




**Directors' Workshop  
On  
Papillion Creek Watershed Partnership**

**Thursday, May 11, 2006**


**7:00 p.m.**

**Board Room**





Papillion Creek Watershed Partnership


Watershed by Design



Watershed by Design Update









Papillion Creek Watershed Partnership

Watershed by Design




Presentation Outline

- Introduction and Background
- Permit Requirements and Schedule
- Stormwater Policy Overview
- Regional Detention Fee
- Questions



Papillion Creek Watershed Partnership


Watershed by Design



Papillion Creek Watershed Partnership's Mission


*"Address issues related to water quality and storm water quantity in the Papillion Creek Watershed by establishing regionally common goals and standards for the development of the watershed through 2040."*

Established August 2001



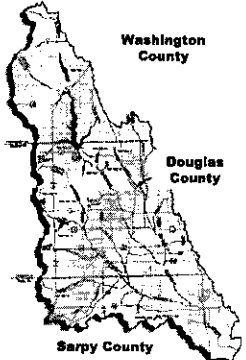
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Papillion Creek Watershed Facts

- 402 square miles
- 3 counties
- 11 cities
- 3 major streams
- 8 major reservoirs
- Over 1/3 of the State population



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### NPDES Phase II, Stormwater Permit Requirements

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



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### August 2006 Requirements

- Establish Local Ordinances to Include Controls on Runoff During and After Development
- Revise Stormwater Design Manual to Include Post-Construction Water Quality BMPs
- Develop a Watershed Master Plan (Policies)

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### Establish Local Stormwater Ordinances

- Model Ordinances have been Drafted
  - Illicit Discharge Connection
  - Construction Site Runoff Control - 1 acre
  - Post-Construction Runoff Control - BMPs
- Includes Provisions for Phase II Communities to Issue Grading Permits
- Refers to Omaha Regional Stormwater Design Manual

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### Omaha Regional Stormwater Design Manual Update

- Based on City of Lincoln's Manual
- Incorporates Sediment and Erosion Control Practices
- Draft Available at [www.papiopartnership.org](http://www.papiopartnership.org)




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### Watershed Master Plan Timeline

Aug 2001	Partnership Formed
Aug 2004	NPDES, Phase II Permit Issued
Late 2004 to Early 2005	Watershed by Design Public Forums for Green, Clean, and Safe Initiatives
May 2005 to Feb 2006	Policy and Technical Workgroup Meetings
March 2006	Public Forum
April 2006	Final Stormwater Policies
July 2006	Adoption of Policies by All PCWP Members
December 2006	Adopt Ordinances/Regulations by PCWP Communities and Counties



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### Green, Clean, and, Safe Watershed

- In a Green Watershed**, urban greenways and trail corridors connect city parks, open spaces, and recreational areas.
- A Clean Watershed** enhances water quality, supports community recreation, and helps protect wildlife.
- A Safe Watershed** manages stormwater runoff and protects residents, businesses, and industries from the damaging impacts of floods.

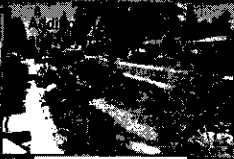



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### Green Watershed Strategies



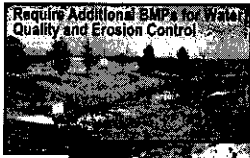
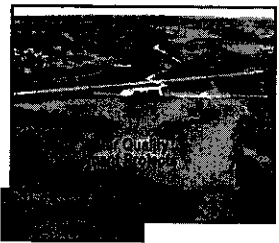




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### Clean Watershed Strategies

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## Safe Watershed Strategies

Big Papio Creek, Happy Hollow Golf Course

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## Workgroup Roles

**Technical Workgroup (16 members)**

- Analyze and Review Technical Issues
- Provide Alternatives and Guidance to Policy Workgroup

**Policy Workgroup (16 members)**

- Review Information Prepared by Technical Workgroup
- Recommend Stormwater Policies for Adoption

**Financial Subcommittee (16 members)**

- Subcommittee to Policy Workgroup for Expertise in Developing Regional Detention Fee Framework

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## Stormwater Policy Development Process

PCWP Facilitation → Draft Policies (Feb 2006) → Public Comment → Tech Memo → Elected Official Boards → Codified Policies (Mar 2, 2006)

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## Review of Policy Development Group

- #1 Stormwater Management Financing
- #2 Peak Flow Reduction
- #3 Pollution Control
- #4 Landscape Preservation, Restoration, and Conservation
- #5 Erosion and Sediment Control
- #6 Floodplain Management

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**#1: Stormwater Management Financing**

**Root Policy:** Create a dedicated, sustainable funding mechanism to accommodate new development and significant redevelopment

**Sub-Policies:**

- 1) Adequate earmarked funds
- 2) Regional Detention Fee established.
- 3) Framework for fee classifications, cost apportionments, inter-local agreements for funds handling, public-private partnerships at detention sites, and 3-year review cycle.

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**#2: Peak Flow Reduction**

**Root Policy:** Maintain or reduce stormwater peak discharge during development and after full build-out

**Sub-Policy:**

- 1) Regional stormwater detention facilities located in general conformance with watershed drainage plan

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**#3: Pollution Control**

**Root Policy:** Reduce pollution from contributing sources including, but not limited to agricultural activities and combined sewer overflows.

**Sub-Policies:**

- 1) Protect surface resources from contamination
- 2) Preserve, protect and mitigate wetlands
- 3) Support NDEQ in TMDL development
- 4) Implement BMPs

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**#4: Landscape Preservation, Restoration, and Conservation**

**Root Policy:** Utilize landscape preservation, restoration, and conservation techniques to meet stormwater management objectives

**Sub-Policies:**

- 1) Incorporate stormwater strategies
- 2) Define natural resources
- 3) Encourage low-impact development
- 4) Dedicate a creek setback (3:1 plus 50')
- 5) Minimum creek setback for maintenance (3:1 plus 20')

# Memorandum

**To:** Programs, Projects and Operations Subcommittee  
**From:** Paul Woodward, Water Resources Engineer  
**Date:** May 8, 2006  
**Re:** Amended Papillion Creek Watershed Partnership Interlocal Agreement

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Over a year ago, the Partnership initiated a "Watershed by Design" process to develop stormwater management policies as part of a comprehensive Watershed Master Plan in order to meet NPDES Phase II Permit requirements. Following a series of public meetings focused on creating a "Green, Clean, and Safe" watershed, Technical and Policy Workgroups made up of local government representatives, planners, engineers, natural resource agencies, attorneys, developers, and financial bonding companies were established to guide the preparation of such policies.

Over the last 9 months, these Workgroups have prepared and agreed to 6 root policies addressing the following issues: stormwater financing; peak flow reduction; pollution control; landscape preservation, restoration and conservation; erosion and sediment control and other BMPs; and floodplain management. Enclosed is a fact sheet summarizing these proposed policies and a recent article from the Omaha World Herald covering this subject.

Many of these policies also commit the District to certain responsibilities and funding over the next several years. In particular, the development of a Regional Stormwater Detention Fee system under Policy #1 – Stormwater Management Financing, would commit the NRD to construct the remaining 7 reservoirs in Douglas and Sarpy County as well as 10 additional regional detention sites and potentially 12 water quality basins. The location of all these sites within the watershed is shown in the enclosed map. In order to fund the capital costs (including land rights) of these detention sites, the workgroups along with representatives from a Financial Subcommittee developed a framework for a fee to be paid with each building permit application. These fees (private) were designed to account for approximately 1/3 of the total estimated costs. The remaining 2/3 of the costs (public) would need to be funded by the Papio NRD. To begin with, the fee would generate around \$2.5 million per year and would need to be matched with about \$5.0 million in NRD funds, a figure currently less than the FY 06 budget for Papio Reservoirs.

In order to formally approve these proposed policies, the municipalities and counties in the Partnership are working to include the policies and detention sites in their comprehensive or master plans as well as adopting a new ordinance which references the updated Omaha Regional Stormwater Design Manual. Additionally, amendments to the current Papillion Creek Watershed Partnership Interlocal Agreement have been proposed which would allow the zoning jurisdictions to collect the Regional Stormwater Detention Fees and then transfer the proceeds from the fee to the NRD for implementation as outlined in the proposed policies.

Through provisions in the enclosed amendment, the District would agree to support the proposed policies and expend the fees collected by the municipalities or counties only on the capital costs needed to construct the proposed regional detention sites and water quality basins. This would require the District to match the funds generated by the fee at a ratio of 2:1. For example, if the fee generated approximately \$2.5 million annually, the NRD would have to budget and expend \$5.0 million annually on reservoirs or water quality basins in the Papillion Creek Watershed.

In summary, amendments to the current Papillion Creek Watershed Partnership Interlocal Agreement would provide the means necessary for the NRD to receive fees collected from the Regional Stormwater Detention Fee system and use them to fund 1/3 of the costs needed to construct regional reservoirs and water quality basins.

Management recommends that the subcommittee recommend to the Board that the Acting General Manager be authorized to execute the Amended Interlocal Agreement for the Continuation of the Papillion Creek Watershed Partnership between the communities of Bellevue, Bennington, Boys Town, Elkhorn, Gretna, La Vista, Omaha, Papillion, and Ralston; the counties of Douglas, and Sarpy; and the NRD, subject to changes deemed necessary by the Acting General Manager and approval as to form by District Legal Counsel.



## **STORMWATER MANAGEMENT POLICY FACT SHEET**

### **Background and Needs**



This Fact Sheet summarizes the development of stormwater management policies for the Papillion Creek Watershed and other local watersheds set forth by the Papillion Creek Watershed Partnership (Partnership) and its supporting member jurisdictions. Such management policies are intended to meet stormwater management regulatory requirements and, very importantly, to also address the “Green, Clean, and Safe” initiatives under the “Watershed by Design” theme that has been presented to the public in a series of six forums beginning on November 17, 2004 and concluding on March 2, 2006.

### **Workgroup Formation**

Early in the policy development process, two 16-member workgroups were formed to provide independent input and synergistic interaction with each other and the Partnership: a Policy Workgroup and a Technical Workgroup. The membership of each workgroup varied and included local government representatives, planners, engineers, natural resource agencies, attorneys, developers, and financial bonding companies. Near the end of the workgroup meetings, a Finance Policy Subcommittee was also formed to provide guidance to the Policy Workgroup on specific policy details. A total of 14 workgroup meetings were conducted during the policy development process.

### **Overview of Stormwater Management Policies**

Six stormwater management policy groups were formulated, each having a “root” policy and a series of supporting sub-policies. The root policies are noted below:

- **#1 Stormwater Management Financing.** A dedicated, sustainable funding mechanism shall be developed and implemented to meet capital and operation and maintenance obligations as a result of new stormwater management regulations and to implement Stormwater Management Policies to accommodate new development and significant redevelopment. *(Includes 3 sub-policies).*
- **#2 Peak Flow Reduction.** 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. *(Includes 1 sub-policy).*
- **#3 Pollution Control.** Reduce pollution from contributing sources, including but not limited to, agricultural activities 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. *(Includes 4 sub-policies).*
- **#4 Landscape Preservation, Restoration, And Conservation** 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. *(Includes 5 sub-policies).*
- **#5 Erosion And Sediment Control and Other BMPs** Promote uniform erosion and sediment control measures, including the adoption of the Omaha Regional Stormwater Design Manual and by implementing consistent rules for regulatory compliance pursuant to State and Federal requirements. *(Includes 3 sub-policies).*
- **#6 Floodplain Management** 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. *(Includes 6 sub-policies)*

It needs to be strongly emphasized that the policy groups and respective sub-policies should be adopted in their totality and not separately. Each policy group has important supporting elements that are beneficial to one or more of the other policy groups; with the intended net outcome being to meet regulatory requirements and provide the

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#### **PARTNERS**

Bellevue  
Papillion

Bennington  
Ralston

Boys Town  
Douglas County

Elkhorn

Gretna  
Sarpy County

La Vista  
Papio-Missouri River NRD

Omaha

underpinning necessary to meet the “Green, Clean, and Safe” initiatives and responsibly manage stormwater quantity and stormwater quality.

## Stormwater Financing

The development of Policy Group #1 Stormwater Financing became a priority for the Policy Workgroup. A framework for a Regional Stormwater Detention Fee system was devised, which included the development of a Watershed Drainage Plan and financing evaluation. The following summarizes this framework for stormwater financing:

- Development of a Watershed Drainage Plan for Douglas and Sarpy Counties preliminarily consisting of 7 remaining multi-reservoir sites, 10 additional regional detention sites and 12 water quality basins with an estimated construction cost of \$282.4 million
- Collection of Regional Stormwater Detention Fees earmarked specifically for construction of regional detention structures and water quality basins.
- Two fee classifications:
  - Low-Density Residential Development: primarily single-family/duplexes; assessed on a per dwelling unit or equivalent prorated average area of lot basis.
  - High-Density Development: high density residential + commercial and industrial; assessed on a per developed acre basis.
- Regional Stormwater Detention Fees (private) account for approximately 1/3 of cost and paid to local zoning jurisdiction with building permit applications.
- Regional Stormwater Detention Fees transferred to special P-MRNRD construction account via inter-local agreements.
- P-MRNRD (public) accounts for approximately 2/3 of cost needed. The P-MRNRD will obtain necessary land rights and build detention structures using pooled accumulated funds.
- On approximately three (3)-year intervals, the Watershed Drainage Plan and Regional Stormwater Detention Fee framework, rates, and construction priority schedule shall be reviewed with respect to availability of needed funds and rate of development within the Watershed by the parties involved.
- The P-MRNRD will seek general obligation bonding authority from the Nebraska Legislature to provide necessary construction scheduling flexibility.
- Financing may additionally require partnership agreements between P-MRNRD and developers/S&IDs at the detention sites on a case-by-case basis.
- Estimated “pay-off” time period at 40+ years is reasonably close to estimated time for watershed platting build-out in Douglas and Sarpy Counties.
- Additional funding strategies are still needed to fund on-going operation and maintenance (O&M) after construction of regional detention.

## Regional Detention Fee Basis

The initial basis for a “Low-Density Residential” fee will be \$500 per Dwelling Unit (D.U.). Assuming 3.5 D.U. per developable acre, this is equivalent to \$1,750 per developable acre. “High-Density” classification is based on relative runoff contribution equal to 1.5 times the “Low Density Residential” fee, or \$2,625 per developable acre.

Based upon anticipated development needs, the estimated Regional Detention Fee revenue would be approximately \$2.5 million per year over the next 40+ years in current dollars. This would be matched by P-MRNRD funds of approximately \$5.0 million per year.

## Next Steps

All Partnership members need to:

- Adopt stormwater management policies by the end of July 2006 to meet the common deadline in their respective Phase II stormwater permits.
- Adopt the new Omaha Regional Stormwater Design Manual and begin implementation of the revised design standards and stormwater management BMPs.
- Develop and adopt ordinances/regulations to implement the policies in a uniform and fair manner.
- Develop, adopt, and implement a more comprehensive Watershed Drainage Plan that is crucial to effective flood protection and water quality improvement in the Watershed.
- Implement the Regional Stormwater Detention Fee through ordinances/regulations and inter-local agreements.
- Develop and implement a dedicated and sustainable Stormwater O&M Fund.



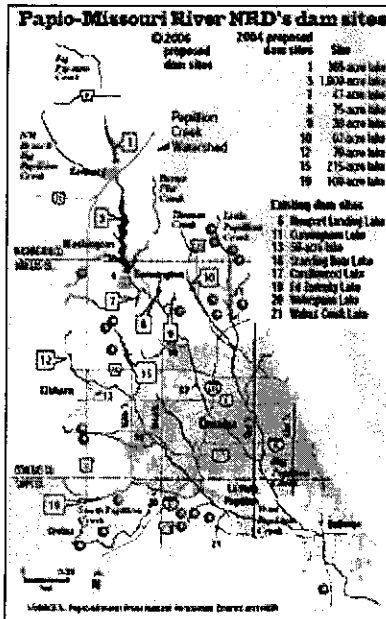
Published Monday  
May 8, 2006

## Omaha metro area: Land of lakes?

BY NANCY GAARDER

WORLD-HERALD STAFF WRITER

Construction of 29 new dams at a cost of \$282.5 million and a tax on new development are part of a regional proposal to address water pollution and flooding in the Omaha metropolitan area.



Click to enlarge

Coupled with a \$100 million plan to build two large flood-control and recreation lakes in Washington County, the proposal pushes possible dam-building in the metro area to nearly \$400 million.

The latest plan is the culmination of several years' work by staff of 12 local governments, developers, some civic groups and the public at several forums.

The groups collaborated as the Papillion Creek Watershed Partnership, which has been spearheaded by the Papio-Missouri River Natural Resources District.

Proponents say the plan is driven by tougher water pollution standards in the federal Clean Water Act and the desire to get ahead of increased flood potential in the rapidly growing Omaha area.

Douglas and Sarpy Counties would be most affected by the proposal, which is now moving into the political arena.

How it will fare is unclear. Just as the Washington County lakes have drawn fierce opposition from people who would lose their property, the broader plan will probably be opposed by some landowners.

City Councils of nine affected communities, the governing boards for Sarpy and Douglas Counties and the Papio NRD will vote on the plan in the next two months.

The Papillion Creek watershed drains most of the metro area and surrounding countryside. Deadly floods occurred along the system in the mid-1960s and led to the construction of seven flood-control lakes. Other dams were scuttled by rising public opposition.

The NRD revived the dam-building effort in 2004 and has since started building a lake at 192nd Street and West Dodge Road. The latest plan expands on the proposal unveiled two years ago.

The goal is to keep flood conditions at current levels, even though the watershed is expected to become completely urbanized over the next 40 years.

Mike McMeekin, president of the Lamp Rynearson & Associates engineering firm, said the proposed dams would be placed in areas with high growth potential.

"Part of the urgency is that we're losing the ability to address the problem as we continue to grow," McMeekin said.

Funding for the dams would come from a tax on new development in Douglas and Sarpy Counties and from the property tax. Technically, the development tax is considered a fee, much like the existing sewer fee.

Here are the funding details:

- Developers would pay a one-time \$500 fee for each new single-family home or for each unit in a duplex or triplex.

### RELATED LINKS

- » Papio-Missouri Natural Resources District
- » Papillion Creek Watershed Partnership

### New lakes

The Papillion Creek Watershed Partnership plans to build 29 lakes:

Seventeen of the lakes would range in size from 50 to 200 acres. On the small end, those lakes would be about half the size of Walnut Creek Lake. On the large end, they would be somewhat smaller than Wehrspann Lake. Of the 17, seven were part of the dam-building initiative announced in 2004.

Twelve small lakes, about one-fourth to one-half the size of Candlewood Lake, would be built to catch sediment and protect water quality in the larger lakes. Nine of those would be built around Cunningham and Zorinsky Lakes to improve their water quality.

The two large lakes previously proposed for Washington County continue to be on the drawing board but are considered outside this specific plan. That's because Washington County is not part of the partnership.

Developers would be allowed to build residential and commercial projects around the lakes. All of the lakes would have public access, but not all would have parks.

- Developers of apartment complexes and commercial and industrial projects would pay a one-time fee of \$2,625 per developed acre.
- The fees would pay for one-third of the cost of the 29 dams. Money from the fees would constitute the private sector's contribution to dam construction.
- Taxpayers would pay for the other two-thirds, primarily through property taxes paid to the Papio NRD.

Currently, at least 1 cent of the NRD's tax levy is used to fund dam construction. That tax was added two years ago and would probably stay on the books for several decades to pay off the dams.

More money may be needed down the road, said Marlin Petermann, acting general manager of the Papio NRD. The tax is paid by residents of Sarpy, Douglas, Washington, Burt, Thurston and Dakota Counties.

- The Papio NRD would continue to seek bonding authority from the Legislature, an effort that so far has stalled.

Jerry Torczon, president of BHI Development, one of the Omaha area's major homebuilders, said he thinks developers are "80 percent on board" with the plan.

"We think, by far, for the community of Omaha, it's a better solution," he said.

If the basin-wide effort to build larger lakes isn't approved, he said, many smaller silt and storm-water ponds would have to be built in individual developments. Those wouldn't have the aesthetic and recreational appeal of larger lakes, he said.

By allowing developers to build subdivisions around the lakes, the plan would increase the value of those developments.

John Fullenkamp, an attorney who represents a number of developers, said that added benefit shouldn't be seen as tipping the scales in favor of developers.

"The last thing that's happening here is that they're coming out on top," he said. "They can go out and buy a piece of property, dam up a ravine and have their own lake without ever paying a fee."

Paul Woodward of the Papio NRD said another important aspect of the plan is that it would raise and standardize flood control and development regulations across the Omaha area.

For example, some communities in the metro area don't restrict how close to a creek a parking lot or structure can be built. This contributes to erosion and the amount of pollutants that can reach a creek.

Douglas County has the strictest standards, and those rules would be extended throughout the two-county area. As another example, the City of Omaha has the strictest overall standards for how much development can occur within a floodplain. Those Omaha standards would be extended throughout the two-county area.

Contact the Omaha World-Herald [newsroom](#)

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**AMENDED  
INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP**

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**THIS AMENDED INTERLOCAL COOPERATION ACT AGREEMENT** (hereinafter referred to as “**this Agreement**”) is made by and among the following parties to-wit: the **CITY OF BELLEVUE**, Nebraska; the **CITY OF BENNINGTON**, Nebraska; the **VILLAGE OF BOYS TOWN**, Nebraska; the **CITY OF ELKHORN**, Nebraska; the **CITY OF GRETNA**, Nebraska; the **CITY OF LAVISTA**, Nebraska; the **CITY OF OMAHA**, Nebraska; the **CITY OF PAPILLION**, Nebraska; the **CITY OF RALSTON**, Nebraska; the **COUNTY OF DOUGLAS**, Nebraska; the **COUNTY OF SARPY**, Nebraska; and, the **PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT**, hereinafter referred to collectively and variously as “**the Parties**,” “**the Papillion Creek Watershed Partnership**,” or “**the Partnership**”)

**WHEREAS**, this Agreement is intended to supersede the agreement entitled “**INTERLOCAL COOPERATION ACT AGREEMENT FOR CONTINUATION OF THE PAPILLION CREEK WATERSHED PARTNERSHIP**,” entered into by the Parties and effective as of July 1, 2004; and,

**WHEREAS**, the Partnership, comprised of governmental entities situated in whole or part within the watershed of the Papillion Creek (hereinafter referred to as “**the Watershed**”), originally was formed through an Interlocal Cooperation Act Agreement dated on August 1, 2001 (hereinafter referred to as the “**Initial Agreement**”), and expiring on July 31, 2004.

**WHEREAS**, the Partnership has accomplished the assessment of existing water quality and quantity conditions, the cooperative preparation of NPDES Phase II Permit applications, the submittal of multiple grant applications, the analysis of additional flood control and the support of state storm water legislation. The Partnership coordinated these issues at monthly meetings of its member's representatives. The progress of Partnership activities was presented to the public at annual meetings and on a website ([www.papiopartnership.org](http://www.papiopartnership.org));

**WHEREAS**, the Partnership was instrumental in the preparation of the "Partnership NPDES Phase II Storm Water Management Plan" for the Watershed, (hereinafter referred to as the "**SWMP**") a true and correct copy of which is attached to this Agreement as **Exhibit "A"** and incorporated herein by this reference;

**WHEREAS**, by the members of the Partnership continuing to act in concert and proposing, enacting and implementing common standards, there will be continued increases in effectiveness and in cost-sharing capability within the Partnership, particularly in the capability to implement the SWMP and to address federally-imposed requirements and mandates which are imminent and which must be funded locally;

**WHEREAS**, other premises that justified the original formation of the Partnership still exist, including, without limitation, that:

- The Watershed has not had a major widespread storm event since the 1960's;
- The hydrology of the Watershed for the Flood Insurance Study (late 1970's) is out of date;
- Urbanization of the Watershed and associated impervious area have increased dramatically since the 60's and 70's;

- The August, 1999, storm event would have caused significantly more damage if centered over Omaha;
- The Papillion Creek does not meet recreational standards specified by the State of Nebraska;
- Deposition is occurring in Watershed reservoirs at unacceptable rates;
- Problems exist in current community drainage systems;
- Currently there is inadequate funding for storm water quantity and water quality problems within the Watershed;
- Currently there is a lack of coordinated effort of Watershed storm water quantity and quality;
- The benefits of reducing existing and future flood impacts in the Watershed include: decreased public and private property damages, reduced potential loss of life, lower flood insurance costs, decreased cost to taxpayers and public agencies for disaster relief;
- Improvement of water quality in streams and reservoirs will result in increased fish, aquatic, and riparian habitat; recreational improvements, reduction of reservoir operation and maintenance costs; and improved aesthetics;
- Potential increased recreational opportunities from the work of the Partnership could include: green spaces (picnic areas, outdoor activities), boating, canoeing, fishing, trail systems, riparian areas for bird watching, nature hikes, education, wildlife viewing, etc.;
- Techniques which could be employed by the Partnership include: facilitation of multi-use storm water structures; elevating the priority of storm water utility maintenance; minimization of future construction in the floodplain/floodway; matching pre-development runoff conditions;

updating hydrology to 2001 and 2040; formulating a master drainage plan for the Watershed; providing adequate construction and maintenance funding; buy-outs/relocations of structures in flood prone areas; providing increased upstream flood storage; enhancing public education and outreach; implementation of new construction site management practices; development of new development/redevelopment standards; implementation of an illicit discharge program; enhance environmental aspects of public street maintenance; reducing the environmental impacts of herbicide, pesticide, and fertilizer application; developing a water quality and quantity monitoring program; developing an industrial site inspection program; construction of retention/detention ponds designed for both water quantity and quality; restoration, creation and enhancement of wetlands; preservation of riparian areas; environmental restoration of streams; creation of buffer strips; use of grassed swales for drainageways; updating of design and construction standards; application of standardized ordinances throughout the Watershed; and, implementation of new set back ordinance and open drainage requirements;

- Standardization of the construction development permit process would reduce liability to landowners from flooding and erosion problems, reduce sediment runoff during construction, and increase property values through recreational enhancements; and,

- Continuation of a coordinated effort will improve compliance with federal, state, and local regulations, such as Storm Water Program, Combined Sewer Overflow Program, National Pollutant Discharge Elimination System Point Source Permits, Federal Emergency Management Agency, and local planning and zoning regulations;

**WHEREAS**, in carrying out its mission, the Partnership will work cooperatively with, but not limited to, the U.S. Army Corps of Engineers, the



Metropolitan Area Planning Agency, the USDA Natural Resources Conservation Service, the Nebraska Game and Parks Commission, the Nebraska Department of Environmental Quality, the Nebraska Department of Natural Resources, the University of Nebraska, the University of Nebraska Cooperative Extension, and State and County Health Departments,

**WHEREAS**, as part of implementing the federally-imposed SWMP requirements, and to address stormwater management on a watershed-wide basis, Stormwater Management Policies (hereinafter referred to as the “**Policies**”) were developed through a community-based process known as Watershed By Design (hereinafter referred to as “**WBD**”) involving the development community, Partnership members, public agencies, non-profit organizations, other stakeholder groups and the general public. The Policies developed through the WBD process consist of six (6) Policy Groups, headed as follows:

- #1 Stormwater Management Financing
- #2 Peak Flow Reduction
- #3 Pollution Control
- #4 Landscape Preservation, Restoration, and Conservation
- #5 Erosion and Sediment Control and Other BMPs
- #6 Floodplain Management

and the texts of the Policies are attached hereto as **Exhibit “B”** and incorporated herein by this reference.

**WHEREAS**, The Policies are intended to be adopted, in total, by the respective members of the Partnership, using their respective land use review and adoption processes (typically reviewed by a Planning Commission or Board and then review and adoption by the elected Board or Council). Such review and adoption of the Policies by the respective members of the Partnership should

occur prior to August 1, 2006, in order for the partnership members to be in compliance with the SWMP.

**NOW, THEREFORE**, in consideration of the foregoing recitals and their mutual covenants hereinafter expressed, the members of the Partnership agree as follows:

1. **Authority:** This Agreement is an agreement for collective and cooperative action made pursuant to authority provided in the Nebraska Interlocal Cooperation Act (Neb. Rev. Stat. §13-801, R.R.S., 1943, et seq.), without a separate entity being created, and, whenever possible, this Agreement shall be construed in conformity therewith.
2. **Mission:** It shall be the mission of the Partnership to address issues related to surface water quality and storm water quantity in the Watershed by establishing and implementing regionally common goals and standards for the development of the Watershed through 2040.
3. **Applicability:** Members of the partnership having jurisdiction over land area outside the physical boundaries of the Watershed expect and intend that planning activities within the Watershed for projects of the Partnership will, insofar as feasible, apply universally to all such land areas as though they were located physically within the Watershed.
4. **Goals:** The Partnership shall have as its goals:
  - a) Implementation of those elements of the SWMP and other programs and projects that are reasonably and feasibly undertaken by collective action of the Partnership;
  - b) Compliance with Federal, State, and local storm water quantity and surface water quality regulations;
  - c) Improvement of water quality in the Watershed's streams and reservoirs;

- d) Increased water-based recreational opportunities and associated improvement in quality of life;
- e) Standardization of the construction development process and evaluation of its effectiveness;
- f) Assessment and characterization of current water quality and quantity conditions for the watershed;
- g) Storm Water Management Plan update;
- h) Environmental compliance;
- i) Sediment and erosion control; and,
- j) Floodplain management.

5. **Executive Committee:** The members of the Partnership shall establish an Executive Committee consisting of one representative from each entity that is a member of the Partnership.

6. **Administering Agent:** The Executive Committee shall designate the Papio-Missouri River Natural Resources District (hereinafter referred to as the “NRD”), or other member of the Partnership which is willing to serve in such capacity, as Administering Agent to administer this Agreement. The Administering Agent shall serve at the pleasure of the Executive Committee and shall perform duties assigned by the Executive Committee, which may include, without limitation:

- a) Seeking any state legislation which all parties to this Agreement determine necessary to support the work of the Partnership;
- b) Designating such personnel and assistance which shall be deemed necessary to support the work of the Partnership;
- c) Preparing, presenting and distributing educational materials;

- d) Organizing meetings of members of the Partnership and interested persons to share knowledge and compare projects and programs of all involved;
- e) Preparing reports on the work of the Partnership;
- f) Entering into contracts on behalf of the Partnership as the Executive Committee directs for the performance of specific actions consistent with both the goals of this Agreement and the respective missions of members of the Partnership;
- g) Holding and maintaining the Watershed Fund, calculating the amount of money necessary to be raised by contributions each year in order to carry out the work of the Partnership, and making requests for contributions from the members of the Partnership, all as the Executive Committee directs;
- h) Disbursing the Watershed Fund as directed by the Executive Committee and reimbursing members of the Partnership for expenditures made on behalf of the Partnership or for the reasonable value of activities performed on behalf of the Partnership, as reasonable value is determined by the Executive Committee.

7. **Implementation.** The Partnership intends and agrees that the elements of the SWMP, Policies, and other beneficial programs and projects meeting the mission and goals of this Agreement, will be implemented as follows:

- a) Responsibility for implementation of an element of the SWMP therein identified solely for individual action by a Partner will rest with the respective member(s) of the Partnership upon whom the primary duty to implement such element has been imposed by law or regulation. Regulations or ordinances implementing elements of the SWMP and Policies will be developed by the Partnership and subsequently submitted to the members of the Partnership for

approval and adoption. The provisions of such regulations or ordinances shall apply to the respective municipality's or county's planning and zoning jurisdiction. The regulations or ordinances approved and adopted by Partnership members shall indicate the geographic jurisdictional limits to which such regulation or ordinance shall apply.

- b)** Subject to the availability of funds, implementation of those elements of the SWMP therein identified for action by the Partnership or individual partners and identified in the table attached hereto as **Exhibit "C"** and incorporated herein by reference shall be voluntarily undertaken by the Partnership collectively; provided, however, no voluntary collective undertaking by the Partnership shall be deemed to relieve a member of the Partnership of a primary duty imposed upon such member by law or regulation.
- c)** Any elements of the SWMP, alternatively, may be voluntarily undertaken by the Partnership collectively if the Executive Committee determines that such course of action is reasonable and feasible.
- d)** If the Executive Committee determines that such course of action is reasonable and feasible, the Partnership may voluntarily and collectively undertake beneficial programs and projects meeting the mission and goals of this Agreement.

**8. Funding:** Funding shall be administered as follows:

- a)** The Partnership Watershed Fund, established by the Initial Agreement, shall continue to be held by the Administering Agent in an interest-bearing account in trust for the members contributing

thereto, in proportion to their contributions, and shall be expended as the Executive Committee directs for initial planning of beneficial programs and projects to meet the mission and goals of this Agreement, establishing mechanisms for long-term funding and authorization for additional planning and implementation of such programs and projects, and for performance of other activities described in this Agreement. The Watershed Fund shall be funded and administered as follows:

- i) On or before the first day of July after the effective date of this Agreement, each member of the Partnership shall make a contribution to the Watershed Fund in the amount shown, opposite such member's name, in the second column of the table attached hereto as **Exhibit "D"** and incorporated herein by reference (such amount hereinafter being referred to as the **"Maximum Annual Contribution"** for such member). For subsequent years during the term of this Agreement, the Administering Agent shall request annual contributions from the members of the Partnership in the amounts necessary to carry out the work of the Partnership, the amounts of such subsequent-year contributions to be determined by the Administering Agent prior to the first day of June of such subsequent year and paid by the members of the Partnership before the first day of July of such subsequent year. These subsequent-year contributions shall be proportional to such members' first year contributions to the Watershed Fund, provided, however, in no case shall any such requested annual contribution exceed the amount of such member's Maximum Annual Contribution.

- ii) Each year during the term of this Agreement, and from time to time as any member of the Partnership may reasonably request, the Administering Agent shall furnish to the members of the Partnership written statements of the condition of the Watershed Fund.
  - iii) Grants or contributions made by non-members of the Partnership shall not be deemed to offset or diminish the obligations of the members of the Partnership under this Agreement.
  - iv) If any member of the Partnership fails to contribute to the Watershed Fund as requested pursuant to this Agreement, such member's involvement and membership in the Partnership shall be terminated upon written notice of termination given by the Administering Agent to such member.
- b) The Regional Stormwater Detention Fee Fund (hereinafter referred to as the “**Detention Fee Fund**”) established in Sub-Policy 2 of Policy Group #1 (Stormwater Management Financing) in the Policies, contemplates that a regional system shall be established to equitably distribute the capital cost of implementing regional stormwater detention facilities among new development or significant redevelopment within the watershed. Based on the initial framework and rates set for the Regional Stormwater Detention Fee (hereinafter referred to as “the **Detention Fee**”) defined in Sub-Policy 3 of Policy Group #1, attached hereto, the Partnership does hereby agree to implement the Watershed Drainage Plan for Douglas and Sarpy Counties, attached hereto as **Exhibit “E”** and

incorporated herein by reference, or as may be amended from time to time through provisions in this Agreement, as follows:

- i) The cities of BELLEVUE, BENNINGTON, ELKHORN, GRETNA, LAVISTA, OMAHA, PAPILLION and RALSTON, and the Counties of DOUGLAS and SARPY (all hereinafter referred to collectively as “**zoning jurisdictions**”) agree to collect Detention Fees from new development or significant redevelopment within the Papillion Creek Watershed, such Detention Fees to be collected and earmarked specifically for construction of regional detention structures and water quality basins, as follows, to-wit:
  - a) Each zoning jurisdiction shall adopt a regulation or ordinance authorizing the collection of the Detention Fees and authorizing the transfer of such fees to the NRD, consistent with the provisions of this Agreement.
  - b) Each zoning jurisdiction shall include, in its subdivision or other agreements with developers for new developments or significant redevelopments, the right to collect Detention Fees at the time of building permit issuance pursuant to, and consistent with, the provisions of this Agreement. The Detention Fee specified in a subdivision agreement shall not be changed after such subdivision agreement has been approved by the zoning jurisdiction, notwithstanding that the Detention Fee framework or rates possibly may be changed before all building construction has been completed in such subdivision.



- c) On or before July 1<sup>st</sup> of each calendar year, each zoning jurisdiction shall remit to the NRD the Detention Fees paid to or collected by such zoning jurisdiction on or before June 1<sup>st</sup> of such calendar year. Such Detention Fees received by the NRD shall be held by the NRD in a separate, interest-bearing account, to be known as the “Detention Fee Fund,” in trust for the members of the Partnership contributing thereto in proportion to their contributions, earmarked specifically for construction by the NRD of regional detention structures and water quality basins and expended by the NRD as further provided in this Agreement.
- d) Each zoning jurisdiction shall, in general, adopt a framework consisting of two Detention Fee classifications, to-wit:
  - (1) “Low-Density Residential Development” (generally consisting of single-family and duplex multi-family dwelling units, or as otherwise determined by the zoning jurisdiction). Detention Fees shall be assessed at an initial rate of \$500 per dwelling unit or equivalent prorated average area of lot basis; and,
  - (2) “High-Density Development” (consisting of other multi-family residential dwelling units determined by the local zoning jurisdiction to represent High density development, plus Commercial and Industrial development). Detention Fees shall be assessed at an initial rate

of \$2,625 per-developed-acre and shall be proportionately indexed to “Low-Density Residential Development” in terms of the potential to generate stormwater surface runoff. Such “High-Density Development” Detention Fees shall be 1.5 times “Low-Density Residential Development” Detention Fees when considered on an estimated-dwelling-unit-per-developed-acre basis.

- e) At approximately three (3) year intervals, the Partnership and the development community shall review the Detention Fee framework and rates, the Watershed Drainage Plan and the construction priority schedule with respect to availability of needed funds and rate of development within the Watershed. Subsequent changes to the Detention Fee framework and rates, Watershed Drainage Plan and construction priority schedule, indicated by such review, shall be subject to formal approval by the respective local zoning jurisdictions and the NRD.
- ii) The NRD agrees implement the regional detention structures and water quality basins in accordance with the Watershed Drainage Plan and construction priority schedule as follows:
  - a) The NRD shall utilize Detention Fees received to pay approximately one-third (1/3) of required capital costs of constructing the regional detention structures and water quality basins, including the cost of obtaining

necessary land rights. The remaining approximately two-thirds (2/3) of such capital costs shall be paid by the NRD from the proceeds of its general property tax levying authority and from contributions from developers and other cooperators that the NRD may be able to obtain.

- b) The NRD will seek authority from the Nebraska Legislature to issue general obligation bonds to provide interim financing of the aforesaid capital costs, in order to provide necessary construction scheduling flexibility.

- 9. **Title to Property.** Title to any tangible property (e.g., monitoring equipment) obtained using funds contributed by members of the Partnership pursuant to this Agreement shall be held in the name of the Administering Agent in trust for the members of the Partnership in proportion to their total contributions to the Watershed Fund and Regional Stormwater Detention Fee Fund.
- 10. **Counterparts.** This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterpart copies of this Agreement, as executed, shall be maintained as part of the records of the Administering Agent.
- 11. **Effective Date:** This Agreement shall become effective on August 1, 2006.
- 12. **Duration of Agreement:** This Agreement shall be in effect for a period of three years from and after its effective date.

- 13. Termination.** Involvement of any member of the Partnership with the Partnership, and responsibilities under this Agreement, may be terminated by such member without cause effective upon 60 days written notice to the other members of the Partnership. Termination of a member's involvement with the Partnership pursuant to this Agreement shall not operate to terminate this Agreement nor shall it affect any rights obtained under this Agreement, prior to such notice of termination being given, for costs incurred or moneys advanced, or for actions taken or responsibilities assumed, by another member of the Partnership during the term of and pursuant to this Agreement.
- 14. Additional Planning and Implementation.** The members of the Partnership may amend or supplement this Agreement from time to time as may be deemed necessary to provide long-term funding and authorization for additional planning and implementation of beneficial programs and projects to meet the mission and goals of this Agreement.

**IN WITNESS WHEREOF,** this Agreement is entered into by the members of the Partnership pursuant to resolutions duly adopted by their respective governing boards.

**[Signature page(s) next]**

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Bellevue, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF BELLEVUE, NEBRASKA

BY

\_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Bennington, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF BENNINGTON, NEBRASKA

BY

\_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the Village of Boys Town, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE VILLAGE OF BOYS TOWN, NEBRASKA

BY

\_\_\_\_\_  
CHAIRMAN, VILLAGE BOARD

Attest:

\_\_\_\_\_  
VILLAGE CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Elkhorn, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF ELKHORN, NEBRASKA

BY \_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK



AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Gretna, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF GRETNA, NEBRASKA

BY

\_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the Village of Kennard, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE VILLAGE OF KENNARD, NEBRASKA

BY

\_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of LaVista, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF LAVISTA, NEBRASKA

BY \_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Omaha, Nebraska on this \_\_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF OMAHA, NEBRASKA

BY

\_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Papillion, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF PAPILLION, NEBRASKA

BY

\_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the City of Ralston, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE CITY OF RALSTON, NEBRASKA

BY \_\_\_\_\_  
MAYOR

Attest:

\_\_\_\_\_  
CITY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the County of Douglas, Nebraska on this \_\_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE COUNTY OF DOUGLAS, NEBRASKA

BY

\_\_\_\_\_  
CHAIRPERSON, COUNTY BOARD

Attest:

\_\_\_\_\_  
COUNTY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the County of Sarpy, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE COUNTY OF SARPY, NEBRASKA

BY

\_\_\_\_\_  
CHAIRPERSON, COUNTY BOARD

Attest:

\_\_\_\_\_  
COUNTY CLERK



AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the County of Washington, Nebraska on this \_\_\_\_ day of  
\_\_\_\_\_, 2006.

THE COUNTY OF WASHINGTON, NEBRASKA

BY

\_\_\_\_\_  
CHAIRPERSON, COUNTY BOARD

Attest:

\_\_\_\_\_  
COUNTY CLERK

AMENDED INTERLOCAL COOPERATION ACT AGREEMENT  
FOR CONTINUATION OF THE  
PAPILLION CREEK WATERSHED PARTNERSHIP

SIGNATURE PAGE

Executed by the Papio-Missouri River Natural Resources District on this  
\_\_\_\_\_ day of \_\_\_\_\_, 2006.

PAPIO-MISSOURI RIVER NATURAL  
RESOURCES DISTRICT

BY \_\_\_\_\_  
ASSISTANT GENERAL MANAGER

### III. Stormwater Management Plan (SWMP)

#### A. INTRODUCTION

This SWMP is an attachment to the NPDES permit application and contains proposals for implementing the Minimum Control Measures set forth in 40 CFR Part 122.34(b). \_\_\_\_\_ believes this SWMP meets or exceeds the requirements set forth in 40 CFR Part 122.34, and requests that these proposals be incorporated into the NPDES permit for its Municipal Separate Storm Sewer System (MS4).

At the time of this application, \_\_\_\_\_ is a member of the Papillion Creek Watershed Partnership (PCWP) through an inter-local agreement with other cities, counties, and the Papio-Missouri River Natural Resources District, located within the Papillion Creek Watershed. The goal of the PCWP is to develop a consistent and effective storm water management program throughout the urbanized areas of the Watershed, while sharing resources to accomplish this goal in the most cost-effective manner possible. Certain activity commitments in the SWMP may be completed through cooperative efforts carried out by the PCWP. However, if the applicant ceases to be a member of the PCWP, or the PCWP ceases to exist, the applicant is still responsible for performing the commitments in the SWMP.

It is anticipated that the NPDES permit will require an Annual Activity Report, in which the activities undertaken to comply with the *Measurable Commitments & Implementation Schedule* set forth in the SWMP below will be verified. The Annual Activity Report will be submitted within 90 days after each anniversary date of the permit.

**Requirement #1: Public Education & Outreach**

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
1.A	The applicant individually or as a member of the PCWP will create and distribute informational brochures on the proper disposal of household hazardous wastes and the availability of the Household Hazardous Waste facility.	Year 1- Develop program for distributing informational brochures on the proper disposal of hazardous waste. Year 2 thru 5 – Print and distribute brochures. Include the following in Annual Activity Reports: the quantity of waste received at the drop-off facility; a summary list of the distribution outlets used for brochures; and an estimate of the brochures distributed each year.
1.B	The applicant individually or as a member of the PCWP will provide information concerning best management practices and participate at public educational events such as Earth Day.	Years 1 thru 3: Develop materials and implementation plan. Summarize progress and plans in the Annual Activity Report. Years 4 thru 5: Print and/or broadcast announcements. Provide information on the number of announcements made and the media used in the Annual Activity Report.
1.C	The applicant individually or as a member of the PCWP will issue public service announcements related to storm water protection on local TV, radio or print outlets.	Ongoing, all years. A summary of the activities will be included in the Annual Activity Report.
1.D	Applicant will initiate a storm water drain-stenciling program to improve public awareness concerning illegal dumping. Develop standard specifications which require stenciled or adhered markers be provided for new concrete storm drains.	Year 1 – Develop standard specifications for marking storm drain inlets. Year 2 thru 5 – Implement standard specifications marking storm drain inlets and include summary of installations in Annual Activity Report.

Comments: The stenciling of existing drain inlets is not included since this is likely to be a grant-funded activity if it occurs.

**Requirement # 2: Public Participation and Involvement**

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
2.A	The applicant individually or as a member of the PCWP will create and operate a system for handling phone calls and email for storm water-related concerns in the Watershed (general information, complaints, reports of illegal dumping, etc.). Also See BMP 2.D below.	Year 1 - Set up system to receive calls/email, documentation system, and forwarding protocols to responsible Partnership jurisdiction for response and/or corrective action.  Years 2 thru 5 – Maintain system operation and include summary of received calls/emails in the Annual Activity Report.
2.B	The applicant as a member of the PCWP will participate in organizing and holding public meetings on Papillion Creek Watershed Plan updates and to solicit feedback for management policies, proposed BMP's, financial reports, etc.	Organize and hold 1 public meeting each year. A summary of activities and feedback will be included in the Annual Activity Report.
2.C	The applicant individually or as a member of the PCWP will implement a Stream Cleanup Day. Identify stream segments in need of cleanup and request volunteers from the local area, public groups, and representatives from local area business and developments.	Year 1 - Develop procedures for organization of cleanup day and an implementation plan. Years 2 thru 5 - Conduct one clean-up day each year. A summary of the clean-up day activities will be included in the Annual Activity Report.
2.D	The applicant as a member of the PCWP will participate in the operation of the PCWP website. Currently the website contains storm water related information and provides educational information to communities, businesses, and schools. Anticipated future enhancements include creation of an email comment/complaint form as part of the system described in 2.A above; and creation of a survey form for comments and suggestions on Watershed Planning.	Operation of website ongoing, all years. A summary of website updates will be included in the Annual Activity Report. Year 1 - Prepare input forms and establish guidelines for response. Year 2 to 5 - Have forms available on website. Include the following in the Annual Activity Report: the number of complaints and comments received each year and a summary of comment responses as related to Watershed Planning.
Comments:		

**Requirement # 3: Illicit Discharge Detection and Elimination**

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
3.A	The applicant will perform dry-weather inspections of all known, major storm water outlets (i.e., those with diameters of 36" or greater) concurrent with investigations to develop a sewer system map (See 3.C below). Inspections will include flow estimations, physical characteristic examinations (See attached procedure), and, if necessary to identify sources or pollutants, screening for additional pollutants. Will also inspect storm water outlets, including smaller outlets and those that discharge to lesser tributaries or other storm conduits, in response to suspect conditions and/or complaints.	Year 1 thru 2 - Identify and initially inspect existing stormwater outfalls in named creeks within the permitted area. Inspection records of these observations will be kept and included in the Annual Activity Report. Year 3 thru 5 – Investigate new or newly-discovered stormwater outfalls in named creeks and report observations in the Annual Activity Report. Years 1 thru 5 - Follow-up will also be conducted as set forth in BMP 3.E below.
3.B	The applicant will develop an ordinance to prohibit illicit non-storm water discharges accompanied by appropriate penalties and enforcement procedures. On new construction this will be enforced, in part, through the building permit process.	Year 1 - Draft proposed ordinance for consideration by applicant's public officials. Year 2 - Anticipate passage of ordinance by the end of this year. Year 3 thru 5 – Implement and enforce ordinance after its passage.
3.C	The applicant will develop a sewer system map of major storm water outfalls and identify the names of respective receiving waters. Mapping is to be GIS based. This map is intended to update the map submitted as part of the application pursuant to 40 CFR Part 122.33(b)(2)	Years 1 and 2 - Complete mapping for existing stormwater outfalls in named creeks and include map in Annual Activity Report Years 3 thru 5 - Maintain system for incremental new construction and include updated map in Annual Activity Report.
3.D	The applicant individually or as a member of the PCWP will implement a BMP/water quality tracking database (decision support system), including protocols for sharing resources within the Partnership and training staff. Functionality of database includes tracking of field inspections, annual reporting, and ties to GIS mapping if appropriate.	Ongoing, all years, input updated data and include documentation in Annual Activity Report.
Requirement # 3: Illicit Discharge Detection and Elimination - Continued on next page		

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
3.E	The applicant will investigate and seek resolution concerning any dry weather discharges of potentially polluted wastewater sources by notifying the source that they must discontinue discharging, and will initiate enforcement action consistent with adopted ordinance (See 3.B above). Any source that the applicant feels constitutes an immediate health or safety threat will be reported immediately to the NDEQ.	Ongoing all years. The following information will be included in the Annual Activity Report: 1) the number of process or potentially polluted wastewater sources found; 2) the number of above resolved at local level; and 3) the identity of any referred and/or unresolved discharge sources.

**Requirement # 4: Construction Site Runoff Control**

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
4.A	The applicant will develop and implement a storm water management and erosion control ordinance for construction sites down to 1 acre in size. Provisions will be included for design and specification review, for enforcement and penalties, for Erosion and Sediment Control requirements consistent with design criteria that meet the requirements of NDEQ's NPDES storm water permit for construction sites, and for waste disposal with respect to discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site.	Year 1: Draft an ordinance for consideration by applicant's public officials and provide for public input, as well as providing NDEQ with an opportunity for input. Year 2: Complete enactment of effective ordinance. Years 3-5: Implement ordinance through commitments made in BMP Elements 4.B and 4.C.
4.B	The applicant as a member of the PCWP will participate in the implementation of a Contractor Certification Program by conducting by providing annual instruction in conjunction with 4.A above and 4.C below.	Year 1 thru 4 - Provide one voluntary class per year. Include summary of participants and instruction in Annual Activity Report. Year 5 – Provide voluntary class and evaluate the need for a mandatory program. Include summary of participants, instruction, and recommendation in Annual Activity Report.
4.C	Applicant will develop and implement a construction site inspection program that included procedures for reporting and resolving deficiencies, notifying NDEQ of non-complying sites; and procedures for referral to NDEQ of non-complying sites that are not responding to local enforcement actions. Identify priority sites based on the nature of the site in terms of size, topography, soil characteristics, and receiving waters. Problems on previous sites will also be a consideration in targeting inspections. Follow-up inspections will be conducted when non-compliance is cited.	Years 3-5: Begin activity one (1) year after the ordinance is enacted and continue through the remainder of permit term. The Annual Activity Report will contain the following information relative to this commitment: 1) the number of inspections conducted in each of the following size categories: 1 to < 5 acres, 5 to < 20 acres, 20 to < 40 acres, & > 40 acres; 2) the number of sites receiving deficiency and non-compliance notices; 3) a summary report on any enforcement actions taken; 4) the identity of any sites that did not resolve deficiencies or non-compliance in a timely manner or that were referred to NDEQ; and 5) the identity of any developer or contractor that had re-occurring compliance problems.
Comment: Complaints will be handled by the system established through BMP 2.A.		



**Requirement # 5: Post-construction Runoff Control**

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
5.A	The applicant will include requirements for BMP Inspection and Maintenance in ordinance required in 4.A above.	Year 1: Draft proposed ordinance for consideration by applicant's public officials. Year 2: Anticipate passage of ordinance by the end of this year. Years 3-5: Implement and enforce ordinance through commitments made in BMP 5.B
5.B	The applicant will implement procedures for post construction site inspection (similar to 4.C above, except for follow-up inspections within one year of completion of construction). Identify priority sites based on the nature of the site in terms of size, topography, soil characteristics, and receiving waters.	Years 3-5: Begin activity one (1) year after the ordinance is enacted and continue through the remainder of permit term. The Annual Activity Report will contain the following information relative to this commitment: 1) The number of inspections conducted in each of the following size categories: 1 to < 5 acres, 5 to < 20 acres, 20 to < 40 acres, & > 40 acres; 2) The number of sites receiving deficiency and non-compliance notices; 3) A summary report on any enforcement actions taken; 4) The identity of any sites that did not resolve deficiencies or non-compliance in a timely manner or that were referred to NDEQ; and 5) The identity of any developer or contractor that had re-occurring compliance problems.
5.C	The applicant individually or as a member of the PCWP will develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for the watershed.	Year 1 – Hold public meeting concurrent with BMP 2.B designed to gather public input, include summary of meeting in Annual Activity Report. Year 2 - Coordinate responses and incorporate them into existing comprehensive or master plans, include summary in Annual Activity Report. Year 3 to 5 – Revise local ordinances and regulations to support master plan strategies and implement strategies; include summary in Annual Activity Report.
Comments:		

**Minimum Requirement # 6: Pollution Prevention/Good Housekeeping for Municipal Operations**

<b>BMP #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
6.A	The applicant will manage their vehicle maintenance facility to comply with the No Exposure Status as identified using NPDES form 3510/11 on an annual basis.	Ongoing all years. A completed and current copy of Form 3510/11, signed by the maintenance facility superintendent, shall be included in each Annual Activity Report.
6.B	The applicant will inspect storm sewer conduits, channels and catch basins and remove sediment and debris as needed to maintain an efficient system within permitted area, and will transport said materials to the municipal solid waste landfill for disposal.	Ongoing all years. A maintenance report will be included in the Annual Activity Report.
6.C	The applicant will develop and implement a training program for employees to prevent pollutant runoff from municipal operations. This would include training for general operation and maintenance activities, schedules, inspections, controls on the discharge of pollutants from streets, proper maintenance of salt/sand storage areas, waste cleanup and handling from transfer stations, etc. Identify responsible departments and personnel for training on operation and maintenance program.	Year 1 – Develop program and training materials and include them in Annual Activity Report. Year 2 thru 5 – Conduct training annually for employees and include summary in Annual Activity Report.
6.D	The applicant will conduct street cleaning on an ongoing basis, so as to reach all paved streets at least once every other year.	Ongoing all years. The approximate miles of streets cleaned per year will be included in the Annual Activity Report.

**IV. Monitoring requirements****Activity #7: Storm Water Monitoring Plan**

<b>SWMP Element #</b>	<b>SWMP Element Description</b>	<b>Measurable Commitments &amp; Implementation Schedule</b>
7.A	<p>The applicant as a member of the PCWP will participate with in-stream water quality monitoring of named creeks in the Papillion Creek Watershed. Pollutant parameters to be analyzed will include BOD5, TSS, ammonia-nitrogen, nitrate-nitrogen, total nitrogen, soluble and total phosphorus, turbidity, pH fecal coliforms, E. coli, and Physical Characteristic Examinations. The purpose of the monitoring will be to identify any water quality concerns or pollutant sources so as to allow for evaluation and improvement of storm water management practices.</p>	<p>Year 1 - Develop monitoring plan and submit to NDEQ for review and comment. Years 2 thru 5: Conduct monitoring.</p> <p>The following information shall be included in the Annual Activity Report:</p> <ol style="list-style-type: none"> <li>1) The monitoring data; and</li> <li>2) A summary report on the findings relative to SWMP efforts.</li> </ol>
7.B	<p>The applicant as a member of the PCWP will participate in wet weather monitoring of a set of storm water outfalls identified in coordination with development of the water quality monitoring program established under BMP 7.A. on at least one storm water outfall annually. Test parameters will be the same as those specified in 7.A above. Composite samples that represent the peak flush of the discharge will be obtained for all parameters, except pH and the bacterial counts for which grab samples are required. Flow estimations as well as the intensity, timing and duration of any recent storm water events will be recorded. The in-stream water quality testing results, as well as watershed characteristics, will be considered in selecting the monitoring site(s). Also BMP assessment monitoring may be conducted in lieu of storm sewer outfall testing.</p>	<p>Year 1 - Develop monitoring plan and submit to NDEQ for review and comment. Years 2 - 5: Conduct monitoring.</p> <p>The following information shall be included in the Annual Activity Report:</p> <ol style="list-style-type: none"> <li>1) the location of the monitoring site;</li> <li>2) the intensity and duration of the storm event monitored;</li> <li>3) the timing of sampling in comparison to the occurrence of the storm event and to the discharge of peak storm water flows;</li> <li>4) the monitoring data; and</li> <li>5) a summary report on the findings relative to SWMP efforts.</li> </ol>

**Record Keeping**

All records of SWMP and Storm Water Monitoring activities will be kept for a period of at least 3 years.

# STORMWATER MANAGEMENT POLICIES

## POLICY GROUP #1: 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:** A dedicated, sustainable funding mechanism shall be developed and implemented to meet capital and operation and maintenance obligations as a result of new stormwater management regulations and to implement Stormwater Management Policies to accommodate new development and significant redevelopment.

### SUB-POLICIES:

- 1) Adequate funds shall be earmarked by the jurisdictional authority or the Papio-Missouri River Natural Resources District (P-MRNRD) for preparing the Watershed Drainage Plan for siting regional stormwater detention and water quality basin facilities that will enable critical peak flow reduction for flood protection and improved water quality within the Papillion Creek Watershed.
- 2) A Regional Stormwater Detention Fee system shall be established to equitably distribute the capital cost of implementing regional stormwater detention facilities among new development or significant redevelopment within the Papillion Creek Watershed.
- 3) The Regional Stormwater Detention Fee initial framework shall consist of the following provisions:
  - a. Development of a Watershed Drainage Plan for Douglas and Sarpy Counties preliminarily consisting of seven (7) remaining multi-reservoir sites, ten (10) additional regional detention sites, and twelve (12) water quality basins.
  - b. Collection of fees shall be earmarked specifically for construction of regional detention structures and water quality basins.
  - c. Two (2) fee classifications shall be established:
    - 1) “Low-Density Residential Development” (generally consisting of single-family and duplex multi-family dwelling units, or as otherwise determined by the local zoning jurisdiction). Fees shall be assessed on a per dwelling unit or equivalent prorated average area of lot basis.
    - 2) “High-Density Development” (consisting of other multi-family residential dwelling units determined by the local zoning jurisdiction to represent high density development, plus Commercial and Industrial development). Fees shall be assessed on a per developed acre basis and shall be proportionately indexed to “Low-Density Residential Development” in terms of the potential to generate stormwater surface runoff. Unless otherwise determined by the local zoning jurisdiction, “High-Density Development” fees shall be 1.5 times that of “Low-Density Residential Development” when considered on an estimated dwelling unit per developed acre basis.
  - d. Regional Stormwater Detention Fees (private) are intended to account for approximately one-third (1/3) of required capital funds, except as further provided

# STORMWATER MANAGEMENT POLICIES

below, and shall be paid to the applicable local zoning jurisdiction with building permit applications.

- e. Regional Stormwater Detention Fee revenues shall be transferred from the applicable local zoning jurisdiction to a special P-MRNRD construction account via inter-local agreements.
- f. 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.
- g. The P-MRNRD will seek general obligation bonding authority from the Nebraska Legislature to provide necessary construction scheduling flexibility.
- h. Financing for detention structures and water quality basins may additionally require public-private partnership agreements between the P-MRNRD and developers/S&IDs at the detention structure sites on a case-by-case basis.
- i. On approximately three (3)-year intervals, the Watershed Drainage Plan and Regional Stormwater Detention 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.
- j. Additional funding strategies shall be developed and implemented to fund on-going O&M after construction of regional detention and water quality basin facilities.

## REFERENCE INFORMATION

### DEFINITIONS

- 1) Stormwater Management Policies. Stormwater management policies 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. 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 #2 – Peak Flow Reduction
  - Policy Group #3 – Pollution Control
  - Policy Group #4 – Landscape Preservation, Restoration, and Conservation
  - Policy Group #5 – Erosion and Sediment
  - Policy Group #6 – Floodplain Management
- 2) Stormwater Management Plan (SWMP). A SWMP is a required part of the NPDES Phase II Stormwater Permits issued to many of the Omaha metropolitan area Papillion

## **STORMWATER MANAGEMENT POLICIES**

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 by the end of year 2 (August 2006) of the permit cycle.

- 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 2009. 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.

### **BASIS FOR STORMWATER MANAGEMENT FINANCING ISSUE**

- 1) Time is of the essence for policy development and implementation:
  - a) Under the existing Phase II Stormwater Permits issued by the Nebraska Department of Environmental Quality, permittees must develop strategies, which include a combination of structural and/or non-structural best management practices and incorporate them into existing Comprehensive Development Plans by the end of July 2006.
  - b) The S&ID platting process is typically several years ahead of full occupation of an S&ID. Therefore, careful pre-emptive planning and program implementation is necessary in order to construct regional stormwater detention and water quality basin improvements in a timely manner to meet the purposes intended and to avoid conflicts from land use encroachments from advancing development.
- 2) Financing to meet capital and O&M obligations for stormwater management projects requires a comprehensive, uniformly applied approach and not a project-by-project approach.

# STORMWATER MANAGEMENT POLICIES

## POLICY GROUP #2: PEAK FLOW REDUCTION

### 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 shall be located in general conformance with a Watershed Drainage Plan to be prepared and adopted following appropriate hydrologic and hydraulic modeling and shall be coordinated with other related master planning efforts for parks, streets, water, sewer, etc.

### REFERENCE INFORMATION

### DEFINITIONS

- 1) 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 outlet from a downstream regional stormwater detention facility (as defined); or where no downstream regional detention facility exists or is otherwise not proposed to be constructed under a watershed drainage plan, the peak discharge determination shall be relative to the lower-most drainage outlet(s) from a new development or significant redevelopment.
- 2) Regional Stormwater Detention Facilities. Those facilities generally serving a drainage catchment area of 500 acres or more in size.
- 3) 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.
- 4) 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 2040, plus the projected 2040 land uses within the Watershed in Washington County; or as may be redefined through periodic updates to the respective County comprehensive plans.

# **STORMWATER MANAGEMENT POLICIES**

## **BASIS FOR INCREASED FLOODING ISSUE**

- 1) The levees on the West Papillion Creek System were originally designed for 100-year flood protection under the development conditions that existed at that time. Recent FEMA floodplain remapping efforts indicate that the required 3-foot freeboard for the levees for many segments is being significantly encroached upon under existing development conditions and will be further compromised under full build-out conditions.
- 2) Similar threats most likely exist on the Papillion and Big Papillion Creek Systems; particularly since much of the levee system was originally designed for only 50-year flood protection and for development conditions that existed at that time.



# STORMWATER MANAGEMENT POLICIES

## POLICY GROUP #3: POLLUTION CONTROL

**ISSUE:** Waters of the Papillion Creek Watershed are impaired.

**“ROOT” POLICY:** Reduce pollution from contributing sources, including but not limited to, agricultural activities 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) Protect surface and groundwater resources from soil erosion (sheet and rill, wind erosion, gully and stream bank erosion), sedimentation, nutrient and chemical contamination.
- 2) Preserve, protect, and mitigate wetland areas to improve water quality by minimizing the downstream transport of sediment, nutrients, bacteria, etc. borne by surface water runoff.
- 3) Support NDEQ in an accelerated TMDL development process that addresses potential pollutant sources in a fair and reasonable manner based on sound technical data and scientific approach.
- 4) Implement Best Management Practices (BMPs) that reduce both urban and rural pollution sources, maintain designated beneficial uses of streams and surface water impoundments, minimize soil loss, and provide sustainable production levels.

### REFERENCE INFORMATION

#### DEFINITIONS:

- 1) 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 stormwater runoff in the most cost-effective manner.” [Source: *U.S. Environmental Protection Agency (EPA)*]
- 2) Total Maximum Daily Load (TMDL). A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. Water quality standards are set by States, Territories, and Tribes. They identify the uses for each waterbody, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The calculation must include a margin of safety to ensure that the waterbody can be used for the purposes the State has designated. The calculation must also account for seasonal variation in water quality. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs, and for Nebraska such standards and programs are administered by the Nebraska Department of Environmental Quality. [Source: *EPA and Nebraska Surface Water Quality Standards, Title 117*].

# STORMWATER MANAGEMENT POLICIES

## **POLICY GROUP #4: LANDSCAPE PRESERVATION, RESTORATION, AND CONSERVATION**

**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) Encourage the use of low-impact development (LID) strategies to preserve significant natural resources, benefit water quality, and maintain or reduce the volume of surface runoff from baseline land use conditions.
- 4) For new or significant redevelopment, provide a Creek Setback (3:1 plus 50 feet) along watercourses as defined within the Watershed Drainage Plan for the Papillion Creek Watershed.
- 5) Any watercourse associated with new or significant redevelopment shall be placed into an outlot or within public right of way or otherwise approved easement and shall require a minimum Creek Setback width of 3:1 plus 20 feet.

### **REFERENCE INFORMATION**

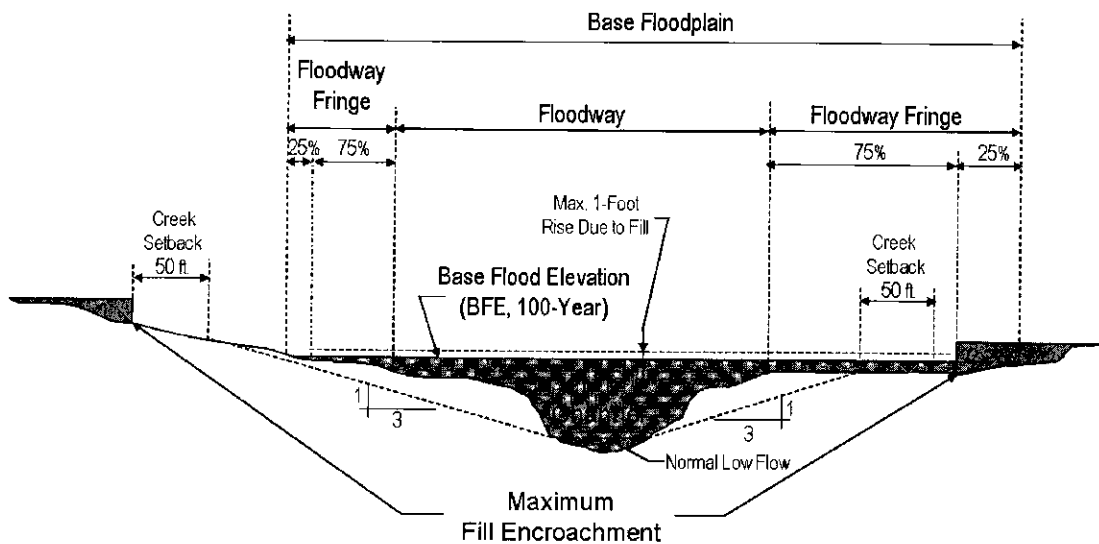
#### **DEFINITIONS**

- 1) Low-Impact Development (LID). A land development and management approach whereby stormwater runoff is managed using local controls to achieve a site's predevelopment hydrology by 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) 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.
- 3) Creek Setback. See Figure 1 below and related definitions in Policy Group #6: Floodplain Management. A setback area equal to three (3) times the channel depth plus fifty (50) feet (3:1 plus 50 feet) from the edge of low water on both sides of channel shall be required for any above or below ground structure exclusive of bank stabilization structures, poles or sign structures adjacent to any watercourse defined within the watershed drainage plan. Grading, stockpiling, and other construction

# STORMWATER MANAGEMENT POLICIES

activities are not allowed within the setback 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 creek setback limits may be credited toward meeting the landscaping buffer and pervious coverage requirements.

A property can be exempt from the creek setback requirement upon a showing by a licensed professional engineer or licensed landscape architect 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 creek 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 – Floodway Fringe Encroachment and Creek Setback Schematic**

# STORMWATER MANAGEMENT POLICIES

## POLICY GROUP #5: 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, including the adoption of the Omaha Regional Stormwater Design Manual and by implementing consistent rules for regulatory compliance pursuant to State and Federal requirements.

### 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.

# STORMWATER MANAGEMENT POLICIES

## POLICY GROUP #6: 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 mapping throughout the Papillion Creek Watershed shall be updated using 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) 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 plan area directly adjacent to the full-build out base flood limits, unless approved mitigation measures are implemented to protect upstream, adjacent, and downstream properties. 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) The lowest first floor elevation of buildings associated with new development or significant redevelopment that are upstream of and contiguous to regional dams within the Papillion Creek Watershed shall be a minimum of one (1) foot above the 500-year flood pool elevation.

### REFERENCE INFORMATION

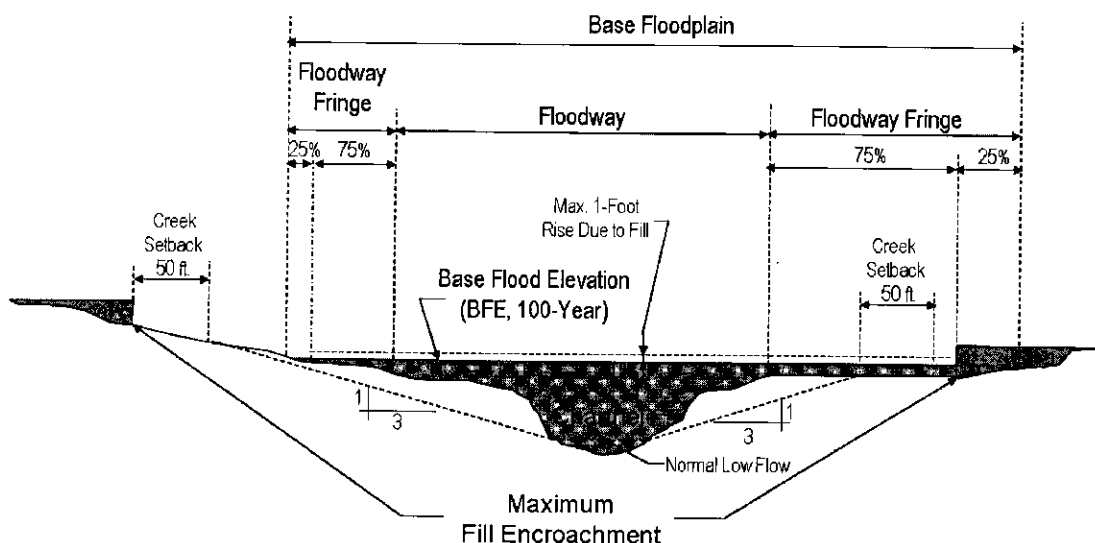
**DEFINITIONS** (See Figure 1 below and related definitions in Policy Group #4: Landscape Preservation, Restoration, and Conservation).

- 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

# STORMWATER MANAGEMENT POLICIES

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) Updated Flood Hazard Maps. The remapping of flooding sources within the Papillion Creek Watershed where Digital Flood Insurance Rate Maps (DFIRMs) are based on 2004 or more recent conditions hydrology and full-build out conditions hydrology. West Papillion Creek and its tributaries are currently under remapping and will become regulatory in 2006. Updating flood hazard maps for Big Papillion Creek and Little Papillion Creek are planned to be completed in the future.
- 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.



**Figure 1 – Floodway Fringe Encroachment and Creek Setback Schematic**

# STORMWATER MANAGEMENT POLICIES

## BASIC FEMA REQUIREMENTS

On March 1, 2003, FEMA became part of the U.S. Department of Homeland Security (DHS). In order for a community to participate in the FEMA National Flood Insurance Program, it must first define base flood elevations and adopt a floodway for all its major streams and tributaries. Once a community adopts its floodway, the requirements of 44 CFR 60.3(d) must be fulfilled. The key concern is that each project in the floodway must receive an encroachment review; i.e., an analysis to determine if the project will increase flood heights or cause increased flooding downstream. Note that the FEMA regulations call for preventing any increase in flood heights. Projects, such as filling, grading or construction of a new building, must be reviewed to determine whether they will obstruct flood flows and cause an increase in flood heights upstream or adjacent to the project site. Further, projects, such as grading, large excavations, channel improvements, and bridge and culvert replacements should also be reviewed to determine whether they will remove an existing obstruction, resulting in increases in flood flows downstream. *[adapted from Federal Emergency Management Agency guidance]*

## EXHIBIT C

### Stormwater Management Elements Shared by the Partnership

SWMP BMP #	100 Public Education and Outreach	Lead Partnership Member(s)	Partnership Cost Share Exemption(s)
1.A	Household Hazardous Waste Public Info	City of Omaha	All Partnership Members
1.B	BMP Information and Earth Day	P-MRNRD [2]	Exempt All Partnership Members on Labor Only
1.C	Public Service Announcements (PSAs)	P-MRNRD [2]	None

SWMP BMP #	200 Public Participation and Involvement	Lead Partnership Member(s)	Partnership Cost Share Exemption(s)
2.A	Stormwater Hotline Administration	City of Omaha	All Partnership Members
2.B	Public Meetings	P-MRNRD [3]	None
2.C	Stream and Lake Clean-up Day	City of Omaha	Boys Town & Non-NPDES, Phase II Communities
2.D	Website and Community Feedback	City of Omaha	None

SWMP BMP #	300 Illicit Discharge Detection and Elimination	Lead Partnership Member(s)	Partnership Cost Share Exemption(s)
3.A	Storm Water Outlet Inspection	City of Omaha	All Partnership Members, except Douglas and Sarpy Counties
3.B	Illicit Discharge Ordinance (see 410 and 510)	P-MRNRD	All Partnership Members, Except for Administration Cost
3.C	GIS Sewer System Map	City of Omaha	Non-NPDES Phase II Communities
3.D	BMP/Water Quality Tracking Database	City of Omaha	Non-NPDES, Phase II Communities
3.E	Ordinance Inspection and Reporting	City of Omaha	All Partnership Members, except Douglas and Sarpy Counties

SWMP BMP #	400 Construction Site Runoff Control	Lead Partnership Member(s)	Partnership Cost Share Exemption(s)
4.A	Erosion Control Ordinance (see 320 and 510)	P-MRNRD [2]	All Partnership Members, Except for Administration Cost
4.B	Contractor Certification Program	City of Omaha and P-MRNRD [2]	Non-NPDES, Phase II Communities, Boys Town and Washington County
4.C	430 Construction Site Inspection Program	City of Omaha	Boys Town and Washington County

SWMP BMP #	500 Post-Construction Runoff Control	Lead Partnership Member(s)	Partnership Cost Share Exemption(s)
5.A	BMP Inspection and Maintenance Ordinance (see 320 and 410)	P-MRNRD [2]	All Partnership Members, Except for Administration Cost
5.B	Post-Construction Site Inspection Program	City of Omaha	All Partnership Members, except Douglas and Sarpy Counties
5.C	Watershed BMP Master Plan	All Partnership Members	None

SWMP BMP #	700 Storm Water Monitoring Plan	Lead Partnership Member(s)	Partnership Cost Share Exemption(s)
7.A, 7.B	Outfall Water Quality Monitoring	City of Omaha	Non-NPDES, Phase II Communities



## EXHIBIT D

<u>Agency</u>	<u>Second Column Initial Contribution</u>	<u>Third Column Percentage</u>
Bellevue	\$20,000	4.6%
Bennington	\$500	0.1%
Boystown	\$1,000	0.2%
Elkhorn	\$3,500	0.8%
Gretna	\$1,000	0.2%
La Vista	\$5,000	1.2%
Kennard	\$0	0.0%
Omaha	\$184,000	41.0%
Papillion	\$7,000	1.6%
Ralston	\$2,500	0.6%
Douglas County	\$65,000	15.0%
Sarpy County	\$55,000	12.7%
Washington County	\$0	0.0%
Papio NRD	\$90,000	<u>20.7%</u>
TOTALS	\$434,500	100.0%

## 1 INTRODUCTION

HDR evaluated proposed regional detention and water quality structures located in the non-urbanized portions of the Papillion Creek Watershed in Douglas and Sarpy counties. The objectives of this evaluation were:

- Locate regional detention sites
- Approximate capital costs for regional detention structures
- Approximate capital costs for water quality basins

## 2 PROJECT DESCRIPTION

In the "2004 Multi-Reservoir Analysis" prepared by HDR Engineering, Inc. in October 2004, 10 reservoirs were proposed. Dam Site 13 is under construction and scheduled for completion in 2006, while Dam Sites 1 and 3C are under additional study by P-MRNRD. The remaining 7 reservoirs are included in this Watershed Drainage Plan along with an additional 10 potential regional detention structures (see Figure 1). The 10 additional regional detention structures were identified by the following methodology:

- Locate potential regional detention sites using 2004 topographic aerials and December 2005 electronic coverage of platted lands in Douglas and Sarpy counties. No field reconnaissance.
- Normal pool surface area calculated using a reservoir sustainability of 2.5 percent multiplied by the site drainage area. Normal pool elevation approximated by matching normal pool area using 2-foot topographic mapping.
- Top of dam estimated at 20-feet above the normal pool elevation.
- No hydrologic analysis conducted to define principal spillway, auxiliary spillway, and top of dam elevations.

Table 1 summarizes the pertinent data for the additional 10 regional detention structures.

**Table 1 Additional Regional Detention Structures Pertinent Data**

Regional Detention No. <sup>1</sup>	Reach Name	Approx. Location	Drainage Area (acres)	Normal Pool		Est. Top of Dam Elev.	Top of Dam Area Plus 20% <sup>2</sup> (acres)
				Elev. (msl)	Area (acres)		
BP-RB1	Trib. to Big Papillion	216 <sup>th</sup> St. & Hwy. 36	703	1192	20	1212	104
BP-RB2	Trib. to Big Papillion	132nd & Rainwood Road	530	1116	15	1136	62
BP-RB3	Trib. to Papillion Creek	Hwy. 75 & Platteview Road	987	1018	28	1038	102
WP-RB1	Trib. to West Papillion	180 <sup>th</sup> & Fort St.	864	1178	24	1198	120
WP-RB2	Trib. to South Papillion	180 <sup>th</sup> & Giles Road	679	1140	21	1160	103
WP-RB3	Trib. to South Papillion	192 <sup>nd</sup> & Hwy. 370	824	1174	22	1194	110
WP-RB4	Trib. to South Papillion	204 <sup>th</sup> & Schram Road	563	1222	16	1242	113
WP-RB5 (SPT)	Trib. to South Papillion	126 <sup>th</sup> & Cornhusker Road	3,310	1069	88	1090	325

## WATERSHED DRAINAGE PLAN

Regional Detention No. <sup>1</sup>	Reach Name	Approx. Location	Drainage Area (acres)	Normal Pool		Est. Top of Dam Elev.	Top of Dam Area Plus 20% <sup>2</sup> (acres)
				Elev. (msl)	Area (acres)		
WP-RB6 (WP-West)	Trib to Unnamed West Papillion Trib.	114 <sup>th</sup> & Cornhusker Road	1,260	1063	32	1081	120
WP-RB7 (WP-East)	Trib to Unnamed West Papillion Trib.	108 <sup>th</sup> & Cornhusker Road	450	1058	12	1073	40

Notes:

<sup>1</sup> Potential regional structure located on tributary to Big Papillion Creek (BP) or West Papillion Creek (WP).

<sup>2</sup> Top of Dam (TOD) area includes 20% for squaring off of properties.

### 3 POTENTIAL IMPACTS

The following assumptions were made for identifying potential impacts:

- Potential infrastructure impacts were identified by desktop evaluation. Transportation and building infrastructure was limited to roadway and dwellings identified on the 2004 aerial maps.
- Existing City of Omaha Sanitary Interceptor Sewer System reviewed for project impact.
- Environmental and cultural/historical impacts were not evaluated.
- Other utilities (private and public) impacted were estimated based on previous projects.
- No coordination with such utilities was conducted.

Table 2 summarizes the potential impacts of the additional 10 regional detention structures.

**Table 2 Estimated Additional Regional Detention Structure Impacts**

Regional Detention No.	Type of Impact	Infrastructure	Description of Potential Impact
BP-RB1	Homes/Farmsteads	• 1 Farmstead/Acreage	
	Other	• 1 Small Pond	
BP-RB2	Homes/Farmsteads	• 4 Farmsteads/Acreages	
BP-RB3	Homes/Farmsteads	• 3 Farmsteads/Acreages	• 2 Near Top of Dam • 1 in Normal Pool
	Other	• 1 Small Pond	
WP-RB1	Homes/Farmsteads	• 1 Farmstead/Acreage	• Borders Top of Dam
	Roads	• Fort St. at 180 <sup>th</sup>	• Approx. 100 LF
	Utilities	• Future Sanitary Sewer Line	
WP-RB2	Homes/Farmsteads	• 1 Farmstead/Acreage	• Several Structures Near Top of Dam
	Other	• Upgrade Existing PL-566 Structure S-6	
WP-RB3	None Identified		
WP-RB4	Homes/Farmsteads	• Subdivision at Frances and 206 <sup>th</sup> St. • 1 Farmstead/Acreage	• Subdivision Located Partially within Top of Dam
	Homes/Farmsteads	• 1 Farmstead/Acreage	
WP-RB5 (SPT) <sup>1</sup>	Roads	• Cornhusker Road	• Raise 0.2 mi. of road and replace bridge
	Utilities	• Power Distribution Line	• Raise approximately 0.2 mi. of line

<b>Regional Detention No.</b>	<b>Type of Impact</b>	<b>Infrastructure</b>	<b>Description of Potential Impact</b>
WP-RB6 (WP-West) <sup>2</sup>	Roads	<ul style="list-style-type: none"> <li>• Sanitary Sewer</li> <li>• Cornhusker Road</li> </ul>	<ul style="list-style-type: none"> <li>• Realign approx. 3,600 LF of sewer</li> <li>• Raise 0.1 mi. of road</li> </ul>
	Utilities	<ul style="list-style-type: none"> <li>• Power Distribution Line</li> <li>• Water Line</li> </ul>	<ul style="list-style-type: none"> <li>• Raise approximately 0.1 mi. of line</li> <li>• Raise approximately 0.1 mi. of line</li> </ul>
WP-RB7 (WP-East) <sup>2</sup>	Roads	<ul style="list-style-type: none"> <li>• 108<sup>th</sup> St.</li> </ul>	<ul style="list-style-type: none"> <li>• Raise 0.1 mi. of road</li> </ul>
	Utilities	<ul style="list-style-type: none"> <li>• Water Line</li> </ul>	<ul style="list-style-type: none"> <li>• Raise approximately 0.1 mi. of line</li> </ul>

Notes:

<sup>1</sup> Additional evaluation documented in a draft report of "Unnamed South Papillion Creek Tributary Detention Evaluation" prepared by HDR Engineering, Inc. in Dec. 2005.

<sup>2</sup> Additional evaluation documented in a draft report of "Unnamed West Papillion Creek Tributary Detention Evaluation" prepared by HDR Engineering, Inc. in Dec. 2005.

#### **4 REGIONAL DETENTION STRUCTURES PROJECT COSTS**

The following assumptions were made in approximating the construction costs:

- Approximate costs segmented into 3 categories: 1) dam construction; 2) real estate; and 3) infrastructure/utilities.
- Dam construction based on costs of dams with similar dam heights and lengths from the "2004 Multi-Reservoir Analysis."
- Land acquisition/right-of-way costs were based upon agricultural land costs. An estimated land cost of \$40,000/acre was established as an approximate value only and may vary significantly from actual appraised values. A 15% contingency was added to the real estate costs.
- The area of each reservoir pool at the corresponding TOD elevation was increased by 20 percent to account for squaring off property lines and was then used to estimate the acres of property required for right-of-way acquisition.
- Road and bridge length impacted by pool elevation 10 ft above normal pool elevation was approximated for each detention site. Estimated bridge cost at \$75/SF.
- Utilities/infrastructure estimated based on impacts documented in Table 2. Home/Farmsteads costs estimated at \$300,000 each.
- All costs were based on year 2006 U.S. dollars.
- Opinion of probable construction costs for WP-RB5, WP-RB6, and WP-RB7 were obtained from the draft report of "Unnamed South Papillion Creek Tributary Detention Evaluation and Unnamed West Papillion Creek Tributary Detention Evaluation," dated December 2005.

Table 3 summaries the estimated costs for the construction of the 10 regional detention structures.

**Table 3            Estimated Additional Regional Detention Cost**

<b>Regional Detention No.</b>	<b>Dam Construction Cost (\$ million)<sup>1</sup></b>	<b>Real Estate Cost (\$ million)<sup>2</sup></b>	<b>Utilities/Infrastructure Cost (\$ million)<sup>3</sup></b>	<b>Total Estimated Cost(\$ million)</b>
BP-RB1	\$2.5	\$4.8	\$0.3	\$7.6
BP-RB2	\$2.5	\$2.9	\$1.2	\$6.6
BP-RB3	\$2.5	\$4.7	\$0.9	\$8.1
WP-RB1	\$2.5	\$5.5	\$0.5	\$8.5
WP-RB2	\$3.0	\$4.7	\$0.3	\$8.0
WP-RB3	\$2.5	\$5.1	\$0.0	\$7.6
WP-RB4	\$2.0	\$5.2	\$0.3	\$7.5
WP-RB5 (SPT)	\$2.9	\$15.5	\$1.5	\$20.0 <sup>4</sup>
WP-RB6 (WP-West)	\$2.8	\$5.5	\$0.1	\$8.4 <sup>4</sup>
WP-RB7 (WP-East)	\$1.8	\$1.8	\$0.2	\$3.8 <sup>4</sup>
<b>Totals</b>	<b>\$24.9</b>	<b>\$55.8</b>	<b>\$5.3</b>	<b>\$86.0</b>

Notes:

- <sup>1</sup> Dam construction cost interpolated from dam length and height of reservoirs evaluated in the "2004 Multi-Reservoir Analysis" prepared by HDR Engineering, Inc.
- <sup>2</sup> Real estate costs updated for \$40,000 per acres with a 15% contingency.
- <sup>3</sup> Utilities/Infrastructure based on potential impacts. Home/farmstead costs estimated at \$300,000 each.
- <sup>4</sup> Additional evaluation documented in a draft report of "Unnamed South Papillion Creek Tributary Detention Evaluation" or draft report of "Unnamed West Papillion Creek Tributary Detention Evaluation" prepared by HDR Engineering, Inc. in Dec. 2005.

Table 4 summaries the estimated costs for the construction of the remaining 7 Multi-Reservoir Analysis detention structures.

**Table 4            Estimated Multi-Reservoir Cost Summary**

<b>Multi-Reservoir Analysis Dam Site No.</b>	<b>Dam Construction Cost (\$ million)<sup>1</sup></b>	<b>Real Estate Cost (\$ million)<sup>2</sup></b>	<b>Utilities/Infrastructure Cost (\$ million)<sup>3</sup></b>	<b>Total Estimated Cost(\$ million)</b>
7	\$2.4	\$6.7	\$0.5	\$9.6
8A	\$2.7	\$7.4	\$1.0	\$11.0
9A	\$2.5	\$4.6	\$0.0	\$7.1
10	\$2.5	\$13.6	\$0.9	\$17.0
12	\$2.8	\$9.9	\$2.8	\$15.5
15A	\$3.6	\$30.1	\$1.2	\$34.9
19	\$2.6	\$13.8	\$0.5	\$16.9
<b>Totals</b>	<b>\$19.0</b>	<b>\$86.0</b>	<b>\$7.0</b>	<b>\$112.0</b>

Notes:

- <sup>1</sup> Dam construction costs obtained from "2004 Multi-Reservoir Analysis" prepared by HDR Engineering, Inc. and increased by 5% for inflation to 2006 values.
- <sup>2</sup> Real estate costs updated for \$40,000 per acres with a 15% contingency.
- <sup>3</sup> Utilities/Infrastructure costs obtained from "2004 Multi-Reservoir Analysis" prepared by HDR Engineering, Inc. and increased by 5% for inflation to 2006 values.

## 5 WATER QUALITY BASINS

Water quality basins are to be constructed upstream of regional detention sites to trap sediment and pollutants; thereby, enhancing the water quality downstream. When existing roads intersect the upper portions of the reservoir pool, modifications to the road structure may be made to create a water quality basin. The size and location of several water quality basins have been identified in the "Community-Based Plans" for the Zorinsky, Cunningham, Standing Bear and Walnut Creek reservoirs. Estimated costs were estimated from similar sized existing basins and proposed regional detention basins.

Table 5 summaries the estimated costs for the construction of the water quality basins.

**Table 5 Water Quality Structures Pertinent Data and Estimated Construction Cost**

Water Quality Basin No.	Approx. Location	Drainage Area (acres)	Estimated Construction Cost (\$ million)
WQ-Zorinsky 1 <sup>2</sup>	Upstream of Zorinsky Lake	1,660	\$6.0
WQ-Zorinsky 2 <sup>1</sup>	Upstream of Zorinsky Lake	1,000	\$5.6
WQ-RB5-1 <sup>2</sup>	Upstream of Regional Detention RB5	770	\$7.5
WQ-15A-1 <sup>2</sup>	Upstream of Proposed Dam Site 15A	3,000	\$10.0
WQ-15A-2 <sup>2</sup>	Upstream of Proposed Dam Site 15A	2,500	\$10.0
WQ-CL-1 <sup>2</sup>	Upstream of Cunningham Lake	740	\$7.5
WQ-CL-2 <sup>2</sup>	Upstream of Cunningham Lake	845	\$7.8
WQ-CL-3 <sup>2</sup>	Upstream of Cunningham Lake	790	\$7.5
WQ-CL-4 <sup>2</sup>	Upstream of Cunningham Lake	915	\$8.0
WQ-CL-5 <sup>2</sup>	Upstream of Cunningham Lake	470	\$5.2
WQ-CL-6 <sup>2</sup>	Upstream of Cunningham Lake	510	\$5.4
WQ-CL-7 <sup>2</sup>	Upstream of Cunningham Lake	200	\$4.0
Total			\$84.4

Notes:

<sup>1</sup> Costs obtained from conceptual design report of "Zorinsky 2 Water Quality Basin" prepared by HDR Engineering, Inc in July 2003.

<sup>2</sup> Estimated construction cost estimated from estimated cost of regional detention structures based on similar drainage area.

## 6 SUMMARY

The total costs estimated to construct the regional detention structures and water quality basins is approximately \$282 million. Table 6 summarizes the costs.

**Table 6 Summary of Estimated Construction Costs**

Description	Total Estimated Cost (\$ million)
Multi-Reservoir Dam Sites (7 sites)	\$112.0
Additional Regional Detention Sites (10 sites)	\$86.0
Water Quality Basins (12 sites)	\$84.4
Total	\$282.4

## **7 CREEK SETBACK**

A Creek Setback was established for new or significant redevelopment in order to restrict development adjacent to a watercourses defined within the Watershed Drainage Plan for the Papillion Creek Watershed located within Sarpy and Douglas counties. Policy Group #4: Landscape Preservation, Restoration, and Conservation establish the basis for a Creek Setback. Watercourses are required to have a Creek Setback width equal to three (3) times the channel depth plus fifty (50) feet (3:1 plus 50 feet) or 3:1 plus 20 feet from the edge of low water on both sides of channel. The watercourses for which the 3:1 plus 50 feet criterion is applicable is defined on the Watershed Drainage Plan (Figure 1). Table 7 summarizes the watercourses where the 3:1 plus 50 feet Creek Setback applies. The creek setback begins at the most downstream point of the watercourse and proceeds upstream to the 500-acre threshold.

**Table 7 Watercourses Where 3:1 plus 50 feet Creek Setback Definition Applies**

<b>Reach</b>
Big Papillion Creek/Papillion Creek
Mud Creek
West Papillion Creek
Hell Creek
South Papillion Creek
North Branch West Papillion Creek
Little Papillion Creek
Thomas Creek
Cole Creek

