

Land Reclamation Specialists

Occupational Profile

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Introduction

Reclamation is the physical aspect of returning a landscape that has undergone surface disturbance back to a productive level. For example, when an oil well is abandoned, the equipment is removed and the vegetation that was disturbed is replanted. The vegetation must be able to subsist on its own, which would mean that the land was in a productive state. Under the Environmental Protection and Enhancement Act (1992), the standard that is used is "reclamation...to [the land's] equivalent capability".

Reclamation is a very large field, involving many different disciplines. This report will provide an overview of the employment and training opportunities in this field. It is based on interviews with a number of experts from government, institutions and the private sector.

Opportunities

There are no labour force or job market statistics kept on the specialisation of land reclamation. It is known that the field is growing rapidly in terms of demand, and that the number of environmental consulting companies is growing rapidly as well.

Government

Under the Alberta Environmental Protection and Enhancement Act every surface disturbance on public and private lands must be reclaimed. Reclamation Inspectors inspect oil wells, pipelines, gravel pits, borrow pits and mining sites to make sure that they are reclaimed properly, and then issue reclamation certificates. The Alberta government does not physically do reclamation. There are 6 Inspectors in northern Alberta for private lands, and about 15 for public lands. A Reclamation Inspector is usually a Technologist, with a background in soils, coming from biology, science degrees, engineering, or a certified engineering technology program. (Please refer to the February 1996 "Forestry Technologists and Technicians Occupational Profile")

Oil & Gas Sector

Most of the large oil and gas companies both do their own work and contract out some of the work. In either case, a representative of the company usually will be on-site to oversee the reclamation work. This person will have reclamation knowledge, and is probably experienced in other aspects of the company's operations.

One contact stated that they only hire from a list of approved contractors. This list has been compiled on the basis of completion of safety training and past performance. The contact also stated that they hire many aboriginal contractors. Another contact stated that all of their reclamation work is contracted out to a local aboriginal band.

In the oil and gas industry reclamation is done by two different types of businesses: general contractors and environmental service companies. General contractors do soil moving and landscape contouring with heavy machinery. Employees are trained on the job, and require no specific background relating to reclamation. One contact stated that it helps to have employees with an environmental education so that value-added service can be offered. Some contractors have their employees take short courses in order to better understand soils and soil productivity. Earth moving work is seasonal; however, most contractors will do related work throughout the rest of the year, providing some opportunities for year round employment.

Environmental services firms deal specifically with environmental concerns, and will do more involved reclamation work. They will often hire summer students who are pursuing an education in the area of reclamation. The environmental service firms generally assess the site, create a reclamation plan and then oversee the earthmoving operations which are contracted out. The duties could include site inspection, data gathering and interpretation, soil sampling, testing and treating, reporting, cost control, site assessment, as well as the physical labour aspects of reclamation including broadcast fertilizing and seeding and treeplanting. Some overseeing of contractors may be involved.

There is no typical size for an environmental service firm. Among the companies contacted, the number of employees specifically doing reclamation work ranged from two to 25. One contact reported hiring up to 12 employees for the summer season.

Transportation

Alberta Transportation and Utilities is implementing changes to their operations as a result of government downsizing. Instead of a Ministry employee overseeing construction operations and borrow pit clean up, engineering management consultants are now being hired. There is an apparent lack of reclamation experience in these engineering firms.

Although only 20% of the province's road way construction in the next five years will be in northern Alberta, in five years highways 43 and 34 will be twinned. The engineering management consultants working on these projects will need to have reclamation expertise at that time.

Forestry

There are few opportunities in forestry for reclamation work. In practice it appears that reforestation does not fall under the category of reclamation. Reclamation is only done on the roads and any stream crossings, otherwise the emphasis is on regeneration. The reclamation work that is done is carried out by the harvesters, and they do not hire people specifically for the reclamation work. The harvesters train their employees themselves.

Until this year the Alberta Forest Service visited logging sites weekly to ensure that operations are carried out properly. This has now been changed to a yearly auditing system and the size of the Forest Service has decreased. Yearly auditing procedures may lead to a higher demand for reclamation specialists in the private sector; however, none of those contacted were willing to

predict the implications of the new system.

Training

The background of a reclamation specialist can be varied, but the key area of knowledge is soils. Other areas of knowledge that are important include the following: chemistry, biology, botany, agriculture, grazing principles, wildlife management, forestry management, agronomy, biostabilisation and ecological principles. Many companies also require that the employee have an earthmoving background, so as to be able to understand what can be done with the heavy machinery. Most employers expect a certain level of experience, and are reluctant to hire new graduates with little or no practical experience.

Lakeland College offers a two year diploma program in Environmental Conservation and Reclamation. A two week practicum is part of the course, in addition to working field trips. There is also the opportunity to take an optional four week practicum. The program has about an 80% employment rate for recent graduates.

The first year of a University of Alberta Bachelor of Science in environmental and conservation sciences degree with a major in land remediation, reclamation and conservation can be completed at Keyano College.

Olds College and NAIT both have programs that are known in the industry. The statistics kept by NAIT suggest that 72% of the Environmental Sciences graduates are working in their field six months after graduation. This looks favourable compared to College-wide statistics which indicate that 63% of this year's graduates are working in fields related to their studies.

Many institutions in Alberta and across Canada offer programs in related areas. Conservation Enforcement at Lethbridge Community College and Environmental Technology at Mount Royal College are just two examples. In addition, short courses and seminars are available from a number of sources such as the Banff School of Management and the Dr. J.W. Grant MacEwan Environmental Studies Institute at Grant MacEwan Community College.

Upgrading is important to keep in touch with legislation changes and technological improvements. Private sector courses are offered by the Petroleum Industry Training Service in Calgary and Sharp Environmental in Fairview. These courses are from two to five days in length and run throughout the year and are aimed at educating people who are already in the oil and gas sector.

Certification

There is a move to standardize the environmental industry in order to protect the public from untrained practitioners. This move is coming from within the environmental industry in the form

of the Canadian Council for Human Resources in the Environmental Industry (CCHREI). It is expected that some sort of certification process will be put in place in late 1997. Any certification will probably be voluntary, and based on the completion of standardized training programs.

The CCHREI also compiles information on the environmental training programs that are offered throughout Canada. It is expected that what is offered as training will be compared with the skills and knowledge that practitioners need. The data pertaining to required skills and knowledge is available in three volumes from the CCHREI. The implication is that courses and programs will probably undergo some changes due to this initiative. There is also the possibility of accreditation. A CCHREI meeting in the fall will address the ways to achieve standardization.

CCHREI has compiled a Skill Set Documentation series dealing with the environmental industry. The skills and knowledge required in each field are listed, as well as the duties that are carried out. In addition, the CCHREI found in their research that many people who have a technical college diploma go on to become project managers. It is therefore important that management skills are not overlooked in college level programs.

Demand Factors

The factors that could change the employment situation include the amount of drilling activity in the oil and gas industry; the recognition by industry management of the need for well-trained personnel; and the amount of legislation and regulation governing activities in the major sectors.

Most of those contacted for this study felt that the field of reclamation was growing strongly, and predicted a steady job market over the long term. Many people and companies are entering the marketplace every year. One contact predicted that the next five years will be busy and then the demand will drop off again. He also stated that his company receives one to three unsolicited résumés per day.

Legislation

The demand for reclamation is directly tied to legislation and so any changes to that legislation would have a profound effect. However, most contacts thought that the legislation would become more strict if changed, thereby increasing the demand for reclamation work.

Downsizing

One of the repercussions of the downsizing that the major oil and gas companies are experiencing is that more of the reclamation work is being hired out to smaller consulting companies. In addition, the growing importance of environmental matters and public awareness has placed this field in a high priority position. Many smaller companies are entering the marketplace each year, and the opportunities for employment are increasing.

Orphan Wells

Current practice regarding well-site abandonment has changed as a result of industry and government pressures. Companies now have to either abandon non-producing wells properly or start them producing again; there is industry pressure against allowing non-producing wells to sit idle. There are thousands of orphan wells in Alberta. The orphan well program is a government-industry partnership that should stimulate demand for reclamation specialists. One contact predicted that this program should increase the demand for reclamation specialists by about 10% per year.

Flare pit reclamation is another growing area. In addition, one of the major oil and gas companies said that some of their major gas plants will be abandoned in the near future and will require reclamation and proper abandonment.

Employer Comments Regarding Training

- The programs at Lakeland College, Olds College and NAIT were all known by the contacts.
- While knowledge in a wide range areas such as soils, biology, botany, ecology and chemistry is important for working in this field. Most of those contacted for this study supported the view that experience is one of the key criteria for hiring. One contact stated that his company did not hire graduates without "real-world experience". Currently, many people lack experience and must be prepared to "work their way up from the bottom".
- Earthmoving experience was highly regarded and used as a criterion for hiring by many of the employers.
- One contact observed that the aboriginals in this field had related experience, though not necessarily any training.
- Several particular areas were identified where training is needed, including:
 - pipeline inspection
 - pipeline river crossings
 - environmental auditing
 - environmental assessment
 - remediation knowledge.
- Many people are trying to break into this field "the quick and dirty way", one contact stated. He said that since there is a lot of work to be done, this will continue. Another contact felt that there were too many people in the work force who felt that they were qualified for reclamation work having taken a 6 month or 1 year course.

Implications for Employment and Training

The demand for skilled reclamation specialists is expected to remain high for at least the next five years. Given the large number of opportunities within the energy sector, the recent announcement of expansion plans in the oilsands sector suggests a continuing long-term demand as well. As a result, demand appears strong for both pre-employment training and upgrading training for current employees.

Along with scientific and technical knowledge, anyone seeking employment in this field will have to have "real world" experience, particularly on earth-moving machinery. Such experience would be a valuable part of any training program.

Many people who have a technical college diploma go on to become project managers. It is therefore important that management skills are not overlooked in pre-employment programs.

Currently people working in this field come from a variety of training and employment backgrounds. The work of the CCHREI should help to clarify the skills and training needed for land reclamation specialists, making it easier to design programs to fit the demand for pre-employment training.

The wide range of knowledge and skills that are needed suggests that a great deal of co-ordination between departments within institutions and perhaps between institutions may be required to meet the needs of industries.

Short courses are very important to the oil and gas sector for upgrading their employees' knowledge and skills. Since current practice, legislation and industry standards are always changing there will be a continued need for short upgrading courses.

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