

Multiple-Purpose Use of Rights-of-Way in British Columbia

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In recent years, the clearing and construction of new rights-of-way or the widening of existing rights-of-way have been subjected to severe scrutiny of regulatory agencies, environmental groups, protestors in general, and the various media at public hearings. The criticisms tend to group all rights-of-way into a common form of land use, regardless of their actual use and impacts.

Virtually nothing has been said, printed, or proclaimed on the beneficial aspects of rights-of-way. Overlooked are the benefits which are derived from better transportation, higher land use, higher taxation base, alternate resources uses, and more reliable energy supplies. Also overlooked is the fact that most developments are built by responsible organizations with continuing financial, social, and political obligations to both private and public investors. Such organizations have specifications and procedures for construction and environmental protection which have been successfully developed from field experiences on previous projects, dating back several decades.

After participating in the British Columbia Utilities Commission Hearings on the Vancouver Island Gas Pipeline Project, the authors were aware of increasing criticism of rights-of-way in principle rather than in fact. Subsequently they visited private and public agencies to determine the underlying reasons for the criticisms in the most affected regions of the Interior of B.C. from Williams Lake to Merritt.

The major railroads and highways, electric transmission lines, and oil and gas pipelines traverse the Province from Prince Rupert on the North Coast to Vancouver on the South Coast. While to date, "common corridor" concepts have not been planned, the major transportation and utility rights-of-way have been routed in parallel and frequently common routes and rights-of-way because of the constraints imposed by the limited accesses through the north-south orientation of the mountain ranges. Local geography and land uses have had little influence on the principal routing.

Most of the existing major rights-of-way pass through the Cariboo and Kamloops Forest Region. Since these Regions

have high multiple-use of land resources, they are selected for analyses of the impacts in this study.

Responsibilities of Developers

Planners and developers of rights-of-way have responsibilities which are usually overlooked by critics when the only visual and physical impacts are reviewed after construction.

Rights-of-way for electric power; gas, oil, and water pipelines; and transportation are designed to ensure minimal interruption of services. This minimal interruption is associated with safety to both the structures and to the public and private users. Physical influences like snow and land slides, erosion, ground stability, and other safety influences affect the location and widths of rights-of-way. When combined with the aesthetic needs of the land owners, rights-of-way are usually the result of many compromises beyond the purpose of the principal service or intent.

Complex regulations exist to protect the customers and shareholders of utilities to ensure that developments are built at lowest cost and least impact to other resources. While the objectives of such regulations are laudable in theory, the objectives often result in costly pre-construction reports and hearings, delayed start-ups, and expensive construction projects. Frequently, the costs of the latter could be better spent mitigating negative impacts, if any, of a completed project.

Physical Impacts of Rights-of-Way on Land

Two main types of rights-of-way exist; namely,

single-purpose use:

- for highways, roads, railroads, and narrow electric distribution lines in which the surface of the ground and air space are only available for single-use, and

multiple purpose use:

- for pipeline and electric transmission lines, in which the surface of the ground is available for agricultural and forest crops, grazing of cattle and wildlife, transportation, and recreation.

Single-purpose rights-of-way limit the use of the land resources. The traffic on highways and railroads preclude any other activities. Traffic has secondary impacts like noise, limited access, and environmental hazards which affect neighbouring lands. Land under narrow electric distribution lines has limited other uses except for agriculture. Electric lines restrict the use of neighbouring lands for forestry because of the need to keep the area clear of trees. The impacts of single-purpose rights-of-way are usually for the

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Mr. Bakewell is a Registered Professional Forester and Professional Engineer in British Columbia. He graduated from the University of British Columbia approximately 40 years ago and has long been associated with the pipeline industry of Canada. Mr. Bakewell acted as a consultant for the timber appraisal and management during the location of over 3,000 miles of the 4,000 miles of pipeline of the Westcoast Transmission Company Limited.

The authors acknowledge the contributions and counsel of many persons in Government Ministries, the Forest Industry, and the Ranching Industry in the Cariboo and Kamloops Regions. In principle, the foregoing conclusions reflect the consensus opinions of individuals directly involved in the administration and use of lands and resources affected by major rights-of-way.



incorporated into a common corridor, the loss of land bases is appreciably reduced with the single right-of-way. The concept is limited by aesthetics, wildlife crossings, and extra costs of construction. Such common use may require extra precautions for safety, corrosion, or interference of one or more of the facilities with each other.

In forest management plans, allowances are made for higher land use like rights-of-way, settlements, and agriculture. Accordingly, the construction of narrow rights-of-way does not affect the current timber supplies available to the forest industry.

The following schedule indicates the relative nominal widths and areas per kilometer used for the various types of rights-of-way. Sometimes parallel rights-of-way traverse the country and utilize the sum of the full widths. In other places, common rights-of-way are used for multiple purposes.

Characteristics of Common Rights-Of-Way

Primary Use	Typical Width (FT)	Area (HA/KM (AC/MILE))	Multiple Uses
Highway	48.77 (160.0)	4.88 (19.39)	Transportation and scenic viewing
Secondary Road	20.1 (66.0)	2.01 (8.0)	Transportation only
Electric - Transmission	183.88 (600.0)	18.39 (72.73)	Grazing, forage, access, recreation, Christmas tree farm, agriculture
- Distribution	6.10 (20.0)	0.61 (2.42)	Access
Pipeline - Gas & Oil	18.28 (60.0)	1.83 (7.27)	Grazing, forage, access, recreation, agriculture
Railroad	30.48 (100.0)	3.05 (12.12)	Transportation only

Benefits from Multi-purpose Use Rights-Of-Way

In the Interior Plateau of British Columbia, most of the electric transmission and pipeline rights-of-way traverse forest lands which had secondary use for grazing. In most places, the original clearing of the mature forest crop represented the end of a forest of over 100 years old. The forestry and grazing productivity of the lands was generally low. After clearing and reseeding a right-of-way with domestic grasses, the grazing capability is increased 4 to 10 times above the original productivity. On gas pipeline rights-of-way, the heat from compression in the "hot line" downstream of compressor stations causes earlier growth in the spring, appreciably extending the grazing season.

The rights-of-way are used for grazing large numbers of cattle. The cattle concentrate where the more abundant and nourishing supply of more palatable forage is available. A current criticism is that by concentrating the cattle on a right-of-way, the surrounding natural areas are undergrazed. In areas south of Kamloops, however, the benefits from grazing on rights-of-way, as well as on clear-cut logging areas resseeded for forage, are most significant. The summer ranges may be undergrazed but the end result is high weight-

public-at-large, but seldom benefit small communities along the route.

Multiple-purpose rights-of-way normally necessitate little change in the traditional uses of the land. Frequently they create higher economic use of land. They commonly have high local benefits affecting resources and land uses like wildlife and domestic livestock grazing, intensive agriculture, recreation, and transportation.

In the study area, rights-of-way lands are used for agriculture and grazing. Much of this new agricultural land results from clearing of low productivity forest stands. In many regions, wildlife benefits from improved growth of shrubs and other vegetation. Rights-of-way and tributary construction roads provide access for local transportation, logging, trapping, grazing, recreation, and other secondary uses.

Common criticisms to all rights-of-way are the withdrawals of land from the agricultural and forest land bases. In absolute terms, the criticisms may be true for single-purpose use rights-of-way but are only partially applicable to multi-purpose use rights-of-way. On many multi-purpose rights-of-way, large areas of relatively unproductive grazing and forest lands are converted into productive agricultural and grazing lands. One possibly justified criticism of rights-of-way is the unregulated use of newly opened areas by trespass, resulting in poaching, spreading of noxious weeds, and increased fire danger.

The losses of agricultural and forest land bases can be materially reduced by the "common corridor" concept for rights-of-way. When transportation and utility services are

gains in the cattle.

Principal criticisms of rights-of-way constructed through areas used for grazing are:

- Drift fences are needed where the rights-of-way traverse natural grazing boundaries caused by dense thicket stands of coniferous growth,
- Cattle concentrate on the right-of-way for grazing,
- The rights-of-way provide easy access to remote areas and allow trespass by all-terrain vehicles, and
- The rights-of-way open up new areas for contamination by knapweed and other noxious vegetation.

Obviously, the first two criticisms are easily solved by the construction of drift fences and proper distribution of salt, and in general, better livestock management. The criticism of access introduces a far more serious subject. A "grant-of-easement" for a transmission line or pipeline only permits the construction, operation, and maintenance of a facility. The Grantee has only the right of access to service the facility. The Grantee has no authority to prevent access or other uses except where danger to the installations may result.

The lack of control of access immediately reflects of the Provincial Ministries involved, particularly those of Forests and Environment. After construction both Ministries are faced with increased responsibilities, such as fire hazard, trespass tree-cutting, poaching, and more intensive game management. Neither Ministry has powers to limit access unless conditions require emergency actions. The mitigation of such access problems is to have Legislation and Regulations governing the administration of access for normal use. Such legislation will be of little influence unless the Ministries have sufficient funds for the necessary supervision.

The control of knapweed requires strict regulation of access and use. Pipeline construction contracts require cleaning of all equipment brought in from knapweed-infested areas. No such regulations or procedures are in effect for private or Government vehicles. British Columbia Hydro, Westcoast Transmission and other pipeline companies participate in all weed control programs for their respective rights-of-way, often in areas where no controls are practiced in neighbouring tenures.

The early growth along the "hotlines" on gas pipeline in early spring provides a valuable food source for moose and deer. In coniferous forest regions, the plants and deciduous shrubs which revegetate the rights-of-way provide valuable browse. In many areas, the additional browse on the rights-of-way and logging areas supports larger number of ungulates than were present before developments.

Trappers make full use of rights-of-way for travelling and setting of traps along the perimeters. The rights-of-way preclude the necessity for clearing of trails and provide easy access to more remote areas.

All-terrain vehicles and snowmobiles make extensive uses of rights-of-way for both summer and winter recreation. This recreation, often in trespass on private lands, is beyond the control of the right-of-way Grantee. Criticisms of recreation uses of rights-of-way are many, such as:

- Disturbance of cattle on open range,
- Crushing of forage and destroying delicate vegetation,
- Opening and not closing gates on drift fences and allowing cattle to roam,
- Vandalism to remote buildings and machinery, and most importantly
- Damage to drainage and erosion control facilities.

The irresponsible and uncontrolled recreation use after construction cannot be controlled by the Grantee. The

Resource Ministries, particularly Environment and Forests, need legislation which enables them to control the use of rights-of-way at all times.

Powerline and pipeline rights-of-way frequently provide the initial access routes for subsequent public roads and logging developments. This route pioneering by utilities is particularly significant in the mountainous regions of both the Interior and the Coast.

Many of the foregoing benefits are not quantitative individually or in any specific locality. However, when accumulated over many thousands of miles of rights-of-way, they appreciably influence other resource uses.

Economic Returns from Rights-Of-Way

Economic impacts of multi-purpose rights-of-way involve the following:

- The forest yield and values of stumpage on Crown lands,
- The range fees for grazing of domestic livestock on Crown land, and
- The annual taxes paid by private companies for facilities on Crown lands.

Much of the forest land withdrawn for rights-of-way in the Cariboo and Kamloops Forest Regions is of lower site quality and productivity than the lands used for commercial forest operations. During the years 1978-1982, inclusive, some 267,689 hectares of natural forest land were logged and produced \$340,180,000 of gross stumpage and royalty payments, or \$1,271 per hectare. On an 18.28 meter (60-foot) gas pipeline right-of-way, this stumpage return is equivalent to \$2,326 per kilometer.

This value represents the actual returns to the Government from the sale of mature timber with an average age of well over 100 years. On the premise that grazing fees were collected on the same lands, the accumulated value of the annual fees, based on average productivity under forest stands and invested at five percent interest, is some \$1,462 per kilometer of right-of-way. Thus, the total value on a 100-year rotation for timber production and grazing is \$3,788 per kilometer.

The grazing capacity of seeded right-of-way is estimated to average five times the grazing capacity of unmanaged forest stands. Accordingly, on the same basis as above, the value of grazing fees alone in 100 years is \$7,360 per kilometer or nearly twice the combined value for unmanaged forestry and grazing.

The combined forestry and range values could be appreciably improved with intensive resource management of the forest and range potentials. Unfortunately, in the foreseeable future, the possibility of intensive management is remote.

The taxation benefits from the installed pipelines are more dramatic than the resource yields to the public revenues. The annual taxes paid on the Westcoast Transmission gas pipeline are some \$4,700 per kilometer. If accumulated at five percent, some \$12,340,000 in taxes are paid for each kilometer of right-of-way during a 100-year period.

While the benefits of higher use can be calculated for the above, the added values for wildlife, recreation, and access are intangible. Nevertheless, these intangible benefits must be recognized even though they are not given monetary values.

Conclusions

New rights-of-way across the Provincial Interior Regions are inevitable with future developments for transportation, electric power, and oil and natural gas transmission.

Opposition to new developments has overshadowed the potential benefits available from past developments because basic concepts have not been recognized; namely,

- The differences between single-purpose use and multiple-purpose use rights-of-way,
- The reduced impacts to local resources by using "common corridor" rights-of-way,

- The forest management plans have allowances for withdrawals of lands for higher uses so reasonable withdrawals for rights-of-way do not affect the allowable cuts,

- The secondary uses on multiple-purpose rights-of-way have high economic and social returns to the public, and
- The negative impacts of rights-of-way on grazing, wildlife, and forestry after construction are largely due to a lack of Provincial legislation and regulations covering access on Crown lands to enable the Ministries to effectively administer resources in their respective jurisdictions.

Home Rule on the Range. Early Days of the Grazing Service. 1984. Marvin Klemme. Vantage Press, Inc. 516 West 34th Street, New York, NY 10001. \$10.95 cloth.

Mr. Klemme was one of the original 20 men chosen to staff the Grazing Service (now the Bureau of Land Management) and, the only one still living. His book deals with the first four years of history of that organization and relates details from his excellent memory (and journal?) which undoubtedly provide the only record of his experiences in existence.

"Home rule on the range" relates how effectively the early "local grazing boards" managed the allocation of grazing privileges in the West. These boards were comprised of stockmen elected by their peers. They took their assignments seriously, and generally gave fair and equitable decisions. The boards were advised and guided by the twenty Grazing Service employees. The story relates how many of the tense situations were resolved.

The story is woven with color and humor into an interesting and valuable history of the period. Mr. Klemme obviously carried a camera in his work as the book is illustrated with pictures of the people he describes.

I was particularly pleased with his tales of the work of the CCC camps, since I got my start as a professional range manager as an enrollee. I was also pleased to find another book authored by Mr. Klemme, after reading long ago his book titled, "An American Grazer Goes Abroad," from which I first learned about grazing in China and Siberia.

This small book is well worth its price, and the investment of a few hours to read it.—**Grant A. Harris**

CALL FOR PAPERS—EIGHTH GREAT PLAINS WILDLIFE DAMAGE CONTROL WORKSHOP

This year's workshop will be April 28-30, 1987 at Howard Johnson's in Rapid City, SD. The workshop is sponsored by the Great Plains Agricultural Council Wildlife Resources Committee in cooperation with U.S. Forest Service: Rocky Mountain Forest & Range Exp. Stn., Nebraska Forest, and SD Coop. Fish & Wildlife Research Unit.

Papers are invited which deal with any aspect on wildlife damage for the general session. This includes rodents, carnivores, other mammals, birds, vertebrate pesticides, and policy. Two special sessions are planned on: (1) prairie dog management and control, and (2) predator management and control to enhance waterfowl production. Presentation should be no more than 20 minutes. Posters and Exhibits are invited. The proceedings will be published by USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, and distributed to all registrants.

Schedule

- Feb. 2, 1987 Title and abstracts due for contributed papers and poster displays.
- Mar. 2, 1987 Arrangements for poster displays and exhibits due.
- Apr. 1, 1987 Draft of paper due to Editor.
- Apr. 28, 1987 Registration, General Session, and Banquet.
- Apr. 29, 1987 General Session, Prairie dog management and control, and predator management and control to enhance waterfowl production.
- Apr. 30, 1987 Half-day field trip to examine prairie dog management.

If you have any questions concerning the Wildlife Damage Control Workshop or need additional information, please contact Daniel W. Uresk, USDA Forest Service, Rocky Mt. Exp. Sta., SD School of Mines, Rapid City, SD 57701, (605) 394-1960.



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