.2	2.4	0.9
PA-CO-159.000	110.1	110.5	0.5	6.8	2.5
PA-CO-161.000	110.5	110.6	0.1	1.3	0.7
PA-CO-163.000	110.6	110.9	0.4	5.4	2.1
PA-CO-165.000	110.9	111.1	0.2	3.1	1.1
PA-CO-167.000	111.2	111.3	0.1	1.5	0.6
PA-CO-168.000	111.3	111.6	0.2	4.1	1.5
PA-CO-170.000	111.6	111.8	0.3	4.1	1.7
PA-CO-175.000	111.8	112.3	0.5	7.4	2.9
PA-CO-175.100	112.3	112.6	0.3	24.9	24.9
PA-CO-176.000	112.6	112.9	0.3	4.4	1.7
PA-CO-177.000	112.9	113.0	0.1	0.7	0.3
PA-CO-178.000	113.0	113.1	0.1	2.4	0.8
PA-CO-181.000	113.1	113.3	0.2	3.5	1.3
PA-CO-184.000	113.3	113.6	0.3	4.3	1.5
PA-CO-185.000	113.6	114.0	0.4	6.4	2.4
PA-CO-186.000	114.0	114.2	0.2	3.6	1.5
PA-CO-188.000	114.2	114.7	0.5	7.7	2.9
PA-CO-197.000	114.7	115.2	0.5	7.3	2.8
PA-CO-198.000	115.2	115.4	0.2	2.9	1.1
PA-CO-199.000	115.4	115.5	0.2	2.9	1.0
PA-CO-201.000	115.5	115.9	0.3	5.4	2.0
PA-CO-204.000	115.9	116.2	0.4	7.9	2.2
PA-CO-205.000	116.2	116.6	0.4	5.0	2.2
PA-CO-206.000	116.6	116.7	0.1	1.8	0.9
PA-CO-207.000	116.7	117.2	0.4	5.4	2.5
PA-CO-208.000	117.2	117.4	0.2	5.8	3.0
PA-CO-211.000	117.5	117.7	0.2	3.1	1.2
PA-CO-212.000	117.7	118.0	0.3	4.3	1.8
PA-CO-214.000	118.0	118.2	0.2	2.0	0.9
PA-CO-213.000	118.2	118.3	0.1	1.7	0.7
PA-CO-215.000	118.3	118.6	0.2	3.6	1.5

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-CO-216.000	118.6	118.9	0.3	5.0	1.9
PA-CO-217.000	118.9	119.0	0.1	0.8	0.4
PA-CO-218.000	119.0	119.2	0.2	2.9	1.3
PA-CO-218.001	M-0159 0.0	M-0159 0.2	0.2	6.8	2.7
PA-CO-219.000	M-0159 0.2	M-0159 0.3	0.1	2.7	1.1
PA-CO-220.000	119.8	120.2	0.4	5.7	2.2
PA-CO-222.000	120.2	120.5	0.3	3.8	1.6
PA-CO-224.001	120.5	121.1	0.7	10.0	3.9
PA-CO-228.000	121.1	121.4	0.3	5.5	2.0
PA-CO-229.000	121.4	121.8	0.3	4.8	1.9
PA-CO-230.000	121.8	121.9	0.2	2.6	1.1
PA-CO-231.000	121.9	122.0	0.1	1.5	0.5
PA-CO-234.000	122.0	122.2	0.2	5.4	1.0
PA-CO-236.000	122.2	122.7	0.5	7.3	3.1
PA-CO-238.000	122.7	122.9	0.2	2.1	1.2
PA-CO-239.000	122.9	123.1	0.2	3.7	1.3
PA-CO-243.000	123.1	123.2	0.1	1.3	0.4
PA-CO-242.000	123.2	123.4	0.2	2.4	1.1
PA-CO-245.000	123.4	123.5	0.1	1.8	0.8
PA-CO-246.000	123.5	123.7	0.2	2.6	1.0
PA-CO-248.000	123.7	124.0	0.3	5.1	2.1
PA-CO-249.001	124.0	124.1	0.1	0.9	0.4
PA-CO-251.000	124.1	124.7	0.6	8.0	3.7
PA-CO-252.000	124.7	124.9	0.2	19.8	3.1
PA-CO-254.000	125.0	125.2	0.2	9.8	2.0
Unity Loop					
Lycoming County					
PA-LY-004.000	L120.4	L 120.6	0.2	6.8	0.3
PA-LY-007.000	L 120.6	L 120.7	0.1	1.1	0.4
PA-LY-010.000	L 120.7	L 120.9	0.2	1.9	0.0
PA-LY-011.000	L 120.9	L 121.1	0.3	17.8	0.0
PA-LY-012.000	L 121.1	L 121.3	0.2	3.1	0.0
PA-LY-012.001	L 121.3	L 121.4	0.1	1.5	0.0
PA-LY-014.000	L 121.5	L 121.7	0.3	4.5	0.0
PA-LY-017.000	L 122.2	L 122.3	0.1	0.9	0.0
PA-LY-018.000	L 122.3	L 122.5	0.3	21.1	0.0
PA-LY-021.000	L 122.5	L 122.7	0.1	3.6	0.0
PA-LY-021.200	L 122.7	L 122.9	0.2	6.6	0.0
PA-LY-022.000	L 122.9	L 123.1	0.2	2.6	0.0
PA-LY-023.000	L 123.1	L 123.6	0.5	16.8	0.0
PA-LY-029.000	L 123.6	L 123.8	0.2	2.8	0.0
PA-LY-032.000	L 123.8	L 124.1	0.3	3.7	0.0
PA-LY-034.000	L 124.2	L 124.4	0.2	2.4	0.0
PA-LY-037.000	L 124.5	L 124.6	0.2	1.9	0.0
PA-LY-038.000	L 124.6	L 124.7	0.1	0.7	0.0
PA-LY-036.000	L 124.7	L 124.7	<0.1	0.1	0.0
PA-LY-039.000	L 124.7	L 124.8	0.1	1.0	0.0

TABLE O-2 (cont'd)

Pennsylvania Clean and Green Program Land Crossed by the Atlantic Sunrise Project Facilities

Facility/County/ Tract Number	Begin Milepost	End Milepost	Length Crossed (miles)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
PA-LY-040.000	L 124.8	L 124.9	0.1	1.4	0.0
PA-LY-041.000	L 124.9	L 125.0	0.1	2.6	0.0
PA-LY-048.000	M-0003 0.0	M-0003 0 .0	<0.1	1.6	0.1
PA-LY-052.000	L 125.6	L 125.9	0.3	8.2	0.0
PA-LY-054.000	L 125.9	L 126.1	0.2	2.5	0.0
PA-LY-055.000	L 126.1	L 126.2	0.1	3.8	0.0
PA-LY-057.000	L 126.2	L 126.7	0.5	16.2	0.0
PA-LY-058.000	L 126.7	L 127.3	0.6	12.2	0.0
PA-LY-060.000	L 127.2	L 127.7	0.5	6.9	0.0
PA-LY-061.000	L 127.7	L 127.8	0.1	1.8	0.0
PA-LY-062.000	L 127.8	L 128.0	0.2	3.0	0.0
PA-LY-064.000	L 128.0	L 128.1	0.1	0.5	0.0
PA-LY-066.000	L 128.1	L 128.7	0.6	7.0	0.0
PA-LY-069.000	L 128.8	L 128.9	0.1	4.5	0.0
Chapman Loop					
Clinton County					
PA-CL-003.000	L 186.0	L 186.1	0.1	9.4	1.2
PA-CL-004.000	L 186.1	L 186.1	<0.1	1.0	0.0
PA-CL-029.000	L 186.8	L 186.8	<0.1	0.6	0.0
PA-CL-030.000	L 186.8	L 186.9	0.1	2.2	0.2
PA-CL-031.000	L 186.9	L 187.3	0.2	6.6	0.0
PA-CL-034.000	L 187.3	L 187.6	0.3	8.0	0.8
Compressor Station 605					
Wyoming					
PA-WY-131.000	N/A	N/A	N/A	50.2	39.3
Compressor Station 610					
Columbia County					
PA-CO-175.100	N/A	N/A	N/A	33.5	33.5
North Diamond Regulator Station					
Luzerne County					
PA-LU-193.000	N/A	N/A	N/A	2.1	1.7
Zick Receipt Meter Station					
Susquehanna County					
PA-SU-050.000	N/A	N/A	N/A	7.0	4.0
River Road Regulator Station					
Lancaster County					
PA-LA-002-B.000	N/A	N/A	N/A	0.8	0.8
West Diamond Regulator Station					
Columbia County					
PA-CO-254.000	N/A	N/A	N/A	4.9	4.3

APPENDIX P

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS EVALUATED FOR POTENTIAL CUMULATIVE EFFECTS WITH THE ATLANTIC SUNRISE PROJECT

APPENDIX P

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
CPL NORTH										
FERC-Jurisdictional Natural Gas Pipeline Projects										
	Central New York Oil & Gas Company (CNYOG), LLC MARC II Pipeline	Sullivan, Wyoming, and Luzerne, PA	30-mile-long pipeline extending CNYOG's system to the proposed PennEast Pipeline	Construction planned for 2017	0.0, crosses pipeline	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	S, GW, SW, WT,VG, WD, L, VI, T, A, N	No air permit information available on PADEP eFACTS	No sufficient detailed information about project to assess cumulative impact potential
	Constitution Pipeline Company, LLC Constitution Pipeline (CP13-499-000)	Susquehanna, PA; Broome, Chenango, Delaware, and Schoharie, NY	122 miles of new 30-inch-diameter natural gas pipeline and additional facilities that include two new meter stations, two pipe interconnections, ten communication towers, eleven mainline valves, and one pig launcher and receiver	Approved by FERC, December 2014/ Construction to begin in 2016	6.5 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	No air permit listed on PADEP eFACTS	Construction period will not overlap; No compressor station engine/gas turbine modifications
	PennEast Pipeline Company's Penn East Pipeline Project (CP15-558-000)	Luzerne, Carbon, Northampton, and Bucks, PA; Hunterdon and Mercer, NJ	114 miles of new 36-inch-diameter pipeline, originating near Dallas, Luzerne County, Pennsylvania, and terminating near Pennington, Mercer County, New Jersey; a 2.1-mile-long, 24-inch-diameter new pipeline lateral; a 0.6-mile-long, 12-inch-diameter new pipeline lateral; a 1.4-mile-long, 36-inch-diameter new pipeline lateral and appurtenant facilities	Application filed September 24, 2015/ Construction to begin in spring 2017	3.6 (southeast)	Upper Susquehanna	Northeast Pennsylvania-Upper Delaware Valley; Metropolitan Philadelphia	GW, SW, L, T, A	No air permit information available on PADEP eFACTS	Site of new PennEast compressor station near Blakeslee, PA is 40 miles east of Transco's existing CS 517

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Tennessee Gas Pipeline (TGP) Northeast Upgrade (CP11-161-000)	Bradford, Wayne, Pike, and Susquehanna, PA; Sussex, Passaic and Bergen, NJ	39.5 miles of 30-inch-diameter pipeline loops (5); Six new mainline valves, four pig launcher/receivers and the modification of four existing compression stations and one meter station	Operational/ in service November 2013	5.5 (southeast); compressor station modification >30 miles northeast	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	PADEP issued AQ Permit GP5-58-329-037 on 4/11/13; major facility operating permit renewal pending	Added one Taurus 70 compressor to existing TGP Compressor Station 321
	TGP Uniondale Expansion Project (CP13-526-000)	Susquehanna, PA	Modifications to Compressor Station 321 and Uniondale Meter Station	Operational/ in service September 2014	5.6 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	PADEP issued determinati on on 12/19/12; plan approval not required for modifica-tion	Added inlet air cooling to engines; no emissions change
	Transco Leidy Southeast Expansion (CP13-551-000)	Luzerne, Monroe, Lycoming, and Columbia, PA; Somerset, Hunterdon, and Mercer, NJ; Howard, MD; Cleveland, NC; and various VA counties	5.3 miles of pipeline loop (Dorrance Loop in Luzerne, PA); 11.5 miles of pipeline loop (Franklin Loop in Luzerne and Monroe, PA); 6.9 miles of pipeline loop (Pleasant Run Loop in Somerset and Hunterdon, NJ); 6.3 miles of pipeline loop (Skillman Loop in Somerset, NJ); various compressor station upgrades including adding 69,900 hp of	Operational/ in service January 2016	0.0–8.0	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley; Central Pennsylvania Intrastate	A, N	Station 515 (Luzerne) Major facility plan approval 40-00002A issued 11/3/2014; Station 520 (Lycoming) Major facility plan approval 41-00001A issued 9/5/2014	Although construction periods would not overlap, Leidy Southeast Expansion will produce stationary source emissions; Impact of emissions from compressor station upgrades would be

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
			additional compression at three existing compressor stations in Lycoming, Columbia, and Luzerne Counties, PA, as well as other minor facilities						Station 517 (Columbia) Major Facility plan approval 19-00007A issued 9/5/2014	reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise Project
Other Natural Gas Facilities										
Wells/Shale Development										
	Various	Clinton, Columbia, Lackawanna, Sullivan Susquehanna, and Wyoming, PA	PADEP issued 2,676 natural gas production well drilling permits from July 2011 through April 11, 2016	Ongoing/ Various	Various	Various	Northeast Pennsylvania – Upper Delaware Valley; Central Pennsylvania Intrastate	S, GW, SW, WT,VG, WD, T, L, VI, A, N for wells closest to proposed facilities that would be constructed around the same timeframe	Air permits would be issued as needed under AQ General Permit GP5	Most well sites are >10 miles from compressor stations 190, 517, 520
Pipeline Gathering Systems										
	Aldrich WC	Susquehanna, PA	400 feet of 8-inch-diameter pipeline	Operational/ in service 2014	7.5 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Alford and Reynolds	Susquehanna, PA	3.3 miles of 16-inch-diameter pipeline	Construction in 2015	6.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction under way and will be completed prior to ASR; No operational emission sources
	Baker WC	Susquehanna, PA	561 feet of 6-inch-diameter pipeline	Operational/ in service 2012	8.5 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Black	Susquehanna, PA	936 feet of 10-inch-diameter pipeline	Operational/ in service 2012	6.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Blanding	Susquehanna, PA	2.3 miles of 16-inch-diameter pipeline	Operational/ in service 2014	5.2 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Bridgewater	Susquehanna, PA	1.3 miles of 8-inch diameter-pipeline	Operational/ in service 2013	9.8 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Bunnell WC	Susquehanna, PA	824 feet of 8-inch-diameter pipeline	Operational/ in service 2013	8.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Clark	Susquehanna, PA	4,076 feet of 10-inch-diameter pipeline	Operational/ in service 2014	0.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI,	Air permit not required	Construction completed and no operational emission sources
	Deckertown	Susquehanna, PA	1.5 miles of 10-inch-diameter pipeline	Operational/ in service 2013	3.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Diamond	Susquehanna, PA	2.3 miles, pipeline diameter unknown	Construction in 2015	10 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction completed and no operational emission sources
	Ely Lake	Susquehanna, PA	2.3 miles of 10-inch-diameter pipeline	Operational/ in service 2012	7.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Empet WC	Susquehanna, PA	140 feet of 8-inch-diameter pipeline	Operational/ in service 2013	1.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Gardner WC	Susquehanna, PA	2,090 feet of 6-inch-diameter pipeline	Construction in 2015	2.5 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	GW, SW, T, A	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Geliatt	Susquehanna, PA	1.8 miles of 12-inch-diameter pipeline	Under Construction/ To be completed in 2015	9.8 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction completed and no operational emission sources
	Gesford WC	Susquehanna, PA	56 feet of 6-inch-diameter pipeline	Operational/ in service 2013	8.0 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Gibson Suction and Discharge	Susquehanna, PA	3.2 miles of 20-inch diameter pipeline and 0.7 mile of 24-inch-diameter pipeline	Operational/ in service 2014	5.9 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Harford	Susquehanna, PA	0.6 mile of 16-inch-diameter pipeline	Construction in 2015	3.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	GW, SW, T, L, A	Air permit not required	Construction completed and no operational emission sources
	Hartley	Susquehanna, PA	0.7 mile of 10-inch-diameter pipeline	Operational/ in service 2014	0.2 (southeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Hathaway	Susquehanna, PA	2.7 miles of 16-inch-diameter pipeline	Operational/ in service 2014	8.7 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Hess WC	Susquehanna, PA	507 feet of 8-inch-diameter pipeline	Operational/ in service 2011	8.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Hibbard WC	Susquehanna, PA	359 feet of 10-inch-diameter pipeline	Operational/ in service 2013	9.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Hickory Ridge	Susquehanna, PA	5.2 miles of 12-inch-diameter pipeline	Operational/ in service 2014	0.0[a] Crosses the centerline	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI	Air permit not required	Construction completed and no operational emission sources
	Hillsdale	Susquehanna, PA	1.9 miles of 24-inch-diameter pipeline and 2.5 miles of 12-inch-diameter pipeline	Construction in 2015	2.8 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	GW, SW, T, A	Air permit not required	Construction completed and no operational emission sources
	Hop Bottom	Susquehanna, PA	2.0 miles of 16-inch diameter pipeline	Operational/ in service 2014	5.0 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Horton	Susquehanna, PA	1.3 miles of 8-inch diameter-pipeline	Operational/ in service 2013	2.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Jeffers Farm	Susquehanna, PA	0.6 mile of 8-inch-diameter pipeline	Operational/ in service 2013	1.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Johnson	Susquehanna, PA	0.9 mile of 16-inch-diameter pipeline	Operational/ in service 2014	9.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Kennedy	Susquehanna, PA	1.6 miles of 10-inch-diameter pipeline	Operational/ in service 2014	5.2 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Kinner	Susquehanna, PA	2.8 miles of 12-inch-diameter pipeline	Operational/ in service 2013	3.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Kropa WC	Susquehanna, PA	797 feet of 8-inch-diameter pipeline	Operational/ in service 2013	8.5 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Lackawanna	Susquehanna, PA	2.5 miles of 12-inch-diameter pipeline and 0.9 mile of 24-inch-diameter pipeline	Under Construction/ To be completed in 2015	1.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	GW, SW, WT,VG, WD, T, L, VI, A,	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Leslie	Susquehanna, PA	2.5 miles of 12-inch-diameter pipeline	Operational/ in service 2013	3.8 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Lewis	Susquehanna, PA	1,300 feet of 10-inch-diameter pipeline	Planning/ Construction to begin in 2017	8.9 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction completed and no operational emission sources
	Lippencott WC	Susquehanna, PA	529 feet of 8-inch-diameter pipeline	Operational/ in service 2012	5.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Loffredo	Susquehanna, PA	1.0 mile of 10-inch-diameter pipeline	Operational/ in service 2013	3.9 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Loffredo	Wyoming, PA	2.5 miles of 10-inch-diameter pipeline	Operational/ in service 2013	2.9 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Lynn	Susquehanna, PA	2.2 miles of 12-inch-diameter pipeline and 0.8 mile of 8-inch-diameter pipeline	Operational/ in service 2012	7.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Maplewood	Susquehanna, PA	2.5 miles of 24-inch-diameter pipeline	Operational/ in service 2015	3.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	GW, SW, T, A	Air permit not required	Construction completed and no operational emission sources
	McCarthy	Susquehanna, PA	1.6 miles of 12-inch-diameter pipeline	Operational/ in service 2013	0.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Meshoppen Creek	Wyoming, PA	1.9 miles of 10-inch-diameter pipeline	Operational/ in service 2012	8.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Meshoppen Creek	Wyoming, PA	1.2 miles of 16-inch-diameter pipeline	Operational/ in service 2012	8.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Millard	Susquehanna, PA	3.6 miles of 12-inch-diameter pipeline	Operational/ in service 2013	0.0 Crosses the centerline	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI,	Air permit not required	Construction completed and no operational emission sources
	Molner	Susquehanna, PA	2.0 miles of 8-inch-diameter pipeline	Operational/ in service 2013	4.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Moxley	Susquehanna, PA	1.8 miles of 16-inch-diameter pipeline	Pre-Construction/ Construction to begin in 2015	5.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction completed and no operational emission sources
	Mulligan	Susquehanna, PA	2.0 miles of 10-inch-diameter pipeline	Operational/ in service 2012	3.9 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	PA-06-035	Susquehanna, PA	245 feet of 6-inch-diameter pipeline	Operational/ in service 2010	6.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	PA-10-014	Susquehanna, PA	1.2 miles of 10-inch-diameter pipeline	Operational/ in service 2010	6.3 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Payne	Susquehanna, PA	2.5 miles of 16-inch-diameter pipeline	Operational/ in service 2014	4.0 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Peterson WC	Susquehanna, PA	1,065 feet of 8-inch-diameter pipeline	Operational/ in service 2013	8.3 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Pijanowski	Susquehanna, PA	1.8 miles of 16-inch-diameter pipeline	Operational/ in service 2014	5.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Plonski WC	Susquehanna, PA	1,840 feet of 10-inch-diameter pipeline	Operational/ in service 2014	6.5 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Quarry	Susquehanna, PA	2.5 miles of 10-inch-diameter pipeline	Operational/ in service 2013	6.9 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Reynolds	Susquehanna, PA	1.6 miles of 20-inch-diameter pipeline	Construction in 2015	5.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction completed and no operational emission sources
	RSmith WC	Susquehanna, PA	750 feet of 4-inch-diameter pipeline	Operational/ in service 2011	8.3 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Severcool WC	Susquehanna, PA	1,179 feet of 8-inch-diameter pipeline	Operational/ in service 2013	9.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

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Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Squire	Susquehanna, PA	1.1 miles of 8-inch-diameter pipeline	Operational/ in service 2013	7.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	States Mill	Susquehanna, PA	1.6 miles of 12-inch-diameter pipeline	Construction to begin in 2016	6.8 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	Air permit not required	Construction expected to be underway prior to ASR initiation, no operation emission sources
	Strickland	Susquehanna, PA	1.7 miles of 12-inch-diameter pipeline	Operational/ in service 2014	9.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	T.Flower WC	Susquehanna, PA	233 feet of 8-inch-diameter pipeline	Operational/ in service 2013	9.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Teddick	Susquehanna, PA	1.0 mile of 8-inch diameter pipeline	Operational/ in service 2013	7.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Teddick WC	Susquehanna, PA	828 feet of 10-inch-diameter pipeline	Operational/ in service 2013	7.3 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

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Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Teel Station	Susquehanna, PA	14,156 hp compressor station composed of reciprocating engine compression packages, dehydration and metering facilities	Operational/ in service 2011	6.8 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	PADEP issued AQ General Permit GP5-58-002 on 5/24/13	Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise Project
	Thomas	Susquehanna, PA	1.5 miles of 8-inch-diameter pipeline	Operational/ in service 2014	1.0 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI	Air permit not required	Construction completed and no operational emission sources
	Tiffany	Susquehanna, PA	3.3 miles of 16-inch-diameter pipeline	Operational/ in service 2013	8.9 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Tingley	Susquehanna, PA	3.0 miles of 16-inch-diameter pipeline	Operational/ in service 2013	3.8 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

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Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	UGI Energy Services Auburn Pipeline Expansion Project	Wyoming and Luzerne, PA	20-inch-diameter 28-mile-long gathering pipeline and compressor station	Operational/ in service January 2014	0.0, Crosses the centerline	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI, A	PADEQ issued AQ General Permit GP5-66-001 on 5/13/2013	UGI Manning compressor station located 30 miles to northeast of Station 517
	Union Hill	Susquehanna, PA	1.8 miles of 16-inch-diameter pipeline	Operational/ in service 2014	4.9 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Vandermark WC	Susquehanna, PA	660 feet of 6-inch-diameter pipeline	Operational/ in service 2013	8.6 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Williams Field Services (midstream) Owego	Susquehanna, PA	24-inch-diameter Owego pipeline (5.9 miles) and associated Zick Compressor Station discharge piping (742 feet) to connect to the proposed Transco Zick Meter Station	Planning Stage/ Construction to begin July 2016; Anticipated in-service June 2017	0.0	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	S, GW, SW, WT,VG, WD, T, L, VI, A, N	Air permit not required	No compressor engine modifications

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Williams Field Services (midstream): Gibson	Susquehanna, PA	20,120 hp compressor station composed of reciprocating engine compression packages and dehydration facilities	Operational/ in service 2014	5.3 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	AQ General Permit GP5-58-011A issued by PADEP 11/19/2014	Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise project
	Williams Field Services (midstream): Gibson Meter Station	Susquehanna, PA	Meter Station	Operational/ in service 2014	6.5 (southeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air Permit not required	Construction completed and no operational emission sources
	Williams Field Services (midstream): Lathrop	Susquehanna, PA	14,200 hp compressor station composed of reciprocating engine compression packages; station will be upgraded to 15,600 hp in May 2015	Operational/ in service 2011	9.0 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	PADEP issued AQ General Permit GP5-58-399-009 on 1/26/10	Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise project

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Williams Field Services (midstream): Miller	Susquehanna, PA	20,120-hp compressor station composed of reciprocating engine compression packages and dehydration facilities	Operational/ in service 2014	5.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	PADEP issued AQ General Permit GP5-58-009A on 11/19/14	Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise project
	Williams Field Services (midstream): Puddlefield Meter Station	Wyoming, PA	Meter Station	Operational/ in service 2012	< 0.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI	Air permit not required	Construction completed and no operational emission sources
	Williams Field Services (midstream): Sickler	Wyoming, PA	Dehydration Facility	Operational/ in service 2012	8.3 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Williams Field Services (midstream): White	Susquehanna, PA	20,120 hp recip. compressor station composed of dehydration facilities	Operational/ in service 2014	6.3 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	PADEP issued AQ General Permit GP5-58-008A on 11/19/14	Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise project
	Williams Field Services (midstream): White Meter Station	Susquehanna, PA	Dehydration only; no metering	Operational/ in service 2012	6.2 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Williams Field Services (midstream): Wilcox	Wyoming, PA	25,948 hp compressor station composed of reciprocating engine and turbine compression packages	Operational/ in service 2012	4.5 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	A	PADEP issued Minor Source Operating Permit 73-1591878-1 on 1/9/14	Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise project

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Williams Field Services (midstream): Zick	Susquehanna, PA	28,512 hp compressor station composed of reciprocating compression packages and dehydration facilities	Operational/ in service 2013	0.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI, A, N	PADEP issued Minor Facility Plan Approval 58-399-037 on 3/25/13; PADEP reviewing AQ General Permit application GP5-58-018 that was submitted on 1/13/14	Zick Compressor Station is located>31 mi les from compressor stations 190, 517, and 520
	Williams Field Services (midstream): Zick Meter Station	Susquehanna, PA	Meter station	Operational/ in service 2012	< 0.1 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI	Air permit not required	Construction completed and no operational emission sources
	Wilmarth (2)	Susquehanna, PA	1. 6 miles of 16-inch-diameter pipeline	Operational/ in service 2013	2.6 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Wood	Susquehanna, PA	0.6 mile of 8-inch-diameter pipeline	Operational/ in service 2012	9.7 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Wyoming (4)	Susquehanna, PA Luzerne, PA Wyoming, PA	10 miles of 16-inch-diameter pipeline	Operational/ in service 2011	0.0-9.0 (various directions)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	VG, WD, L, VI	Air permit not required	Construction completed and no operational emission sources
	Zaverton	Susquehanna, PA	12,200 feet of 12-inch-diameter pipeline	Operational/ in service 2012	8.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	Zupp	Susquehanna, PA	13,580 feet of 20-inch-diameter pipeline	Operational/ in service 2013	1.0 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
Other Actions										
Other Energy Facilities										
	Mehoopany Wind Farm	Wyoming, PA	141-megawatt (MW) wind farm (~88 wind turbines) on 9,000-acre site	Operational/ Construction completed 2012	7.1 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	Negligible	Air permit not required	Construction completed and no operational emission sources
	PPL Susquehanna-Roseland Power Line Project	Luzerne and Lackawanna, PA	Susquehanna to Stanton Section	Construction in 2015	4.9 (southeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	T, A	Air permit not required	Construction completed and no operational emission sources
			Stanton to Lackawanna Section		7.2 (southeast)	Upper Susquehanna		A	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Transmission Lines to supply power to the proposed Transco Compressor Stations 605	Lackawanna and Wyoming, PA	3.5-mile new electrical transmission line for Compressor Station 605	Planning Stage/ Anticipated in-service July 2017	0.0 (east)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods
	Distribution Lines at Compressor Station 517	Columbia, PA	Approximately 1000 feet of distribution line	Planning Stage/ No dates provided	No route determined	n/a	n/a	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods
Transportation Projects										
	Oxbow Creek Bridge	Wyoming, PA	Bridge replacement and/or rehabilitation	In development/ Construction to begin November 2018	3.4 (northwest)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	SW, T, A	Air permit not required	Minor construction emissions, no overlap in construction periods
	SR 106 over Tunhannock Creek	Susquehanna, PA	Bridge replacement	In Development	1.7 (northeast)	Upper Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	SW, T, A	Air permit not required	Minimal construction emissions, no overlap in construction periods
CPL SOUTH										
FERC-Jurisdictional Natural Gas Pipeline Projects										
	Spectra Texas Eastern Appalachia to Market 2014 (CP13-84-000)	Lebanon, PA	Grantville East Discharge	Operational/ in service November 2014	4.6 (southeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
			Grantville West Discharge		Crosses the centerline	Lower Susquehanna	South Central Pennsylvania Intrastate	VG, WD, L, V	Air permit not required	Construction completed and no operational emission sources
	Transco Proposed Rock Springs Expansion Project (CP14-504-000)	Lancaster, PA; Cecil, MD	Proposed 11.2 miles of new pipe (10.1 miles in Lancaster County, PA, and 1.1 in Cecil County, MD) and construction of a 4,000-horsepower, electric motor-driven compressor and metering facility	Construction planned September 2015 – January 2016	0.0	Lower Susquehanna	South Central Pennsylvania Intrastate - Eastern Shore	S, GW, SW, WT,VG, WD, T, L, VI, A, N	Air permit not required (electric motor drive compresso r only)	Construction period will not overlap and compressor drive is electric motor (no direct emissions)
Other Actions										
Other Energy Facilities										
	Tenaska Lebanon Valley Generation Station	Lebanon, PA	Proposed clean-burning, natural gas-fueled electric generating station with a capacity of 950 MWs of electricity	Planning/site evaluation stage/ Start date 2015	6.1 (southeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	A	PADEP issued major facility plan approval on 4/1/15	Major emission source, however site in in Westmore-land County >30 miles from compressor stations 190,517,and 520

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Sunoco Logistics Mariner East 1 and Mariner East 2 Pipeline Projects	Lebanon and Lancaster, PA	Propane and ethane pipeline in Pennsylvania	Mariner East 1 in service February 2016 Mariner East 2 planned to start construction in 2016	Crosses the centerline	Lower Susquehanna	South Central Pennsylvania Intrastate	S, GW, SW, WT,VG, WD, T, L, VI, A, N	PADEP minor source operating permit 22-03094 pending; PADEP technical review ongoing	Minor emission source in Londonderry Twp >30 miles from stations 190, 517 and 520
	Good Spring NGCC power plant (EmberClear [formerly Future Power])	Schuylkill, PA	Construction of two 337 MW natural gas combined cycle power plants (NGCC 1 and NGCC 2)	Construction of NGCC 1 planned to start in 2016; NGCC 2 to be determined	0.0 (north)	Lower Susquehanna	Northeast Pennsylvania – Upper Delaware Valley	S, GW, SW, WT, VG, WD, T, L, VI, A, N	PADEP issued major facility plan approval on 03/04/14 and minor facility plan approval on 10/14/15; Permit no. 54-0082A	Site is located 33 miles south of Transco's CS 610; minimal overlap of construction periods
	Transmission Lines to supply power to the proposed Transco Compressor Stations 610	Columbia, PA	1.8-mile new electrical transmission line for Compressor Station 610	Planning Stage/ Anticipated in-service July 2017	0.0 (east)	Upper Susquehanna	Central Pennsylvania Intrastate	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods
Transportation Projects										
	Bainbridge Road Bridge #2	Lancaster, PA	Bridge replacement	In development/ Construction to begin March 2016	6.1 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	A	Air permit not required	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Bridgeville Road	York, PA	Road widening (shoulders)	Construction began in 2015	3.6 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	T, A	Air permit not required	Undetermined but likely minor
	Bull Run Road Bridge	York, PA	Bridge replacement	Construction began in 2015	3.2 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	T, A	Air permit not required	Undetermined but likely minor
	Colebrook Road Bridge	Lebanon, PA	Bridge replacement	Construction in 2015	0.4 (northwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	T, A	Air permit not required	Undetermined but likely minor
	Mountain Road Bridge	Lebanon, PA	Bridge replacement	In development/ Construction to begin May 2016	3.3 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	T, A	Air permit not required	Undetermined but likely minor
	SR 1020 over Fishing Creek	Columbia, PA	Bridge rehabilitation	In development/ No dates provided	4.5 (southeast)	Upper Susquehanna	Central Pennsylvania Intrastate	SW, T, A	Air permit not required	Undetermined but likely minimal
	SR 339 over Beaver Run	Columbia, PA	Bridge replacement	Future development/ No dates provided	9.3 (northeast)	Upper Susquehanna	Central Pennsylvania Intrastate	Negligible	Air permit not required	Undetermined but likely minor
	SR 4002 over Tb Wilson Creek	Northumberland, PA	Bridge replacement	In development/ Construction to begin December 2016	7.8 (southwest)	Upper Susquehanna	Central Pennsylvania Intrastate	A	Air permit not required	Undetermined but likely minor
	SR 442 over West Branch Run	Columbia, PA	Bridge replacement	In development/ Construction to begin October 2016	4.7 (northwest)	Upper Susquehanna	Central Pennsylvania Intrastate	SW, T, A	Air permit not required	Undetermined but likely minor
	SR 54/3009	Montour, PA	Intersection improvement	Under construction/	6.7 (southwest)	Upper Susquehanna	Central Pennsylvania Intrastate	A	Air permit not required	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	State Route (SR) 1013 over Strong Brook	Columbia, PA	Bridge replacement	Future development/ No dates provided	3.7 (southeast)	Upper Susquehanna	Central Pennsylvania Intrastate	SW, T, A	Air permit not required	Undetermined but likely minor
	Veteran's Memorial Bridge	Lancaster, PA	Bridge rehabilitation	In development/ No dates provided	1.8 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	T, A	Air permit not required	Undetermined but likely minor
Other Development										
	114 Lakewood Drive, Martic, PA, 17565	Lancaster, PA	Residential	No additional status provided/ No dates provided	0.3 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	1213 Holtwood Road, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued July 2014/ No dates provided	0.2 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	L, R, T, GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	166 Lakewood Drive, Martic, PA, 17565	Lancaster, PA	Residential	No additional status provided/ No dates provided	0.5 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	181 Magnolia Drive, Martic, PA, 17565	Lancaster PA	Residential	No additional status provided/ No dates provided	0.4 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	20 Venture Drive, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued September 2013/ No dates provided	0.2 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	3 Vestral Drive, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued April 2014/ No dates provided	0.2 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	53 Drytown Road, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued November 2013/ No dates provided	0.2 (southeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	76 Red Hill Road, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued May 2014/ No dates provided	0.2 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	91 Oak Glen Drive, Martic, PA, 17565	Lancaster, PA	Residential	No additional status provided/ No dates provided	0.3 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	968F Susquehannock Drive, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued April 2014/ No dates provided	0.2 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	99 Drytown Road, Martic, PA, 17565	Lancaster, PA	Residential	Building permit issued June 2014/ No dates provided	0.1 (southeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
	Eastern Land Resources	Lebanon, PA	Potential mixed use development	Eastern Land and Resources Company owns large parcels of land in Pennsylvania and sells them to developers; this land is currently zoned commercial,	Crossed from MPs 45.5 to 45.9	Lower Susquehanna	South Central Pennsylvania Intrastate	S, GW, VG, WD, T, L, RC, A, N	Mixed use development usually does not require air permit	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
				and no construction date is set/ no dates provided						
	MFS, Inc.	Lebanon, PA	Commercial	No status provided/ No dates provided	Crosses the centerline	Lower Susquehanna	South Central Pennsylvania Intrastate	S, GW, VG, WD, T, L, RC, A, N	No air permit listed on PADEP eFACTS	Undetermined but likely minor
	Prologis-A4 PA IV, LLC (No. 1)	Lebanon, PA	Commercial	No status provided/ No dates provided	0.5 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	No air permit listed on PADEP eFACTS	Undetermined but likely minor
	Prologis-A4 PA IV, LLC (No. 2)	Lebanon, PA	Commercial	No status provided/ No dates provided	0.2 (southeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	No air permit listed on PADEP eFACTS	Undetermined but likely minor
	SID Tool Company, Inc.	Lebanon, PA	Commercial	No status provided/ No dates provided	0.1 (northeast)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	No air permit listed on PADEP eFACTS	Undetermined but likely minor
	Skupics, LLC	Lebanon, PA	Commercial	No status provided/ No dates provided	0.2 (southwest)	Lower Susquehanna	South Central Pennsylvania Intrastate	GW, VG, WD, T, L, RC, A, N	No air permit listed on PADEP eFACTS	Undetermined but likely minor
	Stone Hill Village LLC	Lebanon, PA	Residential	Construction of Phase 1 is underway	Crossed from MPs 46.2 to 46.3	Lower Susquehanna	South Central Pennsylvania Intrastate	S, GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
UNITY LOOP										
FERC-Jurisdictional Natural Gas Pipeline Projects										
	Transco Northeast Supply Link (CP12-30-000)	Lycoming, PA	Muncy Loop 2.2 miles	Operational/ in service November 2013	0.04 (northeast)	West Branch Susquehanna	Central Pennsylvania Intrastate	VG, WD, L, VI	Air permit not required	Construction completed and no operational emission sources
Other Natural Gas Facilities										
Wells/Shale Development										
	Various	Lycoming, PA	PADEP has issued 1,254 natural gas production well drilling permits from July 2011 through April 16, 2016	Ongoing/Various	Various	West Branch Susquehanna	Central Pennsylvania Intrastate	S, GW, SW, WT,VG, WD, L	PADEP would issue AQ General Permit GP5 air permits as needed	Most well sites are located >10 miles from compressor stations 190, 517, and 520
Other Actions										
Transportation Projects										
	SR 2019 over German Run	Lycoming, PA	Bridge replacement	Under construction	3.6 (southwest)	West Branch Susquehanna	Central Pennsylvania Intrastate	SW, T, A	Air permit not required	Undetermined but likely minor
MAINLINE A&B REPLACEMENTS										
FERC-Jurisdictional Natural Gas Pipeline Projects										
	Dominion Transmission TL-465 Pipeline Replacement Project (CP13-26-000)	Prince William, VA	Replacement of approximately 9,200 linear feet of 24-inch-diameter natural gas transmission pipeline	Operational/ in service December 2013	1.6 (southwest)	Potomac	National Capital	Negligible	Air permit not required	Construction completed and no operational emission sources

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
Other Actions										
Transportation Projects										
	Brentsville Road	Prince William, VA	Major Bridge Rehabilitation over Broad Run	Construction began 2014; To be completed December 2015	5.4 (southeast)	Potomac	National Capital	Negligible	Air permit not required	Undetermined but likely minor
	I-66	Prince William, VA	Widening (3.5 miles); from milepost 39.6 to milepost 44.3	Construction began 2013; To be completed November 2016	4.2 (northwest)	Potomac	National Capital	T, A	Air permit not required	Undetermined but likely minor
	I-66 and Route 15	Prince William, VA	Interchange reconstruction	Construction began 2013; to be completed August 2017	6.1 (northwest)	Potomac	National Capital	A	Air permit not required	Undetermined but likely minor
	Interstate 66 (I-66) and Route 28	Fairfax, VA	Interchange improvements	Construction to occur 2017-2019	6.7 (northeast)	Potomac	National Capital	A	Air permit not required	Undetermined but likely minor
	Nokesville Road	Manassas, VA	Widening	Construction to occur 2017-2018	2.0 (southeast)	Potomac	National Capital	GW, SW, T, A	Air permit not required	Undetermined but likely minor
	Nokesville Road	Prince William, VA	Widening to six lanes	Construction began in 2014; to be completed November 2016	1.5 (southeast)	Potomac	National Capital	GW, SW, T, A	Air permit not required	Undetermined but likely minor
	Old Centreville Road	Prince William, VA	Major Bridge Rehabilitation over Bull Run	Construction anticipated 2015-2016	4.1 (northeast)	Potomac	National Capital	SW, T, A	Air permit not required	Undetermined but likely minor
	Route 29	Fairfax, VA	Bridge replacement over Little Rocky Run	Construction began 2012; to be completed October 2015	7.4 (northeast)	Potomac	National Capital	Negligible	Air permit not required	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Stringfellow Road	Fairfax, VA	Widening (2 miles) from Fair Lakes Boulevard to Lee Jackson Memorial Highway	Construction began 2012; to be completed July 2015	8.8 (northeast)	Potomac	National Capital	Negligible	Air permit not required	Undetermined but likely minor
	Walney Road	Fairfax, VA	Bridge replacement and widening	Construction began 2013; to be completed December 2015	8.7 (northeast)	Potomac	National Capital	Negligible	Air permit not required	Undetermined but likely minor
	Walney Road	Fairfax, VA	Widen to four lanes	Design underway/ No dates provided	8.9 (northeast)	Potomac	National Capital	A	Air permit not required	Undetermined but likely minor
	Walney Road	Fairfax, VA	Bridge rehabilitation over Flatlick Branch	Design underway/ No dates provided	8.8 (northeast)	Potomac	National Capital	A	Air permit not required	Undetermined but likely minor
Other Development										
	Non-Residential Inventory	Prince William, VA	The non-residential inventory is part of the build-out analysis completed by Prince William County; these areas have received zoning approval by the Board of Supervisors, and may be at any stage of development	Non-Residential inventory areas PLN2003-00250 and REZ1976-0020 is crossed by the Project; no further status provided/ No dates provided	Crosses the Centerline	Potomac	National Capital	S, GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	Residential Inventory	Prince William, VA	The residential inventory is part of the build-out analysis completed by Prince William County; these areas have received zoning approval by the Board of Supervisors, and may be at any stage of development	Residential inventory area REZ1996-0029 is crossed by the Project; as of 2012, this townhome development was under construction/ No dates provided	Crossed from MPs 1579.2 to 1579.3 and MPs 1576.4 to 1579.6	Potomac	National Capital	S, GW, VG, WD, T, L, RC, A, N	Air permit not required	Undetermined but likely minor
COMPRESSOR STATION 610										
Other Actions										
Other Energy Facilities										
	Transmission Lines to supply power to the proposed Transco Compressor Stations 610	Columbia, PA	1.8-mile-long new electrical transmission line for Compressor Station 610	Planning Stage/ Anticipated in-service July 2017	0.0 (east)	Upper Susquehanna	Central Pennsylvania Intrastate	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods
COMPRESSOR STATION 520										
Other Actions										
Other Energy Facilities										
	Distribution Lines at Compressor Station 520	Lycoming, PA	Approximately 1000 feet of distribution line	Planning Stage/ No dates provided	No route determined	n/a	n/a	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods
	Transco Leidy Southeast Expansion (CP13-551-	Luzerne, Monroe, Lycoming, and Columbia, PA;	Project includes the addition of a 20,500-hp compressor unit at Compressor Station	Construction began in February 2015	0.0	Upper Susquehanna	Northeast Pennsylvania–Upper Delaware Valley; Central	A, N	Station 520 (Lycoming) major	Although construction periods would not overlap,

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
	000)	Somerset, Hunterdon, and Mercer, NJ; Howard, MD, Cleveland, NC; and various VA counties	520 in Lycoming County				Pennsylvania Intrastate		facility plan approval 41-00001A issued 9/5/2014	Leidy Southeast Expansion will produce stationary source emissions; Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise Project
COMPRESSOR STATION 517										
Other Actions										
Other Energy Facilities										
	Distribution Lines at Compressor Station 517	Columbia, PA	Approximately 1000 feet of distribution line	Planning Stage/ No dates provided	No route determined	n/a	n/a	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods
	Transco Leidy Southeast Expansion (CP13-551-000)	Luzerne, Monroe, Lycoming, and Columbia, PA; Somerset, Hunterdon, and Mercer, NJ;	Project includes the addition of a 30,000-hp compressor unit and replacement of one 12,600-hp compressor unit with a new 16,000-hp	Construction began in February 2015	0.0	Upper Susquehanna	Northeast Pennsylvania–Upper Delaware Valley; Central Pennsylvania Intrastate	A, N	Station 517 (Columbia) major facility plan approval 19-00007A	Although construction periods would not overlap, Leidy Southeast Expansion will

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts
		Howard, MD; Cleveland, NC; and various VA counties	compressor in Columbia County						issued 9/5/2014	produce stationary source emissions; Impact of emissions from compressor station upgrades would be reflected in data from Transco's proposed ambient air monitoring program for the Atlantic Sunrise Project
COMPRESSOR STATION 190										
Other Actions										
Other Energy Facilities										
	Distribution Electrical Service at Compressor Station 190	Howard, MD	Approximately 700 feet of buried line	Planning Stage/ No dates provided	No route determined	n/a	n/a	S, VG, WD, L, VI, A, N	Air permit not required	No permanent stationary emission, minimal overlap of construction periods

[a] This table lists the projects that have the most potential to contribute to the cumulative impacts within the vicinity of the proposed Atlantic Sunrise Project; it is not intended to provide an all-inclusive listing of projects in the region.

S = Soils
GW = Groundwater
SW = Surface Water
WT = Wetlands
VG = Vegetation
WD = Wildlife
T = Traffic

APPENDIX P (cont'd)

Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Potential Cumulative Effects with the Atlantic Sunrise Project [a]

Facility/ Type of Project	Project (Company Name as appropriate)	Location (County, Commonwealth or State)	Description	Status/ Estimated Construction Date	Approximate Closest Distance (miles) (Direction to Project) [b]	Watershed	Air Quality Control Region (AQCR)	Resources Cumula-tively Affected [a,c]	Air Permits	Potential for Air Cumulative Impacts

L = Land Use
RC = Residential/Commercial
VI = Visual
A = Air
N = Noise

[b] Distance indicates the shortest distance between the project and the nearest Atlantic Sunrise facility. 0.0 indicates that the project either intersects or terminates somewhere along the Atlantic Sunrise Project centerline.

[c] Cumulative impacts are likely negligible either because there is a substantial gap in time between the construction of the listed project and the anticipated Atlantic Sunrise Project schedule and/or because of the substantial distance between the listed project and the Atlantic Sunrise Project.

Key: NTP = Notice to Proceed
PADEP = Pennsylvania Department of Environmental Protection
SR = State Route

APPENDIX Q

REFERENCES

APPENDIX Q
REFERENCES

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APPENDIX R

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LIST OF PREPARERS

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FERC/EIS-0269D
Volume II

Draft Environmental Impact Statement

Atlantic Sunrise Project

Docket No.
CP15-138-000

May 2016