REGULATORY RESPONSE TO CHANGING RECLAMATION DEMANDS

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ABSTRACT

A brief history of the reclamation legislation in the province of Alberta is given. Also how the public, industry, and the government agencies are involved in creating reclamation standards is discussed.

INTRODUCTION

I have been asked to present an overview of reclamation legislation in this province and what roles industry, the public and government have played in its development. I'll focus on its history and discuss those factors that are important in developing methods of meeting the reclamation standards.

Prior to 1963, there was no reclamation legislation. After the 1940s and the 1950s, the 1960s experienced a great deal more industrial activity especially in the petroleum industry. The 1960s also produced a new generation that questioned the values of their elders and were concerned about the environment. The combination of public concern about industrial development and the increased rate of industrial disturbance resulted in the SURFACE RECLAMATION ACT OF 1963 whick was administered by what was then the Department of Mines and Minerals. The Surface Reclamation Act was the first provincial legislation that dealt specifically with reclamation; it applied to surveyed land and dealt with the reclamation of wellsites, pipelines, battery sites, mines and quarries.

The Act set minimum standards for reclamation which were mainly concerned with cleanup and recontouring of the land. It also established field enforcement staff in the form of the Reclamation Council and provided for reclamation certificates.

In 1963, the same year that this Act was passed, I was a mining engineering student at the University of Alberta. That year, our class visited the newest and most modern strip mine in Alberta. On our tour, I was very impressed with the huge dragline and the modern coal handling equipment. I also remember being impressed by the reclamation and the improvement to the land that we were told would be done.

The next time I saw that mine was in 1979 and I looked in vain for the reclamation that had been described some 16 years before. In fact, it was not until 1981 or 1982 that this mine started to salvage topsoil.

I tell this story to demonstrate my belief that without legislation there would be little reclamation and no change from the situation I remember as a student. Even with legislation, the change is slow - it takes time to change people's attitudes and to develop processes and mechanisms to accomplish reclamation.

RECLAMATION LEGISLATION IN ALBERTA

In 1973, 10 years after the passage of the Surface Reclamation Act, a new act, the Land Surface Conservation and Reclamation Act was passed. This Act marked a distinct change in attitude towards reclamation. Whereas the Surface Reclamation Act required industry to "clean up after the damage was done", the Land Surface Conservation and Reclamation Act provided for the planning of development to minimize adverse impact and to ensure that reclamation is accomplished.

In 1973, Parts 1 and 2 of the Act were passed. Part 1 dealt with general administration and responsibilities and Part 2 dealt with the designation of surface disturbances requiring development and reclamation approvals.

In 1978, Part 3 was proclaimed. This part listed the types of surface disturbances for which reclamation standards were enforceable under that Act. These standards apply to all land in Alberta that is used for any of the following purposes:

1. the drilling, operation or abandonment of a well;
2. the contruction, operation or abandonment of a pipeline, battery or transmission line;
3. the opening up, operation, or abandonment of a mine or quarry;
4. the opening up, operation or abandonment of a pit or of a waste disposal site or a landfill site;
5. the conduct of exploration operations;
6. any other operation or activity designated as a regulated surface operation;
7. the construction, operation or abandonment of an interprovincial or international pipeline, powerline, railway or communication system located in the province.

Some disturbances are not covered by the Land Surface Conservation and Reclamation Act. Two of these are:

1. Residential Development.

2. Agricultural Operations - The Act prohibits designation of an Agricultural operation as Regulated Surface Disturbance but operations that are covered under Part 3 of the Act apply universally. These would include gravel pits, pipelines and wellsites.

In a general sense, the reclamation of agricultural operations and soil degradation of agricultural land is covered by the Soil Conservation Act of 1963, which is administered by Alberta Agriculture through each Municipal Government and their Soil Conservation Officers.

The Act (Part 2) also gives the Lieutenant Governor in Council the authority to make regulations designating certain types of disturbances as Regulated Surface Operations and requiring approval of Development and Reclamation plans prior to construction.

Following passage of the Land Surface Conservation and Reclamation Act, a number of regulations were passed, the first in 1974 was the Regulated Coal Surface Operations Regulations which applied to all coal mines in the province. The intent of this regulation was that land reclamation should become an integral part of mine planning and development. At this time, a great deal of public attention focused on coal as "The Fuel of the Future". Of particular public concern was mining on the Eastern Slopes of the Rocky Mountains and on the plains since it was estimated that 30% of the plains are underlain by coal that could someday be mined. It was obvious that mining of this coal would damage the plains' agricultural industry unless high standards of reclamation were adopted.

This same public concern was, I believe, responsible for the 1976 COAL DEVELOPMENT POLICY FOR ALBERTA, in which the Alberta Government made a major statement on reclamation objectives. I quote, "The primary objective in land reclamation is to ensure that the mined or disturbed land will be returned to a state which will support plant and animal life or be otherwise productive or useful to man at least to the degree it was before it was disturbed." This statement on reclamation by the Alberta Government is, I believe, the basis for the Department of Environment's policy that reclamation shall be to equal capability.

In 1976, regulations for reclamation of Oil Sand Operations and major Oil and Gas Pipelines were passed. These operations then needed Development and Reclamation Approval before construction, operation or abandonment.

The last regulation under the Land Surface Conservation and Reclamation Act was passed in 1979. This is the Sand, Gravel, Clay and Marl Surface Operations Regulation which requires Development and Reclamation Approval for all pits on patented land that disturb five or more acres.

Sand and Gravel Operations are a major land disturbing activity in the province. From our records, we estimate that sand and gravel operations in the province cover some 70 sections of patented land, and well over 50% of this land is CLI Class 4 or better. This means that without reclamation some

40 sections of potentially cultivated land could be lost to productive use. That is, of course, unless you consider a playground for dirt bikes as being a productive use. How much food do you think can be grown on 40 sections of land?

ESTABLISHING PROCESSES IN RESPONSE TO CHANGING RECLAMATION DEMAND

I would like now to say a word about the Department of Environment's goals and the objectives and standards concerning reclamation. The Department's broad goal is "to achieve the protection, improvement, and wise use of our environment now and in the future." From a land conservation perspective this means that our objectives are to avoid irreparable environmental damage and to ensure that Alberta's land resources are returned to a state of equal usefulness to society; in short, to return the land to a state of equal capability.

From these objectives the Department has developed a set of specific standards for the reclamation of industrial disturbances. There are nine standards outlined in the "Minimum Reclamation Requirements for Public and Private Lands in Alberta". These are the standards that the Reclamation Officers of Alberta Environment and Alberta Forestry, Lands and Wildlife apply to all surface disturbances. The standards deal with topsoil salvage and replacement, erosion prevention, revegetation and recontouring. They were first put out in 1980 by the Land Conservation and Reclamation Council. Until 1978 when Part 3 of the Land Conservation and Reclamation Act was proclaimed, the Reclamation Council had to use the old standard of the 1963 Surface Reclamation Act.

The decade from 1973 to 1983 can be seen as the period of time it took to get the legislation enacted and a workable system for ensuring reclamation established. The Department's reclamation objectives have not changed since the early 1970s. What has changed over the years and what continues to change are methods - the processes and procedures for making successful reclamation happen. So what we really ought to be talking about is how these methods respond to changing reclamation demands and how industry, the public and government interact within the present system to meet the reclamation standards.

APPLICATION REVIEW AND APPROVAL SYSTEMS

Changes in methods originate mainly from two sources:

1. Application Review and Approval Processes, and

2. Research and Development.

A component of these two sources, mutual education is another important factor that is present in most productive processes. Review and approval processes provide a forum by which industry, the public, and government interact to develop and refine methods for improving reclamation.

Most review and approval processes work in a similar manner. The industry as the proponent, submits an application for a particular development along with an estimate of its environmental impact. The government review system provides a critique of that estimated impact. Through this process, issues are identified and clarified. Similarly, environmental mitigation techniques proposed by industry are debated, modified and adopted as a means of meeting an environmental standard. Solutions to these problems are sometimes hard to find and it is often a trial and error process using the best knowledge available at the time.

As an example, let's look at an established standard - topsoil conservation for pipelines. It was thought that topsoil conservation was done fairly well by most of the industry. However, through the review and approval process, along with feedback from government field staff and landowners, poor conservation of topsoil during frozen conditions was identified as a problem.

The only options to maintain the reclamation standard of salvaging topsoil, were to either develop machinery to salvage frozen soil or to delay construction until the soil was no longer frozen. So industry developed a number of methods to salvage frozen soil.

Modification of existing equipment and the development of new equipment has now greatly resolved the problem of winter topsoil salvage. However, other problems remain to be solved before the quality of winter pipeline construction is as good as summer construction - at least for most agricultural soils.

The public's involvement in the application review and approval processes occurs in a number of ways. Generally, the first involvement of the public is the contact by the applicant with landowners early in the project planning stages. Further involvement of the public is often at organized landowner and industry meetings often called open houses, or round table discussions.

Also the public has input at the Energy Resource Conservation Board hearings or at the Development Appeal Board hearings if the municipality requires a Development permit.

Sometimes the public seeks a more organized input to the process by forming surface rights groups or public associations. Such groups may act as an environmental "watch dog" over industrial development in general or may focus on a specific development. Examples are the approximately 250 landowners who intervened at the ERCB hearing on the TransAlta 500 Kv Transmission Line from Calgary through the Crownest Pass, another is the Bear Lake Surface Rights Group from the Peace River Country, and yet another is the Alberta Wilderness Association. These and many other groups have had significant input into the formal approval process.

Government and industry field staff also play a major part in the review and approval process and are important in the development of new reclamation

methods. Field monitoring completes the "feedback" loop involving application planning, review and approval, construction and reclamation.

The review and approval process would be academic without this field input since there would be no measure of environmental impact, or the success of reclamation. Monitoring and enforcement of reclamation standards through agencies such as the Land Conservation and Reclamation Council also provide incentive for the development of new reclamation technology by industry.

The public plays an important role in monitoring industry's and the government's performance on environmental protection. Often this occurs as a result of their critique of government reclamation standards in general. In other instances, it may be an individual landowner or group of landowners who feel that the government's enforcement standards are not adequate for a particular development. Most of you would, I believe, consider their concern and involvement both legitimate and beneficial to the goal of environmental protection.

The review and approval process does not only apply to the more traditional developments such as coal, oil sands, pipelines, and gravel. It also applies to other areas not specifically legislated. For example, highways and large water and sewer lines do not require environmental approvals. Nonetheless, they are subject to government review before construction similar to that required for other industrial developments.

RECLAMATION RESEARCH AND RECLAMATION STANDARDS

Research is another means by which reclamation problems are solved and methods are changed. Paul Ziemkiewicz has told you far more than I could about the significance of reclamation research. I will only say a word on its significance to reclamation standards. Research, like the monitoring of construction provides feedback to industry, the public, and government on whether the reclamation procedures in place are successful and how other procedures might work.

Both the review and approval process and research have a common thread. That thread is education, and in my view, education is the most important factor in achieving reclamation. In order to change people's attitudes, you must convince them that there is another way - that there is information that they have not considered or that there is a problem where they see none.

Often I think we were not in the environmental approval business but that we are in the education and communication business. Of course, I don't mean the formal academic type of education or the public relations type of communications - I mean the informal process where people communicate their concerns and expectations about a development.

We, in the government review system, work to make various sectors of industry aware of the potential for environmental damage. Industry makes the

government staff aware of what the physical limitations of their developments are and the ways in which they view the effect of their development. The landowner tries to make industry aware of the special effects of the development on his land and what the problems are as he sees them.

As an example of this process, I will describe the Sand and Gravel Program which we started in 1982. The objective was to notify all the gravel pit operators in the province of the legislation and how this legislation affects their pit.

Since 1982, we have gone through the province inspecting all the pits in a particular municipality - then notifying the landowners and the operators of the reclamation requirements and if the pit is over 5 acres, following up with the operator until he receives a Development and Reclamation Approval. We presently are well over half way through the province and plan to have the province covered by 1990.

Our approach to this program has been an educational one. Most operators, except for the large corporate ones, do no long range pit planning. They work from one contract to the next and sometimes from one truckload to the next. When you have to reclaim progressively behind the mining of a pit, then you need a long-range plan.

We have shown many operators that by planning and doing progressive reclamation, they can in fact save money and have valuable reclaimed land for less total cost than their present practices. This is because with no planning they are presently double and triple handling overburden materials. We, in turn, learn from these operators and are made aware of what the operator's problems are and what he can do easily and what is more difficult.

There are about 1000 gravel pit operators out there and they come in all shapes and types. Most are reasonable and many have a genuine concern for the land.

Our approach to the Sand and Gravel Program has been an educational one where everyone learns an awareness of the other's position and problems. I believe that this approach maximizes the reclamation achieved.

Education is also central to this symposium today which brings together the various actors involved in industrial development and environmental protection. We all come to listen and learn from one another and to formulate ideas for furthering reclamation methods.

SUMMARY

In summary, reclamation legislation in Alberta has progressed from a "What Mess?" to a "Now let's clean up the mess we have made", and now to the present "How can we do the job and not make a mess."

The public represented by individual landowners and environmental groups monitor the present system and provide valuable feedback. The public's awareness and concern for environmental quality has evolved measurably. The public is more aware of the environmental consequences of industrial development.

Government has development standards for reclamation and requires better environmental planning from industry and from government.

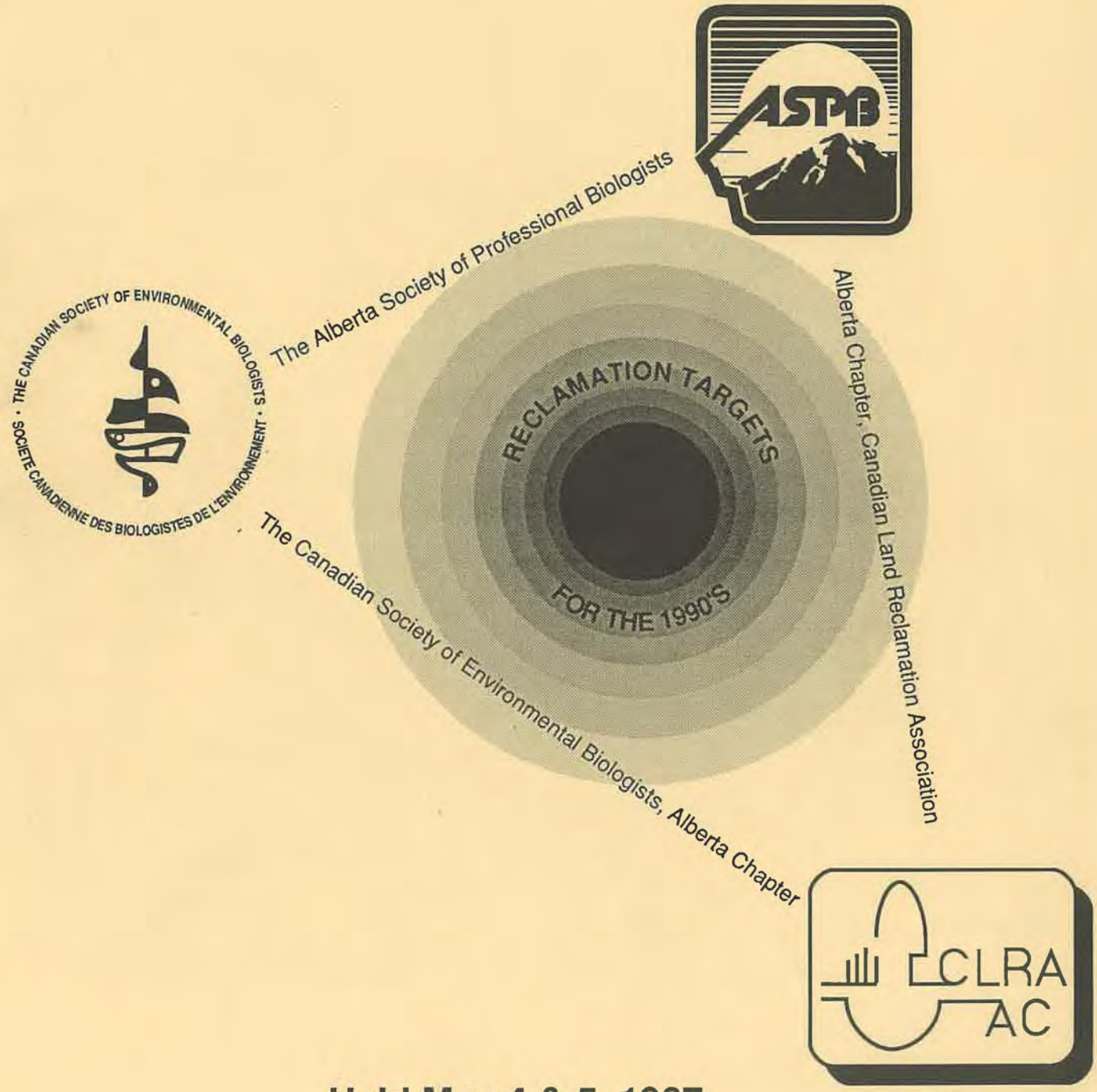
Where do we go in the future? What will be the reclamation issues in the 1990s? Unfortunately, I left my crystal ball at home and it hasn't turned out to be all that accurate in the last few years anyway.

I suspect though, that industry as always, will be accusing we government bureaucrats of trying to move the goal post but, I can assure them that we have not moved the goal post; it is firmly set and has always been since 1976, equal land capability.

However, I fully expect the methods used to attain the reclamation standards will change as problems are investigated and research provides answers. The standards themselves may change too as technology advances so we can get closer to the goal post. The big improvements in reclamation have been made and in the 1990s, I would expect refinements based again on research and technology.

The present reclamation legislation in the province already provides the framework for developing new reclamation technology so improvements to the present system should not require much new legislation.

Proceedings of a Symposium



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Dr. Larry Holbrook, Biotechnica International of Canada, Calgary, Alberta who spoke on Biotechnology and Biologists

- and -

to the Hon. Ken Kowalski, Minister of Environment, for delivering the opening address.

MESSAGE FROM THE ORGANIZING COMMITTEE

Reclamation practitioners and researchers have gone a long way to solving the problems posed by such disturbances as mining, drilling and pipeline construction. The future challenge for reclamation lies in applying our expertise in other areas such as industrial site decommissioning, habitat creation and restoration, and urban design.

The Symposium was designed to expose participants to a wide variety of "new" areas where reclamation science could be applied. These were the "targets" referred to in the Symposium title. The speakers did an excellent job in meeting this goal. Some of the participants felt the Symposium had not provided enough information on new methods to be employed in reclaiming these new disturbance types. While this was not the goal of the Symposium it remains a valid concern that should be addressed in a future symposium.

Finally, the Hon. Ken Kowalski, Minister of Environment, encouraged all participants to get out and preach the need for, and successes of, reclamation, and indeed all environmental programs. Telling ourselves in conferences how wonderful we are is preaching to the converted. We need to let those who benefit from our labours, that amorphous group known as the public, know what we have done for them. This, too, should be the topic of a future symposium.

The papers in this proceedings have been edited and retyped into a common format. The contents of the papers are essentially unchanged from the submitted manuscripts of the authors.

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