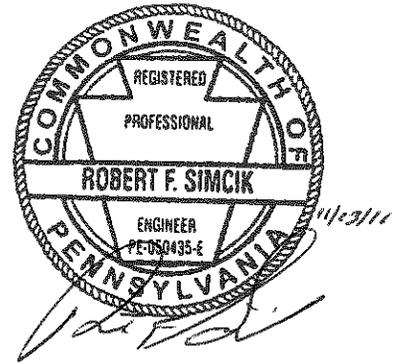


ACT 167 STORMWATER CONSISTENCY VERIFICATION REPORT
SUNOCO PENNSYLVANIA PIPELINE PROJECT
CHESTER AND DELAWARE COUNTIES, PENNSYLVANIA



ACT 167 PLAN TRACKING TABLE
Pennsylvania Pipeline Project
South East Region
Permanent Above Ground Facilities

County	Countywide Act 167 Plan?	Name of Adopted Plan	Date Approved	Municipalities That Have Enacted the Plan	Design is Consistent with Which Agency
Chester	Yes	County-wide Act 167 Stormwater Management Plan for Chester County, PA	July 2, 2013	All Municipalities	PADEP SWM Manual and Chester County Act 167 Plan
		Chester Creek Act 167 Plan - Volume I and Volume II	March 13, 2003	West Whiteland, East Goshen, Westtown	
		Conestoga River Act 167 Plan	October 24, 2005	Elverson, West Nantmeal	
Delaware	No	Chester Creek Act 167 Plan - Volume I and Volume II	March 13, 2003	Thornbury, Edgmont, Chester, Aston, Middletown, Brookhaven	PADEP SWM Manual and Chester/Ridley Creek Act 167 Plan
		Ridley Creek Act 167 Plan	1988	Edgmont, Thornbury	

ACT 167 PLAN TRACKING TABLE
Pennsylvania Pipeline Project
South East Region
Site Restoration Plan

County	Countywide Act 167 Plan?	Name of Adopted Plan	Date Approved	Municipalities That Have Enacted the Plan	Design is Consistent with Which Agency
Chester	Yes	County-wide Act 167 Stormwater Management Plan for Chester County, PA	July 2, 2013	All Municipalities	PADEP SWM Manual
		Chester Creek Act 167 Plan - Volume I and Volume II	March 13, 2003	West Whiteland, East Goshen, Westtown	
		Conestoga River Act 167 Plan	October 24, 2005	Elverson, West Nantmeal	
Delaware	No	Chester Creek Act 167 Plan - Volume I and Volume II	March 13, 2003	Thornbury, Edgmont, Chester, Aston, Middletown, Brookhaven	PADEP SWM Manual and Chester/Ridley Creek Act 167 Plan
		Ridley Creek Act 167 Plan	1988	Edgmont, Thornbury	

ACT 167 STORMWATER CONSISTENCY VERIFICATION REPORT FOR CHESTER COUNTY

1.0 INTRODUCTION

Tetra Tech, Inc. (Tt) has prepared this Act 167 Stormwater Consistency Verification Report. The report verifies consistency between the provisions of the Chester Countywide Act 167 Stormwater Management Plan and the Pennsylvania Pipeline Project. The pipeline will traverse through ten townships in Chester County: East Goshen, East Nantmeal, East Whiteland, Elverson, Upper Uwchlan, Uwchlan, Wallace, West Goshen, West Nantmeal, West Whiteland, and Westtown Townships. The County of Chester developed the Countywide Act 167 Stormwater Management Plan, which was adopted in July 2013. Elverson, West Nantmeal, Wallace, East Nantmeal, Upper Uwchlan, Uwchlan, West Whiteland, East Whiteland, East Goshen, West Goshen, and Westtown Townships have all adopted the Chester Countywide Act 167 Stormwater Management Plan. Parts of Elverson and West Nantmeal Townships lie within the Conestoga Creek Watershed Act 167 Plan area, and parts of West Whiteland, West Goshen, East Goshen, and Westtown Townships lie within the Chester Creek Watershed Act 167 Plan area. The Chester Countywide Act 167 Stormwater Management Plan supersedes and replaces the individual Watershed Act 167 Plans; however, certain provisions of those watershed plans still apply.

2.0 PROJECT DESCRIPTION

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL). The project involves the installation of approximately two parallel pipelines within a 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The 20-inch pipeline will be installed first, followed by the 16-inch line. Any temporary stabilization required will be implemented in accordance with this Erosion and Sediment (E&S) Plan. Both pipelines will be installed within the same limit of disturbance (LOD) and in the same construction period. Construction activities will involve the installation of access roads, block valve pads, tree removal, clearing and grubbing within the right of way, trenching, pipe installation, and site restoration. The total LOD will be 171 acres in Chester County.

Fifty feet will be maintained as permanent ROW. In addition, temporary use areas or extra workspaces will be required at some stream and road/railroad crossings; these will typically expand the construction ROW by 25 feet where needed. Construction activities will involve the installation of 3 permanent access roads, 3 temporary access roads, 3 block valve pads, tree removal, clearing and grubbing within the ROW, trenching, pipe installation, and site restoration.

In Chester County, Pennsylvania, the Pennsylvania Pipeline Project traverses 23.6 linear miles through the municipalities of East Goshen, East Nantmeal, East Whiteland, Elverson, Upper Uwchlan, Uwchlan, Wallace, West Goshen, West Nantmeal, West Whiteland, and Westtown and spans the Downingtown, Elverson, Pottstown, Wagontown, Malvern, West Chester, and Media USGS Quadrangles. A USGS location map showing the proposed alignment can be found in Attachment 1 of the E&S report. Past and

present land use of the project area and surrounding area is agricultural and forested land. Future land use will be a maintained vegetated natural gas pipeline ROW and agricultural land.

The project area surface water runoff drains to surface waters and unnamed tributaries (UNTs) designated as high quality (HQ), trout stock fisheries (TSF), warm water fisheries (WWF), and cold water fisheries (CWF) under PA Code 25 Chapter 93 including UNT to Conestoga River (WWF), South Branch French Creek (HQ-TSF), UNT to South Branch French Creek (HQ-TSF), UNT to Marsh Creek (HQ-TSF), Marsh Creek (HQ-TSF), Black Horse Creek (HQ-TSF), UNT to Black Horse Creek (HQ-TSF), Shamona Creek (HQ-TSF), UNT to Shamona Creek (HQ-TSF), UNT to Upper East Branch Brandywine Creek (HQ-TSF), UNT to Valley Creek (CWF), Valley Creek (CWF), East Branch Chester Creek (TSF), UNT to Ridley Creek (HQ-TSF), and UNT to Chester Creek (TSF).

The E&S plan contains Antidegradation Best Available Combination of Technologies (ABACT) best management practices (BMPs) to maintain the designated use of the receiving waters. The basic BMPs that are anticipated to be employed during the construction activities include:

- Minimizing disturbances to site areas, especially those currently covered with pavement or vegetation.
- Minimizing the time that soil is exposed.
- Preventing the runoff from flowing across disturbed areas (divert the flow to vegetated areas).
- Stabilizing disturbed soils as soon as possible.
- Slowing down the runoff flowing across the site.
- Removing sediment from surface water runoff before it leaves the site.

3.0 SITE RESTORATION

Following completion of pipeline installation and trench backfilling, the pipeline right of way, associated workspaces, and temporary access roads shall be returned to the general grade present prior to pipeline installation in order to maintain preconstruction drainage patterns. After completion of major construction work, topsoil that was stockpiled during construction will be placed along the ROW. Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by structures, paved or designated as a permanent access road. Disturbed areas, which are at final grade, shall be seeded and mulched as soon as practical. The permanent seed mixture will restore disturbed areas to a meadow in good condition or better. As a result of restoring the right of way, workspaces, and temporary access roads to a meadow condition, there will be no increase in stormwater runoff rates or volume attributed to those areas.

Within Chester County, all disturbed areas within the pipeline right of way, additional temporary workspaces, and temporary access roads will be restored to a meadow in good condition or better. The pre-construction drainage patterns surrounding the project will be maintained for the areas of the project within the township. As a result of restoring the pipeline right of way, additional temporary workspaces, and temporary access roads to a meadow condition and maintaining pre-construction drainage patterns in accordance with 25 Pa Code § 102.8(n), there will be no increase in stormwater runoff rate or volume attributed to these locations, and a quantitative stormwater analysis is not required for the pipeline ROW. Where an existing lawn condition exists and the property owner specifies, the area will be restored to a lawn condition instead of meadow.

4.0 STORMWATER MANAGEMENT

The construction and restoration practices for the proposed pipeline have been designed to meet the provisions of the County-Wide Act 167 Stormwater Management Plan for Chester County, Pennsylvania, as well as PADEP Chapter 102 regulations. In general, the pre-construction drainage patterns surrounding the project will be maintained, and all disturbed areas within the pipeline ROW will be restored to a meadow in good condition, with the exception of proposed permanent features, existing permanent features within the right of way, and lawn in residential areas where the landowner has required that lawn cover be reestablished. As a result of restoring the ROW to a meadow condition or lawn, the project will not result in increased stormwater runoff rate or volume for the pipeline corridor.

The Chester County land use ordinance requires that all existing conditions be evaluated as meadow. This project is not in compliance with the requirements of evaluating existing conditions as meadow. Instead, existing conditions were evaluated as is, per PADEP Chapter 102 regulations. The project is not in compliance with the requirements of the Chester County Act 167 ordinance for the areas which do not have permanent facilities proposed. The increase in runoff that would result in the calculations from assuming a meadow to lawn conversion in residential areas has not been detained. An actual increase in runoff rate and volume will not be realized in these areas, however, because the existing and proposed conditions are both lawn cover. The restoration of the ROW to lawn in some residential areas prevents the ability to meet the requirements of the criteria outlined in the Chester County Act 167 plan due to landowner constraints. Approximately 25 percent of the project's limit of disturbance was determined to be existing residential lawn areas that have the potential to be restored to lawn.

The PCSM plan and narrative for the project comply with 25 Pa. Code § 102.8 to preserve the integrity of stream channels and maintain and protect the physical, biological, and chemical qualities of the receiving stream while minimizing any increase in stormwater runoff and volume, impervious areas, land clearing, and grading. The project also protects the existing drainage features and vegetation to the maximum extent possible. The project is in compliance with Section 13 of Chester County's Act 167 Plan because the maximum rate of stormwater runoff is no greater after development than prior to development activities. In addition, the quantity, velocity and direction of resulting stormwater runoff has been managed in a manner which otherwise adequately protects health and property from possible injury.

There will be 3 permanent block valve pads and associated access roads installed in Chester County at Fairview Road, East Lincoln Highway, and Boot Road proposed to support the pipeline. A block valve setting will be installed at the existing Elverson Interchange site with no new grading or additional impervious area. The proposed access roads will remain as a permanent gravel drive after pipeline construction is complete. The post-construction stormwater runoff rate and volume were evaluated for the drainage areas encompassing the block valve sites and access roads that drain to the nearest watercourse. A minimal increase in the 2-year 24-hour storm runoff occurs in the watersheds containing the proposed permanent access roads and pads as result of the additional gravel installation. The post-construction stormwater management calculations show that the minimal increase in runoff volume will be accounted for by providing infiltration berms downslope of the proposed access roads and/or block valve pads. The Best Management Practices (BMPs) will ensure that no additional stormwater drainage will be added from the construction of these facilities. The infiltration berms will be constructed in accordance with the PA Stormwater BMP Manual. The proposed infiltration berms have been sized to provide adequate runoff volume storage to eliminate the difference between pre- and post-construction stormwater runoff volumes. There is no increase in the stormwater runoff rate for the 24-hour 2-, 10-, 25-, 50-, and 100-year storm events in the drainage area as a result of the access road and pad construction. The post-construction rate has been modeled to account for the slowing effect of volume-reducing BMPs to show that the post-construction runoff rates are overdettained. As a result of restoring the ROW to a

meadow or lawn condition, there will be no increase in stormwater runoff rates or volume attributed to the ROW.

The proposed, permanent access roads which will remain as permanent gravel drives shall be inspected periodically. Aggregate will be applied to the permanent access road as needed to maintain an adequate thickness. The infiltration berms shall be inspected regularly to ensure they are infiltrating properly and not clogged with sediment. Vegetation over the berms shall be maintained as necessary, which may require annual mulching. Routinely remove accumulated debris and invasive plants as needed. Inspect for signs of flow channelization and restore level gradient immediately after any deficiencies are observed.

5.0 ACT 167 COMPLIANCE

Chester County has an approved Act 167 Stormwater Management Plan. This plan requires that NRCS curve numbers be used for the runoff calculations. In addition, certain watersheds within Chester County have release rate requirements. Of the three proposed block valve sites in Chester County, only one of them (Boot Road) is in an area with release rate requirements.

A summary of the technical standards for stormwater management in the plan follows.

Peak Discharge Rate Standards

The recommended control guideline for peak rate control is:

- Do not increase the peak rate of discharge for the 2-year through 100-year events (at minimum); as necessary, provide additional peak rate control as required by applicable and approved Act 167 plan.
- The curve numbers that were utilized in the PCSM design for the proposed block valve sites mirror the requirements of Chester County.
- Only Boot Road is in an area with release rate requirements. This requirement states that the post-development 2-year storm should be reduced to the pre-development 1-year storm rate. Additionally, the 5-year and 10-year storm events should be reduced to the pre-development 2-year storm rate.

The proposed permanent facilities will utilize infiltration berms to manage the two-year through 100-year peak rate increases. All proposed permanent facilities meet the associated release rate requirements. These BMPs will also help to increase the time of concentration for the drainage area encompassing the block valve sites.

The pipeline ROW will be maintained in meadow condition. Therefore, peak discharge rate standards do not apply.

Volume Controls

Use of Control Guideline 1 is recommended where site conditions offer the opportunity to reduce the increase in runoff volume as follows:

- Do not increase the post-development total runoff volume for all storms equal to or less than the two-year/24-hour event;
- Existing (pre-development) non-forested pervious areas must be considered meadow (good condition) or its equivalent; and
- 20 percent of existing impervious area, when present, shall be considered meadow (good condition) or its equivalent.

- The curve numbers that were utilized in the PCSM design for the proposed block valve sites mirror the requirements of Chester County.

Stormwater BMPs have been proposed at each of the block valve stations and along the associated access roads. All proposed BMPs have been sized to control the increase in volume associated with the increased impervious area. Therefore, all volume control requirements have been met for block valves.

Channel Protection Standards

The channel protection standards aim to reduce the erosion to channels downslope of stormwater discharges. The plan states that channel protection standards will be achieved through implementation of permanent removal of increased volume from discharges during low flow storm events.

Water Quality Standards

A combination of source reduction measures through non-structural BMPs and water quality treatment through use of structural BMPs is the proposed water quality control strategy of the plan. Reducing the amount of runoff is the preferred strategy and includes minimizing disturbance, preserving and maintaining trees and woodlands, establishing non-erosive flow conditions in natural flow pathways, minimizing soil disturbance and compaction, and directing runoff to pervious areas where possible.

The construction and restoration practices for the proposed pipeline have been designed to meet the provisions of the plan. In general, the pre-construction drainage patterns surrounding the project will be maintained, the LOD will be minimized to the extent practicable, and all disturbed areas will be restored to a meadow in good condition, with the exception of the permanent access roads and block valve sites.

Stormwater management best management practices will be used to ensure that the post-development runoff volume and post-development peak discharge rates do not increase. The channel protection standards have been achieved by eliminating the increase in the post-development runoff volume. The water quality standards have been met by minimizing disturbance, maintaining trees and woodlands where possible, maintaining pre-construction drainage patterns to the extent practicable, minimizing soil disturbance and replacing topsoil.

By following the requirements of PADEP's 25 Pa Code § 102.8(n) and Chester County's approved Act 167 Stormwater Management Plan, the Sunoco Pipeline project meets the criteria for Chester County.

ACT 167 STORMWATER CONSISTENCY VERIFICATION REPORT FOR DELAWARE COUNTY

1.0 INTRODUCTION

Tetra Tech, Inc. (Tt) has prepared this Act 167 Stormwater Consistency Verification Report. The report verifies consistency between the provisions of the Chester Creek, Ridley Creek, Crum Creek, and Marcus Hook Creek Watershed Act 167 Plans and the Pennsylvania Pipeline Project. The pipeline will traverse through seven townships in Delaware County: Aston, Brookhaven, Chester, Edgmont, Middletown, Thornbury, and Upper Chichester Townships. Delaware County does not have a Countywide Act 167 Stormwater Management Plan; instead, the county is subdivided into Watershed Study Areas. Thornbury, Edgmont, Chester, Aston, Middletown, and Brookhaven Townships are located within the Chester Creek Watershed Study Area and follow the provisions of the Chester Creek Act 167 Plan Volume I and Volume II. Edgmont and Thornbury Townships are located in the Ridley Creek Watershed Study Area and follow the provisions of the Ridley Creek Act 167 Plan.

2.0 PROJECT DESCRIPTION

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project that would expand existing pipeline systems to provide natural gas liquid (NGL). The project involves the installation of approximately two parallel pipelines within a 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania (PA) to SPLP's Marcus Hook facility in Delaware County, PA with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, PA to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system. The 20-inch pipeline will be installed first, followed by the 16-inch line. Any temporary stabilization required will be implemented in accordance with this Erosion and Sediment (E&S) Plan. Both pipelines will be installed within the same limit of disturbance (LOD) and in the same construction period. Construction activities will involve the installation of access roads, block valve pads, tree removal, clearing and grubbing within the right of way, trenching, pipe installation, and site restoration. The total LOD will be 97 acres in Delaware County.

Fifty feet will be maintained as permanent ROW. In addition, temporary use areas or extra workspaces will be required at some stream and road/railroad crossings; these will typically expand the construction ROW by 25 feet where needed. Construction activities will involve the installation of 2 block valve pads, expansion activities at a pump station, tree removal, clearing and grubbing within the ROW, trenching, pipe installation, and site restoration.

In Delaware County, Pennsylvania, the Pennsylvania Pipeline Project traverses 11.5 linear miles through the municipalities of Aston, Brookhaven, Chester, Edgmont, Middletown, Thornbury, and Upper Chichester and spans the Media, Marcus Hook, West Chester, and Bridgeport USGS Quadrangles. A USGS location map showing the proposed alignment can be found in Attachment 1 of the E&S report. Past and present land use of the project area and surrounding area is agricultural and forested land. Future land use will be a maintained vegetated natural gas pipeline ROW and agricultural land.

The project area surface water runoff drains to surface waters and unnamed tributaries (UNTs) designated as warm water fisheries (WWF), trout stock fisheries (TSF), high quality (HQ), and cold water fisheries (CWF) under PA Code 25 Chapter 93 including UNT to Ridley Creek (TSF), Rocky Run (HQ-CWF), UNT to Rocky Run (HQ-CWF), UNT to Chester Creek (TSF), Chrome Run (TSF), Crum Run (TSF), UNT to Crum Run (TSF), Chester Creek (TSF), Chester Creek (WWF), UNT to Delaware River (WWF), Baldwin Run (WWF), and UNT to Baldwin Run (WWF).

The E&S plan contains Antidegradation Best Available Combination of Technologies (ABACT) best management practices (BMPs) to maintain the designated use of the receiving waters. The basic BMPs that are anticipated to be employed during the construction activities include:

- Minimizing disturbances to site areas, especially those currently covered with pavement or vegetation.
- Minimizing the time that soil is exposed.
- Preventing the runoff from flowing across disturbed areas (divert the flow to vegetated areas).
- Stabilizing disturbed soils as soon as possible.
- Slowing down the runoff flowing across the site.
- Removing sediment from surface water runoff before it leaves the site.

3.0 SITE RESTORATION

Following completion of pipeline installation and trench backfilling, the area shall be returned to the general grade present prior to pipeline installation in order to maintain preconstruction drainage patterns. After completion of major construction work, topsoil that was stockpiled during construction will be placed along the ROW. Grounds disturbed by any of the operations necessary to complete the work for this project are to be permanently seeded, or if specified, sodded, unless occupied by structures, paved or designated as a permanent access road. Disturbed areas, which are at final grade, shall be seeded and mulched as soon as practical. The permanent seed mixture will restore disturbed areas to a meadow in good condition or better.

Within Delaware County, all disturbed areas within the pipeline right of way, additional temporary workspaces, and temporary access roads will be restored to a meadow in good condition or better. The pre-construction drainage patterns surrounding the project will be maintained for the areas of the project within the township. As a result of restoring the pipeline right of way, additional temporary workspaces, and temporary access roads to a meadow condition and maintaining pre-construction drainage patterns in accordance with 25 Pa Code § 102.8(n), there will be no increase in stormwater runoff rate or volume attributed to these locations, and a quantitative stormwater analysis is not required for the pipeline ROW. Where an existing lawn condition exists and the property owner specifies, the area will be restored to a lawn condition instead of meadow.

4.0 STORMWATER MANAGEMENT

The construction and restoration practices for the proposed pipeline have been designed to meet the provisions of the Chester/Ridley Creek Watershed Stormwater Management District – Middletown Township Stormwater Ordinance and PADEP Chapter 102 regulations. In general, the pre-construction drainage patterns surrounding the project will be maintained, and all disturbed areas within the pipeline ROW will be restored to a meadow in good condition. As a result of restoring all disturbed areas to a meadow condition, the project will not result in increased stormwater runoff rate or volume within the proposed pipeline ROW.

There will be 2 block valve pad areas installed in Delaware County at Middletown Road and South Pennell Road. There will also be expansion activities at existing Twin Oaks Pump Station. The proposed access roads will remain as a permanent gravel drive after pipeline construction is complete. The post-construction stormwater runoff rate and volume were evaluated for the drainage areas encompassing the block valve sites and access roads that drain to the nearest watercourse. A minimal increase in the 2-year 24-hour storm runoff occurs in the watersheds containing the proposed permanent access roads and pads as result of the additional gravel installation. The post-construction stormwater management calculations show that the minimal increase in runoff volume will be accounted for by providing infiltration berms downslope of the proposed access roads or block valve pads. The Best Management Practices (BMPs) will ensure that no additional stormwater drainage will be added from the construction of these facilities. The infiltration berms will be constructed in accordance with the PA Stormwater BMP Manual. The proposed infiltration berms have been sized to provide adequate runoff volume storage to eliminate the difference between pre- and post-construction stormwater runoff volumes. There is no increase in the stormwater runoff rate for the 24-hour 2-, 10-, 25-, 50-, and 100-year storm events in the drainage area as a result of the access road and pad construction. The post-construction rate has been modeled to account for the slowing effect of volume-reducing BMPs to show that the post-construction runoff rates are overdetained. As a result of restoring the ROW to a meadow condition, there will be no increase in stormwater runoff rates or volume attributed to the ROW.

The proposed block valve pad and access road at Middletown Road is proposed to be vegetated to minimize ROW impacts. As a result, stormwater runoff rate and volume requirements are met at this site per PADEP's 25 Pa Code § 102.8(n).

The proposed, permanent access roads which will remain as permanent gravel drives shall be inspected periodically. Aggregate will be applied to the permanent access road as needed to maintain an adequate thickness. The infiltration berms shall be inspected regularly to ensure they are infiltrating properly and not clogged with sediment. Vegetation over the berms shall be maintained as necessary, which may require annual mulching. Routinely remove accumulated debris and invasive plants as needed. Inspect for signs of flow channelization and restore level gradient immediately after any deficiencies are observed.

5.0 ACT 167 COMPLIANCE

The proposed permanent facility in Delaware County meets the requirements set forth in the Chester/Ridley Creek Watershed Stormwater Management District – Middletown Township Stormwater Ordinance.

A summary of the technical standards for stormwater management in the plan follows.

Peak Discharge Rate Standards

The recommended control guideline for peak rate control is:

- Do not increase the peak rate of discharge for the 2-year through 100-year events (at minimum).
- Post-development peak discharge for all design storms must be no greater than 50% of the pre-development peak discharges. As stated in the Stormwater Ordinance, the 50% reduction in peak discharges only applies to the disturbed area. In order to calculate the peak discharge rate, a pre-development watershed of just the disturbed area at South Pennell Road has been developed.

The proposed permanent facilities will utilize infiltration berms to manage the two-year through 100-year peak rate increases. All proposed permanent facilities meet the associated release rate requirements. These BMPs will also help to increase the time of concentration for the drainage area encompassing the block valve sites.

The pipeline ROW will be maintained in meadow condition. Therefore, peak discharge rate standards do not apply.

Volume Controls

Use of Control Guideline 1 is recommended where site conditions offer the opportunity to reduce the increase in runoff volume as follows:

- Do not increase the post-development total runoff volume for all storms equal to or less than the two-year/24-hour event;
- Existing (pre-development) non-forested pervious areas must be considered meadow (good condition) or its equivalent; and
- 20 percent of existing impervious area, when present, shall be considered meadow (good condition) or its equivalent.

Stormwater BMPs have been proposed at each of the block valve stations and along the associated access roads. All proposed BMPs have been sized to control the increase in volume associated with the increased impervious area. Therefore, all volume control requirements have been met for block valves.

Channel Protection Standards

The channel protection standards aim to reduce the erosion to channels downslope of stormwater discharges. The plan states that channel protection standards will be achieved through implementation of permanent removal of increased volume from discharges during low flow storm events.

Water Quality Standards

A combination of source reduction measures through non-structural BMPs and water quality treatment through use of structural BMPs is the proposed water quality control strategy of the plan. Reducing the amount of runoff is the preferred strategy and includes minimizing disturbance, preserving and maintaining trees and woodlands, establishing non-erosive flow conditions in natural flow pathways, minimizing soil disturbance and compaction, and directing runoff to pervious areas where possible.

The construction and restoration practices for the proposed pipeline have been designed to meet the provisions of the plan. In general, the pre-construction drainage patterns surrounding the project will be maintained, the LOD will be minimized to the extent practicable, and all disturbed areas will be restored to a meadow in good condition, with the exception of the permanent access roads and block valve sites.

Stormwater management best management practices will be used to ensure that the post-development runoff volume and post-development peak discharge rates do not increase. The channel protection standards have been achieved by eliminating the increase in the post-development runoff volume. The water quality standards have been met by minimizing disturbance, maintaining trees and woodlands where possible, maintaining pre-construction drainage patterns to the extent practicable, minimizing soil disturbance and replacing topsoil.

By following the requirements of PADEP's 25 Pa Code § 102.8(n) and Delaware County's Chester/Ridley Creek Watershed Stormwater Management District – Middletown Township Stormwater Ordinance, the Sunoco Pipeline project meets the criteria for Delaware County.