The Concurrent Sessions

Three sets of concurrent session presentations, emerging from the planning trenches, offered something of value to virtually everyone, often generating difficult choices. Virtually every individual presentation is covered here to some extent. They have been grouped according to the pre-established session themes (as elaborated here in the words of Valerie Spencer, Program Chair):

First session presentation

Data and Analytical Tools: Planners must communicate with people who collect data – be they scientists or citizen activists. What is important in working with data? What principles give credibility to problem-solving? Presenters with experience in planning, hydrology, data management and aquatic ecology helped to span both the conceptual and practical aspects of data and analytical tools.

Limnology, Plumbing and Planning

by Neil J. Hutchinson

The emergence of North American environmental awareness in the 1970s was largely fuelled by concerns about water quality. An obvious example of the collision of growth and water quality was the deterioration of Lake Erie. Lake Erie was, in essence, over-fertilized by the addition of the algal nutrient phosphorus from sewage treatment plants, agriculture, and urban runoff in its watershed. Some symptoms were obvious, such as the proliferation of algal growth, while others, such as the loss of oxygen from deeper waters and subsequent effects on aquatic life, were less so. Lake Erie survived. Billions of dollars were spent to remove phosphorus from sewage effluent and phosphate from laundry detergents, and to address other point source loadings.

The example of Lake Erie inspired an examination of nutrient enrichment in smaller inland lakes and rivers. For unserved communities, the potential enrichment from domestic septic systems guided development. Recreational lakes, which attract cottagers and their disposable income, are vitally important to the economic and social fabric of small rural municipalities. As cottage development expanded in the 70s and 80s provincial and municipal planners looked for tools to protect water quality. Limnologists developed models to predict the responses of lakes to development. These models related water quality to the amount of phosphorus that is, or may be, exported to lakes from shoreline septic systems. For twenty-five years these models have guided governments in their determination of lake carrying capacity, to the point that other capacity determinants have been ignored.

The models are complex and expensive. They must be developed, calibrated and

confirmed by comparison with the results of water quality monitoring programs. Implementation as planning policy is, in theory, simpler. The model predicts the allowable phosphorus load to a lake and the official plan expresses it as an allowable number of lots of record. These "lake capacities" limit the number of severances allocated to a lake or a watershed in order to maintain water quality within prescribed limits. In practice, this results in a "line in the sand" according to which, for example, 123 is considered an acceptable number of lots, but 124 is viewed as impairing water quality.

Although this process is enshrined in official plans and advocated in government policy, several problems arise. The first involves knowing where to "draw the line" – what is acceptable water quality and what is not? Water clarity is an aesthetic, not a scientific, determination. It is influenced by the users' perceptions of the water and by other natural factors besides algae and phosphorus. The second problem is the technical accuracy needed to defend the "line" when capacity is reached and further development is discouraged. Even the best models can only predict phosphorus loading to within 10%, while official plan policies require regulation of development on a lot-by-lot basis, or an error of 1% or less.

The final problem is a lack of other tools to support the planner if the technical validity of the process is successfully challenged, or if abatement technology can mitigate the export of nutrients to water. Abatement which removed 90% of septic phosphorus could increase the development capacity of a lake by a factor of ten. Such an increase would overwhelm the social carrying capacity as well as other natural attributes of the system.

The adoption and success of lakeshore capacity models and abatement technologies means that planners and residents have developed a false sense of security. The term "carrying capacity" generates expectations of the planning process. The scientific sophistication of the underlying models lends credibility to the notion that the aquatic environment is protected when, in fact, phosphorus loading is the only managed quantity. This causes us to overlook other elements of environmental management – protection of physical habitat for aquatic and terrestrial life, recreational aesthetics, the social environment that draws people to water, and the increasing conflicts of safety and social desires relating to power boats and personal watercraft.

The capacity of the sewage treatment plant limits the growth of any serviced community located on a river or a lake. Official plan policies are swept aside or challenged by developers so long as they can establish that sewage will be treated. Phosphorus treatment, in particular, has improved in the last two decades. Modern-day plants can remove over 99% of the phosphorus from sewage, a ten-fold improvement over two decades. The planning process is consumed by concerns over water quality, to the exclusion of other limits to growth.

The role of planning policies is to guide development in a manner which is socially, economically and environmentally sustainable. This role is consumed by an over-emphasis on one aspect of water quality and treatment capability. Planners and environmental scientists must therefore recognize three principles:

- Planning must overtake plumbing in guiding official plans.
- Other ecological and human attributes must be considered along with water quality.
- Some problems are better solved by managing impacts instead of capacity.

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