NATURAL AGGREGATE RESOURCES IN RIVER CORRIDORS: ECONOMIC BENEFITS AND ENVIRONMENTAL OPPORTUNITIES

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ABSTRACT

The purpose of this paper is to present a series of case studies illustration how new approaches to aggregate extraction within river corridors can and are being undertaken with specific rehabilitation design intended to achieve both environmental gains for the immediate site and surrounding community, and for additional economic benefits to both aggregate operators and other parties. Planning Initiatives Ltd. has been involved in a number of such projects along the Grand River and Upper Thames River which are designed to achieve just such benefits by capitalizing on specific opportunities.

In the past, aggregate resources were extracted, in some cases, with little thought for the potential impacts on the environment. The result was often a landscape where the environment was given little recognition in the decision making process for rehabilitation. However, since the 1950's, the rehabilitation of pits and quarries has advanced, both in terms of scientific research, and legislation and regulations. Many rehabilitated sites today are unrecognizable as former pits and quarries. Today the Aggregate Resources Act and associated regulations make specific provisions for progressive rehabilitation, and have recognized rehabilitation as a crucial factor in aggregate resource development. Rehabilitation requirements and objectives are constantly evolving and with this, people are becoming aware not only of the additional requirements, but also of new opportunities which may exist to not only re-create pre-extraction uses, but to enhance the post-extraction environments.

Because the larger urban areas of southern Ontario consume a large proportion of the aggregates extracted and because of the high cost of transporting such aggregates, it is important and cost effective to obtain aggregates from as close to the urban areas as possible. Planning Initiatives Ltd. is promoting and committed to the concept of the "Urban Resource Rescue" for aggregates found in near-urban areas, in order to ensure they can be extracted prior to being sterilized because of other urban development. In some cases, major aggregate deposits are located within river floodplains, in or near these larger urban centres. Such is the case in both the Kitchener and London areas.

The paper will highlight specific case studies where innovative aggregate extraction and rehabilitation operations are being utilized to create the setting for post extractive uses which will improve the environment and level of community amenities in many ways including environmental enhancement, recreational improvements, residential development, and other uses. Revenues from such operations and joint ventures can also assist municipalities and public sector agencies during uncertain economic times.

As these types of examples become more common, the range and level of techniques for rehabilitation sites and improving the environment will increase and provide further economic and environmental opportunities.

SLIDE #	DESCRIPTION
1,2	Introduction - Planning Initiatives Ltd. and Topic
3	Rivers and Associated Wetlands are a source of water and life, a highly valued landscape continually under pressure from a history of settlement and land use. The natural resources contained in River Corridors provide economic and environmental opportunities.
4	Environmental gain is possible. Former unproductive, agricultural land or unused lowland areas in the floodplain can produce enhanced wetland environments, water bodies (cold/warm water), aquatic and terrestrial habitat as well as provide educational opportunities in an area adjacent to major urban centres.
5	Valuable economic gravel resources are often found in River Corridors. Extraction provides revenues to the municipalities in which the pit occurs, the aggregate producer has satisfied and fulfilled consumer demand for his product and can wisely utilize the available resources within the area.
6	Are aggregate extraction and protection/enhancement of natural and environmental areas incompatible land uses? A number of project Planning Initiatives Ltd. has worked on demonstrate clearly that they need not be incompatible.
7	Urban Resource Rescue Program refers to a strategy and philosophy utilized by Planning Initiatives Ltd. to ensure that aggregate resources, especially in near urban areas are protected or "rescued" before other urban development and activity result in the sterilization or loss of these valuable resources can be extracted.
8	In the Grand River Corridor, a significant transformation has occurred over the past 100 years with the settlement of the area. The Grand River has lost much of the original riverine habitat which once existed in the floodplain areas, through such activities as farming, clearing the land, drainage, urban expansion, etc.). Historically, these areas provided refuge, a food source and breeding areas for many species of mammals, waterfowl and fish. It is estimated that only 35% of the original wetlands in the Grand River watershed exist today. The loss of these areas reduces the ecological diversity and stability of the ecosystem. Are these areas now lost to us? The Grand River Corridor also is the source of major aggregate resources in a major urban area. Within this corridor there are a number of examples of completed, ongoing and proposed projects which illustrate how aggregate extraction and effective reclamation of the land can enhance such areas.

The following discussion will examine the methods by which aggregate extraction, with a well designed operational and rehabilitated reclamation plan can assist in recreation of these natural habitat areas, resulting in both economic and environmental benefits.

Bloomingdale Pit and Snyder Flats Project

9	A joint venture, Preston Sand and Gravel Limited and the Grand River Conservation Authority, has provided the opportunity to reconstruct these natural areas. Location - east side of the Grand River in the Township of Woolwich, and comprises 96 hectares. Close proximity to the urban area of Kitchener-Waterloo, but predominantly rural in nature.

10 Prior to gravel extraction, the floodplain area was low productivity agricultural land, subject to periodic flooding. Original site plan showed the rehabilitation of the site to agriculture.

1987 discovery of valuable aggregate resources below the water table in the floodplain provided an opportunity to re-evaluate final land use opportunities, with economic and environmental benefits.

11 Overview of the subject area during the early extraction period, showing the processing area in the foreground, a couple of the ponds under excavation and the urban area of Kitchener/Waterloo across the other side of the Grand River in the background.

12-14 Through well planned and innovative gravel extraction, the process of regenerating to an environment similar to that which might have existed in this watershed prior to settlement in the area is feasible.

Extraction of a valuable natural resource (aggregate materials) will leave behind a series of diverse habitats and breeding areas for both aquatic and terrestrial species through the creation of a number of floodplain pools and a cold water pond.

Final product will be a valuable site for public education and enjoyment, as well as providing an area for fish and wildlife in a highly urbanized setting.

15,16 Preston Sand and Gravel worked closely with the Grand River Conservation Authority on this project. Public participation included mailing of pamphlets to local residents, invitations to the open house, a number of press releases and interviews, and a questionnaire to residents regarding the project.

River Oaks, Kiwanis, and South Staton

17-21 Immediately south of the Snyder Flats/Bloomingdale Area are several other existing, proposed,and potential areas along the river where aggregate resources can and are being extracted or rescued in plans to result in a variety of ultimate final land uses. The River Oaks residential development represents an exclusive residential area. To the east of the River Oaks residential development (also a former aggregate operation) is Kiwanis Park and the South Staton area. Both areas are underlain by large reserves of gravel resources and located in the floodplain area.

22 Moving further south along the Grand River near the eastern border of Kitchener, there are a number of existing and proposed projects which will continue the "green" corridor along the river.

Grand River Park

23,24 Grand River Park, a project to provide a recreation area for the citizens of Kitchener now is in the approval stages. The proponent is the City of Kitchener.

25,26 Extraction of gravel in a floodplain area, with the royalties paid to the City will be used to create a recreation park with a marsh area, as well as canoeing and fishing areas for the citizens of Kitchener.

27-28 Terrestrial and Aquatic Habitat will be created by selective shaping of the pit floor and by creating habitat niches such as islands and bays.

Bickle Natural Area

30-35 Bickle site is located just south of the Grand River Park project, across Highway 7. It has regenerated naturally to provide two natural ponds suitable for fishing, nature observation, picnicking and hiking.

Summary

36,37 Planning for Better Times Calls for a New Vision of Rehabilitation Planning that provides:

- Economic benefits and environmental gains
- Creative and innovative rehabilitation land forms and uses which:
  - are cost effective to the producer
  - enhance environmental objectives of an area
  - meet the recreational/residential opportunities of the area

With innovative initiatives and the creation of well designed plans, we can utilize existing and future aggregate resources in such a way as to get both economic and environmental gain.

Putnam Tract Class 1 Wetland

38-42 This last example shows another illustration of how we can utilize existing operations not only to protect valuable environmental areas **(39)**, but in fact to enhance them, in this case a Class 1 Wetland along the Upper Thames River Corridor. Natural revegetation has already started and we are assisting it in order to expand the wetland. In doing so, we can enhance the environmental opportunities so that in the future, we will have other areas such as this ideal setting for a hiking trail along a riverside berm which has naturally revegetated itself over the last 35 years.

PROCEEDINGS

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ACKNOWLEDGEMENTS

These proceedings are the result of dedication and commitment of many people including members of the Canadian Land Reclamation Association, technical contributors, other associations and government bodies. The contribution of these groups to the 1993 Annual Meeting is gratefully acknowledged.

In particular, we would like to recognize the financial assistance provided by;

Aggregate Producers' Association of Ontario
Dufferin Aggregates Limited
Standard Aggregates Limited

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<u>Citation</u>

The citation of this document in all references is;

1993 Canadian Land Reclamation Association
Annual Meeting, Lindsay, Ontario, August 11th - 13th

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