pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) TMDL PLAN TECHNICAL REVIEW CHECKLIST[1]

Applicant Name: **East Bradford Township** NPDES Permit No.: **PAI130523**

☐ New MS4 ☐ Existing MS4 with Waiver ☒ Existing MS4 with Permit

Date Application Due: _____ Date Plan Considered Complete: _____

☐ Joint Plan Name(s) of MS4 Group or Individual MS4s Participating in Joint Plan:[2]

In general a response of "No" should be considered a technical deficiency, unless an asterisk is shown in the question.

Public Participation	Yes	No	N/A
1. Was the Plan made available for public review? *Verify that the public was able to access the entire plan. For example, on a website and/or in hard-copy in a public place.*	☒	☐	☐
2. Was a public notice provided in a newspaper of general circulation which described the plan, where it may be reviewed, and the length of time provided for receipt of comments? *Review the notice to confirm the required content.*	☒	☐	☐
3. Was the public notice published at least 45 days prior to submission to DEP and did the public have 30 days to provide comments? *Verify that the public had 30 days to comment and the public notice was published at least 45 days prior to submission to DEP.*	☒	☐	☐
4. Did the permittee hold a public meeting at which the plan was discussed and the public had an opportunity to provide comments? *The plan should confirm that a public meeting was held where the plan was discussed. The meeting can be a regularly scheduled meeting of the municipality; it need not be specifically for the purpose of discussing the plan.*	☒	☐	☐
5. If the plan includes multiple permittees/municipalities, did the public notice reach all relevant target audiences in the municipalities? *Note that if the plan involves multiple permittees and/or municipalities a notice of the plan and public meeting must reach target audiences in each permittee/municipality.*	☐	☐	☒
6. Was a copy of the permittee's record of consideration for each timely comment received during the 30 -day comment period included with the plan? *The MS4 must provide a brief evaluation of each written and verbal comment received*.	☐	☐	☒
Mapping	**Yes**	**No**	**N/A**
1. Was a hard copy storm sewershed map submitted? *A hard copy of the map(s) is required unless reviewer agrees to an electronic copy.*	☒	☐	☐
2. Are surface waters in the MS4 mapped and named? *Confirm that the MS4 has correctly mapped surface waters. Standard is NHD flowline. This is important because outfalls are defined as stormwater discharges at surface waters.*	☒	☐	☐
3. Are all outfalls to impaired waters mapped which receive flow from urbanized areas?	☒	☐	☐

[1] Use this checklist for TMDL Plans as well as combination PRP / TMDL Plans.
[2] Complete this checklist once for joint plans and either copy the completed checklist and place a copy into each MS4's permit file or include a note in the file on where the TMDL Plan checklist relating to the MS4 may be found in WMS or another permit file.

Each outfall must be mapped for all storm sewersheds which drain the UA and discharge to impaired waters (i.e., Planning Area). Portions of the Planning Area which do not have piped conveyances must also have outfalls identified.			

Mapping	Yes	No	N/A
4. Is the drainage area (storm sewershed) to each outfall delineated (mapped)? *Confirm that the MS4 has mapped the Planning Area for which existing loads are to be calculated. (An exception is provided for MS4s in the Chesapeake Bay drainage, if a CBPRP is combined with a TMDL Plan; the drainage area from all outfalls which drain to the Bay can be mapped as one if there are no local impairments).*	☐	☒	☐
5. Are land uses / land covers indicated on the map? *The plan must indicate land uses or land covers to demonstrate that the calculated pollutant loads are reasonable. That information can take the form of detailed mapping which shows impervious/pervious areas or land uses, or it can take the form of storm sewershed delineations broken down into impervious/pervious or land uses in narrative form.*	☒	☐	☐
6. Are all structural BMPs located? *Proposed BMPs must be mapped, demonstrating that they treat flow generated within the Planning Area. Existing BMPs also need to be mapped if used to reduce existing pollutant load. Non-structural BMPs (e.g., street sweeping) need not be mapped.*	☐	☒	☐
7. Are all relevant features identified in the legend?* *DEP has no specific standard for mapping features; MS4s can use the model map on the DEP website as an acceptable model if they wish. Mapping must just be clear.*	☒	☐	☐
8. Is the scale adequate?* *DEP has no specific standard for mapping scale. Scale must be adequate to allow the location of noted features in the field. 1 inch = 800 feet or less suggested; however, not required.*	☒	☐	☐
9. If the MS4 utilizes parsing, is parsing limited to allowed areas, identified in sufficient detail? *The Planning Area can be reduced to "parse out" land area with NPDES permit coverage for stormwater (e.g., industrial stormwater permit, Penn State, PENNDOT, Turnpike, CAFOs) and land that does not contain municipal infrastructure (e.g., homeowner associations) or convey municipal flow that drains directly to surface waters. Mapping must show the parsed-out areas and an explanation must be provided in the plan as to why such areas can be parsed out. BMPs in the parsed-out area may not be credited.*	☒	☐	☐
10. In addition to #9, did the MS4 parse areas that were part of the TMDL but not part of the TMDL Planning Area and if so, were the parsing calculations done correctly? *TMDLs often utilized the entire land area of a municipality to establish baseline loads and WLAs instead of just those areas draining to MS4 outfalls discharging to TMDL waters. In such cases the MS4 may exclude areas not draining to MS4 outfalls from the calculation of existing loads and WLAs. See Attachment A of the TMDL Plan instructions to evaluate whether this type of parsing was done correctly. If calculations were completed that differ from the two examples provided in the attachment, contact BCW for assistance if necessary.*	☒	☐	☐
Pollutants of Concern	**Yes**	**No**	**N/A**
1. Are the pollutants of concern properly identified? *If a WLA has been established in a TMDL for sediment, the MS4 is expected to develop the TMDL Plan based on the reduction of sediment. If WLAs have been established in a TMDL for sediment and nutrients, the MS4 is expected to develop the TMDL Plan based on the reduction of sediment and TP, unless the MS4 chooses to utilize a presumptive approach. DEP will allow MS4s to calculate loads and pollutant reductions based on sediment, under the assumption that the achievement of TMDL Plan objectives for sediment will also achieve the objectives for TP. MS4s must identify use of the presumptive approach in its TMDL Plan if chosen. If a WLA has been established in a TMDL for nutrients alone (or surrogates for nutrients such as "excessive algal growth" and "organic enrichment/low D.O."), the MS4 is expected to develop the TMDL Plan based on the reduction of TP, unless the presumptive approach is chosen, as described above.*	☒	☐	☐

Existing Load Calculations	Yes	No	N/A
1. Is the MS4 using the "baseline load" contained in the TMDL as the existing load, where the baseline load is specific to the MS4? If Yes, is this load properly interpreted? *If the MS4 is identified in the TMDL on its own (not grouped with other MS4s), the MS4 may use the individual baseline load from the TMDL as the existing load. In such cases the reviewer must ensure that the baseline load is accurately interpreted. For example, the baseline load may need to be summed for multiple land uses in order to determine the total baseline load. Select N/A if this method was not used. Select No if this method was used but was improperly interpreted.*	☐	☒	☐
2. Is the MS4 using the "baseline load" contained in the TMDL as the existing load, where the baseline load is an aggregate for a group of MS4s?* *If the MS4 is identified in the TMDL as part of a group of MS4s, one aggregate baseline load will be reported for the group. If all MS4s subject to the TMDL are not collaborating through a joint plan, MS4s will need to distribute the aggregate load amongst themselves. Select N/A if this method was not used.*	☐	☒	☐
3. If Yes to #2, was the method of distributing the load specific to the MS4 accurate and consistent with the method done by other MS4s in the group? *If a joint plan was not completed that used the aggregate baseline load as the existing load, the reviewer will need to assess whether the MS4 properly determined its share of the aggregate load. MS4s may, for example, distribute load based on the percentage of land area or impervious surface in its municipality or TMDL Planning Area. Check these calculations to ensure they are reasonable. In addition, the reviewer will need to ascertain that other MS4s subject to the aggregate load distributed the load in the same way; if not, a technical deficiency letter would need to be sent to each MS4, instructing them to work together to develop a consistent method.*	☐	☐	☒
4. Did the MS4 remodel the baseline load using MapShed or a comparable, or more robust, continuous simulation model? *If #1 or #2 was not done, the MS4 has the option of remodeling the baseline load contained in the TMDL to determine its existing load for the TMDL Plan. MapShed or a similar model must be used in any remodeling effort; if the reviewer is unsure, contact BCW for assistance. Select N/A if this method was not used.*	☒	☐	☐
5. If Yes to #4, did the new modeling utilize the same land use/land cover information that was used to develop the TMDL or other quality assured land use/land cover data from the time of TMDL approval?	☒	☐	☐
6. If Yes to #4, was the size of the watershed modeled a minimum of (approximately) 10 square miles? *MapShed, or any other watershed model where channel erosion is explicitly modeled, should be run on a minimum of ~10 mi^2 area to properly account for downstream impacts and include impaired waters identified in the MS4 Requirements Table. Aggregation of these waters up to approximately the 12-digit HUC scale for modeling purposes is acceptable. Modeling may not be done at the individual storm sewershed or municipal scale where the extent of downstream impact is not included in load calculation.*	☒	☐	☐
7. Were existing loads reduced by considering structural BMPs installed prior to the TMDL approval date?* *All existing structural BMPs can be taken into account to reduce existing load as long as they are functional, including BMPs installed for Chapter 102 purposes. Full credit can be taken for functional BMPs installed prior to the TMDL approval date.*	☒	☐	☐
8. Were existing loads reduced by considering structural BMPs installed after the TMDL approval date?* *An MS4 may use any BMPs installed for Chapter 102 purposes after the TMDL approval date for credit toward reducing existing load only for the net decrease in pollutant loading. If the MS4 does not demonstrate that a BMP reduced post-construction loads as compared to pre-construction loads, the difference cannot be applied as credit. Other non-102 BMPs may be credited in full.*	☐	☒	☐

TMDL Plan Technical Review Checklist

Existing Load Calculations	Yes	No	N/A
9. If Yes to #7 and/or #8, are all of the following provided for existing structural BMPs: detailed description; latitude and longitude coordinates; the permit number, if any, that authorized installation of the BMP; calculations demonstrating the pollutant reductions achieved by the BMP; the date the BMP was installed and a statement that the BMP continues to serve the function(s) it was designed for; and the O&M activities and O&M frequencies associated with the BMP? *DEP-approved methods are required for existing BMP reduction calculations (Effectiveness Values, Expert Panel reports, design quality programs; if none of those methods are applicable, consult with BCW). Existing BMPs must be in the Planning Area and be functional.*	☐	☒	☐
10. Are existing loads calculated for all appropriate sewersheds based on the mapping? *An exception is allowed if the MS4 discharges to Chesapeake Bay and there are no local impairments. In such cases the mapping may provide a single load calculation for the combined storm sewershed.* *To summarize, the existing load may be a 1) baseline load from a TMDL specific to an MS4, 2) a baseline load from a TMDL provided to a group of MS4s that is distributed amongst individual MS4s (unless a joint plan is prepared), or 3) a re-modeled load using information from the time the TMDL was developed. Any of these 3 loads may be reduced by considering 1) pre-TMDL BMP load reductions, which may be credited in full, and/or 2) post-TMDL BMP load reductions, where Chapter 102 PCSM BMPs may be credited for the net reduction and non-Chapter 102 PCSM BMPs may be credited in full.*	☒	☐	☐
Wasteload Allocations (WLAs)	**Yes**	**No**	**N/A**
1. Is there a specific WLA(s) for the MS4 in the TMDL?* *If Yes, the MS4 should report it in the plan, in lbs/yr.*	☒	☐	☐
2. Is there an aggregate (bulk) WLA(s) for a group of MS4s in the TMDL?* *If Yes, the MS4 should report it in the plan, in lbs/yr, along with the WLA(s) specific to the MS4 with supporting calculations.*	☐	☒	☐
3. If Yes to #2, was the method of distributing the aggregate WLA accurate and consistent with the method done by other MS4s in the group? *If a joint plan was not completed, the reviewer will need to assess whether the MS4 properly determined its share of the aggregate WLA. MS4s may, for example, distribute WLAs based on the percentage of land area or impervious surface in its municipality or TMDL Planning Area. Check these calculations to ensure they are reasonable. In addition, the reviewer will need to ascertain that other MS4s subject to the aggregate WLA distributed the WLA in the same way; if not, a technical deficiency letter would need to be sent to each MS4, instructing them to work together to develop a consistent method.*	☐	☐	☒
TMDL Objectives	**Yes**	**No**	**N/A**
1. Has the MS4 demonstrated that it has already satisfied the WLAs? *It is possible that an MS4 will attempt to demonstrate that it has already met WLAs through existing structural BMPs, i.e., existing loads already meet WLAs.*	☐	☒	☐
2. If Yes to #1, does the reviewer agree with the information supporting this assertion? *If an MS4 makes this assertion the reviewer should carefully review all calculations and is encouraged to notify BCW.*	☐	☐	☒
3. If No to #1, does the plan identify the long-term TMDL load reduction objective? *The long-term TMDL objective is to achieve the WLA(s). The number of lbs/yr that must be reduced and the % reduction compared to the existing load(s) must be provided.*	☒	☐	☐

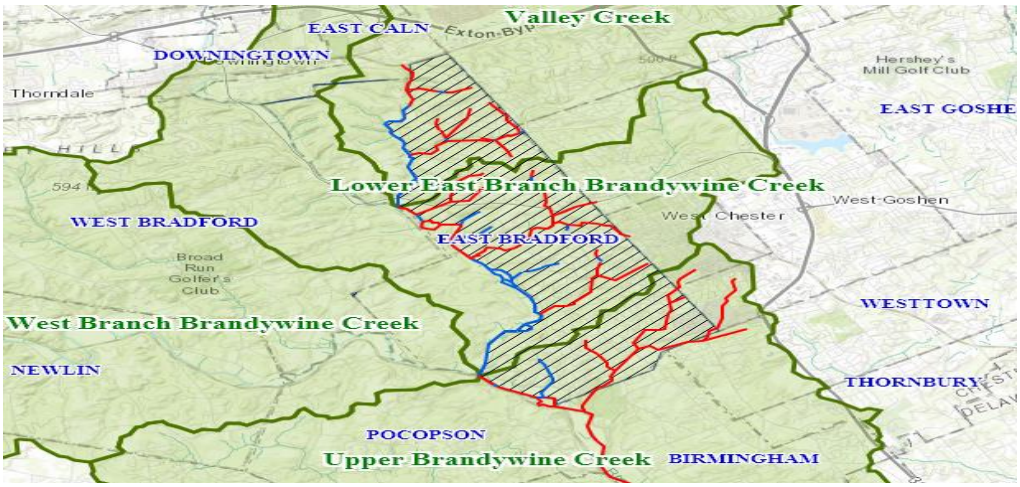
4. If No to #1, does the plan identify the short-term TMDL load reduction objective? *The short-term TMDL objective (for 5-year permit term) is to achieve the WLA(s) or, if this is determined to be infeasible, achieve a reduction of 10% for sediment or a reduction of 5% for TP. A decision on which option is selected must be part of the plan. The number of lbs/yr that must be reduced must be provided.*	☒	☐	☐
Selection of BMPs	**Yes**	**No**	**N/A**
1. Are the names and descriptions of BMPs reported in the TMDL Plan in accordance with the Chesapeake Bay Program Model? *While the TMDL Plan instructions suggests BMPs "should" be reported using naming conventions in the Bay Model, consider this a technical deficiency only if there is so little description of the BMP that it is unclear what BMP name in the Model it would fall into. Note that BMP designs are not required for plans.*	☒	☐	☐
2. Are BMPs located in the drainage area of impaired waterbodies? *BMPs are not creditable if located outside of the Planning Area (exceptions for stream renovation and offsetting). If there are multiple local impairments an appropriate planning scale must be decided. If for example all of the impairments are within the same HUC-12 basin, the planning area load to the entire basin can be totaled and BMPs can be located anywhere in the HUC-12 which drains to nutrient/sediment impaired waters. If the Planning Area discharges to multiple HUC-12 basins a total load must be calculated for each basin. Permittees which prepare joint plans may propose a planning scale which considers BMP locations throughout larger basins than HUC-12. The outcome of the above establishes how many "plans" must be separately developed.*	☒	☐	☐
3. Are BMPs described and load reduction calculations provided for each BMP? *Descriptions must be provided for each proposed BMP and keyed (or numbered) to the BMPs shown on the map. The calculation of the pollutant load to each BMP must be provided, and it must use the same methodology that is used for the existing load.*	☒	☐	☐
4. Are BMP load reduction calculations correct? *DEP-approved methods are required for existing BMP reduction calculations (Effectiveness Values, Expert Panel reports, design quality programs; if none of those methods are applicable, consult with BCW.*	☒	☐	☐
5. If street sweeping is proposed are load reduction calculations done correctly? *Street sweeping may be proposed as a BMP for pollutant loading reductions if 1) street sweeping is not the only method identified for reducing pollutant loading, and 2) the BMP effectiveness values contained in 3800-PM-BCW0100m or Chesapeake Bay Program expert panel reports are utilized. In order to obtain credit under the Effectiveness Values table, a street sweeping frequency of at least 25/year must be proposed. If expert panel report methods are used, the MS4 must agree to keep records on lane miles swept in the Planning Area.*	☐	☐	☒
6. If stormwater inlet filters or other solids removal is proposed are load reduction calculations done correctly? *No more than 50% of total pollutant reduction requirements can be met through this BMP. The drainage area treated by this BMP may be no greater than 0.5 acre unless it can be demonstrated that the specific system proposed is capable of treating stormwater from larger drainage areas. For planning purposes, the sediment removal efficiency specified by the manufacturer may be assumed, but no higher than 80%. Calculations must include a reasonable estimate of the mass of solids collected through this BMP over time and must follow instructions in the BMP Effectiveness Values document. A clear maintenance schedule must be specified.*	☐	☐	☒

7. If stream restoration is proposed are load reduction calculations done correctly? *Stream restoration projects may be proposed downstream of the Planning Area. Load reduction credit is limited to the proportion of flow treated by the project that discharges from the Planning Area. The Effectiveness Values table provides a load reduction of 44.88 lbs/ft/yr for stream restoration. That load reduction assumes Chesapeake Bay loading rates (Attachment B of the PRP Instructions) or equivalent. However, where existing sediment loads were calculated using modeling at a local watershed scale, a default rate of 115 lbs/ft/yr may be used. In addition, the methods used must be consistent with "Considerations of Stream Restoration Projects" (posted to DEP's MS4 website). Contact BCW for assistance as necessary.*	☒	☐	☐
8. If MapShed was used and stream bank restoration or street sweeping are proposed as BMPs, do the load reductions from these BMPs meet DEP requirements? *Desktop MapShed users may not use the streambank restoration or street sweeping components included in the MapShed BMP editor for pollutant reduction calculations. Pollutant reductions associated with streambank restoration projects and street sweeping must conform to the TMDL Plan Instructions.*	☐	☐	☒
9. Does the MS4 propose offsets?* *Offsets are BMPs located outside the Planning Area or otherwise treat flows that originate outside of the Planning Area. Offsets require approval of BCW and can only be approved through an individual permit.*	☐	☒	☐
10. Does the plan contain an implementation schedule? *The TMDL Plan instructions do not explicitly require a schedule, although the permit states that BMPs must be implemented in accordance with the schedule in the plan and it is recommended for joint plans. If the reviewer believes that the scope of projects are such that the permittee should have no problem (given funding) with implementing all BMPs within 5 years, although a specific schedule for each BMP is not in the plan, omission of a schedule does not necessarily constitute a technical deficiency. If the reviewer has reason to question the feasibility of implementing all BMPs within 5 years, omission of a schedule may be considered a technical deficiency.*	☒	☐	☐
11. If the MS4 has not already achieved WLA(s) and does not propose to achieve WLA(s) during the permit term, does the plan contain a conceptual plan for how the WLA(s) will be achieved, long-term? *This section may be less detailed than the section addressing short-term reductions, but nonetheless should describe a feasible plan toward achieving the WLA(s). Calculations are not required, but are recommended. An estimate on the number of years it will take the MS4 to achieve the WLA(s) should be reported based on the preliminary analysis.*	☒	☐	☐
Funding	**Yes**	**No**	**N/A**
1. Is the sponsor of each proposed BMP identified?* *Plans need to include project sponsors and partners. If none are identified it should not necessarily be considered a deficiency.*	☒	☐	☐
2. Is the proposed means of funding each BMP identified? *Plans need to specify probable sources of funding for each BMP, with alternatives in the event the funding sources do not materialize.*	☒	☐	☐
Operation and Maintenance	**Yes**	**No**	**N/A**
1. Is the party responsible for the O&M of each proposed structural BMP identified? *The plan must identify the entity that will be responsible for the O&M of each BMP. If a joint plan is prepared the reviewer may skip to the same question in the section below.*	☐	☐	☒
2. Are the O&M activities for each proposed structural BMP identified and generally adequate? *A list of general O&M activities for each BMP are required.*	☐	☐	☒
3. Is the frequency of O&M identified and reasonable for each BMP? *The Stormwater BMP Manual may be used to check the validity of proposed O&M frequencies.*	☐	☐	☒

TMDL Plan Technical Review Checklist

Joint TMDL Plan Written Agreements (If Applicable)	Yes	No	N/A
1. Does the written agreement address the scope of the agreement (i.e., complete plan implementation or individual BMP implementation)? *If a joint plan was submitted and there is no written agreement, the application would be considered incomplete. If applicable and a written agreement was submitted, verify that the agreement addresses the scope of how the parties are cooperating.*	☐	☐	☒
2. Does the written agreement address roles and responsibilities of each party?* *The TMDL Plan instructions recommend that the following be addressed: how projects will be selected; selection of engineering and other contracted services; long-term O&M; adaptive management of the plan (or the individual BMPs) over the permit term; and a commitment to using the Plan (or to implementing the individual BMP). If one of these topics is not addressed, use judgment in determining whether or not the omission constitutes a technical deficiency.*	☐	☐	☒
3. Does the written agreement contain a schedule of milestones to implement the plan?* *See #10 under Selection of BMPs. If not addressed, use judgment in determining whether or not the omission constitutes a technical deficiency.*	☐	☐	☒

Comments: The DEP's GIS shows East Bradford Township's UA in the map:



The MS4 Requirements Table shows the township's MS4 requirements:

MS4 Urban Area Report
EAST BRADFORD TWP, Chester County

INDIVIDUAL PERMIT REQUIRED: Yes	**REASON:** TMDL Plan, SP, IP	**NPDES ID:** PAI130523
IMPAIRED DOWNSTREAM WATERS	**REQUIREMENTS**	**OTHER CAUSES OF IMPAIRMENT**
West Valley Creek		Water/Flow Variability (4c)
East Branch Brandywine Creek		Cause Unknown (4a) Water/Flow Variability (4c)
Unnamed Tributaries to East Branch Brandywine Creek		Other Habitat Alterations (4c)
Plum Run		Water/Flow Variability (4c)
Taylor Run		Other Habitat Alterations (4c)
Christina River Basin Sediment	TMDL Plan-Siltation Suspended Solids (4a)	
Unnamed Tributaries to Valley Creek		Water/Flow Variability (4c)
Broad Run		Water/Flow Variability (4c)
Blackhorse Run		Other Habitat Alterations Water/Flow Variability (4c)

TMDL Plan Technical Review Checklist

The Christina River Basin TMDL includes this MS4 in Brandywine Creek Watershed. The MS4 must comply with Appendix F of the permit, for which the township submitted a TMDL Plan to comply with the reductions.

Table 4-8. Average annual sediment allocations for towns in Brandywine Creek Watershed

Township	Baseline (ton/yr)	TMDL (ton/yr)	Percent Reduction
BIRMINGHAM TWP	310.81	130.35	58.06%
COATESVILLE CITY	231.29	79.76	65.52%
EAST BRADFORD TWP	1185.00	467.17	60.58%
EAST FALLOWFIELD TWP	803.23	426.42	46.91%
EAST MARLBOROUGH TWP	366.70	139.44	61.98%
HIGHLAND TWP	384.80	238.86	37.93%
HONEY BROOK BORO	20.58	13.23	35.70%
HONEY BROOK TWP	813.84	558.76	31.34%
MODENA BORO	27.96	12.46	55.43%
NEWLIN TWP	144.18	59.59	58.67%
PARKESBURG BORO	52.11	32.35	37.93%
PENNSBURY TWP	113.98	43.48	61.85%
POCOPSON TWP	821.21	320.79	60.94%
SADSBURY TWP	289.73	172.13	40.59%
THORNBURY TWP	82.17	34.46	58.06%
VALLEY TWP	485.14	164.64	66.06%
WALLACE TWP	21.74	17.41	19.92%
WEST BRADFORD TWP	283.22	121.60	57.07%
WEST CALN TWP	68.28	43.07	36.92%
WEST GOSHEN TWP	461.32	180.51	60.87%

According to this TMDL, this township has baseline sediment load 1185 tons/year, WLA 467.17 tons/year and reduction 60.58%. But the township revised these loads by calculating using MapShed Model with 2012 watershed-specific land use loading rates in township's planning area. This process was prescribed by Center for Watershed Protection and The Chester County Water Resources Authority (CCWRA).

Parsing

The township calculated its UA in Christina Basin Watershed as 4891.67 acres in sub-basin B14 and sub-basin B15. The baseline load was calculated to be approximately 2,085 tons/year. But the township parsed part of West Chester University, which lies in UA. This area is 129.25 acres and corresponding calculated sediment load reduced from baseline is 39 tons. /year. It also parsed PennDOT Roadways and right of ways served by PennDOT system, which is 76.25 acres and corresponding sediment load is 30 tons/year.

With the credit from parsing, the existing sediment load = 2,085 – 39 – 30 = 2,016 tons/year

Existing BMPs

The township took credits from five stream restoration BMPs implemented in 1999 before approval of EPA's TMDL for Christina River Basin. Total credits for reduction of sediment loads by these existing BMPs are 449 tons/year for 7,800 linear feet at a rate of sediment removal of 115 lbs./ft/year. With these existing BMPs, the revised baseline load, WLA and required reductions (60.58%) are shown below:

MS4	Calculated Baseline (ton/yr.)	WLA (ton/yr.)	Reduction (ton/yr.)
East Bradford	1,567	618	949

Net existing load = 2,016 – 449 = 1,567 tons/year

Required TMDL based Sediment Reduction = 1,567 X 0.6058 = 949.29 tons/year

The township has decided to reduce 10% of the existing load in this permit cycle.

Short Term Required Sediment Reduction = 1,567 X 0.10 = 157 tons/year

The township will pursue additional BMPs in the next few permit cycles to achieve the WLA in TMDL.

Proposed BMPs

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The township has proposed the following BMPs to achieve its short term required sediment reduction.

BMPs Proposed for Year 1

- Copeland Park Stormwater Basin Retrofit – Install forebay and infiltration area in basin and modify the existing outlet riser to adequately accommodate the net increase in volume 2 year storm.

BMPs Proposed for Year 2

- East Bradford Park Stormwater Basin Retrofit – Install infiltration component in basin and modify the existing outlet riser to adequately accommodate the net increase in volume 2 year storm.

BMPs Proposed for Year 3

- Birmingham Road Stormwater Basin Retrofit – Install forebay and infiltration area in basin and modify the existing outlet riser to adequately accommodate the net increase in volume 2 year storm.

BMPs Proposed for Year 4

- Strode's Mill Property Stream Bank Stabilization – Complete floodplain restoration, streambank stabilization and riparian buffer enhancement.

BMPs Proposed for Year 5

- Tigue Farm Stream Bank Stabilization – Complete floodplain restoration, streambank stabilization and riparian buffer enhancement.

Two stream restoration BMPs will be 1500 LF each.

Total sediment reductions from proposed BMPs = 173 tons/year which exceeds the required reductions for the permit terms. However, the excess reductions can be applied towards meeting the TMDL required reductions.

Funding

In 2019, the Township has budgeted $160,000 for TMDL related projects in a General Fund. This includes the Copeland Park basin retrofitting, the Shadow Wood Farm subsurface detention system installation and the cleanout and potential retrofitting of the Birmingham Road stormwater basin. If the aforementioned projects are not completed in 2019, funding will be rolled over to the following year.

From 2020 through 2023, the Township has budgeted $120,000 per year for TMDL related projects in the same Fund mentioned above to complete projects on the list and beyond as the budget allows.

Some of the budgeted money in the Fund may be used to providing matching funds for grant applications should they arise. Grant applications will be matched dependent on whether or not PADEP will approve credit for the project. For example, the Brandywine/Red Clay Creek Alliance is currently finalizing the design of a streambank stabilization project on Plum Run located on the former Tigue Farm property. They have requested a $50,000 match from the Township for the project. The Township is considering a match, but only if PADEP can provide the Township with a guarantee in writing that the project will be able to be credited with an acceptable amount of sediment reduction based on Township TMDL calculations.

Beyond the General Fund, the Township is exploring the creation of a stormwater fee for its residents and other nonresidential properties. The Township is to begin the studies required to create the fee beginning in 2020, working under the expectation that it may require a few years to implement such a fee. The study will consider the construction of all remaining TMDL projects and routine stormwater maintenance/repair/replacement activities conducted by the Township. Initial order of magnitude calculations indicate that a reasonable fee ($60 - $100/year) may generate funds in the range of $200,000 to $500,000 per year.

Operation & Maintenance (O & M)

The operation and Maintenance of all future BMPs will be dependent on the project location and owner. In nearly all cases, the operation and maintenance of proposed BMPs will be the responsibility of the property owner. There are a few unique cases, most notably the streambank restoration projects planned as part of the Plum Run Stream Bank Stabilization (Phase 1 includes Strode's Mill and Tigue Road) where the Brandywine Red Clay Alliance will be facilitating installation of the BMPs and assisting with ongoing Operations and Maintenance. East Bradford Township operations and maintenance personnel are responsible for maintain existing and proposed BMPs on Township property, including locations at Copeland Park, East Bradford Park and the East Bradford Township Public Works Building.

A general O & requirements are implemented for all existing BMPs.

Public Participation

The TMDL Plan public notice was published *in the Daily Local News,* on July 27, 2017. The plan was made available for public review on August 1, 2017. A comment period was provided ending on September 1, 2017. A public meeting held on September 12, 2017, included this TMDL Plan in the agenda. The township did not receive any comments from the public on this TMDL Plan in the meeting and during the comment period.

Recommendation:

☒ **Approve** ☐ **Do Not Approve**

Reviewer Name: **Harris Mahmud**
Environmental Engineering Specialist Date: **6/4/2019**

Section Chief: **Elizabeth Mahoney**
Environmental Group Manager Date: **6/10/2020**

Program Manager: **Thomas L. Magge**
Clean Water Program Manager Date:

PLAN REVIEW SUMMARY

Complete when the plan is considered technically adequate

PLAN DEFICIENCIES	Yes	No
1. Were major changes to the plan required? *Major changes would include, for example, revised mapping, recalculation of existing loads and proposed BMP reductions, addition of proposed BMPs to meet reduction requirements, etc.*	☐	☒
If Yes, describe the needed changes:		

BMPs	Yes	No
2. Does the plan include exceptionally low cost, highly effective BMPs? *A typical example is retrofitting an existing flood control basin, but similar common-sense practices should be listed if the reviewer thinks the idea is a good one to share with others.*	☐	☒
List BMPs:		
3. Does the plan provide total BMP capital costs? If yes, provide below.	☐	☒
Total construction costs or other cost data:		
4. Does the plan include BMPs to be located on private property?	☐	☐
List property owner types (homeowners, commercial/industrial, private organizations, other): **N/A**		
5. Does the plan include BMP installation using low-cost resources (construction with municipal staff and/or volunteers, donations, etc.)?	☐	☒
Brief description:		

COLLABORATION	Plan	BMP(s)
6. If the plan is a collaborative arrangement, does it involve the entire plan or a(n) individual BMP(s)?	☐	☐
Brief description: **N/A**		

TMDL Plan Technical Review Checklist

BMP TYPES PROPOSED	Number
Stream Restoration/floodplain restoration	**2**
Flood control basin modification	
New infiltration basin/bed/trench	
Pervious pavement	
Vegetated swale/strip	
Riparian Buffer/tree planting	
Rain garden/bioretention	
Bioswale	
Dry Detention Basin	
Dry Extended Detention Ponds	
Constructed Wetlands	
Infiltration Practices	
Filter Strip Runoff Reduction / Stormwater Treatment	
Wet Ponds and Wetlands	
Street Sweeping	
Storm Drain Cleaning	
Rooftop Disconnection	
Impervious area conversion to pervious	
Other: **Basin Retrofits**	**3**