

CHAPTER FOUR

Vision, Issues and Objectives

The community-based visioning exercises held in early 1997 yielded an expression of what the watershed community is most concerned about when it comes to conservation and management of the Jock River and its watershed. The community's Vision for the Jock River Watershed was laid out in chart form in the report *Jock River Watershed Plan* —

Creating Our Watershed's Future — Watershed Wide Community Workshop As Heard Report completed in May 1997. To paraphrase, the community's perception is that there are 10 key elements of watershed health which can be grouped into the three themes, as follows:

Table 1: A Jock River Vision for Watershed Health

| Themes | | | |
|-------------------------------------|--|--|---|
| Elements of Watershed Health | People Understanding the River | Green Way of Life | Comfort with the River |
| | commitment to stewardship | sustainable agricultural practices | recreation potential in river corridor |
| | open dialogue and cooperation between stakeholders | stewardship of vegetation in woodlands, wetlands and riparian corridors | surface and groundwater quality suitable to human and aquatic habitat needs |
| | awareness through information and education | maintenance of rural character conservation of wildlife habitat diversity | normal fluctuation in water levels and flows neither excessively low nor excessively high |

The overall goal of the Jock River Watershed Plan is "To achieve and maintain a healthy, sustainable Jock River Watershed."

Specific watershed objectives include developing cost-effective strategies for managing the following six identified environmental issues.

1. Water Quality Management
2. Water Quantity Management
3. Wildlife Habitat Management
4. Groundwater Resource Management
5. Sustainable Land Use Management
6. Community Awareness and Concern

The watershed management plan needs to prescribe a range of measures which would achieve the overall goal of sustained watershed health. The plan should be specific enough to be of practical use by watershed managers in soliciting the needed resources, assigning watershed management tasks to various agents, implementing the work, undertaking follow-up monitoring, and periodic reporting on progress.

The overall goal of sustained watershed health was further broken down and described in terms of a series of Watershed Objectives related to watershed management issues of concern. The Watershed Objectives indicate how the desired state compares with the present state with respect to a given issue. The Jock River Watershed Objectives are presented in Table 2. In most cases, measurable performance targets for the Objective statement have yet to be defined, and may not be until the launch of specific watershed management activities.

Four watershed issues (and the objectives corresponding to them) have to do with the physical condition of the watershed, while the fifth and sixth relate more to the state of the relationship between humans and the natural environment, in the watershed context. It is important to address each of these because, fundamentally, watershed management is about managing human behaviour and activities within the watershed to minimize the adverse effects and maximize the beneficial effects of our exploitation and use of the environment around us.

Table 2: Jock River Watershed Objectives

| Issue | Objective(s) | Concerns & Influencing Factors |
|--|---|--|
| Poor Water Quality | Improve, protect and maintain surface water quality | Land management practices, Farming practices, Faulty septic systems, Stormwater runoff, Attitudes towards environment |
| Water Quantity — High Water Levels and Low Flows | Achieve manageable, sustainable water levels | Potential for overbank flooding, Flood damage avoidance, Dessication of aquatic habitat at low flow, low assimilative capacity for non-point and point source pollutants Water taking permits/cumulative impacts |
| Fish, Wildlife and Plant Life | Achieve appropriate biodiversity for fish and wildlife populations | Variable biodiversity, increasingly poor as one moves downstream; Limited/impacted vegetative cover; Decrease in significant habitats; Development pressures; Farming |
| Groundwater Quality and Quantity | Protect groundwater quality and quantity | One known situation of groundwater quality impairment, no known shortages in deep aquifers; heads up to avoid in future; baseflow depletion due to lowering of near surface groundwater table and surface water withdrawals are of concern |
| Sustainable Land Use and Development | Achieve environmentally sustainable farming and development, to meet human needs (without compromising the integrity of the natural ecosystem) Improve and expand appropriate recreation opportunities | Attention to environmental impact of land management practices Lack of information/studies Absence of economic incentives |
| Community Awareness and Concern | Create a sense of well being, pride and comfort with the river Encourage a green way of life Encourage Participation, co-operation and involvement of all members of the watershed in achieving a healthy watershed Preserve the rural character of the watershed Develop and promote a sense of respect for the watershed and its sustainability | Apathy Lack of knowledge Lack of commitment Cost (real and perceived) Lack of environmental ethic |

CHAPTER FIVE

Watershed Management Strategies

The set of watershed management measures listed here follow the watershed objectives developed from a community-based process based on intuitive reasoning and consensus-building among interested parties.

Relatively little effort has been spent on detailed scientific research or technical analysis of management options to demonstrate their applicability or usefulness. Where existing information is lacking on a given issue, it may be premature to recommend costly interventions, but it is appropriate to recommend investment to obtain the required information to evaluate the need for options. Where the merits of certain measures or activities have been demonstrated elsewhere, it may be reasonable to assume with a high degree of confidence that they would be applicable also to the Jock River.

There will be some uncertainty about the effectiveness of some elements of any watershed or environmental management strategy. There is uncertainty with respect to the “external” factors which influence watershed conditions (and health) many of which are beyond the control of local watershed managers. With this in mind it is appropriate to take an “adaptive environmental management” approach within the *Jock River Watershed Management Plan*. While it is necessary to lay out an overall strategy to follow, some aspects of watershed management have to be approached as experiments, with adequate investments in continued monitoring of the watershed’s response to our interventions, and systematic re-evaluation of the management strategy on an ongoing basis. It must also be noted that some of the strategies may take some time, both for implementation and/or to show results.

The development of an overall strategy for the Jock River began with a listing of the many possible ways and means of achieving the watershed objectives, relying on the knowledge and experience of resource managers within the provincial ministries, municipalities, the conservation authorities and other organizations such as the Friends of the Jock River. The initial lists were cumbersome and difficult to comprehend in an overall sense, and needed to be organized more systematically. The results are presented in Tables A2-1 to A2-6, in Appendix B. Each table contains the recommended elements of an overall strategy to address one of the watershed issues and corresponding objectives which were presented in Table 2. The recommended actions have been sorted into eight categories:

- Education
- Stewardship
- Scientific Research/Studies
- Capital Projects, Works and Infrastructure
- Planning and Development Control
- Restoration, Rehabilitation, Management
- Monitoring and Reporting
- Legislation and Enforcement

Maps 5 through 8 illustrate the recommendations on a reach basis. Map 5 includes those recommendations that apply to all reaches.



Bait Fishermen, Ashton

CHAPTER SIX

Implementation

6.1 A Three Year Work Plan

The overall watershed management strategy should be implemented in a cycle which involves selecting and acting on the most important elements of the strategy to be pursued in the short term, monitoring the watershed's response, reviewing the results, updating the management strategy and resuming implementation of the most important elements, and so on. The duration of each work plan cycle should be 3–5 years to obtain adequate political/institutional support and resources.

It is necessary to select the elements of the overall watershed management strategy (Tables A2-1 to A2-6 of Appendix B) which will address the most pressing existing or emerging problems in the watershed, are most promising in terms of the expected benefits to be attained from their implementation, or

are most critical to future decision-making. This should also include those strategies which may take many years to implement and do not require a large amount of effort to start. A three year work plan for Jock River watershed management has been prepared in Tables 3A to 3F (one for each of the key watershed management issues).

In order to obtain the necessary commitments to move forward with implementation in the short term, it will be necessary to assign responsibilities (lead and supporting roles) for implementation, and to estimate the cost associated with the selected actions. Suggestions in this regard are made within the Tables, based on RVCA's understanding of the legislative powers, mandates, policies and programs of various stakeholders in watershed management.



Heart's Desire Weir, 1986

Table 3A : Jock River Watershed Magement — Three Year Work Plan (2002 to 2004)

| Issue: Poor Water Quality | | | |
|--|---|---|---|
| Recommended Watershed Management Action by Type | | | |
| Type of action | Action | Lead Players | Resources Required |
| Education | <ul style="list-style-type: none"> • distribute information, deliver public service messages on best management practices and link between land management and surface water quality | <ul style="list-style-type: none"> • municipalities, OMAFRA, RVCA, LRC, stewardship councils | develop materials \$6,500 |
| Stewardship | <ul style="list-style-type: none"> • continue or introduce incentive programs aimed at reducing non-point source pollutant loads (restricted cattle access,etc) | <ul style="list-style-type: none"> • municipalities, OMAFRA, RVCA | Jock River portion of watershed-wide prog. \$270,000 |
| Scientific Research/ Studies | <ul style="list-style-type: none"> • carry out investigative water quality monitoring to determine pollutant sources | <ul style="list-style-type: none"> • MOE, RVCA, Ottawa | manpower, lab fees, equipment \$210,000 |
| Capital Projects/ infrastructure | <ul style="list-style-type: none"> • implementation of South Nepean Master Drainage Plan | <ul style="list-style-type: none"> • Ottawa | no additional |
| Planning & Development Control | <ul style="list-style-type: none"> • initiate subwatershed planning for Flowing Creek and other receiving streams for urban runoff in the Richmond and Stittsville vicinities | <ul style="list-style-type: none"> • municipality | no additional |
| Restoration, Rehabilitation, Management | <ul style="list-style-type: none"> • enhancement of riparian zone | <ul style="list-style-type: none"> • Friends of Jock River | no additional |
| Monitoring & Reporting | <ul style="list-style-type: none"> • continued baseline monitoring of water quality and macro-invertebrates to track long term trends | <ul style="list-style-type: none"> • RVCA | no additional |
| Legislation/ Enforcement | <ul style="list-style-type: none"> • continue performance monitoring and reporting on municipal storm sewer systems wastewater systems | <ul style="list-style-type: none"> • municipalities | no additional |

Table 3B : Jock River Watershed Magement — Three Year Work Plan (2002 to 2004)

Issue: Water Quality — High Water Levels and Low Flows

| Recommended Watershed Management Action by Type | | | |
|--|--|--|---|
| Type of action | Action | Lead Players | Resources Required |
| Education | <ul style="list-style-type: none"> information brochures, etc. re: water cycle, budget | <ul style="list-style-type: none"> RVCA | no additional |
| Stewardship | <ul style="list-style-type: none"> none identified | — | — |
| Scientific Research/ Studies | <ul style="list-style-type: none"> determine water budget for watershed review and update flood risk mapping in areas of flat topography and no defined river valley (Richmond, Cedarview to Greenbank) prepare new flood risk mapping from Richmond Fen wetland to Cemetary Side Rd. | <ul style="list-style-type: none"> RVCA RVCA RVCA | update mapping, water budget analysis, new mapping \$750,000 |
| Capital Projects/ Infrastructure | <ul style="list-style-type: none"> decide on the future of the Ashton Dam, Richmond weir and Heart's Desire weir in consultation with local community | <ul style="list-style-type: none"> municipalities, RVCA | weir feasibility study \$7,500 |
| Planning & Development Control | <ul style="list-style-type: none"> assess the impact of all new land use and development proposals on groundwater recharge and elevation of near surface ground water table (i.e. volume of near surface groundwater reserves) | <ul style="list-style-type: none"> municipalities, RVCA | no additional |
| Restoration, Rehabilitation, Management | <ul style="list-style-type: none"> none identified | — | — |
| Monitoring & Reporting | <ul style="list-style-type: none"> install additional streamflow gauges to allow for improved water budget analysis | <ul style="list-style-type: none"> RVCA, Friends of the Jock River | purchase, install, maintain gauges \$57,000 |
| Legislation/ Enforcement | <ul style="list-style-type: none"> review the water taking permit process and establish means of determining cumulative impacts on a watershed basis | <ul style="list-style-type: none"> MOE, RVCA | no additional |

Table 3C : Jock River Watershed Magement — Three Year Work Plan (2002 to 2004)

| Issue: Fish and Wildlife, Plant Life | | | |
|--|---|---|---|
| Recommended Watershed Management Action by Type | | | |
| Type of action | Action | Lead Players | Resources Required |
| Education | <ul style="list-style-type: none"> information brochures, workshops, demonstration sites, etc. | <ul style="list-style-type: none"> LRC, Friends of the Jock River(FoJR), municipalities, RVCA | \$15,000 |
| Stewardship | <ul style="list-style-type: none"> promote planting of native species of shrubs, trees and ground covers in the riparian zone — use education and awareness and incentive programs | <ul style="list-style-type: none"> municipalities , RVCA, Friends of the Jock River, MNR, MAPLE | workshops, training, incentives \$112,500 |
| Scientific Research/ Studies | <ul style="list-style-type: none"> survey the river and stream corridors as to the existing extent and density of riparian vegetation — identify target areas for streamside and riparian zone planting produce mapping of existing aquatic habitat characteristics | <ul style="list-style-type: none"> RVCA, MNR, Friends of the Jock River, MAPLE, Rideau River Round Table (RRR) | manpower for mapping, surveys, 2 years \$148,000 |
| Capital Projects/ infrastructure | <ul style="list-style-type: none"> none identified | — | no additional |
| Planning & Development Control | <ul style="list-style-type: none"> ongoing environmental planning and policy implementation, input into new Official Plans | <ul style="list-style-type: none"> Ottawa, RVCA | no additional |
| Restoration, Rehabilitation, Management | <ul style="list-style-type: none"> riparian zone enhancement | <ul style="list-style-type: none"> Friends of Jock River, MAPLE, RRR | \$2,000 |
| Monitoring & Reporting | <ul style="list-style-type: none"> select appropriate indicator species for monitoring of fish and wildlife in the watershed | <ul style="list-style-type: none"> MNR, RVCA, MAPLE, FoJR | monitor indicator species — manpower and expenses \$109,000 |
| Legislation/ Enforcement | <ul style="list-style-type: none"> continued, consistent enforcement of existing legislation and regulations to protect aquatic habitat | MNR, MOE, RVCA | no additional |

Table 3D : Jock River Watershed Magement — Three Year Work Plan (2002 to 2004)

| Issue: Groundwater Quality and Quantity | | Lead Players | Resources Required |
|--|---|--|------------------------------|
| Recommended Watershed Management Action by Type | | | |
| Type of action | Action | | |
| Education | <ul style="list-style-type: none"> • distribute information, deliver public service messages on best management practices and groundwater sensitivity, workshops, well sampling programs, etc. | municipalities, OMAFRA, RVCA, MNR, MoE, RRR | materials, manpower \$22,500 |
| Stewardship | <ul style="list-style-type: none"> • continue to deliver programs to educate and raise public awareness of groundwater management issues | municipalities, MOE, RVCA, RRR | included above |
| Scientific Research/ Studies | <ul style="list-style-type: none"> • continue research to quantify surface water/groundwater flux • examine groundwater risk by mapping (to the extent possible): recharge/discharge potential, depth to bedrock, tile drainage installations, risky land uses and management practice (land application of sludge, liquid manure systems, industries, etc.) • devise strategy to alleviate leaching TCE in Beckwith | <ul style="list-style-type: none"> • RVCA • municipalities, MOE, RVCA, Health Unit | modelling, \$150,000 |
| Capital Projects/ infrastructure | <ul style="list-style-type: none"> • none identified | — | — |
| Planning & Development Control | <ul style="list-style-type: none"> • review hydrogeological implications of all new land use and development proposals | • municipalities, RVCA | no additional |
| Restoration, Rehabilitation, Management | <ul style="list-style-type: none"> • prepare aquifer management strategy | • municipalities, RVCA | no additional |
| Monitoring & Reporting | <ul style="list-style-type: none"> • initiate baseflow monitoring on Jock River and tributaries | • RVCA, Friend of the Jock River | baseflow monitoring \$49,500 |
| Legislation/ Enforcement | <ul style="list-style-type: none"> • review water taking permit process, and update to better account for cumulative effects on a watershed basis | • MOE, RVCA, municipalities | no additional |

Table 3E : Jock River Watershed Magement — Three Year Work Plan (2002 to 2004)

| Issue: Sustainable Land Use and Development | | | |
|--|---|--|--|
| Recommended Watershed Management Action by Type | | | |
| Type of action | Action | Lead Players | Resources Required |
| Education | <ul style="list-style-type: none"> • continue to identify public's role in planning process | <ul style="list-style-type: none"> • municipalities | no additional |
| Stewardship | <ul style="list-style-type: none"> • promote the use of environmental stewardship programs which are available to the agricultural sector (Healthy Futures, Environmental Farm plans, etc.) | <ul style="list-style-type: none"> • OMAFRA, municipalities, RVCA | no additional |
| Scientific Research/ Studies | <ul style="list-style-type: none"> • establish criteria for delineating the boundaries of a Jock River riparian corridor, and prepare a map of the riparian corridor and draft land use policies for same, for discussion purposes • determine present ownership of lands in the riparian corridor as delineated | <ul style="list-style-type: none"> • municipalities, MNR, RVCA • municipalities, RVCA | riparian corridor project manpower and expenses \$55,000 |
| Capital Projects/ infrastructure | <ul style="list-style-type: none"> • none identified | — | — |
| Planning & Development Control | <ul style="list-style-type: none"> • move forward with the preparation of development opportunity and constraint mapping to steer urban expansion away from the more sensitive portions of the watershed • complete subwatershed plans, for the relevant subwatersheds, prior to adopting any official plan amendments. In general, subwatershed plans are required prior to the designation of large tracts of land for new development via official plan amendment, or to prepare more specific restoration/conservation strategies for smaller portions of the watershed which are of particular local interest or concern • continue to protect viable/prime agricultural lands for agricultural production uses in official plans | <ul style="list-style-type: none"> • municipalities, RVCA • municipalities • municipalities | no additional |
| Restoration, Rehabilitation and Management | <ul style="list-style-type: none"> • subwatershed plans may be required to prepare more specific restoration/conservation strategies for smaller portions of the watershed which are of particular local interest or concern | <ul style="list-style-type: none"> • municipalities | completion of subwatershed plan \$150,000 |
| Monitoring & Reporting | <ul style="list-style-type: none"> • none identified | — | — |
| Legislation/ Enforcement | <ul style="list-style-type: none"> • ensure effective and consistent enforcement of septic system regulations, consider developing a mandatory inspection/correction program | <ul style="list-style-type: none"> • municipalities, RVCA, Health Unit | by law development and enforcement \$30,000 |

Table 3F : Jock River Watershed Magement — Three Year Work Plan (2002 to 2004)

| Issue: Community Awareness and Concern | | | |
|--|---|---|---|
| Recommended Watershed Management Action by Type | | | |
| Type of action | Action | Lead Players | Resources Required |
| Education | <ul style="list-style-type: none"> • install identification and interpretative signs at significant watershed features (tributary names and their role in baseflow maintenance, wetlands, watershed boundaries, etc.) • use Jock River and tributaries as a local resource in elementary and secondary school science, geography and environmental management programs | <ul style="list-style-type: none"> • Friends of the Jock, RVCA, RRR • local school boards | prep and installation of signage \$150,000 |
| Stewardship | <ul style="list-style-type: none"> • promote and support the activities of the Friends of the Jock River, and foster the Friends' development as an effective vehicle for stimulating community interest and action; promote its evolution as a Watershed Round Table or Watershed Action Committee (WAC) • initiate or continue, and promote, incentive programs • establish a community based "Adopt a River," or "River-keeper" network on the Jock River and its tributaries • create recreational corridor the length of the river | <ul style="list-style-type: none"> • municipalities, RVCA • municipalities, RVCA • FoJR, RVCA, RRR • FoJR, municipalities | support FoJR and WAC, volunteer network support \$60,000 |
| Scientific Research/ Study | <ul style="list-style-type: none"> • none identified | — | — |
| Capital Projects/ infrastructure | <ul style="list-style-type: none"> • none identified | — | — |
| Planning & Development Control | <ul style="list-style-type: none"> • none identified | — | — |
| Restoration, Rehabilitation and Management | <ul style="list-style-type: none"> • publish a status report on Jock River watershed management plan every three years | <ul style="list-style-type: none"> • RVCA, all | prep, publication and distribution of report \$25,000 |
| Monitoring & Reporting | <ul style="list-style-type: none"> • create Watershed Action Committee to implement recommendations and monitor implementation | — | — |
| Legislation/ Enforcement | <ul style="list-style-type: none"> • none identified | — | — |

6.2 Monitoring and Review of the Plan

The watershed’s response to many influences, including our watershed management efforts, needs to be monitored on a continuing basis. The suggested three year work plan (Tables 3A to 3F) includes a number of “watershed monitoring activities”. Some of the monitoring is needed in order to develop a deeper understanding of certain watershed phenomena where the existing data are insufficient, and may therefore be of relatively short duration (enough to support management decisions). Other monitoring, for the purpose of tracking long term trends using selected indicators, needs to be done on a consistent and continuing basis over many years. To be meaningful, data collected to track how the watershed is responding to change should be matched with data on the changes. Table 4 is a summary of the recommended watershed monitoring work which is most important at the present time.

On a regular basis, the *Jock River Watershed Management Plan* needs to be reviewed and updated based on the additional information gathered through monitoring activities, and to respond to emerging issues or concerns. It is suggested that after each three years of watershed management effort, a brief should be prepared to document the following:

- progress made on watershed management actions listed in the three year work plan
- observed trends in watershed conditions as indicated by monitoring efforts, correlated as much as possible with the watershed management efforts which have been made
- changes in external influences on watershed conditions since the last review
- modifications to the overall strategy, as determined through dialogue and consensus- building among watershed stakeholders
- priority actions to be pursued for the next three years of watershed management effort (an updated work plan)

As part of its ongoing watershed management program, the Rideau Valley Conservation Authority accepts a coordinating role, in consultation with the municipalities, the provincial ministries, the Friends of the Jock River and other Non Government Organizations to ensure that the periodic review is done in an efficient manner and in an open accountable process.

Table 4: Recommended Watershed Monitoring

Water Conditions and Trends

| Information gaps to be filled by focused field studies and short term monitoring programs | Watershed Conditions and Trends to be monitored on a continuing long term basis | Things that influence Watershed Conditions and Trends |
|--|---|--|
| <ul style="list-style-type: none"> • pollutant sources to be determined by investigative water quality sampling • water levels during flood events, to calibrate and improve flood plain estimates • spatial variation in baseflow, and variation with groundwater table fluctuations • spatial variation in recharge/ discharge potential | <ul style="list-style-type: none"> • water quality and macro-invertebrates • streamflow (peak flows and low flows — continuous year-round records at several permanent stations) • groundwater levels and quality • change in natural vegetative cover along riparian zone, and throughout watershed • change in total extent and distribution of ecological land classes • presence and abundance of indicator fish and wildlife species | <ul style="list-style-type: none"> • performance of municipal stormwater, and solid waste management systems • precipitation, air temperature and other climatic conditions • water taking permits issued • new septic systems installed, old septic systems repaired • land use change (change in area and distribution of urban/suburban/rural land uses, change in number of households, population, change in hectares actively farmed, etc.) — current and projected in OPs • change in land management practices (amount of fertilizer used, # of nutrient management plans completed and implemented, Best Management Practices applied, etc.) • participation in voluntary stewardship programs |

BIBLIOGRAPHY

Curry, John *Richmond on the Jock*, Stittsville News, 1993

Regional Municipality of Ottawa-Carleton and Partners — *Water Quality Committee Guidelines for Watershed, Subwatershed and Stormwater Site Management Planning in the Region of Ottawa-Carleton 1999*

Rideau Valley Conservation Authority *Jock River Watershed Plan — Creating Our Watershed's Future; Watershed-Wide Community Workshops "As Heard Reports" May 1997*

Rideau Valley Conservation Authority *Jock River Watershed Plan — Interim Report 1996*



Local Landmark, Munster



"Bug" Sampling, Jock River