

Appendix B

Exhibit B

PAPILLION CREEK WATERSHED STORMWATER MANAGEMENT POLICIES

POLICY GROUP #1: WATER QUALITY IMPROVEMENT

ISSUE: Waters of the Papillion Creek Watershed are impaired.

“ROOT” POLICY: Improve water quality from all contributing sources, including but not limited to, agricultural activities, urban stormwater, and combined sewer overflows, such that waters of the Papillion Creek Watershed and other local watersheds can meet applicable water quality standards and community-based goals, where feasible.

SUB-POLICIES:

- 1) Water Quality LID shall be required on all new developments and significant redevelopments.
- 2) Protect surface and groundwater resources from soil erosion (sheet and rill, wind erosion, gully and stream bank erosion), sedimentation, nutrient and chemical contamination. Buffer strips and riparian corridors should be established along all stream segments.
- 3) Preserve and protect wetland areas to the fullest extent possible to maintain natural hydrology and improve water quality by minimizing the downstream transport of sediment, nutrients, bacteria, etc. borne by surface water runoff. Re-establishment of previously existing wetlands and the creation of new wetlands should be promoted. Any impacted wetlands shall be mitigated at a 3:1 ratio.
- 4) Implement MS4 Stormwater Management Plan.
- 5) Implement Best Management Practices (BMPs), as identified in the Papio-Missouri River Basin Water Quality Management Plan (WQMP), to reduce both urban and rural pollution sources, maintain or restore designated beneficial uses of streams and surface water impoundments, minimize soil loss, and provide sustainable production levels. Water quality basins shall be located in general conformance with an adopted Papillion Creek Watershed Management Plan.

REFERENCE INFORMATION

DEFINITIONS:

- 1) Low-Impact Development (LID). A land development and management approach whereby stormwater runoff is managed using design techniques that promote infiltration, filtration, storage, evaporation, and temporary detention close to its source. Management of such stormwater runoff sources may include open space, rooftops, streetscapes, parking lots, sidewalks, medians, etc.
- 2) Water Quality LID. A level of LID using strategies designed to provide for water quality control of the first ½ inch of stormwater runoff generated from each new development or significant redevelopment and to maintain the peak discharge rates during the 2-year storm event to baseline land use conditions, measured at every drainage (stormwater discharge) outlet from the new development or significant redevelopment.
- 3) Best Management Practice (BMP). “A technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of

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stormwater runoff in the most cost-effective manner.” [Source: U.S. Environmental Protection Agency (EPA)]

4)

5) Municipal Separate Storm Sewer System (MS4). An MS4 is a conveyance or system of conveyances that is:

- owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.,
 - designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches),
 - not a combined sewer, and
 - not part of a sewage treatment plant, or publicly owned treatment works (POTW).
- [Source: EPA].

The communities located in the urbanized area of Douglas and Sarpy counties, as defined by EPA, are defined as an MS4.

6) Stormwater Management Plan (SWMP). EPA’s National Pollutant Discharge System (NPDES) requires small, medium, and large communities to obtain NPDES permits and develop stormwater management programs. The communities located within the Papillion Creek Watershed have developed a Stormwater Management Plan (SWMP) that describes stormwater control practices that will be implemented consistent with permit requirements to minimize the discharge of pollutants from the sewer system. MS4s are required to develop, implement, and enforce a stormwater management program. The SWMP focus is to describe how the MS4 will reduce the discharge of pollutants from its sewer system and addresses these program areas:

- Construction Site Runoff Control
- Illicit Discharge Detection and Elimination
- Pollution Prevention/Good Housekeeping
- Post-Construction Runoff Control
- Public Education and Outreach
- Public Involvement/Participation

7) Water Quality Management Plan (WQMP). Plan based on EPA’s nine key elements (9 Elements) requirements to achieve improvements in water quality. A WQMP for the Papio-Missouri River Basin, which includes the Papillion Creek Watershed, was approved in June 2018 by EPA which lays out a strategy to systematically address water resource deficiencies in the basin and allows for management of individual watersheds or other targeted areas. The focus of the Plan is to address impaired waterbodies and satisfy the EPA requirements to be eligible for Section 319 funding. Implementation will be guided on a watershed scale by a comprehensive strategy to address water and land use deficiencies that contribute to the degradation of surface water resources, groundwater resources, and aquatic and terrestrial habitat. The ultimate goals is to delist impaired waterbodies from the 303(d) list. [Source: 2018 Papio-Missouri River Basin Water Quality Management Plan].

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POLICY GROUP #2: PEAK FLOW MANAGEMENT

ISSUE

Urbanization within the Papillion Creek Watershed has and will continue to increase runoff leading to more flooding problems and diminished water quality.

ROOT POLICY

Maintain or reduce stormwater peak discharge during development and after full build-out land use conditions from that which existed under baseline land use conditions.

SUB-POLICY

- 1) Regional stormwater detention facilities and other structural and non-structural BMPs shall be located in general conformance with an adopted Papillion Creek Watershed Management Plan and shall be coordinated with other related master planning efforts for parks, streets, water, sewer, etc.
- 2) Maximum LID shall be required to reduce peak discharge rates on all new developments and significant redevelopments as identified in the Papillion Creek Watershed Management Plan.
- 3) All significant redevelopment shall maintain peak discharge rates during the 2, 10, and 100-year storm event under baseline land use conditions.

REFERENCE INFORMATION

DEFINITIONS

- 1) Low-Impact Development (LID). A land development and management approach whereby stormwater runoff is managed using design techniques that promote infiltration, filtration, storage, evaporation, and temporary detention close to its source. Management of such stormwater runoff sources may include open space, rooftops, streetscapes, parking lots, sidewalks, medians, etc.
- 2) Water Quality LID. A level of LID using strategies designed to provide for water quality control of the first ½ inch of stormwater runoff generated from each new development or significant redevelopment and to maintain the peak discharge rates during the 2-year storm event to baseline land use condition, measured at every drainage (stormwater discharge) outlet from the new development or significant redevelopment.
- 3) Maximum LID. A level of LID using strategies, including water quality LID and on-site detention, designed not to exceed peak discharge rates of more than 0.2 cfs/acre during the 2-year storm event or 0.5 cfs/acre during the 100-year storm event based on the contributing drainage from each site, measured at every drainage (stormwater discharge) outlet from the new development or significant redevelopment.
- 4) Peak Discharge or Peak Flow. The maximum instantaneous surface water discharge rate resulting from a design storm frequency event for a particular hydrologic and hydraulic analysis, as defined in the Omaha Regional Stormwater Design Manual. The measurement of the peak discharge shall be at the lower-most drainage outlet(s) from a new development or significant redevelopment.

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- 5) Regional Stormwater Detention Facilities. Those facilities generally serving a drainage catchment area of 500 acres or more in size.
- 6) Baseline Land Use Conditions. That which existed for Year 2001 for Big and Little Papillion Creeks and its tributaries (excluding West Papillion Creek) and for Year 2004 for West Papillion Creek and its tributaries.
- 7) Full Build-Out Land Use Conditions. Fully platted developable land use conditions for the combined portions of the Papillion Creek Watershed that lie in Douglas and Sarpy Counties that are assumed to occur by the Year 2050, plus the projected 2050 land uses within the Watershed in Washington County; or as may be redefined through periodic updates to the respective County comprehensive plans.

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POLICY GROUP #3: STREAM CORRIDOR PRESERVATION

ISSUE: Natural areas are diminishing, and there is a need to be proactive and integrate efforts directed toward providing additional landscape and green space areas with enhanced stormwater management through restoration and conservation of stream corridors, wetlands, and other natural vegetation.

“ROOT” POLICY: Utilize landscape preservation, restoration, and conservation techniques to meet the multi-purpose objectives of enhanced aesthetics, quality of life, recreational and educational opportunities, pollutant reduction, and overall stormwater management.

SUB-POLICIES:

- 1) Incorporate stormwater management strategies as a part of landscape preservation, restoration, and conservation efforts where technically feasible.
- 2) Define natural resources for the purpose of preservation, restoration, mitigation, and/or enhancement.
- 3) For new development or significant redevelopment, provide a stream setback of 3:1 plus 50 feet along all streams as identified in the Papillion Creek Watershed Management Plan and a stream setback of 3:1 plus 20 feet for all other streams based upon a current channel survey (within 12 months of preliminary plat submission).
- 4) All landscape preservation features as required in this policy or other policies, including all stormwater and LID strategies, stream setbacks, existing or mitigated wetlands, etc., identified in new or significant redevelopment shall be placed into an outlot or within public right of way or otherwise approved easement.
- 5) These policies are intended to provide a minimum requirement for new development or significant redevelopment. Site conditions may warrant additional setback distance or other stream stabilization measures.
- 6) The Papillion Creek Watershed Partnership is working to update this policy to limit future damages from stream degradation. Policy updates may be completed prior to the expiration of the 2025-2029 interlocal agreement.

REFERENCE INFORMATION

DEFINITIONS

- 1) Stream. Any depression two feet or more below the surrounding land which serves to give direction to a current of water at least nine months of the year and which has a bed and well-defined banks. *[Adapted from Chapter 31 of Nebraska Statutes. May also be referred to as creek or watercourse.]*
- 2) Stream Setback. See Figure 1 below and related definitions in Policy Group #5. A setback area equal to three (3) times the channel depth plus fifty (50) feet (3:1 plus 50 feet) from the edge of the channel bottom on both sides of the channel shall be required for any above or below ground structure exclusive of bank stabilization structures, poles or sign structures adjacent to any stream defined within the watershed drainage plan. Grading, stockpiling, and other construction activities are not allowed within the setback

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area and the setback area must be protected with adequate erosion controls or other Best Management Practices, (BMPs). The outer 30 feet adjacent to the stream setback limits may be credited toward meeting the landscaping buffer and pervious coverage requirements.

- 3) A property can be exempt from the stream setback requirement upon a showing by a licensed professional engineer that adequate bank stabilization structures or slope protection will be installed in the construction of said structure, having an estimated useful life equal to that of the structure, which will provide adequate erosion control conditions coupled with adequate lateral support so that no portion of said structure adjacent to the stream will be endangered by erosion or lack of lateral support. In the event that the structure is adjacent to any stream which has been channelized or otherwise improved by any agency of government, then such certificate providing an exception to the stream setback requirement may take the form of a certification as to the adequacy and protection of the improvements installed by such governmental agency. If such exemption is granted, applicable rights-of-way must be provided and a minimum 20-foot corridor adjacent thereto.

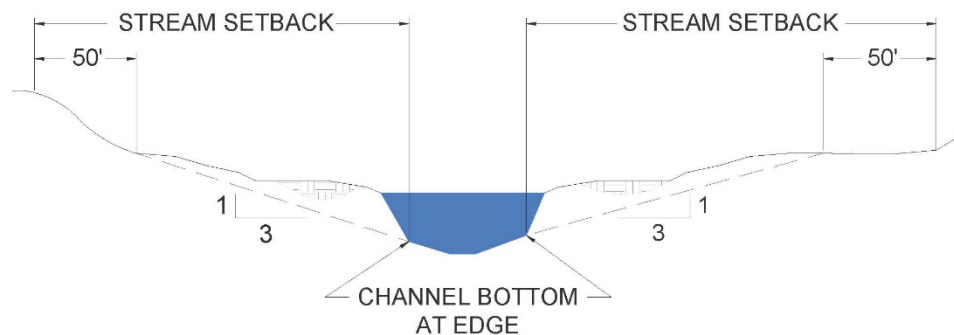


Figure 1 –Stream Setback Schematic

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POLICY GROUP #4: EROSION AND SEDIMENT CONTROL AND OTHER BMPs

ISSUE: Sound erosion and sediment control design and enforcement practices are needed in order to protect valuable land resources, stream and other drainage corridors, and surface water impoundments and for the parallel purpose of meeting applicable Nebraska Department of Environmental Quality regulatory requirements for construction activities that disturb greater than one acre.

“ROOT” POLICY: Promote uniform erosion and sediment control measures by implementing consistent rules for regulatory compliance pursuant to State and Federal requirements, including the adoption of the Omaha Regional Stormwater Design Manual.

SUB-POLICIES:

- 1) Construction site stormwater management controls shall include both erosion and sediment control measures.
- 2) The design and implementation of post-construction, permanent erosion and sediment controls shall be considered in conjunction with meeting the intent of other Stormwater Management Policies.
- 3) Sediment storage shall be incorporated with all regional detention facilities where technically feasible.

REFERENCE INFORMATION

DEFINITIONS

- 1) Erosion Control. Land and stormwater management practices that minimize soil loss caused by surface water movement.
- 2) Sediment Control. Land and stormwater management practices that minimize the transport and deposition of sediment onto adjacent properties and into receiving streams and surface water impoundments.

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POLICY GROUP #5: FLOODPLAIN MANAGEMENT

ISSUE: Continued and anticipated development within the Papillion Creek Watershed mandates that holistic floodplain management be implemented and maintained in order to protect its citizens, property, and natural resources.

“ROOT” POLICY: Participate in the FEMA National Flood Insurance Program, update FEMA floodplain mapping throughout the Papillion Creek Watershed, and enforce floodplain regulations to full build-out, base flood elevations.

SUB-POLICIES:

- 1) Floodplain management coordination among all jurisdictions within the Papillion Creek Watershed and the Papio-Missouri River Natural Resources District (P-MRNRD) is required.
- 2) Flood Insurance Studies and Flood Insurance Rate Maps throughout the Papillion Creek Watershed shall be updated as new data and methodologies become available. Any further updates will use current and full-build out conditions hydrology.
- 3) Encroachments for new developments or significant redevelopments within floodway fringes shall not cause any increase greater than one (1.00) foot in the height of the full build-out base flood elevation using best available data.
- 4) Filling of the floodway fringe associated with new development within the Papillion Creek System shall be limited to 25% of the floodway fringe in the floodplain development application project area, unless approved mitigation measures are implemented. The remaining 75% of floodway fringe within the project area shall be designated as a floodway overlay zone. For redevelopment, these provisions may be modified or waived in whole or in part by the local jurisdiction.
- 5) The low chord elevation for bridges crossing all watercourses within FEMA designated floodplains shall be a minimum of one (1) foot above the base flood elevation for full-build out conditions hydrology using best available data.
- 6)

REFERENCE INFORMATION

DEFINITIONS (See Figure 1 below and related definitions in Policy Group #3: Landscape Preservation, Restoration, and Conservation).

- 1) Base Flood. The flood having a one percent chance of being equaled or exceeded in magnitude in any given year (commonly called a 100-year flood). *[Adapted from Chapter 31 of Nebraska Statutes]*
- 2) Floodway. The channel of a watercourse and the adjacent land areas that are necessary to be reserved in order to discharge the base flood without cumulatively

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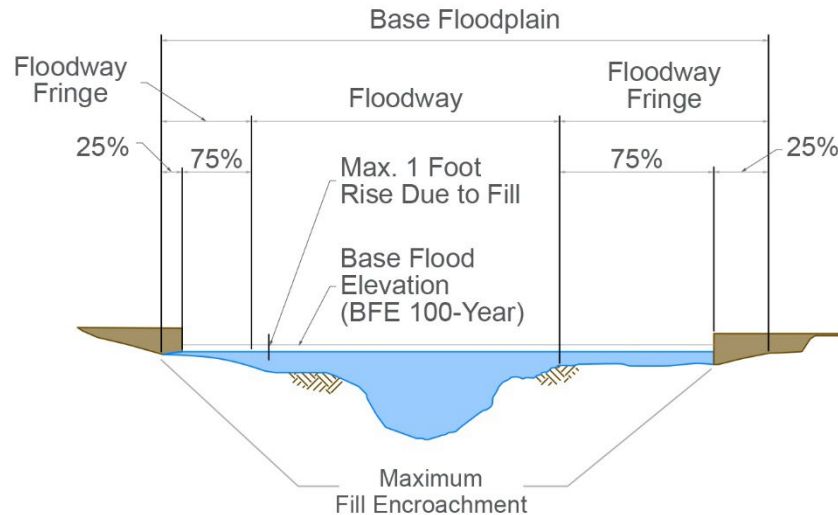


Figure 1 – Floodway Fringe Encroachment Schematic

increasing the water surface elevation more than one foot. *[Adapted from Chapter 31 of Nebraska Statutes]*. The Federal Emergency Management Agency (FEMA) provides further clarification that a floodway is the central portion of a riverine floodplain needed to carry the deeper, faster moving water.

- 3) Floodway Fringe. That portion of the floodplain of the base flood, which is outside of the floodway. *[Adapted from Chapter 31 of Nebraska Statutes]*
- 4) Floodplain. The area adjoining a watercourse, which has been or may be covered by flood waters. *[Adapted from Chapter 31 of Nebraska Statutes]*
- 5) Watercourse. Any depression two feet or more below the surrounding land which serves to give direction to a current of water at least nine months of the year and which has a bed and well-defined banks. *[Adapted from Chapter 31 of Nebraska Statutes]*
- 6) Low Chord Elevation. The bottom-most face elevation of horizontal support girders or similar superstructure that supports a bridge deck.
- 7) Flood Insurance Studies and Flood Insurance Rate Maps. FEMA and the P-MRNRD as a Cooperating Technical Partner update Flood Insurance Studies and Flood Insurance Rate Maps as new data, methodologies, or funding is available. FEMA and P-MRNRD work together to determine if updates are necessary. As part of any new study, FEMA will produce both the Flood Insurance Study and Flood Insurance Rate Maps, as well as Flood Risk Products. These products may include a Flood Risk Map, a Flood Risk Report, and a Flood Risk Database, Changes Since Last FIRM, Areas of Mitigation Interest, Flood Depth and Analysis Grids, and Flood Risk Assessment Data. In addition to these standard datasets, the Flood Risk Database may contain custom datasets based on available information.
- 8) New Development. New development shall be defined as that which is undertaken to any undeveloped parcel that existed at the time of implementation of this policy.

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POLICY GROUP #6: STORMWATER MANAGEMENT FINANCING

ISSUE: Regulatory requirements for stormwater management and implementation of Stormwater Management Policies intended to accommodate new development and significant redevelopment will impose large financial demands for capital and operation and maintenance beyond existing funding resources.

“ROOT” POLICY: Dedicated, sustainable funding mechanisms shall be developed and implemented to meet capital and operation and maintenance obligations needed to implement NPDES Stormwater Management Plans, Stormwater Management Policies, and the Papillion Creek Watershed Management Plan.

SUB-POLICIES:

- 1) All new development and significant redevelopment will be required to fund the planning, implementation, and operation and maintenance of water quality LID.
- 2) A Watershed Management Fee system shall be established to equitably distribute the capital cost of implementing the Papillion Creek Watershed Management Plan among new development or significant redevelopment. Such Watershed Management Fee shall only apply to new development or significant redevelopment within the Papillion Creek Watershed and the initial framework shall consist of the following provisions:
 - a. Collection of fees and public funding shall be earmarked specifically for the construction of projects called for in the Papillion Creek Watershed Management Plan, including Maximum LID costs such as on site detention, regional detention basins, and water quality basins.
 - b. Multiple fee classifications shall be established which fairly and equitably distribute the cost of these projects among all undeveloped areas within the Papillion Creek Watershed.
 - c. Watershed Management Fees (private) are intended to account for approximately one-third (1/3) of required capital funds and shall be paid to the applicable local zoning jurisdiction with building permit applications.
 - d. Watershed Management Fee revenues shall be transferred from the applicable local zoning jurisdiction to a special P-MRNRD construction account via inter-local agreements.
 - e. The P-MRNRD (public) costs are intended to account for approximately two-thirds (2/3) of required capital funds, including the cost of obtaining necessary land rights, except as further provided below; and the P-MRNRD shall be responsible for constructing regional detention structures and water quality basins using pooled accumulated funds.
 - f. The P-MRNRD will seek an extension of its general obligation bonding authority from the Nebraska Legislature to provide necessary construction scheduling flexibility.
 - g. Financing for Papillion Creek Watershed Management Plan projects may require public-private partnership agreements between the P-MRNRD and developers/S&IDs on a case-by-case basis.

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- h. On approximately five (5)-year intervals, the Papillion Creek Watershed Management Plan and Watershed Management Fee framework, rates, and construction priority schedule shall be reviewed with respect to availability of needed funds and rate of development within the Papillion Creek Watershed by the parties involved (local zoning jurisdictions, P-MRNRD, and the development community). Subsequent changes thereto shall be formally approved by the respective local zoning jurisdictions and the P-MRNRD.

The Partnership will continue to work towards establishing a Stormwater Utility Fee System to equitably distribute the costs for ongoing operation and maintenance of all stormwater BMPs and infrastructure among all existing property owners within NPDES MS4 permittees.

REFERENCE INFORMATION

DEFINITIONS

- 1) Stormwater Management Policies. Initial stormwater management policies were approved in 2009. The policies were developed by the Technical Workgroup and Policy Workgroup that were commissioned by the Papillion Creek Watershed Partnership (PCWP) subsequent to the “Green, Clean, and Safe” initiatives developed through the “Watershed by Design” public forums conducted in 2004 and 2005 and subsequently revised by the PCWP in 2009, 2014 and 2019. The following policy groups contain “root” policies and sub-policies for stormwater management that have been developed in addition to the Stormwater Management Financing Policy Group herein:
 - Policy Group #1 – Water Quality Improvement
 - Policy Group #2 – Peak Flow Management
 - Policy Group #3 – Stream Corridor Preservation
 - Policy Group #4 – Erosion and Sediment Control and Other BMPs
 - Policy Group #5 – Floodplain Management
- 2) Stormwater Management Plan (SWMP). A SWMP is a required part of the NPDES MS4 Stormwater Permits issued to the Papillion Creek Watershed Partnership (PCWP) members. Development of Stormwater Management Policies is an integral part of the SWMP, and such policies are to be adopted by respective PCWP partners.
- 3) Comprehensive Development Plans. Existing plans developed by local jurisdictions that serve as the basis for zoning and other land use regulations and ordinances. The Stormwater Management Policies are to be incorporated into the respective Comprehensive Development Plans.
- 4) Policy Implementation. The implementation of the policies will be through the development of ordinances and regulations, in years 3 through 5 of the NPDES permit cycle; that is, by the year 2019. Ordinances and regulations are intended to be consistent for, and adopted by, the respective PCWP members. Such ordinances and regulations shall need to be consistent with the Comprehensive Development Plans of the respective PCWP members.

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- 5) Low-Impact Development (LID). A land development and management approach whereby stormwater runoff is managed using design techniques that promote infiltration, filtration, storage, evaporation, and temporary detention close to its source. Management of such stormwater runoff sources may include open space, rooftops, streetscapes, parking lots, sidewalks, medians, etc.
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- 7) Maximum LID. A level of LID using strategies, including water quality LID and on-site detention, designed not to exceed peak discharge rates of more than 0.2 cfs/acre during the 2-year storm event or 0.5 cfs/acre during the 100-year storm event based on the contributing drainage from each site, measured at every drainage (stormwater discharge) outlet from the new development or significant redevelopment.
- 8) Baseline Land Use Conditions. That which existed for Year 2001 for Big and Little Papillion Creeks and its tributaries (excluding West Papillion Creek) and for Year 2004 for West Papillion Creek and its tributaries. That which existed in 2007 for all areas not within the Papillion Creek Watershed.