

# Grand River Water Management Plan 2013 Update

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## Broad Water Objectives for the Grand River Watershed

**Report from Objectives Working Group**

**4/20/2012**

# Broad Water Objectives for the Grand River Watershed

## Executive Summary

The Water Management Plan update focuses on water resources in the Grand River watershed. This Plan feeds into and complements the broader Watershed Management Plan which addresses the management of other key resources such as forests (e.g., Forest Management Plan), fisheries (e.g., Fisheries Management Plan) and specific drinking water uses (e.g., Source Protection plans). The update to the Water Management Plan addresses the management of surface and ground water resources in the Grand River watershed to 2031.

Goals and broad water objectives guide the development of the Water Management Plan. A goal is ***'a broad statement of the desired, long-term water quality and quantity conditions in the Grand River watershed which are supported by the Water Management Plan partners'***. The Water Management Plan has four overarching goals:

- Improve water quality to improve river health and reduce its impact on Lake Erie;
- Ensure sustainable water supplies for communities, economies and ecosystems;
- Reduce flood damage potential; and,
- Increase resiliency to deal with climate change.

A process was launched in 2011 to compile implicitly and explicitly stated *broad water objectives* in the Grand River watershed. ***Broad water objectives are qualitative descriptions of a desired state or system condition in the Grand River watershed that meets the current uses, needs and values of ecosystems, communities and economies.*** This process is fundamental to the Water Management Plan update because it gathers the collective viewpoints of the partners to the plan<sup>1</sup> and other stakeholders to build a common understanding and collective approach to water management in the Grand River watershed. An Objectives Working Group, comprised of members from various agencies who are partners to the plan, was established in December 2010 and the compilation of *broad water objectives* was begun.

During the process of compiling the *broad water objectives*, the human uses, ecological needs and social and cultural values (i.e., *uses, needs, and values*) for water in the watershed were documented. These uses, needs and values underpin the *broad water objectives* for the watershed.

The working group then compiled *broad water objectives* that were either 1) stated in various participatory initiatives (e.g., The Grand Strategy for the Grand River as a Canadian Heritage River, Fisheries Management Plan; municipal Official Plans, etc.), 2) reflected in the intent or ideas implied in other initiatives (e.g., Great Lakes Water Quality Agreement; Lake Erie Lake-wide Management Plan; Species at Risk Recovery Strategies, etc.), or 3) were inherent to the key *uses, needs and values*.

The compiled list of ***draft broad water objectives*** was circulated to Project Team members for feedback; comments were incorporated and then presented to the Steering Committee for further input.<sup>2</sup>

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<sup>1</sup> Partners to the plan include: municipalities in the Grand River watershed; the Ontario Ministry of the Environment; Ontario Ministry of Food and Rural Affairs, Environment Canada; Natural Resources Canada; Fisheries and Oceans Canada; Agriculture and Agri-Food Canada; Six Nations of the Grand River.

<sup>2</sup> The Steering Committee is comprised of senior representatives of the partners in the plan and is responsible for overseeing and facilitating the development of the updated Water Management Plan. The Project Team is responsible for overall coordination, development and management of the Water Management Plan update.

The Steering Committee approved the *draft broad water objectives* for wider circulation and input in August 2011.

The *broad water objectives* were made available for comment to the public through the Watershed Report, the annual Grand River Watershed Water Forum in September 2011 and an on-line survey launched in October 2011. Concurrently, feedback was solicited from a wide range of groups including

- Interested public,
- Agricultural community,
- Environmental non-government organizations,
- Broader watershed community (including multi-stakeholder groups that undertake collaborative projects and programs such as the Grand River Fisheries Management Plan Implementation Committee),
- Science Advisory Committee, and
- Grand River Conservation Authority Board.

An assessment of the feedback indicated that the list of *uses, needs* and *values* was considered complete. Various groups provided both detailed and high-level feedback about the *broad water objectives*. Every effort was made to incorporate this feedback. Consequently, some changes to the stated *broad water objectives* were made.

Many of the comments provided through the public engagement process dealt with broader philosophies and precepts that could underpin the Water Management Plan. Some of these ideas are already reflected in the Water Management Plan Project Charter, signed by partners in the plan. These broad concepts will be reviewed and revised based on the input provided and articulated as a set of *Guiding Principles* for the Water Management Plan. The *Guiding Principles* will be discussed by the partners to the plan later in 2012.

The *broad water objectives* represent a qualitative description of the desired condition of water resources in the Grand River watershed that meet current water *uses, needs* and *values*. It is anticipated that these objectives may change in the future in response to shifting system conditions and changing water *uses, needs* and *values*.

**Final List of Human *Uses*, Ecological *Needs* and Societal and Cultural *Values*  
for Water in the Grand River Watershed**

Theme	Use/Need/Value
<b>Healthy, resilient natural system</b>	Aquatic, riparian, wetland and associated Lake Erie habitat is dependent on the quantity, quality and flow of surface and ground water.
	Aquatic species in the river system and portions of Lake Erie are dependent on the quantity, quality and flow of water.
	Wildlife use surface water for foraging and drinking.
<b>Community services</b>	Surface and ground water provide a source of raw water for municipal supplies that support people and industry.
	Ground water is a source for private domestic drinking water supplies.
	Surface waters receive treated wastewater and storm water.
<b>A strong economy</b>	Surface and ground water provide a source of raw water for municipal supplies that support business and industry.
	Surface and ground water are a private source of water for commercial/industrial activities that are not on municipal water services, including: <ul style="list-style-type: none"> <li>• food and beverage production,</li> <li>• aquaculture, and</li> <li>• aggregate washing.</li> </ul>
	Surface and ground water are a source of water for crop irrigation and livestock watering.
	Agricultural lands are dependent on adequate drainage and optimal soil moisture to support productivity.
	Grand River – Lake Erie commercial fisheries are supported by water quality and quantity.
	The flow of water supports hydroelectric power generation.
<b>Culture, recreation and tourism</b>	Rivers, streams, lakes and reservoirs are used for recreation: <ul style="list-style-type: none"> <li>• swimming at public beaches, water skiing,</li> <li>• paddling, sailing,</li> <li>• motorized boating,</li> <li>• angling, and</li> <li>• passive enjoyment of trails and natural areas.</li> </ul>
	Surface and ground water are used to irrigate the landscape in public and private recreational areas.
	Aquatic and riparian systems, wetlands and associated Lake Erie near shore have cultural importance: <ul style="list-style-type: none"> <li>• as a community amenity and focal point,</li> <li>• for cultural heritage, and</li> <li>• traditional and spiritual values</li> </ul>

## Final Broad Water Objectives for the Grand River Watershed

Theme	Broad Water Objective
<b>Aquatic ecosystem Health</b>	Water quality supports the health, resiliency and biodiversity of aquatic, riparian and wetland communities.
	The flow regime supports the lifecycle requirements of aquatic and riparian species.
	Water quality does not promote excessive growth of aquatic vegetation or harmful algal blooms in rivers, reservoirs and lakes.
	Interactions between the Grand River and Lake Erie support the chemical, biological and physical integrity of both systems.
	The flow regime supports healthy river processes.
	Ground water recharge and discharge function is maintained, such that water quality, water availability and habitat are supported.
<b>Water supply</b>	Quantity of raw water for municipal supplies is reliable and able to meet current and future needs.
	Quantity of raw water for agricultural and commercial/industrial users is reliable and able to meet their current and future needs.
<b>Public health &amp; safety</b>	Raw surface and ground water used by municipalities is of suitable quality to produce safe drinking water using economically feasible treatment processes.
	Raw surface and ground water used by the agricultural industry for crop irrigation or livestock watering is suitable to produce safe, quality food.
	Ground water supplies used for private drinking water supplies meet or are better than the drinking water quality standards, with the exception of natural conditions related to geology.
	The risk to life and property from flooding and erosion is managed.
	Water quality does not restrict human consumption of fish.
	Restrictions on swimming at public beach areas are minimized.
<b>Culture, recreation &amp; tourism</b>	The rivers are an amenity in the communities through which they pass.
	The rivers are aesthetically pleasing to support recreational, cultural and destination tourism uses.
	River flow is sufficient to reasonably support paddling where river flow is regulated.
	Water quality and quantity needs of sport fish populations are met, such that angling opportunities and community benefits are realized.
<b>River services</b>	The provision for wastewater assimilation is optimized without adverse impacts on the ecosystem or human uses.
	The provision for urban drainage is optimized without adverse impacts on the ecosystem or human uses.
	The provision for drainage of productive agricultural land is optimized without adverse impacts on the ecosystem or human uses.
	Hydroelectric power production is a secondary benefit of river flow when it is cost effective.
	Water quantity and quality are sufficient for optimal production of Grand River-specific stocks for commercial fisheries.

## Working Group Members

Working Group Member	Water Management Plan Partner
Sandra Cooke, Chair	Grand River Conservation Authority
Ann-Marie Wesland	Ministry of the Environment
Lindsey Burzese	Ministry of the Environment
Kevin McKague	Ministry of Agriculture, Food and Rural Affairs
Paul General	Six Nations
Sandra George	Environment Canada
Tom MacDougall	Ministry of Natural Resources
Claire HOLETON	Grand River Conservation Authority
Crystal Allan	Grand River Conservation Authority
Barbara Veale	Grand River Conservation Authority
Katherine Balpatak	Grand River Conservation Authority
Tony Zammit	Grand River Conservation Authority

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## 1. Introduction

The Water Management Plan focuses on the water resources in the Grand River watershed. It supports and complements the broader Watershed Management Plan which addresses the management of other watershed resources such as forests (e.g., Forest Management Plan), fisheries (e.g., Fisheries Management Plan) and specific uses such as drinking water (e.g., source protection plans). The Water Management Plan is a joint call to action and will align the efforts of all partners to the plan<sup>3</sup> – watershed municipalities, the provincial and federal government agencies, key stakeholders, industry and business, the agricultural community, watershed residents and the Grand River Conservation Authority (GRCA). It will galvanize all participants to achieve mutually supported goals and objectives for sustainable water management, flood control and water quality improvements.

Goals and broad water objectives guide the development of the Water Management Plan. A goal is defined as ***‘a broad statement of the desired, long-term water quality and quantity conditions in the Grand River watershed which are supported by the Water Management Plan partners’***. The Water Management Plan has four overarching goals:

- Improve water quality to improve river health and reduce its’ impact on Lake Erie;
- Ensure sustainable water supplies for communities, economies and ecosystems
- Reduce flood damage potential; and
- Increase resiliency to deal with climate change.

These goals underpin a more detailed list of *broad water objectives* for the watershed. A *broad water objective* is ***‘a qualitative description of a desired state or system condition in the Grand River watershed that meets the current uses, needs and values of ecosystems, communities and economies’***. Progress towards meeting these objectives can be measured using *indicators* and *targets*. Definitions and the relationships among *goals*, *objectives* and *targets* are illustrated in a framework of definitions for the Grand River Water Management Plan in Appendix 1.

This report outlines the process for compiling *broad water objectives* for the Water Management Plan. This process is fundamental to the Plan as it gathers the collective viewpoints of the partners and various watershed stakeholders and builds a common understanding of water management in the watershed. The final list of *broad water objectives* supporting the 2012 Water Management Plan update is presented in Section 4 - Conclusions.

## 2. Compiling Broad Water Objectives for the Grand River Watershed

Many initiatives across the watershed, such as municipal Official Plans, Grand River Fisheries Management Plan and The Grand Strategy for Managing the Grand River as a Canadian Heritage River, either explicitly state or imply specific objectives for the water resources in the Grand River watershed. The objectives stated for each initiative guide that process, yet they may not be known or complementary to other initiatives across the watershed. Therefore, it is important that a water management plan for the watershed acknowledge these various water objectives so that the management of water can be effective and integrated at a watershed scale.

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<sup>3</sup> Partners to the plan include: municipalities in the Grand River watershed; the Ontario Ministries of the Environment; Ontario Ministry of Agriculture, Food and Rural Affairs, Environment Canada; Fisheries and Oceans Canada; and Agriculture and Agri-Food Canada; Six Nations of the Grand River.



To compile *broad water objectives* for the watershed, an Objectives Working Group was formed by the Plan partners. Working group members were charged with identifying explicit and implicit uses of water as well as any *broad water objectives* identified across the watershed. Working group members included representatives from the Ontario Ministry of the Environment, Ontario Ministry of Agriculture, Food and Rural Affairs, Natural Resources Canada; Environment Canada, Six Nations of the Grand River and the GRCA. Working group members were familiar with the Grand River watershed and contributed their expertise about water resources including perspectives in ecology, water policy and management, fisheries management and agriculture. Input from municipalities was provided by members on the Project Team and Steering Committee.

The working group met monthly from December 2010 to September 2011 and designed a process for compiling the *broad water objectives* for the watershed. This process, as described in Phase I in Figure 1, shows the steps taken by the working group to develop the *broad water objectives*.

The first step in developing *broad water objectives* was to identify the key water uses, ecological needs and social and cultural values of water across the watershed. Identification of the *uses*, *needs* and *values* provides the common understanding of how water is used and valued in the watershed by everyone and everything. This includes watershed residents, water managers and aspects of the natural environment such as fish and wildlife.

The following questions were used to distinguish the *uses*, *needs* and *values* associated with water that contribute to the social, economic and environmental well-being of the watershed in the Water Management Plan update:

- *What human uses are dependent on water?*
- *What ecological needs does water meet?*
- *What social and cultural values are supported by water?*

A review of the community values and aspirations for water that have already been documented through participatory planning processes across the watershed was conducted. Existing municipal and watershed-wide initiatives such as municipal Official Plans, The Grand Strategy for the Grand River as a Canadian Heritage River, Grand River Watershed Fisheries Management Plan, Lake Erie Lake-wide Management Plan and Species at Risk Recovery Strategies were evaluated to identify *uses*, *needs* and *values* of water resources in the watershed. Previously documented information on *uses*, *needs* and *values* for water in the watershed was supplemented with input from agency and GRCA.

The *uses*, *needs* and *values* underpin broad statements of the desired state, or *broad water objectives*, for water in the watershed. A *broad water objective* is defined as **‘a qualitative description of a desired state or system condition in the Grand River watershed that meets the current uses, needs and values of ecosystems and economies’**. They answer the question: “what do you want to see?” Although some may be difficult to attain, they are useful to guide the process for setting quantitative *targets*. A target is a **‘quantitative description of a system condition that will cause the objectives to be met’**. Resource condition targets are used to gauge progress in achieving the desired state and inform what key actions are required to achieve the desired resource condition.

Based on the identified water *uses*, *needs* and *values*, 23 draft *broad water objectives* were developed and grouped under five themes:

- healthy, resilient natural system,
- community services,
- a strong economy,
- culture, recreation and tourism, and
- river services.

These themes were used to help partners and other stakeholders understand the objectives and how they fit together. In some cases, a water objective relates to two or more water *uses, needs* and *values* whereas in other cases a single water *use, need* or *value* relates to two or more water objectives. It is acknowledged that the objectives can be grouped in different ways.

A draft of the *uses, needs* and *values* and a list of draft *broad water objectives* were circulated to the Project Team and later the Steering Committee for feedback. Based on this input, the Objectives Working Group presented a revised list of *uses, needs* and *values* and *broad water objectives* to the Steering Committee in August 2011. The Steering Committee approved the draft *uses, needs* and *values* and *broad water objectives* for wider circulation and engagement in September 2011 (see [Appendix 2](#) and [Appendix 3](#), respectively).

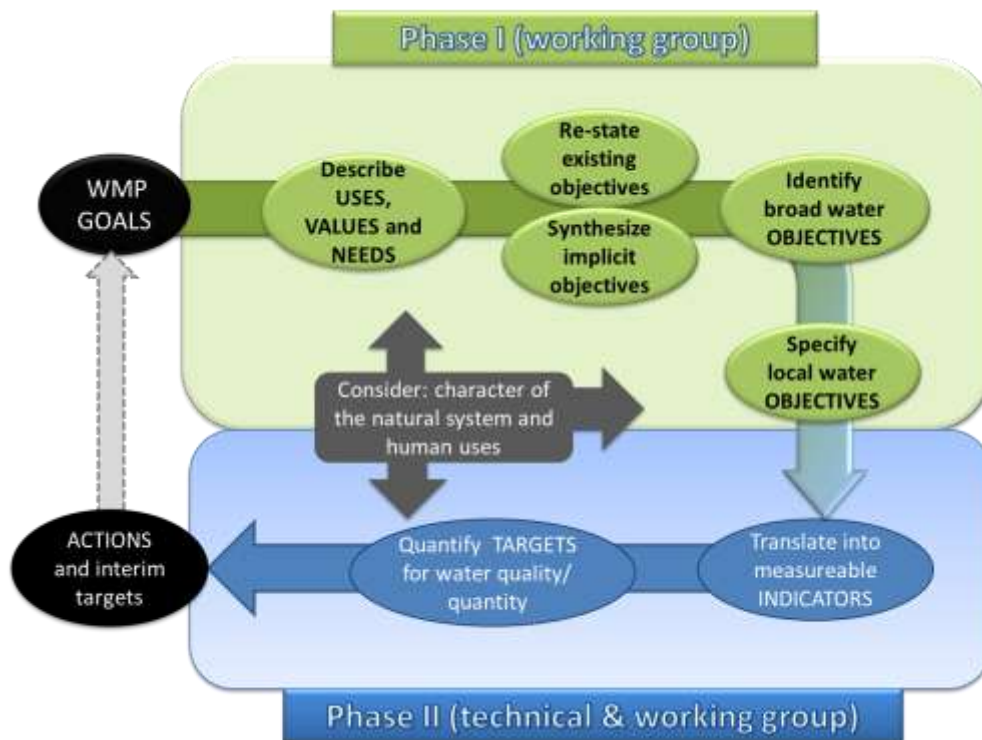


Figure 1: Process for developing *broad water objectives*, indicators and targets.

### 3. Communications and Engagement Plan

The draft *broad water objectives* for the Water Management Plan were derived from participatory initiatives and expert knowledge. However, transparency and stakeholder participation are important principles of the Water Management Plan update. Therefore, the partners decided that the draft list of *uses, needs and values* and *broad water objectives* should be circulated to a wider audience for comment. The Communications and Engagement Working Group, with membership from Plan partners, developed a strategy to present this information to and solicit feedback from a wider audience. This process centred on three questions:

- *Does the list of water uses, needs and values reflect your interests?*
- *Are there any key water uses, needs and values missing?*
- *Looking at the list of broad water objectives, do you think each objective is being met (based on the objectives that are relevant to you)?*

The Communications and Engagement Plan focused on engaging the following stakeholder groups:

1. Interested public;
2. Agricultural community;
3. Environmental non-government groups;
4. Broader watershed community (including multi-stakeholder groups that undertake collaborative projects and programs such as the Grand River Fisheries Management Plan Implementation Committee);
5. Science advisory committee, and
6. Grand River Conservation Authority Board.

The *broad water objectives* were made available for public comment through the Watershed Report, the annual Grand River Watershed Water Forum, information posted on the GRCA website, a press release, an on-line survey and meetings with key stakeholder groups. The following sections describe the communication and engagement process in more detail.

#### 3.1. Interested Public

The Watershed Report is the fall edition of *The Grand*, a newspaper insert published twice a year that highlights information about the Grand River watershed. The Watershed Report edition is included in over 200,000 daily and weekly newspapers delivered to watershed residents every fall. The focus of the September 2011 issue was on the goals and the *broad water objectives* for the Water Management Plan. It included the 23 draft water objectives as well as the draft list of *uses, needs and values*. The Watershed Report included a call for feedback and an invitation to complete an on-line survey that was launched in October 2011. Further, the goals and *broad water objectives* were highlighted in presentations at the annual Grand River Watershed Water Forum which was attended by over 250 people from watershed municipalities, government agencies, consulting planners and engineers and others.

The on-line survey was designed to solicit feedback from a wide range of people from throughout the Grand River watershed. This approach was considered to be more effective and efficient than holding a series of public open houses or focus groups.

Survey questions, marketing tools and data analysis were developed collaboratively the Communications and Engagement Working Group, Project Team, Lura Consulting and GRCA staff. The

survey was posted for 30 days on the GRCA website and promoted by e-mail invitations through the networks of GRCA staff and the Plan partners, social media, news release and on the GRCA webpage. Over 600 people completed the survey, which closed on December 1, 2011.

Survey results showed that the list of *uses, needs* and *values* are considered inclusive. The survey also evaluated people's perceptions about whether the objectives that were important to them are currently being met. A total of 617 people provided 5,424 responses to the question about whether the draft objectives are being met. The number of responses varied for each objective, as survey takers were only presented objectives based on previously stated interests. The results showed that for more than half of the objectives, most (50 per cent or more) people selected "yes, I feel the objective is being met". For the remaining objectives, the responses were mixed and no choice received a clear majority of the responses (see "Grand River Water Management Plan Public Survey, 2011"<sup>4</sup> for further information regarding the key messages from the on-line public survey).

### **3.2. Agriculture Community**

The agricultural community is prominent in the Grand River watershed. Agricultural production occurs on over 70 per cent of the land in the Grand River watershed. Farmers have been active in watershed restoration for decades. To engage this community, GRCA and Ontario Ministry of Food and Rural Affairs (OMAFRA) staff met with executive members of the seven agricultural federations in the watershed. The draft lists of water *uses, needs* and *values* and *broad water objectives* were presented and discussed. Comments were provided to GRCA staff at these meetings and by phone or email. All comments were gathered and circulated to all groups for one final input. Letters were also sent to leaders of four Old Order Mennonite and Amish groups with follow up communications to confirm that the letters has been received. These leaders declined to be involved in the process; however, they requested updates about key decisions that may affect them.

Feedback received from the executive members of the County Federations of Agriculture confirmed that their members felt the lists of water *uses, needs* and *values* and *broad water objectives* were inclusive and reflect the needs and values of the farming community.

### **3.3. Environmental Non-Government Organizations**

The Grand River watershed has a strong, active community of non-government organizations that have an interest in environmental issues and water management. Some of these organizations are involved in local water issues, while others have provincial or national scope. The Water Management Plan recognizes that these groups have important connections with the public in terms of communicating information about watershed issues with a trusted voice and assisting in promoting social change around the goals of the Plan. As well, some of these groups may be in a position to work with the partners to carry out management actions recommended as the Plan is completed.

Over 60 organizations were identified as potentially having an interest in the Water Management Plan, based on their mandates to address municipal water use, local watershed restoration or broader water sustainability and policy issues. Given the scope and large number of organizations identified, the GRCA hosted a roundtable meeting to bring interested organizations together to discuss the Plan. All identified

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<sup>4</sup> The survey can be found at the following website: [http://www.grandriver.ca/waterplan/Feb2012\\_Poll\\_results.pdf](http://www.grandriver.ca/waterplan/Feb2012_Poll_results.pdf)

organizations were sent invitations and 33 participants from 18 organizations across the watershed participated in the roundtable.

The group discussed the Water Management Plan process and were provided with an opportunity to comment on the *uses, needs and values* and *broad water objectives* in small breakout groups and then collectively in the larger group. The participants cited individual and commonly-held concerns and opinions, both about the *broad water objectives* as a whole and about specific ones. All comments provided in this meeting were documented in a report '*Grand River Water Management Plan: Environmental Non-government Organizations (NGO) Roundtable*<sup>5</sup>', which was circulated to all identified non-government groups to confirm that their suggestions were captured accurately and to provide space for additional comments. These comments were then presented to the Project Team and Steering Committee.

### **3.4. Broader Watershed Management Community**

The Communications and Engagement Plan distinguishes between environmental non-governmental organizations and groups that have direct ties with partner agencies and who undertake collaborative programs and projects. The Grand River Fisheries Management Plan Implementation Committee and the Grand Strategy Heritage Working Group<sup>6</sup> are organizations identified in the Communications and Engagement Plan as being part of the 'broader watershed management community.' These groups suggested alternate wording and identified some gaps and concerns but felt that, in general, the *uses, needs and values* and the *broad water objectives* were inclusive.

#### **Grand River Fisheries Management Plan Implementation Committee**

The Fisheries Management Plan Implementation Committee is made of up individuals whose role is to implement the recommendations made in the Grand River Fisheries Management Plan. This plan used a community-based approach to fisheries management involving collaboration among the Ontario Ministry of Natural Resources, the GRCA and twelve partners representing organized stakeholder groups and the University of Waterloo.

GRCA staff met with the Fisheries Management Plan group on a two occasions to discuss the *broad water objectives*. Additional group discussions were conducted over email.

#### **Grand Strategy Heritage Working Group**

The Heritage Working Group was formed in 1995 to help increase community involvement and commitment to the celebration and management of human heritage resources in the Grand River watershed which was declared a Canadian Heritage River, along with its tributaries, in 1994. Membership in the Heritage Working Group is drawn from all areas of the Grand River watershed and includes representatives from government agencies, universities, heritage groups, national historic sites, museums, the GRCA and interested individuals.

The draft lists of *uses, needs and values* and *broad water objectives* were presented to the group and discussed in September 2011.

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<sup>5</sup> A report of documenting the comments made by environmental non-government organizations is posted on the GRCA website: [http://www.grandriver.ca/waterplan/ENGO\\_workshop\\_report\\_Nov2011.pdf](http://www.grandriver.ca/waterplan/ENGO_workshop_report_Nov2011.pdf)

<sup>6</sup> The Grand Strategy Heritage Working Group is not part of the governance structure of the Grand River Water Management Plan.

### **3.5. Science Advisory Committee**

A Science Advisory Committee has been established to provide the Steering Committee, Project Team and GRCA staff with scientific, technical and management advice. The Science Advisory Committee consists of an interdisciplinary team of five academic researchers from watershed universities. Advice about the content and wording of the draft lists was provided by the committee at meetings in October 2011, December 2011 and January 2012.

### **3.6. Grand River Conservation Authority Board**

The Grand River Conservation Authority (GRCA) is a partnership of watershed municipalities. The GRCA Board is composed of 26 members. Smaller municipalities share one representative while larger municipalities have several Board members. Each member takes an active role in guiding the activities of the GRCA. Municipal representatives keep their local municipal council apprised of the programs and projects of the Authority and act as the liaison between the Authority and the municipality.

The Board ensures the natural environment is healthy and benefits all partners. They vote on the authority's policies, programs, staff and budgets. In this way, decisions about water management are made at the watershed level.

GRCA staff provides frequent updates on the Water Management Plan to the Board at regularly scheduled Board meetings. At its September 8, 2011 Board meeting, members were invited to comment on the *uses, needs and values* and the *broad water objectives* and encourage municipal staff and others to participate in the on-line survey. The Board accepted the *broad water objectives* and provided some specific comments for consideration.

### **3.7. Summary of Revisions**

The draft lists of *uses, needs and values* and *broad water objectives* were revised based on the comments and suggestions received during the communications and engagement process. The changes to the *uses, needs and values* and the rationale for these changes are shown in Table 1. The specific modifications made to the *broad water objectives* and the reasons for them are summarized in Table 2.

**Table 1.** Revised List of Human *Uses*, Ecological *Needs* and Societal and Cultural *Values* for the Grand River Watershed

Theme	Stated use/need/value	Rationale
<b>Healthy, resilient natural system</b>	Aquatic, riparian, wetland and associated Lake Erie habitat are dependent on the quantity, quality and flow of surface and ground water.	
	Aquatic species in the river system and portions of Lake Erie are dependent on the quantity, quality and flow of water.	
	Wildlife use surface water for foraging and drinking.	
<b>Community services</b>	Surface and ground water provide a source of raw water for municipal supplies that support people and industry.	
	Ground water is a source for private domestic drinking water supplies.	
	Surface waters receive treated wastewater and storm water.	
<b>A strong economy</b>	Surface and ground water provide a source of raw water for municipal supplies that support business and industry.	Agriculture was moved to a new theme “A strong economy” to recognize the linkage between the environment and the watershed economy
	Surface and ground water are a private source of water for commercial/industrial activities that are not on municipal water services, including: <ul style="list-style-type: none"> <li>• food and beverage production,</li> <li>• aquaculture, and</li> <li>• aggregate washing.</li> </ul>	
	Surface and ground water are a source of water for crop irrigation and livestock watering.	
	Agricultural lands are dependent on adequate drainage and optimal soil moisture to support productivity.	An additional use was added to acknowledge the need for optimal soil moisture conditions on agricultural lands
	Grand River – Lake Erie commercial fisheries are supported by water quality and quantity.	
	The flow of water supports hydroelectric power generation.	
<b>Culture, recreation and tourism</b>	Rivers, streams, lakes and reservoirs are used for recreation: <ul style="list-style-type: none"> <li>• swimming at public beaches, water skiing,</li> <li>• paddling, sailing,</li> <li>• motorized boating,</li> <li>• angling, and</li> <li>• passive enjoyment of trails and natural areas.</li> </ul>	
	Surface and ground water are used to irrigate the landscape in public and private recreational areas.	
	Aquatic and riparian systems, wetlands and associated Lake Erie near shore have cultural importance: <ul style="list-style-type: none"> <li>• as a community amenity and focal point,</li> <li>• for cultural heritage, and</li> <li>• traditional and spiritual values.</li> </ul>	

**Table 2.** Revised *Broad Water Objectives* for the Grand River Watershed

<i>Theme</i>	<i>Broad water objective</i>	<i>Rationale</i>
<b>Aquatic ecosystem health</b>	Water quality supports the health, resiliency and biodiversity of aquatic, riparian and wetland communities.	Included the concept of ‘resiliency’ as many people felt this was important to include.
	The flow regime supports the lifecycle requirements of aquatic and riparian species.	Same wording as drafted. A suggestion was to replace ‘supports’ with ‘improve’. Lifecycle requirements for various species are finitely defined, therefore, it was felt that ‘supports’ is the appropriate verb. The intent of ‘improved conditions’ is acknowledged in the overarching goals to the Plan.
	Water quality does not promote excessive growth of aquatic vegetation or harmful algal blooms in rivers, reservoirs and lakes	Added ‘lakes’ to be inclusive of Lake Erie.
	Interactions between the Grand River and Lake Erie support the chemical, biological and physical integrity of both systems.	The slight rewording provides a closer alignment to the stated objectives for the Great Lakes Water Quality Agreement and the objectives for the Lake Erie Lake-wide Management Plan.
	The flow regime supports healthy river processes.	Same as drafted.
	Ground water recharge and discharge function is maintained, such that water quality, water availability and habitat are supported.	Same as drafted. Note that draft objective 6: <i>Ground water aquifer storage is maintained in the long term</i> was eliminated from the list as it was decided that this objective is captured implicitly in this broad objective.
<b>Water supply</b>	Quantity of raw water for municipal supplies is reliable and able to meet current and future needs.	Same as drafted.
	Quantity of raw water for agricultural and commercial/industrial users is reliable and able to meet their current and future needs.	Same as drafted.
<b>Public health &amp; safety</b>	New theme “Public health & safety” replaced ‘hydrologic function’ as the term ‘hydrologic function’ was not fully understood by most people surveyed. This new theme captures the objectives that relate directly to human uses.	
	Raw surface and ground water used by municipalities is of suitable quality to produce safe drinking water using economically feasible treatment processes.	Many people felt that ‘adequate and predictable’ was not appropriate. A slight rewording was made. Objective moved to new theme – ‘Public health and safety’ from Water Supply.
	Raw surface and ground water used by the agricultural industry for crop irrigation or livestock watering is suitable to produce safe, quality food.	New objective. It was suggested to have an objective which acknowledges the food safety requirement of water used for crop irrigation and livestock watering.
	Ground water supplies used for private drinking water supplies meet or are better than the drinking water quality standards, with the exception of natural conditions related to geology.	Objective same wording as drafted; moved to new theme – ‘Public health and safety’ from ‘Water supply’.



**Table 2 (continued). Revised Broad Water Objectives for the Grand River Watershed**

<i>Theme</i>	<i>Broad water objective</i>	<i>Rationale</i>
<b>Public health &amp; safety (con't)</b>	The risk to life and property from flooding and erosion is managed.	Objective moved from 'Hydrologic function' to "Public health and safety". Comments received suggested that the risk from flooding and erosion is 'reduced'. Project Team and Steering committee members felt that managed was a more appropriate verb.
	Water quality does not restrict human consumption of fish.	Same wording as drafted. Objective moved from the theme "Culture, recreation and tourism'. Note: Although there was concern by project team and steering committee members regarding the feasibility of this objective, many people who provided feedback on the objectives through engagement activities commented that this is an important objective. The intent of this objective is to support and reflect the risk management approach the Ministry of the Environment uses to assess the consumption of sport fish in Ontario.
	Restrictions on swimming at public beach areas are minimized.	Same wording as drafted. Objective moved from the theme "Culture, recreation and tourism'
<b>Culture, recreation &amp; tourism</b>	The rivers are an amenity in the communities through which they pass.	Same wording as drafted.
	The rivers are aesthetically pleasing to support recreational, cultural and destination tourism uses.	Same wording as drafted.
	River flow is sufficient to reasonably support paddling where river flow is regulated.	Same wording as drafted.
	Water quality and quantity needs of sport fish populations are met, such that angling opportunities and community benefits are realized.	The term 'optimized' is difficult to understand in the context of recreation and tourism and therefore was replaced with 'realized'.
<b>River services</b>	The provision for wastewater assimilation is optimized without adverse impacts on the ecosystem or human uses.	The term 'capacity' is difficult to understand. Modification of this objective more closely aligns with the objectives regarding urban and agricultural drainage below.
	The provision for urban drainage is optimized without adverse impacts on the ecosystem or human uses.	Same wording as drafted.
	The provision for drainage of productive agricultural land is optimized without adverse impacts on the ecosystem or human uses.	Same wording as drafted however 'without adverse impacts' may be difficult to define.
	Hydroelectric power production is a secondary benefit of river flow when it is cost effective.	Same wording as drafted.
	Water quantity and quality are sufficient for optimal production of Grand River-specific stocks for commercial fisheries.	Same wording as drafted.

## 4. Conclusions

GRCA staff reviewed the comments received through from the communication and engagement process. All of the feedback on the *uses, needs* and *values* of water in the watershed indicated that they were considered comprehensive and complete. The final list of human uses, ecological needs and societal and cultural values that will be used in the 2012 Water Management Plan is presented in Table 3.

Various stakeholder groups provided both detailed and high-level feedback about the *broad water objectives*. The comments and suggestions expressed through the communication and engagement process were carefully considered and every effort was made to incorporate them into the final list of *broad water objectives*. Consequently, some changes to the draft *broad water objectives* were made. The final list of *broad water objectives* that will be used to underpin the 2012 Water Management Plan is presented in Table 4.

Many of the comments provided through the public engagement process dealt with broader philosophies and precepts that could underpin the Water Management Plan. Some of these ideas are already reflected in the Water Management Plan Project Charter which guides the Plan partners in the development of the Water Management Plan. These broad concepts will be reviewed and revised based on the input provided and articulated as a set of *Guiding Principles* for the Water Management Plan. For example, many comments suggested that an ‘ecosystem approach’ be embraced in the Plan – a concept that is fundamental to the development of targets. This concept was included in the Project Charter. It will be clearly stated as a guiding principle to the Plan. The *Guiding Principles* will be discussed by the Plan partners and endorsed later in 2012.

The *broad water objectives* represent a qualitative description of the desired resource condition and of the Grand River watershed that meet current water *uses, needs* and *values*. It is anticipated that these objectives may change in the future in response to shifting system conditions and changing water *uses, needs* and *values*.

The final list of human *uses*, ecological *needs* and societal and cultural *values* of water and *broad water objectives* will be used by the Plan partners to help guide the development of resource condition indicators and quantitative targets. Water resource condition targets will be used to gauge progress in achieving the desired state of surface and ground water in the Grand River watershed and inform what key actions are required by Plan partners to achieve the *broad water objectives*.

**Table 3.** Final List of Human Uses, Ecological Needs and Societal and Cultural Values for Water in the Grand River Watershed

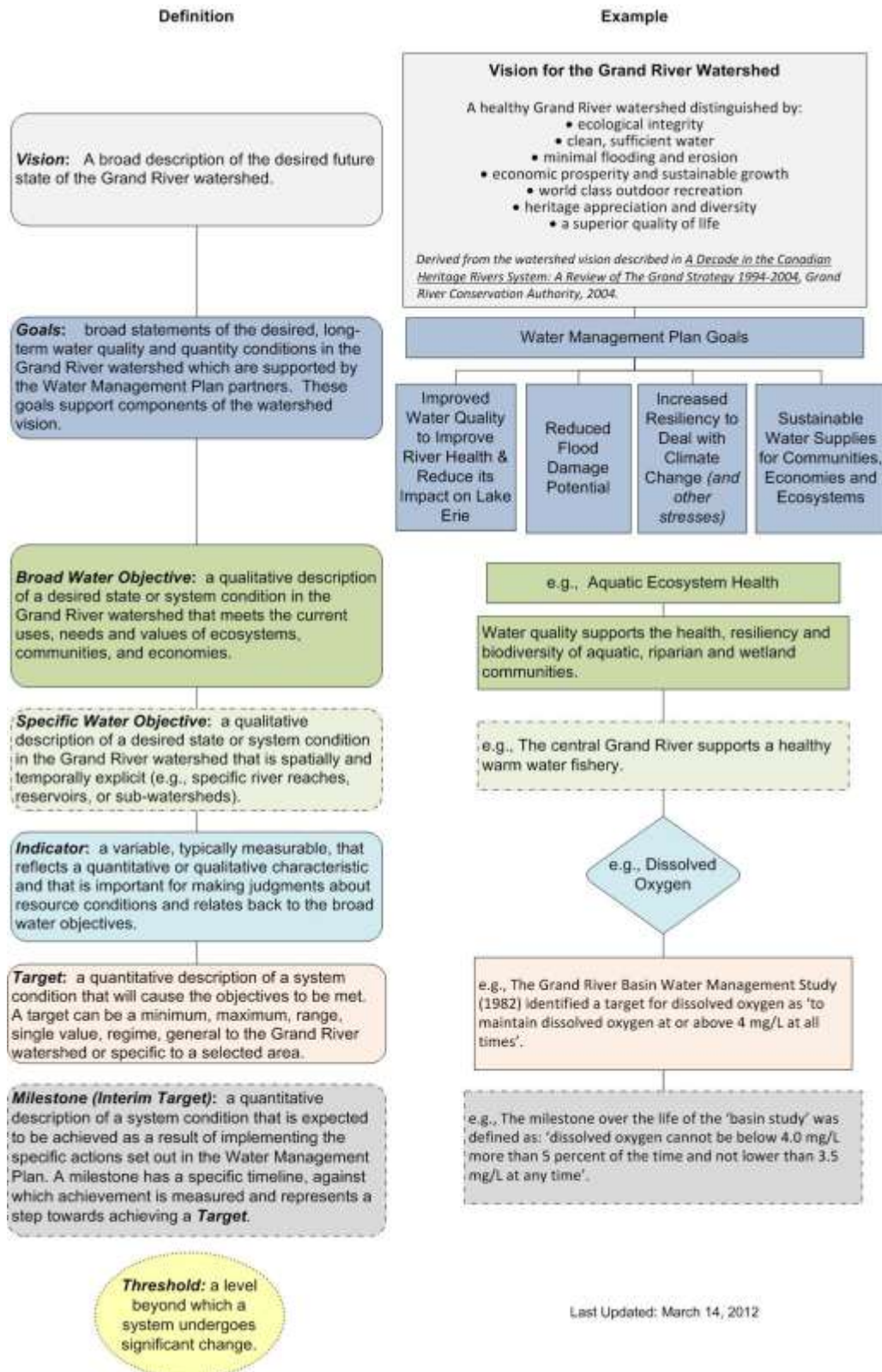
Theme	Use/need/value
<b>Healthy, resilient natural system</b>	Aquatic, riparian, wetland and associated Lake Erie habitat is dependent on the quantity, quality and flow of surface and ground water.
	Aquatic species in the river system and portions of Lake Erie are dependent on the quantity, quality and flow of water.
	Wildlife use surface water for foraging and drinking.
<b>Community services</b>	Surface and ground water provide a source of raw water for municipal supplies that support people and industry.
	Ground water is a source for private domestic drinking water supplies.
	Surface waters receive treated wastewater and storm water.
<b>A strong economy</b>	Surface and ground water provide a source of raw water for municipal supplies that support business and industry.
	Surface and ground water are a private source of water for commercial/industrial activities that are not on municipal water services, including: <ul style="list-style-type: none"> <li>• food and beverage production,</li> <li>• aquaculture, and</li> <li>• aggregate washing.</li> </ul>
	Surface and ground water are a source of water for crop irrigation and livestock watering.
	Agricultural lands are dependent on adequate drainage and optimal soil moisture to support productivity.
	Grand River – Lake Erie commercial fisheries are supported by water quality and quantity.
	The flow of water supports hydroelectric power generation.
<b>Culture, recreation and tourism</b>	Rivers, streams, lakes and reservoirs are used for recreation: <ul style="list-style-type: none"> <li>• swimming at public beaches, water skiing,</li> <li>• paddling, sailing,</li> <li>• motorized boating,</li> <li>• angling, and</li> <li>• passive enjoyment of trails and natural areas.</li> </ul>
	Surface and ground water are used to irrigate the landscape in public and private recreational areas.
	Aquatic and riparian systems, wetlands and associated Lake Erie near shore have cultural importance: <ul style="list-style-type: none"> <li>• as a community amenity and focal point,</li> <li>• for cultural heritage, and</li> <li>• traditional and spiritual values</li> </ul>

**Table 4.** Final *Broad Water Objectives* for the Grand River Watershed

Theme	Broad Water Objective
<b>Aquatic ecosystem health</b>	Water quality supports the health, resiliency and biodiversity of aquatic, riparian and wetland communities.
	The flow regime supports the lifecycle requirements of aquatic and riparian species.
	Water quality does not promote excessive growth of aquatic vegetation or harmful algal blooms in rivers, reservoirs and lakes.
	Interactions between the Grand River and Lake Erie support the chemical, biological and physical integrity of both systems.
	The flow regime supports healthy river processes.
	Ground water recharge and discharge function is maintained, such that water quality, water availability and habitat are supported.
<b>Water supply</b>	Quantity of raw water for municipal supplies is reliable and able to meet current and future needs.
	Quantity of raw water for agricultural and commercial/industrial users is reliable and able to meet their current and future needs.
<b>Public health &amp; safety</b>	Raw surface and ground water used by municipalities is of suitable quality to produce safe drinking water using economically feasible treatment processes.
	Raw surface and ground water used by the agricultural industry for crop irrigation or livestock watering is suitable to produce safe, quality food.
	Ground water supplies used for private drinking water supplies meet or are better than the drinking water quality standards, with the exception of natural conditions related to geology.
	The risk to life and property from flooding and erosion is managed.
	Water quality does not restrict human consumption of fish.
	Restrictions on swimming at public beach areas are minimized.
<b>Culture, recreation &amp; tourism</b>	The rivers are an amenity in the communities through which they pass.
	The rivers are aesthetically pleasing to support recreational, cultural and destination tourism uses.
	River flow is sufficient to reasonably support paddling where river flow is regulated.
	Water quality and quantity needs of sport fish populations are met, such that angling opportunities and community benefits are realized.
<b>River services</b>	The provision for wastewater assimilation is optimized without adverse impacts on the ecosystem or human uses.
	The provision for urban drainage is optimized without adverse impacts on the ecosystem or human uses.
	The provision for drainage of productive agricultural land is optimized without adverse impacts on the ecosystem or human uses.
	Hydroelectric power production is a secondary benefit of river flow when it is cost effective.
	Water quantity and quality are sufficient for optimal production of Grand River-specific stocks for commercial fisheries.

## 5. Appendices

### Appendix 1. A framework of definitions for the Grand River Water Management Plan.



**Appendix 2.** Draft Human *Uses*, Environmental Needs and Community *Values* for Water draft which was approved for public engagement.

<p><b>Healthy, resilient natural system:</b></p> <ol style="list-style-type: none"> <li>1. Aquatic, riparian, wetland and associated Lake Erie habitat is dependent on the quantity, quality and flow of surface and ground water.</li> <li>2. Aquatic species in the river system and portions of Lake Erie are dependent on the quantity, quality and flow of water.</li> <li>3. Wildlife use surface water for foraging and drinking.</li> </ol> <p><b>Community services:</b></p> <ol style="list-style-type: none"> <li>4. Surface and ground water provide a source of raw water for municipal supplies that support people and industry.</li> <li>5. Ground water is a source for private domestic drinking water supplies.</li> <li>6. Surface waters receive treated wastewater and storm water.</li> </ol> <p><b>Productive agriculture:</b></p> <ol style="list-style-type: none"> <li>7. Surface and ground water are a source of water for crop irrigation.</li> <li>8. Surface and ground water are a source of water for livestock watering.</li> <li>9. Agricultural lands are dependent on adequate drainage to support productivity.</li> </ol>	<p><b>A strong economy:</b></p> <ol style="list-style-type: none"> <li>10. Surface and ground water provide a source of raw water for municipal supplies that support business and industry.</li> <li>11. Surface and ground water are a private source of water for commercial/industrial activities that are not on municipal water services, including: <ul style="list-style-type: none"> <li>• food and beverage production,</li> <li>• aquaculture, and</li> <li>• aggregate washing.</li> </ul> </li> <li>12. Grand River – Lake Erie commercial fisheries are supported by water quality and quantity.</li> <li>13. The flow of water supports hydroelectric power generation.</li> </ol> <p><b>Culture, recreation and tourism:</b></p> <ol style="list-style-type: none"> <li>14. Rivers, streams, lakes and reservoirs are used for recreation: <ul style="list-style-type: none"> <li>• swimming at public beaches, water skiing,</li> <li>• paddling, sailing,</li> <li>• motorized boating,</li> <li>• angling, and</li> <li>• passive enjoyment of trails and natural areas.</li> </ul> </li> <li>15. Surface and ground water are used to irrigate the landscape in public and private recreational areas.</li> <li>16. Aquatic and riparian systems, wetlands and associated Lake Erie near shore have cultural importance: <ul style="list-style-type: none"> <li>• as a community amenity and focal point</li> <li>• for cultural heritage, and</li> <li>• traditional and spiritual values.</li> </ul> </li> </ol>
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**Appendix 3. Draft *Broad Water Objectives* for the Grand River Water Management Plan used for public engagement.**

**Water supply**

1. Quantity of raw water for municipal supplies is reliable and able to meet current and future needs.
2. Quantity of raw water for agricultural and commercial/industrial users is reliable and able to meet their current and future needs.
3. Surface and ground water used by municipalities as a raw supply of treated water is of adequate and predictable quality to produce safe drinking water using economically feasible treatment processes.
4. Ground water supplies used for private supplies meet or are better than the drinking water quality standards, with the exception of natural conditions related to geology.

**Hydrologic function**

5. The flow regime supports healthy river processes.
6. Ground water aquifer storage is maintained in the long term.
7. Ground water recharge and discharge function is maintained, such that water quality, water availability and habitat are supported.
8. The risk to life and property from flooding and erosion is managed.

**Biodiversity and ecosystem integrity**

9. Water quality supports the health and biodiversity of aquatic, riparian and wetland communities.
10. The flow regime supports the lifecycle requirements of aquatic and riparian species.
11. Water quality does not promote excessive growth of aquatic vegetation or harmful algal blooms in rivers, streams and reservoirs.
12. Interactions between Lake Erie and the Grand River support the ecological integrity of both systems.

**Culture, recreation and tourism**

13. The rivers are an amenity in the communities through which they pass.
14. The rivers are aesthetically pleasing to support recreational, cultural and destination tourism uses.
15. River flow is sufficient to reasonably support paddling where river flow is regulated.
16. Water quality and quantity needs of sport fish populations are met, such that angling opportunities and community benefits are optimized.
17. Water quality does not restrict human consumption of fish.
18. Restrictions on swimming at public beach areas are minimized.

**River services**

19. The capacity of the river system is optimized to accommodate treated wastewater without adverse impacts on the ecosystem or human uses.
20. The provision for urban drainage is optimized without adverse impacts on the ecosystem or human uses.
21. The provision for drainage of productive agricultural land is optimized without adverse impacts on the ecosystem or human uses.
22. Hydroelectric power production is pursued as a secondary benefit of river flow where it is cost effective.
23. Water quantity and quality are sufficient for optimal production of Grand River-specific stocks for commercial fisheries.