



## INTRODUCTION

In 2016, the Nose Creek Watershed Partnership (NCWP) initiated the scheduled update of the Nose Creek Watershed Water Management Plan (Nose Creek Plan or Plan). The Plan update was necessary to:

- Reflect advancements in knowledge
- Reflect changes in provincial and municipal policies
- Address challenges with Plan implementation
- Address new issues in watershed management

The updated Nose Creek Plan recommendations reflect the goal of balancing watershed objectives with urban development, as well as the ongoing need to protect riparian areas and improve water quality in the Nose Creek watershed. Adaptive management will be applied in the watershed as new information becomes available through recommended technical studies, and as policy advances. The updated Plan represents a renewed commitment by the Partnership to support common goals and objectives that aim to maintain and improve watershed conditions for future generations.

This summary identifies the key changes made to the Nose Creek Plan. Readers are encouraged to refer to the full Nose Creek Plan for additional detail.

### Stakeholder Engagement

The NCWP provided stakeholders with opportunities to give input into the updated Plan at key stages in the planning process. Summaries of the discussions held with stakeholders during three Stakeholder Engagement Sessions can be found on the NCWP website ([www.ncwp.ca](http://www.ncwp.ca)).

## RECOMMENDATIONS

### Water Quantity and Stormwater Management (Refer to Plan Section 6.2)

<b>Desired Outcomes</b>	<ul style="list-style-type: none"><li>• Degradation of natural hydrology and stream channel morphology is minimized.</li><li>• Through mitigation, the cumulative impact of urban development on watershed resources is minimized.</li></ul>
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### Stakeholder Concerns

- Current lack of tools and monitoring data to validate assumptions and understand the effectiveness of best management practices (BMPs) to meet Plan objectives. Stakeholders noted that a watershed-scale model is a useful tool for future forecasting, and for identifying benefits to water quality
- Industry stakeholders expressed concern with the existing 2013 runoff volume control targets, and the ability to practically achieve the 2017 targets. Implementation challenges:
  - The lack of provincial policy and guidelines
  - Limited tools available to achieve targets

- Stakeholders generally accepted that managing stormwater is critical to improving watershed conditions
- Need for runoff volume control targets in redevelopment areas to improve watershed condition and to create a level playing field for all developments
- Stakeholders were concerned about the delay in uptake of BMPs by industry to achieve goals for water quantity, water quality and riparian health

### Corresponding Updated Plan Recommendations

- Delayed implementation of the 2017 runoff volume control target until Jan 2021; continue to implement the 2013 target
- Advance provincial water re-use and stormwater use policy, guidelines, and performance criteria, and modelling tools to support implementation
- Develop a watershed-scale hydrologic, hydraulic and water quality model to predict future changes in watershed condition as land use changes, and identify and evaluate stormwater management options
- Implement surface water and a streambank erosion monitoring programs to support the model
- Establish a redevelopment runoff volume control target and water quality objectives
- Use absorptive landscaping, green roofs, soil cells and cisterns to manage runoff volumes in redevelopment areas constrained by space
- Continue to integrate internal drainage areas into existing and future policies to minimize discharges and protect properties
- Amend the Alberta Wetland Policy to consider wetland integration in stormwater management for urbanizing areas
- Improve the timeliness and reduce uncertainty of approvals for Low Impact Development (LID) projects
- Monitor and evaluate the performance of LID pilot studies

### Surface Water Quality (Section 6.3)

<b>Desired Outcomes</b>	<ul style="list-style-type: none"> <li>• Surface water and stormwater quality improve.</li> <li>• Water quality condition supports a variety of uses, and aquatic life.</li> <li>• The cumulative impact of land uses on water quality is minimized.</li> </ul>
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### Stakeholder Concerns

- High nutrient concentrations in Nose Creek and West Nose Creek that contribute to algal growth and poor water quality downstream
- Channelization (straightening) of Nose and West Nose creeks that reduces channel length, accelerates streamflow, increases erosion, and decreases sediment deposition in the floodplain
- Discharge of treated effluent to Nose Creek from the Town of Crossfield, and the subsequent impacts to water quality and downstream users
- Limited monitoring to measure improvements in water quality, streamflow, and channel morphology

### Corresponding Updated Plan Recommendations

- Surface water quality should meet objectives and guidelines summarized in the Plan
- Explore Total Maximum Daily Loads for phosphorus and sediment (and other parameters as identified) as a mechanism to improve water quality
- Explore opportunities to advance the development of stormwater quality guidelines and objectives, beyond the current requirement to reduce total suspended solids
- Encourage more extensive and targeted use of LID practices to improve stormwater quality

- Seek an alternative means for treating and disposing effluent from the Town of Crossfield
- Develop and implement a comprehensive, standardized surface water monitoring program
- Continue to monitor stormwater quality to better understand trends in quality and volume
- Adhere to the Procedure for Topsoil Statutory Declaration and Development Permit process for soil quality disposal (Rocky View County)
- Escarpments equal to 15% slope up to 30% slope should be assessed to determine suitability for development, or maintained as natural area; slopes >30% should be designated as Environmental Reserve

## Riparian Protection (Section 6.4)

### Desired Outcomes

- Local and regional flood and drought mitigation efforts are supported.
- Contiguous and healthy riparian corridors maintain water quality and support biodiversity.
- Permanent watercourses naturally meander within floodplains.

### Stakeholder Concerns

- Costs and benefits of implementing strategies to protect riparian areas and improve water quality are not well understood
- Concerns regarding the implementation of riparian setbacks and over-interpretation of maps, particularly for ephemeral streams with poorly defined channels
- Encroachment by development into riparian areas, and relaxations of waterbody setback widths
- Limited recognition of the value of ephemeral and intermittent watercourses to overall watershed hydrology and water quality
- Lack of ability to retain wetlands in developing areas
- The lack of knowledge about the rate of loss of wetlands and the collective impacts of those losses
- Process for wetland compensation and restoration (e.g., multiple levels of review, length of time to make decisions)
- Challenges with wetland integration in development; lack of guidance on how to protect and mitigate impacts on wetlands in new developments, or how to integrate water management and wetlands in developments without creating delays in the approval process
- Lack of monitoring data to validate assumptions and the effectiveness of BMPs being implemented

### Corresponding Updated Plan Recommendations

- Improve riparian condition when riparian health assessment scores fall below the threshold rating of 70, where practical, using a priority approach for restoration
- Apply a systematic approach to monitor riparian lands
- Prescribe BMPs during detailed design, and use routinely when working in and around riparian areas
- Determine riparian setbacks for permanent watercourses on a site-specific basis as the greater of the minimum setback (e.g., 30 m or 60 m) and the 1:100-year floodplain width. Additional steep slope setbacks may apply
- Preserve ephemeral and intermittent watercourses in new developments, where possible
- Strategically locate buildings, roads and structures to preserve the natural hydrology of ephemeral and intermittent watercourses
- Apply a minimum 10 m setback to ephemeral and intermittent watercourses. Up to 4 m of the outer edge of the setback may be used for critical infrastructure or pathways

- Update the wetland inventory using Alberta’s Merged Wetland Inventory and field-truthing
- Apply setbacks to wetlands
- Effort should be made to prevent loss of high-valued wetlands in the watershed. Assign values to wetlands
- Integrate wetland management into urban planning
- Adopt strategies to prevent wetland loss. Where loss is unavoidable, mitigate impacts, or restore or create wetlands in urban areas as part of water management infrastructure, provided that future criteria for wetland integration are met
- Implement BMPs for livestock grazing permitted in riparian areas (e.g., offstream watering)

## Groundwater (Section 6.5)

### Desired Outcomes

- Groundwater quality and quantity is protected for users and the aquatic environment.

### Stakeholder Concerns

- Lack of knowledge regarding locations of springs and seeps.

### Corresponding Updated Plan Recommendations

- Develop a comprehensive source water protection plan focused on the groundwater resource
- Identify and properly decommission abandoned water wells
- Apply appropriate BMPs to protect groundwater (e.g. proper use of pesticides and fertilizers)
- Increase understanding of springs and seeps, and the role of groundwater in the water balance

## Biodiversity (Section 6.6)

### Desired Outcomes

- Native plants support stable streambanks.
- Conditions for fish and aquatic life improve.
- Invasive species are managed appropriately.

### Stakeholder Concerns

- Need for the protection of Brown Trout spawning habitat in West Nose Creek
- Presence of invasive species (e.g., Prussian carp, crayfish) in storm ponds, creeks, and tributaries
- Prevention of invasive species introduction and establishment (e.g., zebra mussels, quagga mussels, whirling disease, invasive plants)

### Corresponding Updated Plan Recommendations

- Update the Restricted Activity Period for West Nose Creek, relevant to Brown Trout spawning
- Protect, maintain and enhance spawning and rearing areas for Brown Trout in West Nose Creek
- Consider wildlife habitat sensitivities in future land use plans
- Document the occurrence of invasive species in the watershed (e.g., Prussian carp, crayfish)
- Develop and disseminate educational resources for public users that highlight the threats of aquatic invasive species
- Continue annual efforts to monitor and control invasive species to native plants and water resources.

Summary document was prepared by Palliser Environmental Services Ltd.



Palliser Environmental Services Ltd.