

WELLS GRAY PARK DEVELOPMENT 1950
A REPORT DEALING WITH THE CLEARWATER LAKE ROAD SURVEY AND OTHER
RECONNAISSANCE AND ENGINEERING SURVEYS CARRIED OUT IN 1950

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NOTE: In addition to reporting on the engineering projects assigned for consideration, I have included a number of recommendations and suggestions that may be of some assistance in connection with the preparation of a development plan for the park.

In making my recommendations for the trail system, I have referred to the survey conducted by A. Weston in 1949 and the Lookout Visibility Survey of the same year, and have given consideration to information obtained from the local residents and guides.

I. MURTLE RIVER BRIDGE

(a) Bridge Approach: Considerable delay in the work program resulted when hardpan was encountered during construction of the bridge approach. Proper equipment was not available for drilling and a delay of three weeks resulted when drilling had to be carried out by hand. Six hundred and fifty yards of hardpan were removed before the rock was exposed. A Warsop gasoline drill was available but it was not suitable for use in the hardpan, although it worked satisfactorily in the rock. Fifty-five yards of rock were removed before the road was pushed through to the bridge, with the first crossing being made on August 9. Further blasting was carried out with a resulting grade of 17%. This grade can be reduced to 10% without producing a through-cut although a compressor and drill should be available before further reduction of the grade is attempted. However, the approach is safe and no difficulty should be encountered by anyone that should drive into the park.

(b) Maintenance 1950: The main bridge timbers were re-treated with Cuprinol and the bents with a creosote - petroleum mixture. This work was carried out with a spray gun: _____ gallons of Cuprinol were used, and _____ gallons of petroleum - creosote mixture, giving an average cover of _____ and _____ square feet per gallon, respectively. (Figures to be obtained from the Ranger.) Because some of the timbers had not been treated due to shortages of preservative or because of ice at the time of construction, it was considered wise to repaint the bridge. Many checks had developed in the timbers after seasoning for a year, and protection against rot could be ensured only by retreating.

Starting on the bridge approach

Drilling rock on the approach with a portable gasoline drill

The 'cat' reached the bridge on August 9.

Above and right: Murtle River Bridge during high water 1950

The corduroy, as improved with running planks, will serve in a temporary way for a few years. It will have to be replaced with fill when the road is improved.

Car and trailer crossing the bridge to the proposed picnic area. The approach can be negotiated without difficulty.

Cat crossing the bridge on August 10.

Jeep truck brought fuel over the bridge the next day.

The grade shown above (25%) was later reduced to 17%.

Other maintenance included the tightening of the tension rods. Seasoning of the timbers had produced a slight settling and slight camber was returned to the truss by tightening the rods.

The bridge in no way was threatened by an extremely high water. Two or three logs became jammed against the bridge, but they were easily pushed away.

(c) Appendix to 1949 Report: Drawings of the bridge castings and rods were not included in the original report. These have been prepared and are attached to this report.

The design of the tension rods in the truss has been checked and, although the design is adequate, it has not been consistent. The bridge may receive considerable use over the years, and any corrosion may weaken the bridge at its weakest point. To provide the same factor of safety in all the rods, the four outer ones should be increased to 2 1/2" or to 2" with upset threads.

In any event, a protective measure should be taken by slackening off each rod one at a time and giving it a coating of red lead with special precaution being taken to protect the threaded ends.

II. ROADS AND TRAILS - MAINTENANCE AND NEW CONSTRUCTION

(a) Public Works Road - Clearwater Station to Hemp Creek: Until this road has been greatly improved, there is no justification for any major park development. There has been very little maintenance on this road over the years, and instead of showing a gradual improvement, the condition of the road has been deteriorating. A number of bridges were replaced in 1948 and 1949, but one known as "Second Canyon" bridge has not been repaired. Instead, it was planned to relocate a section of the road, thereby eliminating the bridge, but this new construction has not been undertaken and the present state of this bridge makes it very unwise to cross again with heavy equipment. The Public Works Department in Victoria should be contacted, requesting that this new construction be undertaken at an early date. In addition, a plan for improvement, however small and gradual, would serve greatly in deciding upon the development which we should undertake, year by year. The use that is given to the road by tourists, hunters, and by the local residents, warrants at least a small appropriation each year towards the gradual improvement of this road.

(b) Hemp Creek to Dawson Falls: This section of the road was improved greatly this year and, although it is still a single-lane road, it is in better condition than the Public Works road up to this point. A ramp was constructed and a large quantity of blue shale with very good road building qualities was placed on the road. The road, improved by grading and surfacing with this shale, is now passable even in wet weather. Before any further work is done on the road, the subgrade should be prepared. A very little consideration given before any new work is undertaken will result in an "engineered highway" and will eliminate relocation, minor as it may seem. For example, if the centre line of the road is staked in at the corduroy, the fill will be placed in such a way as to give a straight road instead of one with the centre line wandering from side to side in the already cleared right-of-way.

A transit and chain line was run along this section of the road and the enclosed plan has been prepared. The profile was plotted from levels carried from the Murtle River Bridge where the elevation has been assumed as 2600'.

Bank of shale-like rock near present ranger station, and ramp used for loading the material.

This material contains large quantities of serpentine, a possible source of magnesium. There appears to be a chemical reaction when the material becomes wet, but only because the particles are flaky and pack tightly when wet. This material has proved very satisfactory as fill through swampy areas. It also provides an excellent driving surface.

Truck overturned on road near the entrance to the Park.

(c) Dawson Falls to Clearwater Lake: The construction of the Murtle River Bridge and the subsequent plan to construct the road to Clearwater Lake changes to a large extent the possibilities for development of the park. The construction of the bridge immediately made it possible to consider the north side of the river near Dawson Falls for a lodge site, campsites, and picnic area.

To a greater extent, the construction of the road changes the possibilities for development of the upper Clearwater area, including the Horseshoe and Clearwater Lake. The road is being built as a truck road, as part of the protection system of roads and trails, but it is not to be opened to the public until it has been improved and made safe for travel. The road has been so located that it can be improved to highway standards and small changes will give a maximum grade of 7 1/2%. The type of country opened up is exceptionally scenic and the fact that the road follows the river for five miles brings excellent river fishing within a few minutes' drive from the Dawson Falls area.

The location of the road from the bridge to Clearwater Lake constituted the major portion of the work for the survey crew. The construction camp at Dawson Falls was used as headquarters with secondary camps at the Horseshoe and Clearwater Lake.

The project would not be considered a difficult one, as the trail, with minor locations, would have served as a location, although construction costs would have been higher had this route been chosen. The purpose of the survey was to find a location upon which a truck road could be constructed as cheaply as possible but, with minor relocations, would permit improvement to highway standards. For this reason, alignment was given more consideration than sight distances or maximum grades over short stretches. However, it will be possible to reduce the grade to 7 1/2% maximum by cut and fill, improving sight distances at the same time.

The location of 15 1/2 miles of road through undeveloped country was an interesting project. There was not the troublesome bother of obtaining right-of-ways through property, and probably the only natural control point was near the Forest Service cabin at the Horseshoe, where the bank sloped steeply to the bench above the river.

Two possible general locations were considered: the higher levels, where much of the trail was located, and the benches near the river. Rocks and boulders abounded at the higher levels, and as river valley benches were composed of gravel, it was decided to descent into the valley as soon as possible. We chose to descent to the valley by following a draw about 1 1/2 miles along the trail. This route had its disadvantages too: a cedar swamp had to be crossed, and a switchback had to be utilized, so that the road would pass below a rock bluff, but easier construction in the river valley justified the choice of the route.

The attached plan to scale of 500' = 1" shows all the trial lines as well as the final location. All work was done with chain and compass, with grades set by Abney level. The route was traversed several times by foot and the total distance chained, including the trial lines, amounted to 157,660 feet, approximately 30 miles.

A brief description of the road which follow may be of assistance in planning the work program when construction is continued.

Mileage

- 0.0 - 0.7 The reverse curve at stations 8+00 - 14+00 was put in to avoid a swampy area through which the trail passed. The turnout onto the bridge approach has a radius of 210' and was planned so that, when the bridge approach was reduced to 10% grade, a throughcut would not be required. The present grade on the approach is 17% over about 200'.
- 0.7 - 1.0 This section includes the north approach. The larger curve has a radius of 110' and was not built to give that radius, but to permit the reduced grades. The cutoff between stations 44+00 and 39+00 was intended to complete a loop back to the bridge, but was later developed as part of the road. The larger curve remains ungravelled and has not been used, although it should be used when the picnic area is developed.
- 1.0 - 1.8 Difficult construction over this rocky stretch. No gravel available.
- 1.8 Culvert required at the beaver dam.
- 1.8 - 3.0 This section follows the trail through a swampy area. At some later date, this section may be reconstructed, crossing two or three swampy areas, although the present location may prove to be satisfactory.
- It was necessary to cross through a cedar swamp at station 149+00 in order to get below a rock bluff at mile 4.0.
- 3.0 - 4.5 7 1/2 % descent to the river valley. Rock bluff at mile 4.0. During construction, the road was shortened, omitting the switchback shown on the plan, but the final road will have to following the original location to reduce the grade.
- 4.5 - 5.4 Easy construction in the river valley. Culvert at mile 5.1. End of construction at 5.4 in 1950. Camp to be established here next year.
- 5.4 Creek - culvert required
- 5.5 Mineral springs - culvert required
- 5.55 Small creek - culvert required
- 5.5 - 6.5 Moderately easy construction. Some large timber near mile 5.6.
- 6.5 - 6.8 Rock encountered close to the river. The road climbs a few feet to a bench above.
- 6.8 Creek - culvert required
- 7.0 Creek - culvert required
- 7.1 Creek - culvert required
- 7.1 - 7.9 Easy construction
- 7.9 Forest Service cabin at the Horseshoe - culvert required.

- 7.9 - 9.7 Easy construction. A change in the location as indicated by the dotted line, which became apparent after the location was plotted, might be made. At present, the location takes the road along a fence around John Ray's farm.
- 9.7 Creek draining the lakes on John Ray's farm - bridge required.
- 9.8 Lone Spoon Creek - bridge required
- 9.8 - 10.0 Soft ground. It may be worthwhile to construct this portion of the road at the base of the sidehill, although the climb should not be started until mile 10.0. A spur road would have to be extended for 3/4 mile from mile 10.0 if the proposed bridge site is to be used.
- 10.0 - 12.2 Easy construction, generally along the trail location over rolling sand hills.
- 11.7 Creek - culvert required
- 12.2 - 12.5 The road crosses to the west side of the valley where construction is easier.
- 12.3 Culvert required at the outlet of Shadow Lake.
- 12.4 A switchback here eliminates some rockwork that may be done at a later date to straighten this section of the road.
- 12.5 - 14.0 Easy construction
- 12.8 Culvert required
- 13.8 Culvert required
- 14.0 Bridge required over creek draining Zellar's Lake. The dotted line indicates the final location, but this requires a large quantity of fill, but this fill can be omitted in the first stages by placing the road on the side hill through the creek bed.
- 14.0 - 14.5 The road descends to the lava flat. To speed construction, it would be possible to descend on the old trail at a steeper grader from mile 14.2 to mile 14.5.
- 14.5 - 15.1 The road passes over a flat lava flow with 18" of cover. The dotted line indicates a revised location which would be well to follow, to eliminate a reverse cut at station 779+00, where the road passes too close to an unstable edge of the bank.
- 15.3 A new bridge will be required at Falls Creek, but the addition of one stringer will permit the temporary use of the the span.
- 15.3 - 15.5 This portion of the road has been located well back from the river, and does not cut the concession area. A crossing of the swampy areas at the cabin has not been planned, but access to the cabin can be obtained by use of the trail, which will be wide enough for a Jeep.

Considerable time was spent in reconnaissance and unless the benefits of this reconnaissance are utilized to the fullest extent, some of the time spent has been wasted. The location in the field is blazed where the timber is heavy and is staked where necessary. However, there are certain sections where an alternative route may have to be used because of construction difficulties which were not apparent during location. I have indicated some of the possible alternative routes, but I think it would be worthwhile if I spent a week or two going over the location with the foreman in charge or the Ranger when construction is commenced in the spring. It was my intention to do this last fall when the location work was completed, but at that time it was thought that work could continue for only a couple of weeks. Other work seemed more pressing at the time.

Left: Falls Creek Bridge. The bridge can be widened and used for light vehicles until a new bridge is built.

Right: Outlet of Clearwater Lake as seen from Falls Creek.

Left: View of the outlet of Clearwater Lake from the air.

Right: Forest Service Cabin near the outlet (location indicated on the aerial view) - the terminus of the road.

Sketch of crossing at LONE SPOON CREEK.

Bridge over creek at Sta 512+00, Mile 9.75, draining lake on John Ray's farm.

Sketch of crossing at Falls Creek

Mahood Mountain on the north shore of Mahood Lake.

The construction of two or three miles of road along the lake in front of this mountain present the only great obstacle in the completion of a land route connecting the Clearwater Valley with the Cariboo. It may be possible to pass behind this mountain with the road taking a cut-off in the vicinity of the Horseshoe.

McNeil's Lodge at the west end of Mahood Lake. Fifty-five miles of poor road from here connects with Mile 93 on the Cariboo Highway. Location of 12 miles of new road along Canim Lake would improve this route.

(d) Mahood Lake Trail: An area of the park, very inaccessible and not properly patrolled, lies on the west side of the Clearwater River, extending from Clearwater Lake to Mahood Lake. This area is reported as the main lightning risk area of Wells Gray Park. A boathouse was constructed in the fall of 1949 at the Horseshoe to replace one destroyed in 1948 when both the boathouse and boat were lost. A new boat is to be brought in, and this will make it possible to cross the river at this point. However, more effective patrolling would be possible if the road were extended into this area. An existing trail which could be improved, and a site suitable for a low cost bridge make the extension of the road feasible.

The illustration on the following pages shows the site and type of structure which would be required. A truss similar to that of the Murtle River Bridge and two approach spans would provide the crossing. About 25,000 cbm of timber would be required, but the accessibility of the site would make construction simple compared to that at the Mushroom. The concrete piers would have to be poured during extreme low water, in August or September. It should be possible to build the bridge for \$6,000.00 - \$7,000.00.

The main disadvantage to the site is that it is quite far north. The crossing could be made farther south, but any reduction in cost resulting from shorter road required would not justify the additional cost of the bridge at any of the other sites.

The improvement of an old trail, built first in 1912 when a donkey engine was transported from Mahood Lake to within a couple of miles of Clearwater Lake, would not be a costly project. The construction of a road along this route would bring Mahood Lake to 21 miles from Dawson Falls, and would actually make it possible to travel from the North Thompson Valley through the park to the Cariboo. The distance from Clearwater Station to Mile 93 on the Cariboo Highway would be about 107 plus a 15-mile ferry. There is a barge on the lake already that has been used for carrying vehicles.

I consider the development of this circuit a very important factor in the development of the park. Tedious backtracking would be unnecessary and many people would be attracted from distant centres just to drive over a route as scenic as this one would be. Some of the highlights along this route would include: Bear Creek Falls, Dawson Falls, Helmcken Falls, a scenic drive along the Clearwater with river fishing, side trip to Clearwater Lake with excellent fishing, lake trout fishing in Mahood Lake, with swimming and boating on the lake, fishing in Mahood River, and side trip to Sylvia and Goodwin Falls, Canim River Falls. The road would not change the park from the "Primitive Wonderland" state but would give a glimpse of the area to those who cannot afford the time or the expense of traveling by plane or pack train.

(e) Murtle Lake Trail: The trail to Murtle Lake is in such bad shape that some definite action will have to be taken soon; it will have to be abandoned or put back into shape. It has been maintained until recently by private interests, but major improvements and relocation is required to reduce maintenance costs. If this trail is to serve in the trail system dictated either by protection or recreation needs, some effort should be made to keep the trail open.

Referring to the report by R.L. Fielder of 1949 entitled "Wells Gray Park Lookout Requirements", we find a list of eight selected lookout sites: Hemp Creek, Pyramid, Centre Ridge, Stillwater, Azure, Kilpil, Summit, and Hobson, with recommendations for development of Azure with priority I, Stillwater, priority III, and Hemp Creek as secondary. Mr. Fielder states that "the development of Stillwater presents a problem as access is difficult. The only approach is the southern slope which

is heavily covered with rock. It will be necessary to cross the Murtle River at Dawson Falls, and follow the existing trail along the north side of the Murtle River to the Pyramid, then construct new trail for approximately 10 miles along the river, then approximately 4 1/2 miles to the top of the hill.”

Mr. A. Weston as stated in his report of 1949, page 15, that the construction of the trail on the north side of the Murtle from the Mushbowl to Outlet Lake is quite feasible with the exception of a section in the vicinity of Stillwater.

The recommendations above indicate that any trail work attempted should fit into a program for the development of a trail on the north side of the river. Passing the low ground in the vicinity of the Stillwater will be the greatest problem. It may be necessary to construct bridges or trestle over two or three channels subject to flooding every spring. However, this area may be temporarily by-passed by using the present trail as far as Stillwater and then crossing to the north side. In this manner, the lookout requirements would still be served while making possible new construction of the trail badly in need of repair on the north bank.

The new construction would fit into the planned trail for the north side of the river and the required bridge could always be used as a connection to the area to the south. A very light packhorse bridge could be constructed at considerably lower cost than trying to provide a trail around Stillwater.

(f) Helmcken Falls Trail: The construction of the road to Helmcken Falls has been delayed until the parking problem and lookout facilities have been studied further. The possibilities of bringing motor traffic to the north side of the falls is now possible, after the construction of the road to Clearwater Lake. The lookout side on the north side of the river is well back from the edge of the bank and the view is considered to be superior.

For use with the present trail, a parking lot should be provided for the convenience of those walking to the falls. The present trail is 2 1/4 miles long from the road to the falls, and this could be shortened by one-quarter of a mile as indicated on the plan. The trail to the falls should be as direct as possible as very few people would be interested in picnicking along the river other than at the falls when other areas of the Clearwater and Murtle are more scenic and accessible.

Possible trail or road locations to the north side of Helmcken Falls are indicated on the plan.

(g) Recommendations for the Road and Trail System:

1. Some action from the Public Works on the improvement of the Clearwater Station - Hemp Creek Road.
2. Construction of a bridge across the Clearwater in the vicinity of Lone Spoon Creek.
3. Improvement of the trail from this crossing south to Mahood Lake, with all work being done on a location that can be developed to serve towards the construction of a road.
4. Planned development of the trail to Murtle Lake on the north side of the river.
5. The construction of an experimental section of road using the blue shale available, to test its qualities as finished course.

III. LODGE SITE - DAWSON FALLS

A number of people are finding their way into the park, but most of them have been arranging accommodation before they come in, or they bring camping equipment with them. The need for additional accommodation will increase with the improvement of the road, and it may be a number of years before the construction of a lodge would be justified.

Until the present time, the Dawson Falls area only has been considered, but the possibility of developing an area near the Horseshoe or John Ray's farm as the centre of the park should be given some consideration. The pleasing atmosphere and the central location which would be produced if the route through the park were developed, makes it a possible location for the major development in the park.

Depending on the type of development of the park, a lodge at Dawson Falls may still be warranted. A topographic map of the area has been prepared to a scale of 50' = 1" and I have indicated on the plan two possible sites. Actually, these sites are the same one; one development puts the lodge close to the river and the other puts it on a bench 60 feet above. The site above the river is the more logical from service standpoint, although the location at the river has certain appealing values. The building would remain cooler in hot weather and mosquitoes would be absent near the river when they could be troublesome on the bench above. I have attempted to illustrate a type of development that could be fitted in.

Services: The development of a small hydro-electric plant in the area would add greatly to the conveniences which could be offered. The water supply problem would be simplified, both for the lodge area and the picnicking areas and campsites nearby. Eighty feet of head is available between Dawson Falls and the Mushroom, where a low cost turbine and generator installation could be built on the rock foundation. The pipe line with intake just above the falls would serve the lodge as well as providing water for the turbine.

Access to either site would not present a problem.

IV. ADMINISTRATION HEADQUARTER AND RANGER STATION

A site near the park boundary at the edge of the green timber was considered for a Ranger Station site. A topographic map of the area has been prepared to a scale of 50' = 1".

The site, which has been chosen over that of Dawson Falls because of better exposure, could be considered as the park entrance with a checking station combined. In winter, road clearing will not be as much of a problem.

A water supply has been checked. A well set in a creek bed would supply the domestic requirements of the site. A pump and 600 feet of pipe would be required to pump the water to a reservoir or pressure tank situated in the Ranger Station.

An experimental section of road in front of the Ranger Station has been mentioned already in this report. This road is indicated on the plan of the site.

View of Dawson Falls from the lodge site on north side of river.

View from the proposed Ranger Station, looking towards the Trophies.

Murtle River bank erosion: the bank, five feet above high water and one hundred feet in width, composed of silt and fine sand, is being washed away, a little each year.

V. CAMPSITES AND PICNIC AREA - DAWSON FALLS

Overnight camping could be developed on the banks near the Mushbowl on either side of the river, although the only water supply is the river. If power were available, water could be pumped to either bank.

The area just north of the bridge has been chosen as the picnic area. Four tables, two fireplaces, and a toilet should be built. The bridge approach should not be considered a hazard, even though a portion of the grade is 17% as other sections of the road on the way into the park have grades up to 22%.

VI. MURTLE RIVER BANK EROSION IN VICINITY OF BLACKWATER CREEK

A map of the Murtle River in the vicinity of the Pyramid shows the location where the Murtle is threatening to break through its east bank each year during high water. The fine, silty bank is washing away and it would be possible, any year during high water, for the river to break through and flow down the Blackwater and Hemp Creek valleys. According to Mr. Ted Helset, the trail along the bank at this point has been moved twice in the last ten years. A log jam caused this situation and some blasting and clearing the channel with a bulldozer would prevent a disaster. The Department responsible should be notified and preventive measures taken.

VII. OTHER SURVEYS IN 1950

(a) Wildlife Study: This survey was conducted by the Parks and Recreation Division and the recommendations which come out of this survey may influence the overall plan of development of the park, and thereby the location of the administration and lodge sites.

(b) BC Triangulation Survey: As a result of the disastrous floods of 1948, a Dominion-Provincial Board was set up to study the Fraser River Basin. The Clearwater River, which drains a lake area, is one of the principal tributaries of the North Thompson, and it has been suggested that a foot of water at the Mission gauge could be held back in the park. Studies have been commenced to study the feasibility of this proposition.

In order to provide the necessary primary triangulation system for this study and to complete a system already started, a BC Triangulation Survey was carried out in 1950 in the general area of Wells Gray Park. This survey will result in a more accurate map of the park. It may be necessary for another field party to obtain more field information before an accurate map of the area is published, but an interim map may be prepared. Every effort should be made to have these maps prepared, to encourage the Geodetic Survey to carry levels into the area.

(c) Provincial Water Rights Survey: A survey party of four camped at the lower end of Clearwater Lake for six to eight weeks. Triangulation stations along the lake were re-established and a study of outlets of Clearwater, Hobson, and Azure Lakes was made.

(d) Dominion Water and Power Bureau: This Department established temporary recording stations on the five major lakes in the park, and plans were made for the installation of automatic recorders. a cable crossing has been planned for stream gauging purposes just below Falls Creek on Clearwater River.

Note: The recommendations for the road and trail system have been based upon the assumption that the construction of the Clearwater Lake road would continue in 1951. If this is not the case, funds should be made available to either slash the right-of-way or cut a trail along the location line from mile 5.4 (end of construction in 1950) to mile 6.9, where the road location joins the existing trail.