Abstract

Planning and Designing for Reclaimed Landscapes at Seton Lake, B.C.

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A recent program of recycling disturbed landscapes associated with hydro-electric projects has been undertaken by the Reservoir Lands Management Branch of B.C. Hydro. At Seton Lake, near Lillooet, sites include a large quarry, a series of borrow pits and a cut over portion of shoreline.

An overall masterplan includes phasing, trail and vehicular access and specific designs for view points, campgrounds and entrances. In addition, a planting strategy which emphasizes the use of leguminous and native vegetation as well as a grading approach for water retention has been evolved. The project's first phase examplifies a cost effective and compatable design for reclamation in a difficult terrain and climatic environment despite financial cutbacks.

Planning and Designing for Reclaimed Landscape: Seton Lake, British Columbia

Background

In 1971, B.C. Hydro and Power Corporation initiated a program of multiple-land use incorporating a range of public and private activities with energy generation and transmission. One result of this policy is the provision of public recreation at specific sites coupled with appropriate environmental protection and safety measures. In part, this mandate for public access is an attempt to alleviate an earlier perception of the Corporation as an aggressive consumer of land and water resources with consequential ecological and scenic disruption. During the last several years of financial exigency, B.C. Hydro has attempted to balance its engineering requirements with those of conservation and public benefit. Project cost effectiveness has become a paramount management considearation.

In this context, the Corporation's Reservoir Lands Management Branch has developed several recreation areas on disturbed sites related to hydro power dams and impoundments. Its planning and implementation process includes identification of potentials and user requirements, master planning and design, construction and operation. Recreation areas at Shushwap Falls, Hayward Lake, Daisy Lake, Buntzen Lake and Seton Lake have been designated, and have received attention from this branch and its consultants. Site enhancement and rehabilitation have sometimes been necessary to assure human safety as well as to create recreational amenity. A design approach which emphasizes skillful regrading, careful plant selection, simple construction, inexpensive maintenance and the ability to tolerate intensive seasonal use is therefore required.

Project Work at Seton Lake

A 5 ha site is located approximately 320 km north of Vancouver at the east end of Seton Lake near Lillooet, B.C. A series of grassed and wooded terraces are separated by steep gravel slopes. A beach and an abandoned aggregate pit are also present. The interior dry belt climate is characterized by hot summers and cold winters with some snowfall. The property is associated with a dam (equipped with a fish ladder) a canal diversion and a 42,000 kw powerhouse which form part of the Bridge/Seton River generating system. The Duffy Lake Road which accesses the site is becoming an increasingly popular summer tourist route. Cayoosh Creek forms the southern property boundary. Benchlands above the stream are used by local residents and visitors for camping and picnicking, although few built facilities presently exist. The route to this area is through a former Ministry of Highways gravel operation.

The Corporation initiated a phased program of site planning for recreational use in 1980. Its first priority has been renovation of three specific areas within its parcel. Development at the beach site includes parking, picnic tables and comfort facilities. Regrading, installation of fencing and creation of a sloped and retained pathway from parking to the beachfront has all been completed in addition to the planting of shade trees related to a waterfront picnic area. A second stage of work entails implementation of a longer term trail as well as the creation of a major viewpoint and campground entrance accompanied by rehabilitation of the abandoned gravel pits. The challenges of site improvement have included coping with rough bare mineral soils, high summer temperatures with dessicating winds and infrequent rainfall, archeological sites requiring protection, plus an extemely limited budget. Therefore, careful grading

has been combined with procedures for water retention, judicious use of topsoil, planting with nutrient enhancing leguminous cover crops and the introduction of tolerant native trees and shrubs. Impervious areas are limited to intersections with the Duffy Lake Road.

1. The Seton Lake Viewpoint

Located on the south side of Seton Lake above its confluence with the Seton River, the viewpoint provides extensive vistas toward Lillooet and the Fraser Valley as well as of the lake. The problems have been those of improving a rough gravel edge between the Duffy Lake Road and the site, providing increased slope stability between the viewpoint and the beach below, encouraging pedestrian access and circulation while protecting archeological middens and accommodating parking for tour busses and automobiles. As this site also allows direct views of the dam and the canal diversion, there is an additional opportunity to provide interpretive information about B.C. Hydro's overall use of the landscape.

The rough edge has been regraded to a 1:3 sloped facilitating planting and increasing its stability. Gravel from the pit (campground entrance area) below has been transported and utilized to provide a parking area and turnaround with proper cross-slopes provided for drainage. This material has also been used for pathways linking the parking area with viewpoints along the bluff edge. Barrier plantings are being installed below the perimeter pathway to discourage trespass and to increase stability. A new trail will link the upper viewpoint with the beach. An additional challenge has been protection and recognition of the important Indian Middens at this site. Both parking and foot paths have been routed to avoid these archeological locations and where feasible, the soil has been sculpted to better reveal their forms. Comfort stations and picnic

facilities have been located in an adjacent grove of ponderosa pine trees. The requirement for bus and automobile parking at the viewpoint has been coupled with a new turnoff and entrance road to the beach below, enabling B.C. Hydro to better control visitor flow and surveillance. Incidence of vandalism has therefore been extremely low. Construction details for fencing, trails, signage and retaining walls (where necessary) have emphasized use of pressure treated timber plus locally available rock. While regraded slopes will be freshly planted with a cover crop mix and tolerant woody species, a developing meadow where most of the middens and some of the best views occur has been allowed to naturally colonize.

2. The Gravel Pit and Campground Entry

This exposed site is visible from the Duffy Lake Road as well as from the viewpoint on the upper terrace. A major problem at this location is the treatment of a very large steep gravel bank, approximately 50 meters in height. Partially the result of previous glacial activity, the slope has become increasingly barren and unstable as a result of undermining during aggregate extraction. A major challenge therefore is to increase its stability as well as its visual coherence with surrounding terrain.

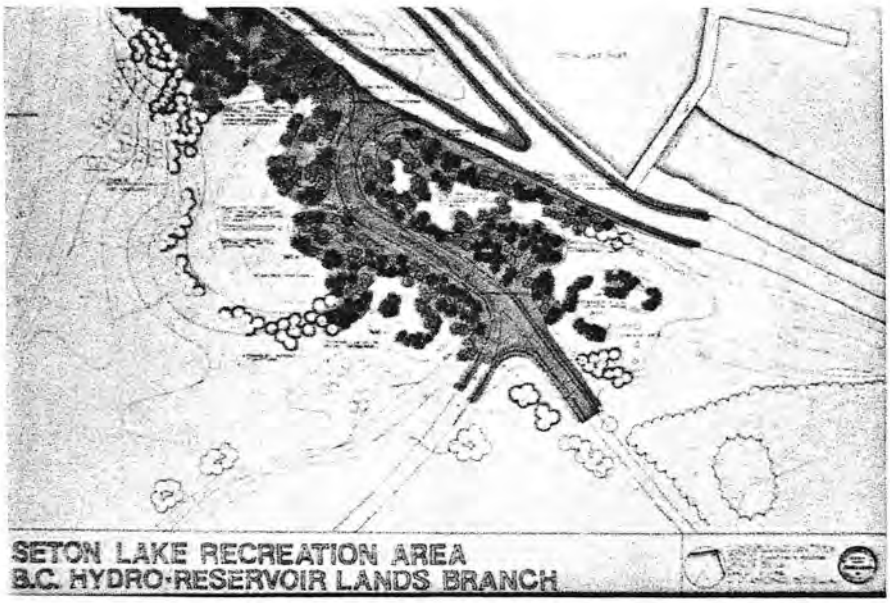
An approach is being pursued which involves gradual rather than radical recontouring and a planting strategy which incorporates replenishment of the rough soil base as well as matchng ecosystems and successional phases. Overplanting with small trees and shrubs has been advised, as up to a 30% loss is possible. These trees and shrubs will be thinned at a later date. Two fields are being formed through regrading. One will accommodate informal play activities related to the picnicking and day use area at Cayoosh Creek while another will provide for larger recreation vehicle camping. The installation of shade trees related to these locations is therefore essential. During regrading a series of

pockets to accumulate and retain moisture are being created on the shady side of recontoured slopes and berms. Topsoil and straw mulch are being utilized in conjunction with an early spring planting program.

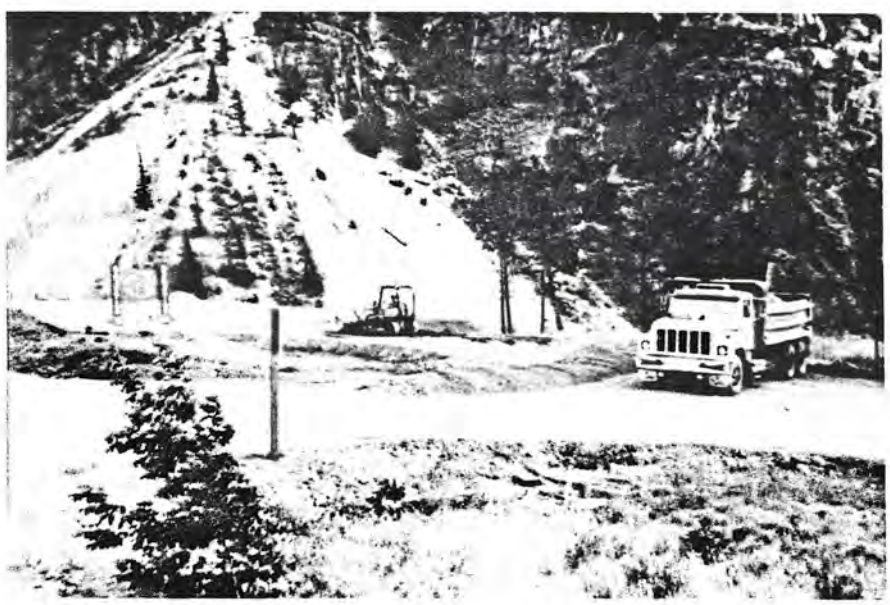
A custom seed mixture of legumes and grasses is scheduled for application on the bare slopes. Nitrogen fixing plants which have been recommended include white alsike clover, birdsfoot trefoil (a good slope performer) and perennial lupine. Recommended grasses are annual rye grass, alkalai grass and prairie velvet as well as aster. The herbacious perennial crown vetch provides vigorourous slope ground cover and chokes out undesirable weeds. The mix will vary with terrain and with proximity to tree and shrub plantings. For example, the grass content will be reduced adjacent to woody species. The steep exposed slope previously described will be hydroseeded, with additional planting installed once stabilized.

Research has been conducted into compatiable tree and shrub species for rocky, gravelly soils in this interior biogeoclimatic zone. Both ponderosa and lodgepole pine as well as douglas fir can, with a suitable mulching and early irrigation program be established. Trembling aspen, black cottonwood and Virginia cherry are among trees which will be considered, while ceanothus species, snow bush, soapberry and mahonia species will provide a shrub understory.

Since many decisions are being made on site by B.C. Hydro field personnel (with consultation with head office in Vancouver), a series of simple plans, sections and working details have been developed in addition to perspective sketches from various vantage points at both sites to guide layout crews. The extremely limited budget has not permitted an ongoing role for the outside consultant. Since startup in 1981, $350,000 has been

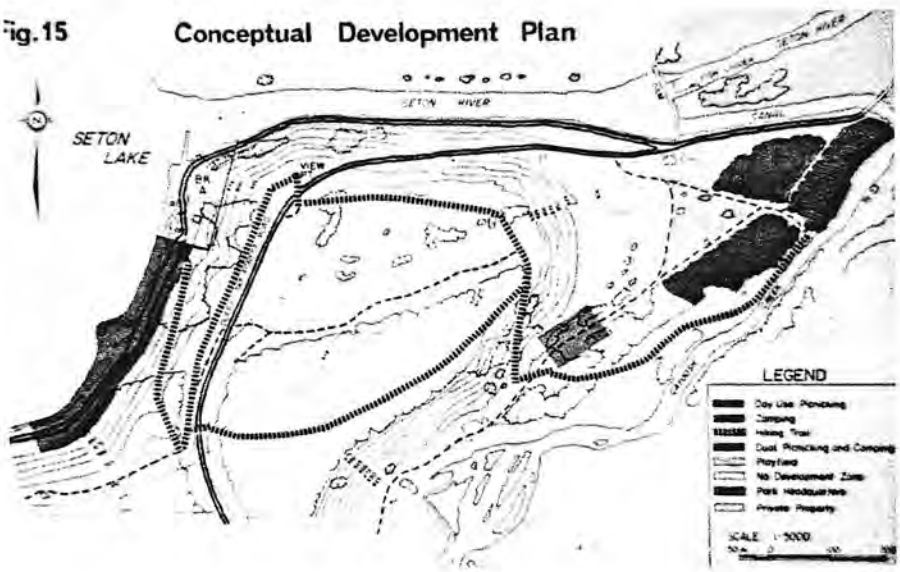


Reclamation plan for part of gravel pit which includes campground entry road.



Construction activity at viewpoint during 1983: grading.

Vista toward Lillooet and Fraser Valley from viewpoint above Seton Lake off the Duffy Lake Road.



Conceptual Development plan including trail network. Both gravel pit and viewpoint are rehabilitation sites.

spent on rehabilitation and construction at both the viewpoint and campground entry, with an additional budget allowance for this fiscal year.

Conclusions

The Seton Lake project demonstrates the willingness of one large resource extractor to initiate the rehabilitation of a difficult landscape with resulting public benefit. It also illustrates the dichotomy between an optomistic long range plan executed during a time of more generous budgets and the reality of constraint. However, in a recent article for "Landscape", Robert Dorney (April, 1984) speaks out strongly against over reclamation. He argues that disturbed landscapes often serve as educational benchmarks and that in time, some of these can become important places ecologically. There is a tendancy, he adds, to manicure and sterilize such sites. Perhaps at Seton Lake the present condition of economic restraint will encourage a cautious approach with assessment of the success of each phase before subsequent expenditures.

This modest design project represents an important role for the landscape architect. It is ironic that in British Columbia, where the provincial economy is mostly dependent upon its natural resources, most professional work is concerned with urban developments many of which are in the Lower Mainland. Hopefully, the profession will find future opportunities to liase with both governments and the private sector to recycle and manage used landscapes for human enjoyment and new economic opportunities.

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NINTH ANNUAL MEETING CANADIAN LAND RECLAMATION ASSOCIATION

RECLAMATION IN MOUNTAINS, FOOTHILLS AND PLAINS: **DOING IT RIGHT!**

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