

**Project Name** | Cannon River Comprehensive Watershed Management Plan

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**Regarding** | Response to BWSR Board Committee Conditions

## Background

At the November 13, 2019 BWSR Southern Region Committee meeting, the Committee selected Option 2 from the following BWSR memorandum titled “Optional Actions related to the Cannon River Watershed Comprehensive Watershed Management Plan” to be addressed prior to Board Approval:

2. Recommendation of conditional approval of the Plan to the full Board as follows:
  - a. Prior to full board approval
    - i. Measurable goals of less than 5% must be further evaluated and targeted to seek a minimum of 5% improvement or be removed from plan.
    - ii. Clarification of descriptions of the science-based approach and other processes used (Where numbers for goals and costs came from, how priorities were selected and how targeting was completed)
    - iii. Visually provide reference to the priority cover crop locations (as requested by MDA)
    - iv. Identification of funding sources for implementation activities tied to additional planning and modeling processes such as lake management plans and flood evaluation studies.
  - b. Watershed Based Implementation funds are to be made available following the completion of the following items and approvable by the Executive Director of the Board of Water and Soil Resources
    - i. Improved Targeting using combination of locally obtained methods combined with best scientific models such as HSPF-SAM, PTMApp, or available WRAPS related HSPF results.
    - ii. Creation of an inventory or model driven map indicating practice opportunities in targeted areas.
    - iii. Updated calculation of pollution reductions that satisfactorily indicates a pace of progress that adequately meets WRAPS reduction Goals

Subsequent to this decision, Planning Partners met with BWSR Staff on numerous occasions to discuss the best approach for addressing these conditions. On November 26<sup>th</sup> members of the Planning Work Group and EOR held a call with BWSR Staff to discuss the conditions. On December 4, 2019 members of the Planning Work Group and EOR held a meeting with BWSR Staff to review a preliminary response to the conditions. Finally, on January 31, 2020 members of the Planning Work Group, BWSR staff and EOR met to review final questions and concerns with the revisions.

This memorandum explains how each of the conditions have been addressed in the revised version of the Cannon River Comprehensive Watershed Management Plan.

## Response to Conditions

### **Condition 2a(i): Measurable goals of less than 5% must be further evaluated and targeted to seek a minimum of 5% improvement or be removed from plan.**

*There was some confusion regarding where the resource-specific goals are located in the Plan. Resource-specific goals are provided in the following tables:*

- *Tables 3-2 Existing Total Phosphorus Loads and Load Reduction Goals for Tier One Protection Lakes*
- *Table 3-5 Existing Total Phosphorus Loads and Load Reduction Goals for Tier One Impaired Lakes*
- *Table 3-8 Existing TSS Loads and Load Reduction Goals for Tier One Impaired Streams*
- *Table 3-9 Existing Nitrate Loads and Load Reduction Goals for Tier One Impaired Streams*

*Tables 3-2 (Protection Lakes) and 3-5 (Impaired Lakes) did not contain goals that were less than 5%. However, the Planning Work Group has since decided to add implementation of structural practices in the Tier One Protection Lake and Tier One Impaired Lake drainage areas. These additional load reductions have been included in Table 3-2, Table 3-3, Table 3-5, and Table 3-6.*

*Table 3-8 (Impaired Streams) had goals that were less than 5% for Lower Vermillion (2%) and Trout Brook (3%). In reviewing the results, we recognized that the goal for the Lower Vermillion River was based on the total drainage area to the river and not the portion of the drainage area located within the Planning Area boundary. Once this value was adjusted to account for only the portion of the total load contributed by the drainage area in the Planning Area, the TSS load reduction goal became 27% and the nitrate reduction goal became 7%. These numbers were updated in Table 3-8 and Table 3-9. Similarly, we noticed an error in the total number of acres available in the Trout Brook watershed. Once this value was corrected, the TSS load reduction goal for Trout Brook became 52% and the nitrate reduction goal became 11%. These numbers were also updated in Table 3-8 and Table 3-9.*

*Goals reported in Table 3-13 (Existing Total Phosphorus Loads and TP Load Reductions for Tier One Lakes from Agricultural Conservation Practices) are the goals for the implementation of ONLY Agricultural Conservation Practices in the drainage area to the Tier One Lakes. While some of these goals are less than 5% (e.g. Dudley, Roemhildts, Cedar, Fox and Hunt), this percentage only represents implementation of agricultural conservation practices and total goals for each Tier One priority lake and stream exceed 5% as shown in Table 3-2, Table 3-5 and Table 3-8. To make the content of Table 3-13 clearer and to better establish the connection between Table 3-13 and Tables 3-2 and 3-5, the caption of the table and the individual column labels were modified and a footnote was added.*

*PTMApp Targeted BMP Action Reports were generated for the Tier One lakes and streams during development of maps targeting the fields with the highest pollutant loads delivered to the resources as part of addressing Condition 2b(ii). PTMApp predicted load reductions based on implementing all of the most cost-effective practices were similar in magnitude to the HSPF-SAM predicted load reductions for this Plan's agricultural conservation practice goals (10% conversion of cropland on vulnerable soils to perennials, nutrient management on 10% of cultivated cropland, 15% cover crops on corn/soy, and 80% cover crops on short-season crops). Moreover, the most cost-effective practices identified by PTMApp for these resources were source reduction practices, which corresponds with the selection of agricultural conservation practice goals by the Planning Partners in this watershed. This comparison of*

*PTMApp and HSPF-SAM reduction scenarios validates this Plan's goals and the choice of HSPF-SAM by the Planning Partners as a pollutant reduction tracking tool.*

**Condition 2a(ii): Clarification of descriptions of the science-based approach and other processes used (Where numbers for goals and costs came from, how priorities were selected and how targeting was completed)**

*Section 2.3 Process for Prioritization of Issues and Resources was revised to clarify the process for identifying issues, priority areas, and targeted areas within the Resource Drainage Areas. Previously, this information was located in two separate sections of the Plan. In the revised narrative ~~version~~, all of the steps (from the identification of issues and concerns to targeting the specific fields in the drainage area to the Tier One Resources) has been expanded upon and are found in a single section. This section identifies the tools used in the prioritization process and how they informed the prioritization process. Additionally, figures illustrating the process were pulled into the body of this section so they are in-line with the narrative.*

*In addition, the reference to "weight of evidence" was changed to "multiple lines of evidence".*

**Condition 2a(iii): Visually provide reference to the priority cover crop locations (as requested by MDA)**

*Maps highlighting the location of cultivated cropland on vulnerable soils and cultivated land either in a corn-soybean rotation or short-season crop rotation on non-vulnerable soils have been provided for the Tier One Priority Lake and Stream drainage areas in Appendix D of the Plan. Planning Partners recognize that it doesn't make economic sense to take high yielding cropland on good soils out of production. Therefore, the Planning Partners will target converting cultivated cropland to perennial vegetation on low yielding, marginal cropland which we defined as cultivated cropland on NRCS land capability class IV soils. Cultivation on these soils is limited as a result of the effects of one or more permanent features such as (1) steep slopes, (2) severe susceptibility to water or wind erosion, (3) severe effects of past erosion, (4) shallow soils, (5) low moisture-holding capacity, (6) frequent overflows accompanied by severe crop damage, (7) excessive wetness with continuing hazard of waterlogging after drainage, (8) severe salinity or sodium, and (9) moderately adverse climate. Planning Partners will target nutrient management and cover crop practices on cultivated cropland on non-vulnerable soils based on the assumption that this land is likely to remain cultivated and would benefit from better management practices.*

*Within these land uses, cover crops will be targeted for implementation first on corn/soybean acres and short-season crop acres that are located on fields with the highest pollutant delivery to the priority resources, as depicted in the PTMApp pollutant loading maps included in Section 3.1.1-A Protection Lakes, Section 3.1.1-B Impaired Lakes, and Section 3.1.1-C Pollutant Impaired Streams. See the response to Condition 2b(ii) for a description of these maps.*

**Condition 2a(iv): Identification of funding sources for implementation activities tied to additional planning and modeling processes such as lake management plans and flood evaluation studies.**

*The following notes were added to the Targeted Implementation Plans (Tables 4-2, 4-3 and 4-4) to address this concern:*

- <sup>1</sup> Activities (e.g. lake management plans and education and outreach plans) are currently not eligible for Watershed Based Implementation Funds and costs are planned through CRWJPB membership dues, lake association contributions or other local and other state sources.
- <sup>2</sup> Activity (Long-Term Flood Evaluation Study) is currently not eligible for Watershed Based Implementation Funds and costs are under consideration for funding through FEMA and the DNR. These two agencies prioritized the Cannon River Watershed in 2018 to start the Discovery process, which is a prerequisite to obtain FEMA funds for developing a Risk MAP project.

**Condition 2b(i): Improved Targeting using combination of locally obtained methods combined with best scientific models such as HSPF-SAM, PTMApp, or available WRAPS related HSPF results.**

*The Planning Partners ultimately used HSPF-SAM and PTMApp for improved targeting. HSPF-SAM was used to model the existing loads and load reductions achieved from implementation of the plan to the Tier One lakes and streams. PTMApp was also used to generate maps that can be used to identify fields with the highest pollutant loads delivered to the Tier One lakes and streams to aid field-scale targeting of practices during work plan development.*

**Condition 2b(ii): Creation of an inventory or model driven map indicating practice opportunities in targeted areas.**

*PTMApp was used to determine locations of highest TSS loading areas within the Targeted Implementation Areas for the protection lakes, impaired lakes, and pollutant impaired streams (excepting Rush Creek and Medford Creek which are in a portion of the Planning Area which does not have PTMApp). Figures illustrating where these highest loading areas are within the Targeted Implementation Areas are included in Section 3.1.1-A Protection Lakes, Section 3.1.1-B Impaired Lakes, and Section 3.1.1-C Pollutant Impaired Streams. The figure for Rush Creek and Medford Creek was generated using HSPF-SAM since this is the only tool available at this point in time.*

*Additionally, the area corresponding to the highest TSS loading subcatchments is provided in Tables 3-3, 3-6 and 3-10.*

*To address the question of whether or not there is enough acreage in the highest loading areas for implementation to achieve the load reduction goals, a table has been provided at the end of the memo. Note that this table compares TP and TSS to the load reduction goals since these are the primary pollutants these models (HSPF-SAM and PTMApp) address.*

**Condition 2b(iii): Updated calculation of pollution reductions that satisfactorily indicates a pace of progress that adequately meets WRAPS reduction Goals.**

*See the response to condition 2a(i) above. Additionally, the following table demonstrates how the lake and stream goals can be met by implementation of conservation practices on available viable acres.*

<b>Resource</b>		<b>Estimated 10-year TP Reduction Goal</b>		<b>Estimated 10-year TSS Reduction Goal</b>		<b>Estimated 10-year Nitrate Reduction Goal</b>		<b>PTMApp Prioritized Targeted Implementation Areas</b>
		[lb/yr]	[%]	[lb/yr]	[%]	[lb/yr]	[%]	[acres]
<i>Protection Lakes</i>	<i>Beaver</i>	6	14%					<i>PTMAPP not available</i>
	<i>Dudley (and Kelly)</i>	87	12%					184
	<i>Fish</i>	7	15%					230
	<i>Roemhildts</i>	84	12%					79
<i>Impaired Lakes</i>	<i>Cedar</i>	341	14%					12 + 588
	<i>Fox</i>	534	14%					1,842
	<i>Hunt</i>	606	67%					20
<i>Impaired Streams</i>	<i>Lower Vermillion</i>			505	27%	13,008	7%	<i>PTMAPP not available</i>
	<i>Belle Creek</i>			2,145	6%	58,705	7%	322 + 2,208
	<i>Little Cannon</i>			2,713	8%	66,061	8%	535 + 2,911
	<i>Trout Brook</i>			1,238	52%	26,719	11%	618 + 2,359
	<i>Prairie Creek</i>			631	7%	40,497	6%	1,386 + 7,580
	<i>Rush Creek</i>			240	12%	13,120	5%	<i>PTMAPP not available</i>
	<i>Medford Creek</i>			203	34%	11,956	15%	<i>PTMAPP not available</i>

Source: PTMApp estimated load reductions from PTMApp-Web Targeted BMP Action Report for cost effectiveness.