AN ENVIRONMENTAL STUDY OF THE WHITE PASS & YUKON ROUTE PIPELINE FROM THE B.C. - ALASKA BORDER TO WHITEHORSE, Y.T.

by: D. MUNRO
K. WEAGLE

ENVIRONMENTAL PROTECTION SERVICE
WHITEHORSE, YUKON - SEPT. 1976

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September 1976

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Introduction

At present White Pass & Yukon Route (WPYR) is operating the pipeline from Skagway to Whitehorse to transport furnace oil (Diesel) and stove oil (number one). On the Canadian side there are 90 miles of four inch I.D. and four and one-half inch O.D. high pressure pipe extending from the Alaska-British Columbia border at White Pass to Whitehorse which is operated under a National Energy Board (NEB) licence. About 32 million gallons of product is pumped through the line annually, which averages approximately 100,000 gallons per day of operation. Pumping stations are located at Skagway and White Pass. From the White Pass pumping station the product is pumped into Canada at approximately 1200 psi.

Nine spills ranging in size from ten barrels to one hundred barrels have occured along the WPYR pipeline from November 1973 to August 1976. Details of these spills are outlined in Appendix I. The number of spills, and the fact that many of the spills are in areas which can be considered environmentally sensitive, suggested that the pipeline in its present state is not environmentally sound. The apparent condition of the pipeline, and the WPYR application to the NEB to increase the pumping pressure from 1200 psi to 1400 psi, suggested the need for a survey to determine the environmental problems presented by the pipeline.

Since the time of the survey WPYR has taken steps to improve some of the problem areas as indicated in Appendix II.

History of the Pipeline

The pipeline was built in 1944 by the United States Army to transport petroleum products from Whitehorse to Skagway as part of the Canol Project. The railway right-of-way was leased by the United States Army from WPYR for pipeline construction. In 1946 the pipeline was shut down. It was put back into operation in 1947 by the United

States Army with the products pumped from Skagway to Whitehorse. In 1948 the pipeline was leased to WPYR for one year. Then the U.S. Army took the pipeline back and continued to operate it until 1958. WPYR purchased the portion of the pipeline in Alaska from the U.S. Army in 1958 and the Canadian portion was transferred to the Canadian government who in turn leased it to WPYR. In 1962 the Canadian portion of the pipeline was purchased by WPYR (historical information supplied by Mrs. A. Retallack, Manager Public Relations, WPYR).

Methods

The survey was conducted during the period of July 19 - 22, 1976 by Dave Munro, Environmental Protection Service (EPS), and Bill Pastichuk, Fisheries and Marine Service (FMS). Neil Wright, WPYR, supplied logistic support and accompanied the survey team during the survey. The pipeline from Whitehorse to White Pass was examined on July 19 to 21 by railway motor car. Areas not accessible by rail were examined by truck on July 22, 1976. The pipeline was evaluated for the following and problem areas were documented with photography:

1) depth and protection at road and rail crossings;
2) type and location of stream crossings;
3) areas of unsupported pipe;
4) areas of pipe susceptible to rockslides, avalanches, mud slides and glaciation;
5) distance of pipe from the railway tracks;
6) distance of pipe from lakes and soil conditions between the pipe and the lakes;
7) areas of the pipe with dents or damage;
8) additional situations that may result in spills from the pipe.

All areas of the pipeline were examined in relation to the potential magnitude of possible spills and the sensitivity of the receiving environment. Sensitivity was examined in relation to contamination of surface water, ground water, soil, areas critical to water fowl,

wildlife, fisheries resources, and domestic water supplies.

Environmentally sensitive areas

There are seven different areas along the pipeline route which are considered environmentally sensitive. These areas are identified on the route map in Appendix 3.

1) The White Pass area, miles 20 to 24. The topography of the area is dominated by broken rock with intermittent areas of standing and flowing water. These intermittent water courses form the head waters for Summit Lake. The vegetation in this area is dominated by dwarf fir, mountain hemlock and lichens. The F.F. Slaney & Co. Ltd. (1974) report indicated that this area has a very low productivity and disturbed areas have a slow recovery rate.
2) The Fraser Hill area, mile 24 to 27.7. This area is extremely wet and swampy with water flowing into the Tutshi River and Bernard Lake. In this area the pipe dips into one creek (Plate 1) and follows above another creek supported by the rocks in the creek bed for about 100 yards (Plate 2). The flow into the Tutshi River and Bernard Lake contributes to the sensitive nature of this area with respect to the wildlife and fisheries resources.
3) Shallow Lake and Bernard Lake, mile 27.7 to 32. In this area the pipeline follows the lake shore and is within five yards of the lake shore in some areas. Along this portion the railway bed separates the pipeline from the lake. The pipe crosses several streams which flow directly into the lakes. The sensitivity of this area is related to the close proximity of the pipe to the lakes.
4) Area north of Log Cabin, mile 33 to 36. This area is very wet and swampy with numerous creeks inhabited by beaver and muskrats. From mile 33.5 to 34.5 there is water flowing in the ditches on either side of the railway track and the pipe is in one or the

other ditch throughout the distance. At mile 35 the pipe crosses under the track and follows in a creek for about 100 yards (Plates 3 and 4). The creek flows into Lindeman Lake approximately three miles from this point. Again the amount of flowing water and the presence of muskrat and beaver contribute to the sensitivity of the area.

5) Bennett Lake, mile 40.6 to 67. For most of this area the pipeline runs along the lake with the railway bed separating the pipeline from the lake. The pipeline is often within ten yards of the lake. The pipeline crosses numerous streams which flow directly into Bennett Lake (Plates 5 and 6). The sensitivity of this area is related to the close proximity of the pipeline to the lake, the fishery resource and the recreational value of the lake.

6) Lewes Lake and the Watson River, mile 74 - 86. In the area south of Lewes Lake the pipeline follows the Watson River for several miles and is very close to the river in several locations. Between mile 79 to 80.4 the ground is swampy and drains into the Watson River. In the area where the pipeline follows Lewes Lake it is separated from the lake by the railway bed and is over 100 yards away from the lake on a bench. The sensitivity of this area is a result of the close proximity of the pipeline to the river and lake which supports fish and wildlife populations.

7) Cowley Lake, Murray Lake and Wolf Creek crossing, mile 93 - 102. The Cowley Lake and Murray Lake portion of the pipeline is environmentally sensitive because it is inhabited by beaver and muskrat and is a breeding area for waterfowl. Throughout most of this area the pipeline is on the ridge above the lakes and for the most part is over 100 yards from the lakes. The Wolf Creek crossing is very important because of the creeks direct and rapid flow into the City of Whitehorse domestic water supply (Plate 7).

Draindown characteristics of the pipeline in environmentally sensitive areas.

Draindown figures represent the maximum possible product loss at a particular point on the pipeline. They are based upon the assumption that an open fracture of the pipeline occurs and that there is an absence of action to control the spill resulting in a complete draining of the pipe at the point of the break. Of the areas indicate as being sensitive the area along Bennett Lake has the highest draindown. The draindown at Bennett station (mile 40.6) is 750 barrels and remains above 500 barrels for the entire length of Bennett Lake with peaks of 900 and 875 barrels at miles 48 and 50 respectively

The Fraser Hill area (mile 24 to 27.7) has the second highest draindown. Here the draindown increases from zero at mile 24 to a maximum of 575 barrels at Fraser station (mile 27.7). At the Tutshi River crossing the draindown is 475 barrels.

The other sensitive area where draindown is high is the Wolf Creek crossing where it is 500 barrels.

The draindown in other sensitive areas is much lower (0 to 400 barrels). In only a few places is the draindown zero, and in most areas the draindown is sufficient to cause considerable damage to the environment if a break were to occur.

Specific problem areas

1) Road and rail crossings.

The Annie Lake road crossing is the only road or rail crossing representing a major problem. Annie Lake road crossing at mile 89.2 is shown in Plates 8 and 9. At this crossing the pipe is encased in a sleeve which does not extend the entire width of the road bed. The depth of burial under the road bed is a

maximum of six inches and unprotected pipe extends out of the road bed on either side of the crossing. The pipe was damaged by a grader plowing the road on November 5, 1973 resulting in the spilling of 25 barrels of furnace oil. However, beyond repairing the pipe no action was taken by WPYR to prevent a similar occurance. It is recommended that the pipe should be properly buried to meet present standards for road crossings to reduce the possibility of another break.

2) Stream crossings and other water related problems

The majority of stream crossings appear to be in acceptable condition with only a few exceptions. At most small stream crossings the pipe is laying on the ground and spans the stream from bank to bank (Plates 5 and 10). At the larger stream crossings the pipe is either supported on the railway bridge (Plate 11) or suspended by cables from "A" frames (Plates 6 and 7).

The unsatisfactory stream crossings are located at miles 24.8, 25.6, 35.3 and those requiring minor repairs are located at miles 55.4 and 57.5 and the Tutshi river crossing.

At mile 24.8 the pipe dips into the stream (Plate 1). This is a very unsatisfactory crossing and it is recommended it be rectified by supporting the pipe on the bridge. At this location the draindown is 225 barrels requiring about one and one-half hours to drain. It is felt unless action is taken to improve the crossing there is the possibility of a complete break, during spring breakup, resulting in a large spill directly into the stream.

At mile 25.8 the pipe follows above a stream (Plate 2) supported on the large rocks in the stream bed. It is recommended that

the pipe be pulled out of the stream bed and placed along the side of the railway to reduce the possibility of damage to the stream.

At mile 35.3 the pipeline again follows a stream bed (Plates 3 and 4). At this location the pipeline crosses under the railway track approximately 100 yards beyond the railway motor car shown in Plate 3 and follows along the stream for about one quarter of a mile. For 100 yards of its length at this location the pipe rests in the stream bed in the water. It is recommended that the pipeline be moved to the other side of the railway bed for the one quarter mile that the stream follows the right of way.

At the Tutshi River crossing mile 26.7 the pipeline is tied to the railway bridge with wire. However, on the south end of the bridge the wire holding the pipe to the bridge has broken, leaving the pipe unsupported for part of the stream crossing (Plate 11). It is recommended that the pipe be securely fastened to the bridge over its entire span.

At the stream crossings at miles 55.4 and 57.5 the pipeline is suspended by cables and "A" frames (Plate 5). The cables have been anchored to the pipe, on either side of the creek, by means of a hook welded to the pipe (Plate 12) at mile 57.5 and a clamp at mile 55.4. It is recommended that the cables be anchored by some other means to alleviate stress on the pipe.

Along the Watson River there are two areas of concern related to the close proximity of the pipeline to the river. The areas are at miles 77.4 and 85.6. At mile 77.4 the pipeline crosses a gully which drains directly into the Watson River (Plate 13). The pipeline is unsupported for 50 - 60 feet and bends slightly into the gully At mile 86.5 the pipeline comes within five

yards of the river in a low wet area (Plate 14). It is recommended that at both of these locations the pipe be moved to the other side of the rail bed in order to have the rail bed act as a dyke between the pipeline and the river.

3) Areas of unsupported pipe.

In most wet areas the pipe is above ground and supported on old railway ties at regular intervals (approximately 50 feet). In other areas the pipe is lying on the ground or is buried to various depths. There are two areas, mile 40 (Plates 15 and 16) and mile 74.3 (Plate 17) where the pipe is resting on the ground, on banks above the railway track and the banks are slumping. In these areas it is recommended that the pipeline be moved away from the edge of the bank or moved down onto the railway bed below the banks.

4) Areas susceptible to rock slides, avalanches, mud slides and glaciation.

Along Bennett Lake there are numerous areas of pipeline susceptible to rockslides. Through most of the slide areas the pipeline is buried a few inches deep along the railway bed, surfacing only for short distances. In some of the areas where the pipe is above ground it is shielded with old railway ties. The areas susceptible to rock slides are at miles 42.2, 43.6 (Plates 18 and 19), 51 - 52, 57.7, 63.7 - 64.5. It is recommended that in these areas the pipeline be checked for damage, damaged sections replaced, and the pipe set into the side of the railway bed and covered with sand to an acceptable depth to prevent damage from minor rock slides.

At the south end of Bennett Lake from mile 41 to 43 there are several areas where glaciation occurs during the winter months (Plates 20 and 21). At these locations a six inch sleeve has

been placed around the pipeline in four foot sections. This is to allow the track crews to use picks to remove the ice from along the railway without damaging the pipe. These sleeves are only over short portions of the glaciated area and the pipe shows pick marks where it is not protected. It is recommended that in these glaciated areas the pipe be inspected, all damaged pipe be replaced, and the unprotected sections of pipe be properly protected from damage due to pick work by use of a sleeve or other protective material.

7) Areas of the pipe with dents and damage.

There appeared to be few areas where the pipe has been dented or damaged except near White Pass. To ensure there isn't additional damage to the pipe that was not noted during this brief survey, the pipeline should be carefully inspected over its entire length and repairs made where necessary.

In the area from White Pass to Fraser, miles 20 to 28, the pipe has been dented by snow clearing equipment in many locations. In addition all the pipeline markers have been knocked down during snow clearing operations (Plate 22). Some of the worst areas of damage are at miles 21, 21.5, 25.7 (Plate 23), 28.5 (Plate 22). It is recommended that the section of pipe from miles 20 to 28 should be carefully inspected and all damaged pipe and pipeline markers be replaced.

There are also three locations where the pipeline was damaged last winter, and spillage occured. The damaged sections were temporarily repaired and it is imperative that permanent repairs be completed. These areas are at mile 21 (Plate 24), 39.8 (Plate 25) and 49.3 (Plate 26).

At mile 21 a section of pipe was replaced but put in slightly

off centre. It is recommended that this section of pipe be properly aligned.

A break at mile 40.1 was repaired with a clamp to stop the leakage and get the pipeline back into production as quickly as possible. It is recommended that this clamp be removed and the damaged pipe replaced.

A break at mile 49.3 was repaired by welding the crease in the pipe. It is recommended that this section of pipe be replaced.

8) Other areas suspect of possible weakness or in need of repair. When the U.S.Army shut the pipeline down in 1946 they drilled one-quarter inch holes in various places in order to bleed the pipe. When the pipeline was put back into production, they welded over the holes. Since that time most of these sections of pipe have been removed. However, there are three locations where these sections have not been replaced, at miles 54.4, 55 (Plate 27) and 55.3. It is recommended that these sections of pipe be replaced.

Two other sections of pipe which should be removed are at miles 24.8 and 94. At mile 24.8 there is a one-inch spiggot welded to the pipe (Plate 28) which was installed in order to bleed the pipe. At mile 94 there is a three-quarter inch bleeder valve (Plate 29) which is no longer being used. It is recommended that the valve be removed to reduce the possibility of vandalism or uncontrolled bleeding of the pipeline as the valve is in an accessible location.

At mile 49.8 the valve needs attention as it is leaking (Plate 30). If the valve cannot be repaired it is recommended that it be replaced.

Recommendations

From the concerns outlined in the body of the report it is apparent that the pipeline is in unsatisfactory condition from an environmenta point of view.

Areas needing immediate attention are: The Annie Lake road crossing mile 89.2; stream crossings at miles 24.8, 25.8, 26.7, 35.3, 55.4 and 57.5; areas of unsupported pipe at miles 40 and 74.3; areas of dented and damaged pipe at miles 21, 21.5, 25.7, 28.5, 40.1 and 49.3; the drill holes at miles 54.4, 55 and 55.3; the spiggot at mile 24.8; the bleeder valve at mile 94; the valve at mile 49.8; and glaciation problems along Bennett Lake between miles 41 and 43.

Beyond these immediate repairs there are numerous areas indicated in this report which require work that should be done as soon as possible. These include moving the pipeline to the opposite side of the railway bed along the Watson River at miles 77.4 and 85.6 and properly protecting the pipe against rock slides in areas along Bennett Lake.

Due to the methods employed in the survey there were sections of the pipeline that did not receive detailed examination. In light of the number of problem areas encountered there are probably additional sites not found during this survey that require attention. It is therefore recommended that the pipeline be carefully inspected over its entire length and repairs made as necessary.

Due to the age of the pipeline, wartime construction methods, the environmental threat posed by its present condition, and the cost of repairing and maintaining the existing pipeline, alternative methods of moving fuel from Skagway to Whitehorse should be examined. There appears to be three alternatives open or opening in the near future:

1) upgrading or rebuilding of the pipeline conforming to present

day standards;
2) transporting the fuel by tank car on the WPYR Railway;
3) transporting by road after the Carcross-Skagway road is completed

It is recommended that WPYR initiate this examination immediately as the need for this type of study is made more urgent by the increasing demand for petroleum products in Yukon.

References

F.F. Slaney & Company Limited. Environmental Considerations Carcross to Skagway Road Mile 65.6 to 85.2. Golder, Brawner & Associates Limited, Vancouver, Canada 1974.

Acknowledgements

The authors wish to thank Mr. C. Wykes for his assistance in reviewing this report, Mr. C. Kingston for supplying information about the pipeline, Mr. N. Wright for his assistance during the survey, Miss L. Ament for typing the report, and Mr. K. Sillak who assisted in editing the report.

Plate 1 Stream Crossing (Mile 24.8).

Plate 2 Pipeline laying among the rocks in a stream bed (mile 25.8).

Plate 3 Pipeline running in stream for approximately 100 yards (mile 35.3).

Plate 4 Same as Plate 3 shown from the opposite direction.

Plate 5 Stream crossing showing old railway tie laying on the pipe (mile 57.2).

Plate 6 Stream crossing (mile 55.4).

Plate 7 Wolf Creek crossing showing suspended pipe above the creek (mile 101.6).

Plate 8 Annie Lake road crossing (mile 89.2).

Plate 9 Annie Lake road crossing showing depth that the sleeve encasing the pipe below is burried and the proximity of the unprotected pipe to the road.

Plate 10 Stream crossing at 38A bridge. At this crossing the pipe is encased in a six inch pipe (mile 38.6).

Plate 11 Tutshi River crossing. The pipe is suspended on the bridge but has broken free at the close end of the bridge (mile 26.7).

Plate 12 Hook welded on pipe in order to fasten the cable which supports the "A" frame and pipe at stream crossing (mile 57.5).

Plate 13 Unsupported pipe in gully leading into the Watson River (mile 77.4).

Plate 14 Pipeline with Watson River less than five yards away (mile 85.6).

Plate 15 Area of unsupported pipe due to erosion of gravel bank (mile 40.1).

Plate 16 Area of unsupported pipe due to erosion of gravel bank (mile 40.).

Plate 17 Unsupported pipe due to erosion of bank, above the Watson River (mile 74.4).

Plate 18 Rock slide area along Bennett Lake (mile 43.6).

Plate 19 Pipeline in rock slide area (Plate 18) showing fallen rocks on the pipeline.

Plate 20 Area of glaciation along Bennett Lake (mile 42.7).

Plate 21 Sleeve on pipe in glaciation area (Plate 20).

Plate 22 Dents in pipe and a pipeline marker which has been knocked down by snow clearing equipment (mile 28.5).

Plate 23 Dents in pipe caused by snow clearing equipment (mile 25.7).

Plate 24 Repaired pipe with section of pipe but in off-centre (mile 21.5)

Plate 25 Clamp on old pipeline break (mile 40.1)

Plate 26 Weld over crack in pipe (mile 49.3).

Plate 27 Welded drill holes in pipe (mile 55).

Plate 28 Spiggot on pipe (mile 24.8).

Plate 29 Obsolete valve on pipe near Cowley Lake (mile 94).

Plate 30 Leaking valve (mile 49.8).

Appendix I

Spill History of the Pipeline From 1966 to 1976

Spill History of the Pipeline 1966 to 1976

The Environmental Protection Service, Whitehorse, Yukon Territory, began responding to reports of oil spills in 1973 and from November 1973 to August 1976 there have been nine spills reported from the White Pass & Yukon Route pipeline. These spills ranged in volume from fifty gallons to 6000 gallons and occurred under a variety of conditions and for several reasons.

The details of each spill are contained in the E.P.S. Significent Event Report forms which follow. Where clean-up operations or follow up visits were involved the reports on these visits are also enclosed as well as photographs.

Mile 89.2
Annie Lake road crossing
November 5, 1973
1500 - 2000 gallons

Environmental Protection Service

SIGNIFICANT EVENT REPORT

FILE No 4000.2-1

REGION: Pacific | SER. No:

DESCRIPTION

TYPE OF ACCIDENT: [X] OIL SPILL [ ] CHEMICAL SPILL [ ] OTHER (Specify) _____

SPECIFIC TYPE OF HAZARDOUS MATERIAL: Furnace Oil

SOURCE (Name of carrier or facility): White Pass - Yukon Pipeline

QUANTITY / UNIT: 1500 to 2000 Gals

LOCATION: Annie Lake Road Crossing

LAT. (N): 60° 27'

LONG. (W): 134° 51'

DATE and CAUSE OF ACCIDENT: November 5, 1973 0100 Hours Pipeline Break

EXTENT OF PRESENT DAMAGE TO ECOLOGY and PROPERTY

Contained in shallow ditch beside road.
Migrated under and through snow then into ground - not near any water course.

ESTIMATE OF FUTURE DAMAGE and COST OF CLEAN-UP

None

PRESENT SHORT TERM ACTION BEING TAKEN AT SITE: [X] Natural [X] Containment [ ] Control [ ] Clean up [ ] _____

STATUS: [ ] Cleaned up or terminated [X] Controlled or Dormant [ ] Mobile or Active [ ] Uncontrolled

PRESENT LONG TERM ACTION BEING TAKEN and ESTIMATED COMPLETION DATE

Site will be observed by E.P.S. during thaw.

ON SCENE COMMANDER / COORDINATOR	TITLE	TEL No.
Mr. Bill Thomson	Assistant Manager Petroleum Division	667-2511

AGENCY EMPLOYED BY (Department or Organization)	OTHER DEPARTMENTS OR ORGANIZATIONS INVOLVED
White Pass Petroleum Services	Environmental Protection Service

OTHER PERTINENT DETAILS, eg. LEGAL ASPECTS, MAN DAYS

Pipeline apparently broke where gov't grader dented it a month or two before.

Pipe broke at 0100 hours on November 5/73 and was noticed at guaging station at Carcross. Pipeline turned off 15 or 20 minutes later.

Old section of pipe replaced with new during morning of November 5th.

We (E.P.S.) were notified of break at 1320 hours by Mr. Thomson and visited site with him.

REPORTED BY	POSITION OR TITLE	LOCATION	TEL No.	DATE
Mr. Bill Thomson	Assistant Manager Petroleum Division	Whitehorse Yukon	667-2511	Nov. 5/73
REPORT PREPARED BY	POSITION OR TITLE	LOCATION	TEL No.	DATE
Colin Wykes	District Manager EPS Yukon	Whitehorse	667-6487	Nov. 13/73

(OVER)

Mile 42.7
December 29, 1973
65 Barrels

The oil on the lake surface was burnt on December 31, 1973 (Plate 1). Burning continued periodically over the next several months as oil was noticed on the lake. The site was again visited in April 1974 and there was a considerable amount of petroleum residue on the surface of the ice (Plate 2). During another site visit in June 1974 the only trace of the spill was a streak of residue left by the oil at former ice surface (Plate 3). In July 1976 the site was again visited and the residue described above was absent.

Plate 1. Burning off oil that had accumulated on the surface of Bennett Lake after the December 29, 1973 spill.

FILE NO

\#6

DESCRIPTION

	SPECIFIC TYPE OF HAZARDOUS MATERIAL	QUANTITY / UNIT
X CHEMICAL SPILL	Stove Oil	Not Known y Estimate by Neil Wright 65 Bbls
	SOURCE (Name of carrier or facility) White Pass Pipeline	

	LAT. (N)	LONG. (W)	DATE and CAUSE OF ACCIDENT
Mile 42.7 (from Skagway) on pipeline route - approx. 4 - 5 miles north of Bennett	Approx 59°53'	134°56'	December 29, 1973 (pipeline break)

DAMAGE TO ECOLOGY and PROPERTY

Much of the oil on the surface of the lake was burnt on Dec. 31/73 in the af noon, however, oil was observed under the ice (through ice auger holes) alon the shore line.

EXTENT OF DAMAGE and COST OF CLEAN-UP

Oil will continue to seep down the hill from the railroad tracks to the lake however, the magnitude of the total spill is not yet known so there is no wa of estimating the fuel that has not yet reached the lake.

ACTION BEING TAKEN AT SITE — STATUS

X Clean up — ☐ Cleaned up or terminated — ☐

☐ ____________ — X Controlled or Dormant — ☐

ACTION BEING TAKEN and ESTIMATED COMPLETION DATE

Short Term Action:- 600' of by-pass pipeline has been put in place and will start in use Jan. 2 P.M., this will be replaced by permanent pipe when weath permits in the spring. Most of the pipe is burried and in frozen ground anc it was therefore impossible to locate the exact location of the break.

	TITLE
Mr. Neil Wright	Foreman Whitehorse Tank Farm

	OTHER DEPARTMENTS OR ORGANIZATIONS
White Pass	D.O.E. (E.P.S. & F.M.S.)

I was notified of pipeline break at 11:10 A.M. Dec. 31/73 by Mr. B. Thomson White Pass. Apparently line had been inactive for 2½ days when either: a) pressure guage reading was low; b) a 'short' on fuel that reached Carcro: was recorded; or c) visual observation of oil on Lake Bennett.

All three of the above were relayed to me by various White Pass employees. Mr. Perry Savoie (FMS) and I visited the site in the afternoon of Dec. 31/7: and observed the clean-up operation which was being conducted as efficientl: as possible considering the circumstances.

	POSITION or TITLE	LOCATION	TEL No.	
Bill Thomson	A/Mgr Petroleum Div White Pass Pet. Services	Whitehorse	667-2155	Dec 31
Collin Wykes	District Manager E.P.S. (D.O.E.)	Whitehorse	667-6487	Jan. 2

Plate 2. Residue left on the ice of Bennett Lake after the burning of the 1973 spill (Plate 31). Photo taken in April 1973.

Plate 3. Residue left on the shore of Bennett Lake after ice out in 1974. The residue was left at the level of the top of the ice during the spill. Photo taken in June 1974.

Mile 86.7
July 4, 1974
50 Gallons

There was an underestimate of the damage caused by this spill. Plate 4 shows the high pressure break in the line. Plate 5 shows the oil stain across the tracks that occurred when the pipe broke and Plates 6 and 7 show the extensive patch of dead vegetation that surrounded the site of the break when visited during the 1976 survey.

Plate 4. The hole in the pipeline that resulted from the high pressure break on July 4, 1974.

Canada
Environmental Protection Service

SIGNIFICANT EVENT REPORT

File No 4000-2-1&2

REGION PACY | SEQ No 9

DESCRIPTION

TYPE OF ACCIDENT	SPECIFIC HAZARDOUS MATERIAL	QUANTITY/U.M.
X OIL SPILL ☐ CHEMICAL SPILL ☐ OTHER (Specify)	Diesel Fuel	50 Gal (our estimate)
	SOURCE (Name of carrier or facility): White Pass and Yukon Route	

LOCATION	LAT. (N)	LONG.(W)	DATE and CAUSE OF ACCIDENT
Mile 86.7 WP&YT Rail Line	60° 29'	134° 55'	July 4, 1974 Pipeline Break

ACCIDENT DAMAGE TO ENVIRONMENT / PROPERTY — OTHER RISKS / HAZARDS

There was very little environmental damage. The pipe broke along a seam and oil sprayed over an area about 40' x 8' coating vegetation in the area. There was no water course in the area and the oil was absorbed by the soil.

CORRECTIVE SHORT TERM ACTION BEING TAKEN AT SITE			STATUS	
X None	☐ Containment	☐ Clean up	☐ Cleaned up or terminated	☐ Mobile or Active
☐ Dispersion	☐ Control	☐ _____	☐ Controlled or Dormant	☐ Uncontrolled

Other Agencies Advised / Involved — Corrective Long Term Action — Estimated Completion Date — Weather — Logs

The report was given to the Yukon Forest Service because of the forest fire hazard involved. They inspected the site on July 5, 1974.

The break was the result of pressure built up in the pipe while product was left in the pipe during downtime. In the area of the break the pipe seam was weakened by rust and the high pressure (3000 psi, estimated by WPYR) cause the break. The break caused a pressure drop at the Skagway gauguing station and the pipe was immediately shut off.

ON SCENE COMMANDER / COORDINATOR	TITLE	DEPT./ORG'N	TEL. No.
None			

REPORTED BY	POSITION OR TITLE	LOCATION	TELEPHONE No	DATE
Mrs. A. Retallack	Public Relations WPYR	Whitehorse	667-2511	July 4/
RECEIVED BY	POSITION OR TITLE	LOCATION	TELEPHONE No	DATE
Ken Weagle	Senior Biologist EPS	Whitehorse	667-6487	July 12

Plate 5. The oil stain over the tracks that resulted from the July 4, 1974 spill. It was finally estimated that 74 barrels of fuel were lost. The pipeline is on the right of the tracks.

Plate 6. Dead vegetation in the area of the July 4, 1974 spill. This illustrates that even a light skim of oil will cause an extensive vegetation kill (looking toward the track, west).

Plate 7. Damage to the vegetation caused by the July 4, 1974 spill (Picture taken looking toward the east on the opposite side of the tracks from the pipeline).

Mile 104.1
McRae
July 5, 1974
1500 Gallons

Canada
Environmental Protection Service

FILE No 4000.2-1&2

SIGNIFICANT EVENT REPORT

REGION PACY | ISEO No 10

DESCRIPTION

TYPE OF ACCIDENT	SPECIFIC HAZARDOUS MATERIAL	QUANTITY/ UNIT
☒ OIL SPILL ☐ CHEMICAL SPILL	Diesel Fuel	1500 Gal.
☐ OTHER (Specify) _____	SOURCE (Name of carrier or facility) White Pass and Yukon Route	(Our Estimat

LOCATION	LAT. (N)	LONG.(W)	DATE and CAUSE OF ACCIDENT
200 yards south of ~~McRae~~ McCRae Chevron St. along the	60° 38'	135° 00'	July 5, 1974 (evening) pipeline brea

PRESENT DAMAGE TO ENVIRONMENT / PROPERTY — OTHER RISKS / HAZARDS

The fuel was contained within the ditch and absorbed by the soil. The fuel in the ditch was pumped into barrels and absorbed with ConWed. There was damage to the vegetation in a 100 yard stretch of the ditch but no oil entered a water course.

CORRECTIVE SHORT TERM ACTION BEING TAKEN AT SITE			STATUS	
☐ None	☐ Containment	☒ Clean up	☒ Cleaned up or terminated	☐ Mobile or Active
☐ Observation	☐ Control	☐ _____	☐ Controlled or Dormant	☐ Uncontrolled

Other Agencies Advised / Involved — Corrective Long Term Action — Estimated Completion Date — Weather — Logs.

The break resulted from rust weakening the pipe and the pipe breaking during a pressure surge. The surge came during start up procedures and therefore was not immediately detectable. When the normal pumping pressure was not reached in an appropriate time the pipe was shut off at Skagway. This was the second break on their pipeline in two days. Action should be initiated to prevent further incidents of this type.

ON SCENE COMMANDER / COORDINATOR	TITLE	DEPT./ORG'N	TEL. No
Mr. Neil Wright,	Tank Farm Foreman,	WPYR, Whitehorse, Yukon	667-2511

REPORTED BY	POSITION OR TITLE	LOCATION	TELEPHONE No	DATE
Mr. Neil Wright	Tank Farm Foreman WPYR	Whitehorse	667-2511	July 6/7
REPORTED BY	POSITION OR TITLE	LOCATION	TELEPHONE No	DATE
Ken Weagle	Senior Biologist EPS	Whitehorse	667-6487	July 12/

Mile 46.6
March 25, 1975
3000 Gallons

Plate 8 shows the actual leak in the pipe. This leak occurred as the result of a rock slide the previous fall. The damage to the pipe caused by the rock was not repaired and under the stress of winter conditions the pipe began to leak. This illustrates why damaged pipe should be repaired as soon as it is discovered.

When the spill was first inspected there were few signs of oil on the ice surface. About one week later the experimental clean up took place which is described in the Significent Event - Supplementary Report. Plate 9 shows the burning of the collected oil and Plate 10 shows what residue is left after the burning subsides. It was estimated that 75% of the 3000 gallons were disposed of.

Environment Canada / Environmental Protection — Environnement Canada / Protection de l'Environnement

FILE NO. 4000.2-1&2

SIGNIFICANT EVENT REPORT

REGION	SEQ NO.	ACCIDENT DATE
PACY	41	25/3/75

TYPE OF ACCIDENT
- [X] Oil spill
- [ ] Chemical spill
- [ ]

SPECIFIC HAZARD: Stove Oil

SOURCE (Name of Carrier/Facility): White Pass & Yukon Route Pipeline

QUANTITY & UNIT: 3,000 gallons

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Mile 46.6 of Pipeline	59° 52'	134° 57'	Rock had fallen on pipe last fall and weakened it. Line pressure tested 25/3/75 and broke at weak spot.

PRESENT DAMAGE TO ENVIRONMENT/PROPERTY – OTHER RISKS/HAZARDS – WEATHER

When we were informed of the spill on the evening of March 25th we made arrangements to go to the scene the next morning. When we arrived around 1430 hours the only visible signs were some discolouration on the snow around the pipe and a small stain 2' x 3' at the lake edge. Any product running down to the lake edge entered a large pressure crack and disappeared.

SHORT TERM ACTION
- [ ] None
- [ ] Containment
- [ ] Cleanup
- [X] Observation
- [ ] Control
- [ ]

STATUS
- [X] Cleaned-up/ terminated
- [ ] Controlled/ dormant
- [ ] Mobile/active
- [ ] Uncontrolled
- [ ]

AGENCIES ADVISED/INVOLVED – LONG TERM ACTION – EST. COMPLETION DATE – LEGAL ASPECTS

I checked the ice surface in every direction for 300 yards and found no trace of oil. The Road Master has promised to advise us if the oil shows on the ice surface when the water begins to rise (that is - if the oil comes back up through the crack it went down). The White Pass action was swift, once the leak was discovered. All valves were closed and as soon as the crew could get to the scene the pipe was repaired. Legal samples were taken but no action is anticipated at this date. I will revisit the pipeline within the week to see if the diesel has emerged from under the ice.

ON SCENE COMMANDER	TITLE	DEPT./ORG'N	PHONE
Neil Wright	Tank Farm Foreman	WPYR	667-2511

REPORTED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Bill Thompson	Petroleum Manager, WPYR	Whitehorse, Yukon	667-2511	March 25/

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
W. Robson	Technician, EPS	Whitehorse, Yukon	667-6487	April 2/7

Environment Canada
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Environnement Canada
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FILE NO. 4000.2-1&2

SIGNIFICANT EVENT – SUPPLEMENTARY REPORT NO.

REGION	SEQ NO.	ACCIDENT DATE
PACY	41	25/3/75

TYPE OF ACCIDENT	SPECIFIC HAZARD	QUANTITY & UNIT
[X] Oil spill [ ] Chemical spill [ ]	Stove Oil SOURCE (Name of Carrier/Facility) White Pass & Yukon Route	3000 Gallons

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Mile 46.6 of Pipeline	59° 52'	134° 57'	Rock had fallen on pipe last fall and weakene it. Line pressure tested 25/3/75 and broke a weak spot.

REMARKS:

Report on our April 3, 1975 visit attached.

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
W. Robson	Technician	Whitehorse, Yukon	667-6487	April 4/75

April 4, 1975

Second Inspection of W.P.Y.R. Pipeline Break of March 25, 1975.

During the first inspection of the break on March 26th by W. Robson, I was unable to estimate the amount of oil lost or find traces of the oil on the ice. However I could see where the oil had entered a crack at the edge of the ice and disappeared. What may have happened was the oil went under the ice or into layers between the ice and then worked its way up through small cracks. When Ken Weagle and I went out to revisit the scene on April 3, 1975 we still could not see any sign of the oil on the surface, and at one point when we drove in (we visited the spill site by sno-machine) we passed over the area where we eventually found oil and still could see none.

After arriving we unpacked our augers and set to drilling along a grid that Ken and I worked out. We dug 12 holes covering a semi-circular area with a diameter of 200 yards and then Ken found some traces of fuel and we concentrated our efforts in this area.

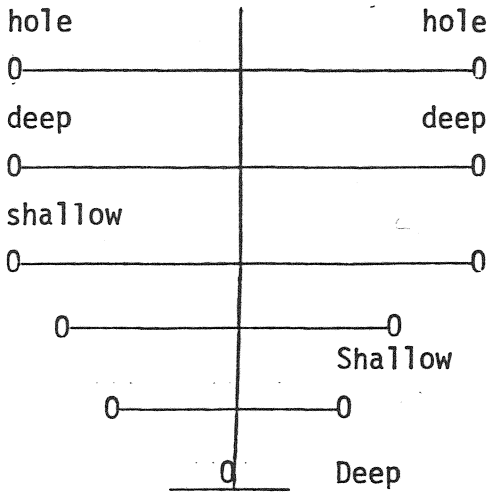
We dug several more holes, trying to determine the outter boundary of the fuel, but even when we thought we had found clear water or ice, after an hour there would be fuel in the holes. Vermiculite was used as a wicking agent in the oil. Most of the oil we encountered required vermiculite to promote a fire.

We set three large fires one after the other. Basically these are the steps we followed:

1) dig several holes right through the ice to allow oil under the ice to rise, then put vermiculite in the hole;

2) dig several shallower holes that released oil trapped within the ice, put vermiculite in the hole;

3) cut or dig a series of trenches between all the holes as outlined in the diagram, and spread vermiculite in the trenches.



...2

4) Wait until vermiculite has a chance to soak up the oil (5 to 10 minutes).

5) Light the fire.

We found the length of burning and intensity increased as with the number of holes and trenches, but the amount of oil in any area is probably the most important factor.

We lit three fires and one of these fires burned for several hours fed by oil released from the melting ice. This fire was at the end of a trench, and the wind was pushing the oil toward the fire. A pool of oil ½" thick, with a surface area of 70 sq. feet was accumulated by the wind and fed the fire.

We were unable to estimate the amount of fuel burned. The official estimates of loss were 3,000 gallons. We feel we got a substantial portion of this amount. More fuel will be burned by section crews from the W.P.Y.R. railway and Ken Weagle has been talking to Bill Thompson, Petroleum Manager, WPYR about a proper clean-up with a front end loader.

E.P.S. will visit the site again, possibly next week.

Ken Weagle

W. Robson
K. Weagle

Plate 8. The leaking pipe at mile 46.6 as found on March 26, 1975. The original damage occurred in the fall of 1974 and the pipe ruptured under the stress of winter conditions in 1975.

Plate 9. Burning off oil on April 3, 1975 after it had been collected on the ice surface.

Plate 10. The residue left after burning of the March 25, 1975 spill. It was estimated that 75% of the 3000 gallons spilled were disposed of.

Mile 87.5
October 14, 1975
6000 Gallons

There was originally an underestimation of the environmental damage caused by this spill. Plate 11 shows the path the oil followed as it flowed toward Rat Lake. Plate 12 shows the extent of dead vegetation along the north shore of the lake. During the July inspection no slicks were seen on the lake however there has been considerable damage to the waterfowl and muskrat habitat.

Plate 11. The dead vegetation at the centre of the photo shows the path the oil followed as it flowed toward Rat Lake.

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FILE NO. 4000.2-1&2

SIGNIFICANT EVENT REPORT

REGION	SEQ NO.	ACCIDENT DATE
PACY	14	14/10/75

TYPE OF ACCIDENT
- [X] Oil spill
- [ ] Chemical spill
- [ ]

SPECIFIC HAZARD: Stove Oil

QUANTITY & UNIT: Approx. 6000 gallo

SOURCE (Name of Carrier/Facility): White Pass & Yukon Route Pipeline Break

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Mile 14 of Carcross road Mile 87.5 of WPYR Railway	60° 25' 20"	134° 50'	Pipeline start up AM Oct. 14/75 after being closed for 5 days due to gas spill in Skagway Harbour. Pipe weaker by action of clay & swamp water.

PRESENT DAMAGE TO ENVIRONMENT/PROPERTY – OTHER RISKS/HAZARDS – WEATHER

Little damage as oil is contained in swampy area with no out flow at this time of year. Oil was prevented from entering the lake by the reeds and ice on lake.

SHORT TERM ACTION
- [ ] None
- [ ] Containment
- [X] Cleanup
- [ ] Observation
- [ ] Control
- [ ]

STATUS
- [ ] Cleaned-up/ terminated
- [X] Controlled/ dormant
- [ ] Mobile/active
- [ ] Uncontrolled
- [ ]

AGENCIES ADVISED/INVOLVED – LONG TERM ACTION – EST. COMPLETION DATE – LEGAL ASPECTS

Fisheries and Marine Service - not involved as there was no outflow.
Indian Affairs - been kept up to date on progress.
Fire Marshall.

- pipe clamped and linkage stopped - Oct. 14/75
- Oct. 15/75 - intent to pump out pipe and replace 120 feet of pipe - also planning to pump up as much oil as possible.

Est. completion - evening Oct. 15/75.

ON SCENE COMMANDER	TITLE	DEPT./ORG'N	PHONE
Neil Wright	Tank Farm Operator	WPYR	667-2511

REPORTED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Bill Thomson	Petroleum Mgr. WPYR	Whitehorse	667-2511	14/10/75

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
W. Robson	Sr. Technician EPS	Whitehorse	667-6487	15/10/75
~~D. Munro~~	Technician			

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FILE NO. 4000.2-182

SIGNIFICANT EVENT – SUPPLEMENTARY REPORT NO.

REGION	SEQ NO.	ACCIDENT DATE
PACY	14	14/10/75

TYPE OF ACCIDENT	SPECIFIC HAZARD	QUANTITY & UNIT
[X] Oil spill	Stove Oil	About 6000 Gallons
[ ] Chemical spill	SOURCE (Name of Carrier/Facility)	
[ ]	White Pass & Yukon Route Pipeline Break	

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Mile 14 Carcross Road mile 87.5 of WPYR Rail way	60° 25' 20"	134° 50'	Pipeline started up AM Oct. 14/75 afte being closed for 5 days due to gas spi in Skagway. Pipe weakened by action c clay & swamp water.

REMARKS:

Clean up started October 15,/75 using absorbent and pumping oil into a tank car. Absorbent was picked up on October 16th.

As a large portion of the oil has been soaked up by moss or is lying under th moss making it difficult to pick up and as it is not moving, clean up has bee left at this point. As there is still oil at the site we will conduct furthe inspections of the site between now and freeze up and again in the spring and if deemed necessary will have more clean up done.

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
D. Munro	EPS Technician	Whitehorse, Yukon	667-6487	Oct. 16/75

Plate 12. Dead vegetation along the shores of Rat Lake as a result of the October 14, 1975 spill. Photo taken in July 1976.

Mile 49.3
January 30, 1976
100 Gallons

Plate 13. The weld over the hole which caused the January 30, 1976 spill. It is felt that it would be better to remove the damaged section of pipe than to put a weld over the hole.

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FILE NO. 4474-3F

SIGNIFICANT EVENT REPORT

REGION	SEQ NO.	ACCIDENT DATE
PACY	21	Jan. 30/76

TYPE OF ACCIDENT	SPECIFIC HAZARD	QUANTITY & UNIT
[X] Oil spill [ ] Chemical spill	Diesel Fuel SOURCE (Name of Carrier/Facility): White Pass & Yukon Route (Pipeline)	Estimate under 100 gallons

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Mile 49.3 WPYR Pipeline	59° 58'	134° 55'	Bulldozer creased pipe creating a small leak.

PRESENT DAMAGE TO ENVIRONMENT/PROPERTY – OTHER RISKS/HAZARDS – WEATHER

The break occurred in an area where the pipe was approximately 200 yards fro the shore of Bennett Lake. The soil in the area has a high gravel content and thus oil lost quickly disappeared into the ground. There was no apparent environmental damage at the time and it was unlikely that fuel will reach Bennett Lake.

SHORT TERM ACTION

[X] None
[ ] Containment
[ ] Cleanup
[ ] Observation
[ ] Control
[ ]

AGENCIES ADVISED/INVOLVED – LONG TERM ACTION – EST. COMPLETION DATE – LEGAL ASPECTS

DINA and FMS were informed and a Fisheries Officer accompanie an EPS Technician to the site on Jan. 30/76. Further action will depend on the accuracy of the estimated fuel lost. Pipe was repaired by welding the crease and was completed at 16:00.

STATUS

[ ] Cleaned-up/ terminated
[ ] Controlled/ dormant
[X] Mobile/active
[ ] Uncontrolled
[ ]

ON SCENE COMMANDER	TITLE	DEPT./ORG'N	PHONE
WPYR			

REPORTED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Bob Morris	Petroleum Div. WPYR	Whitehorse, Yukon	667-2511	Jan. 30/76

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Ken Weagle	Sr. Biologist, EPS	Whitehorse, Yukon	667-6487	Feb. 2/76

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Mile 40.1
March 31, 1976
1400 Gallons

Plate 25 (in text) shows the above break and temporary patch placed on the break. There was some damage to vegetation in the area but the major proportion of the oil seeped into the sandy soil.

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FILE NO. 4474-3F

SIGNIFICANT EVENT REPORT

REGION	SEQ NO.	ACCIDENT DATE
PACY	25	31/3/76

TYPE OF ACCIDENT

- [X] Oil spill
- [ ] Chemical spill
- [ ]

SPECIFIC HAZARD

Stove Oil

SOURCE (Name of Carrier/Facility)

White Pass & Yukon Route

QUANTITY & UNIT

Approx 1400 Gallons

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
1 Mile South of Bennett Lake	59° 49'	135° 01'	Pressure build up due to slush in line - also pipe was dented at this spot.

PRESENT DAMAGE TO ENVIRONMENT/PROPERTY – OTHER RISKS/HAZARDS – WEATHER

The break occurred on a sandy flat, quite aways from Lindeman or Bennett Lakes - leak spotted around 0930 and under control by 1400 hours. Environmental damage likely minimal due to nature of surrounding landscape.

SHORT TERM ACTION

- [ ] None
- [ ] Containment
- [ ] Cleanup
- [ ] Observation
- [XX] Control
- [ ]

STATUS

- [XX] Cleaned-up/ terminated
- [ ] Controlled/ dormant
- [ ] Mobile/active
- [ ] Uncontrolled
- [ ]

AGENCIES ADVISED/INVOLVED – LONG TERM ACTION – EST. COMPLETION DATE – LEGAL ASPECTS

F.M.S. was phoned immediately and a joint inspection of both scenes was carried out on the afternoon of 2/4/76. P. Savoie, F.M.S. and W. Robson and D. Ellis E.P.S. visited both sites. No problems with clean up could be foreseen, no legal action contemplated.

ON SCENE COMMANDER	TITLE	DEPT./ORG'N	PHONE
Neil Wright	Tank Farm Foreman	WPYR	668-5600

REPORTED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Neil Wright	Tank Farm Foreman	WPYR Whitehorse	668-5600	2/4/76

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
W. Robson	Sr. Technician, EPS Yukon		667-6487	12/4/76

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Mile 21.5
April 1, 1976
100 Gallons

Plate 24 (in text) shows the patch in the pipe at this location which was put in slightly off centre. Although the original estimate of product lost was 100 gallons and was later raised by WPYR to ten barrels. There was a large area where damage to vegetation was apparent (Plate 14) and in July 1976 slicks could still be seen on ponds as much as 400 yards away from the spill.

Plate 14. Damage to the vegetation as a result of the April 1, 1976 spill in the White Pass area.

Environment Canada / Environmental Protection — Environnement Canada / Protection de l'Environnement

FILE NO. 4474-3F

SIGNIFICANT EVENT REPORT

REGION	SEQ NO.	ACCIDENT DATE
PACY	1	1/4/76

TYPE OF ACCIDENT

- [X] Oil spill
- [ ] Chemical spill
- [ ]

SPECIFIC HAZARD: Stove Oil

QUANTITY & UNIT: Approx 100 Gallon

SOURCE (Name of Carrier/Facility): W.P.Y.R.

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
White Pass - 1/2 mile inside Canadian border	59° 38'	135° 07'	Pressure build up due to slush in the line.

PRESENT DAMAGE TO ENVIRONMENT/PROPERTY – OTHER RISKS/HAZARDS – WEATHER

- Minimal damage apparent from our visit, however our inspection was limited to a view from the air. High winds and "white-out conditions" prevented a closer look.

The line was repaired within a few hours of finding a leak.

SHORT TERM ACTION

- [ ] None
- [ ] Containment
- [ ] Cleanup
- [ ] Observation
- [X] Control
- [ ]

STATUS

- [X] Cleaned-up/ terminated
- [ ] Controlled/ dormant
- [ ] Mobile/active
- [ ] Uncontrolled
- [ ]

AGENCIES ADVISED/INVOLVED – LONG TERM ACTION – EST. COMPLETION DATE – LEGAL ASPECTS

F.M.S. was phoned immediately and a joint inspection of both scenes was carried out on the afternoon of 2/4/76. P. Savoie, F.M.S. and W. Robson and D. Ellis E.P.S. visited both sites. No problems with clean up could be foreseen no legal action contemplated.

ON SCENE COMMANDER	TITLE	DEPT./ORG'N	PHONE
Neil Wright	Tank Farm Foreman	WPYR	668-5600

REPORTED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Neil Wright	Tank Farm Foreman	WPYR, Whitehorse	668-5600	2/4/76

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
W. Robson	Sr. Technician, EPS Yukon		667-6487	12/4/76

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WPYR provided the authors with a list of spills from 1966 to 1976. This record was provided in a letter from C.W. Kingston to C.E. Wykes on August 13, 1976. It can be noted that some of the estimates of product lost differ between the E.P.S. Significant Event Reports and the WPYR records. In such cases the E.P.S. estimates are often done on site or are the initial estimates by WPYR. The WPYR estimates given in Mr. Kingston's letter are more accurate because they are calculated from the WPYR records at the Tank Farms in Whitehorse and Skagway.

In reference to the lasting nature of damage from the spills to vegetation, Plate 15 shows the damage caused by a spill of 213 barrels on May 13, 1969. The picture was taken in July 1976.

Plate 15. Damage to vegetation caused by a spill of 213 barrels of diesel fuel at Mile 78.4 on May 13, 1969. The photo was taken in July 1976.

The White Pass and Yukon Corporation Limited

CHARLES W. KINGSTON
Vice President Administration

August 13, 1976

Mr. Colin E. Wykes
District Manager
E P S Yukon
Room 102, 212 Main Street
Whitehorse, Yukon

Your File: 4600.2-4/3

Dear Mr. Wykes:

Attached, as you requested, is a summary of pipeline breaks and product losses during the past 10 years for Yukon Pipelines Limited. You will note that 38 breaks have occurred, with the following frequency:

1966	1
1967	-
1968	2
1969	12
1970	9
1971	2
1972	3
1973	2
1974	2
1975	2
1976	3

I suspect that record keeping was less reliable in the years prior to 1969 and that some breaks before that time went unrecorded. You will note that breaks have been much less frequent since the major upgrading program was initiated in 1971.

Of the 38 breaks recorded, the largest product loss occured on January 19, 1969 at Mile Post 51.2. Our records show that this spill flowed on top of the frozen lake and was burned off. This was an unusually large spill and its occurrence prompted improved protection, surveillance and detection procedures which have been effective in controlling the size of spills since that time.

... 2

Box 10140, Pacific Centre, 701 West Georgia Street, Vancouver, B.C., V7Y 1E6, Telex: 04-51412; Telephone: (604) 683-7221

Of the remaining 37 breaks, the average product loss has been 67 barrels. In most of these cases the majority of the product was recovered or absorbed, with the remainder soaking into adjacent ground. There have been very few instances when product has escaped into watercourses.

You will also note that the most frequent cause of pipeline breaks has been damage by equipment. Until recent years, snowplowing on the railroad was handled by rail mounted rotary plows. When the change was made to bulldozers, inadequate precaution was taken to protect the pipeline, resulting in considerable damage. In present operations this type of damage is minimal. During the upgrading program, most of the equipment damaged sections of pipe were removed. We expect that pipeline damage from this cause will be infrequent in the future and, when it does occur, will be reported immediately by the operator for corrective action.

On July 4, 1974 two breaks occurred as a result of improper handling of valves during a planned shutdown. You conducted an investigation of those breaks with Mr. G. L. Budd and I am sure you remember the incident. This type of damage is not expected to recur.

For your additional information I am enclosing a chart showing Draindown Characteristics of the line. This chart illustrates the maximum possible product loss at all points along the pipeline, as well as the time required for the product to drain. It is based upon the assumption that a complete and open fracture of the line occurs, and that there is a complete absence of action on our part to control the spill. In practice this is a virtual impossibility because complete fractures have seldom if ever occurred (normally the break is a crack or a hole) and our operators take immediate action to close valuves, stop the flow at the break, and recover the spilled product.

I hope this information will be adequate for your purpose. Should you need any elaboration, please give me a call.

Yours very truly,

C. W. Kingston
Vice President Administration

mab
Copies to: W. J. Thomson)
E. C. Hanousek) no enclosure of Draindown Characteristics

PIPELINE BREAKS

May 1, 1966 to August 1, 1976

Date	Location	Loss of Product		Cause
Oct 1/66	M. P. 104.5	Diesel	13 bbls	Dozer damage
Mar 16/68	M. P. 77.1	Stove	153 bbls	Dozer damage
Dec 3/68	M. P. 26.8	Diesel	62 bbls	Dozer damage
Jan 6/69	M. P. 22.2	Stove	135 bbls	Old dozer damage
Jan 19/69	M. P. 51.2	Stove	1046 bbls	Old damage by falling rock
Feb 4/69	M. P. 70.5	Stove	76 bbls	Corrosion
May 13/69	M. P. 78.4	Diesel	213 bbls	Corrosion
Aug 5/69	M. P. 54.5	Stove	negligible	Bleeder valve cracked by sled
Aug 20/69	M. P. 100.2	Furnace	18 bbls	Old dozer damage
Aug 21/69	M. P. 100	Furnace	10 bbls	Old dozer damage
Aug 24/69	M. P. 21.5	Stove	7 bbls	Bullet hole
Aug 29/69	Alcan Hwy/North of Airport	Stove	25 bbls	Dozer damage
Nov 12/69	North of Alcan Hwy Crossing	Diesel	122 bbls	Old damage by falling rocks
Nov 17/69	M. P. 87.9	Diesel	145 bbls	Old dozer damage

Nov 19/69	M. P. 102.9	Diesel	95 bbls	Old dozer damage
Feb 20/70	M. P. 28	Stove	40 bbls	Old dozer damage
Mar 2/70	M. P. 53.6	Stove	43 bbls	Old backhoe damage
Mar 21/70	South of Alcan Hwy Crossing	Stove	105 bbls	Old grader damage
May 27/70	M. P. 87.6	Stove	negligible	Pin hole in weld
Dec 3/70	M. P. 72.6	Stove	33 bbls	Old dozer damage
Mar 22/70	M. P. 27.7	Diesel	27 bbls	Dozer damage
Apr 27/70	M. P. 68	Stove	negligible	Pin hole fill line to Carcross tank
May 27/70	M. P. 87.6	Diesel	negligible	Pin hole in weld
Oct 13/70	M. P. 59.4	Stove	negligible	Dozer damage
Mar 22/71	M. P. 27.7	Stove	negligible	Dozer damage
Sept 2/71	M. P. 62.5	Furnace	287 bbls	Line fractured while being blown
Jan 26/72	M. P. 40.9	Stove	20 bbls	Dozer damage
Feb 5/72	M. P. 70.5	Diesel	165 bbls	Corrosion
Apr 28/72	M. P. 45.5	Diesel	150 bbls	Corrosion
Nov 5/73	M. P. 89.2	Furnace	25 bbls	Grader damage
Dec 31/73	M. P. 42.9	Stove	100 bbls	Line fracture

PIPELINE BREAKS --3

Jul 4/74	M. P. 86.7	Diesel	74 bbls	High pressure line rupture
Jul 4/74	M. P. 104.1	Diesel	100 bbls	High pressure line rupture
Mar 25/75	M. P. 46.6	Diesel	85 bbls	Falling rocks
Oct 14/75	M. P. 87.5	Furnace	84 bbls	Corrosion
Jan 30/76	M. P. 49.3	Furnace	18 bbls	Dozer damage
Mar 31/76	M. P. 21	Furnace	10 bbls	Old dozer damage
Apr 1/76	M. P. 40.6	Furnace	40 bbls	Old dozer damage

######

Appendix II

Letter from Neil Wright to Environmental Protection Service indicating work done on the pipeline by WPYR August 16 to 27, 1976.

Whitehorse, Yukon

Sept. 14. 1976

To: Envirnmental Protection Services

From: Neil Wright

CC: E.Hanousek

RE: Repairs to pipeline Aug. 16 to Aug. 27. 1976.

1. Broken lock Wolf Creek Valve replaced.
2. 57 A. Bridge. Pipeline peirs washed out, one peir rebuilt, pipeline crossing rebuilt.
3. M.P. 51. Replaced 9' pipe, cat damage.
4. M.P. 49.8. Valve packing glands leaking, (repaired)
5. ~~XXX~~ M.P. 49.3. Replaced 8' pipe, cat damage. (Heney Siding)
6. M.P. 40.6. Replaced 8' pipe, removed clamp from line.
7. M.P. 28.5. Replaced 25' pipe, cat damage.
8. M.P. 25.5. Replaced 40' pipe, cat damage, pipeline was not moved at this point, it would put pipeline, in the way of snow removeing equipment.
9. M.P. 21.5. Replaced 35' pipe, cat damage, pipeline moved at this point to protect from further damage.

Neil Wright

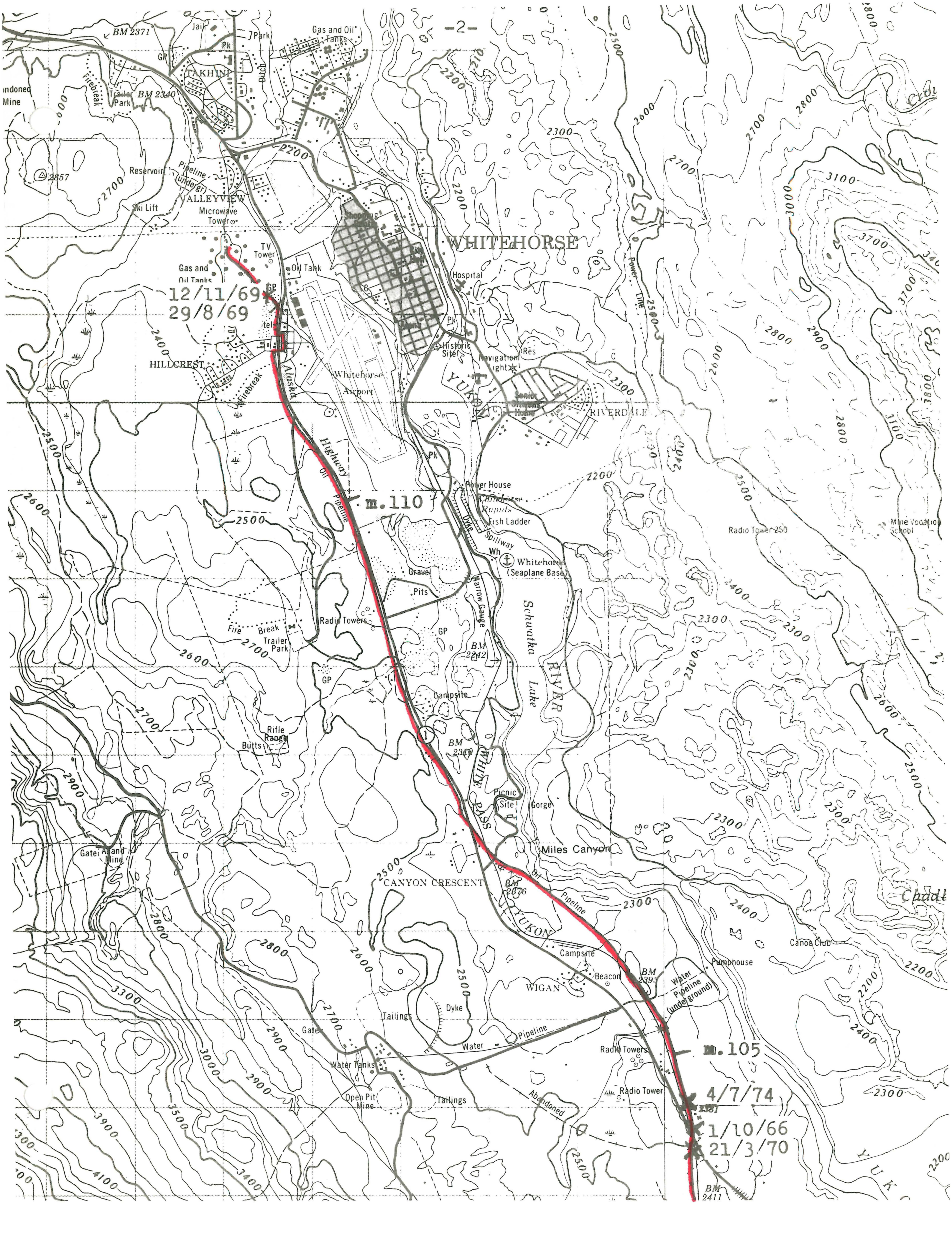
Supervisor Pipeline Division

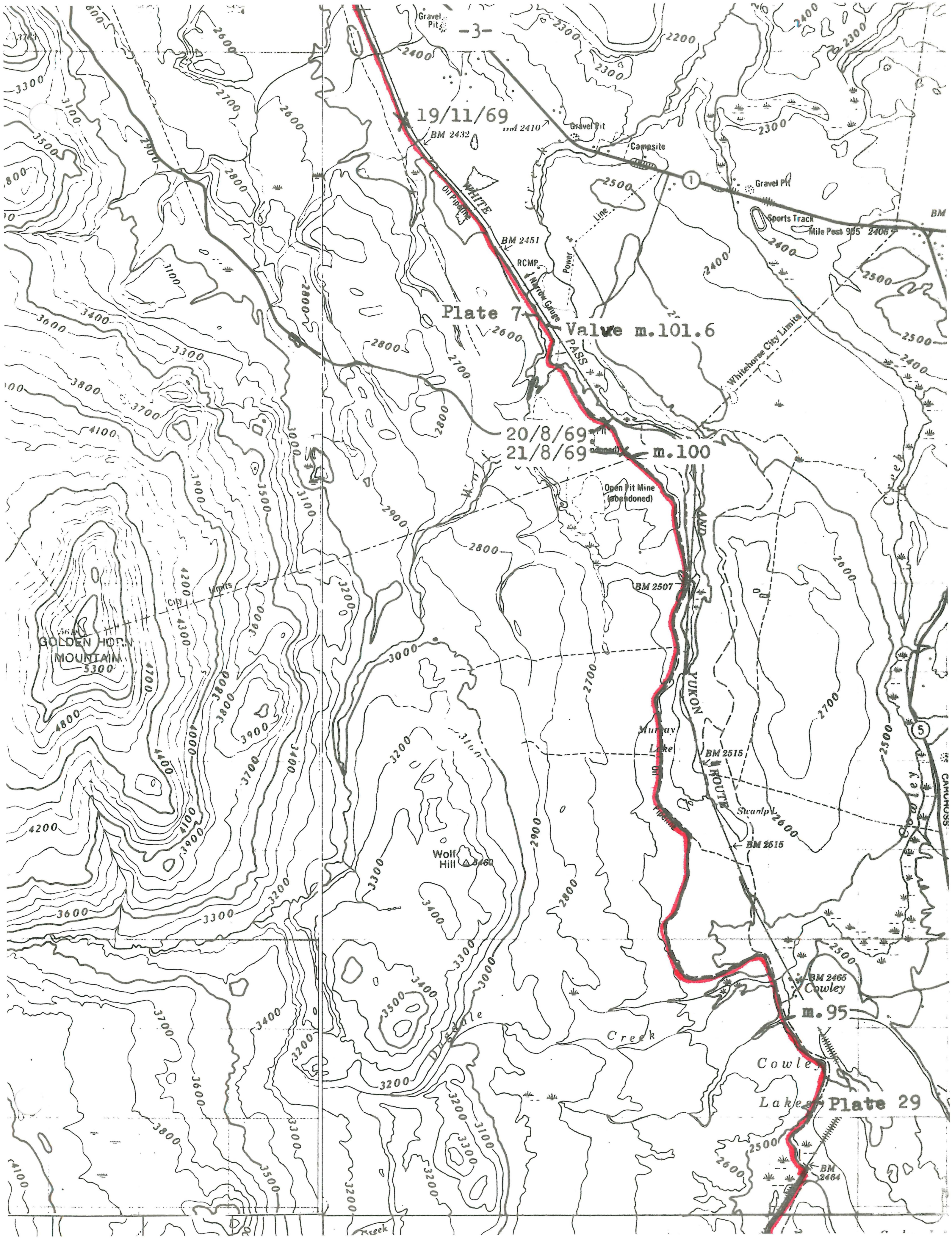
Appendix III

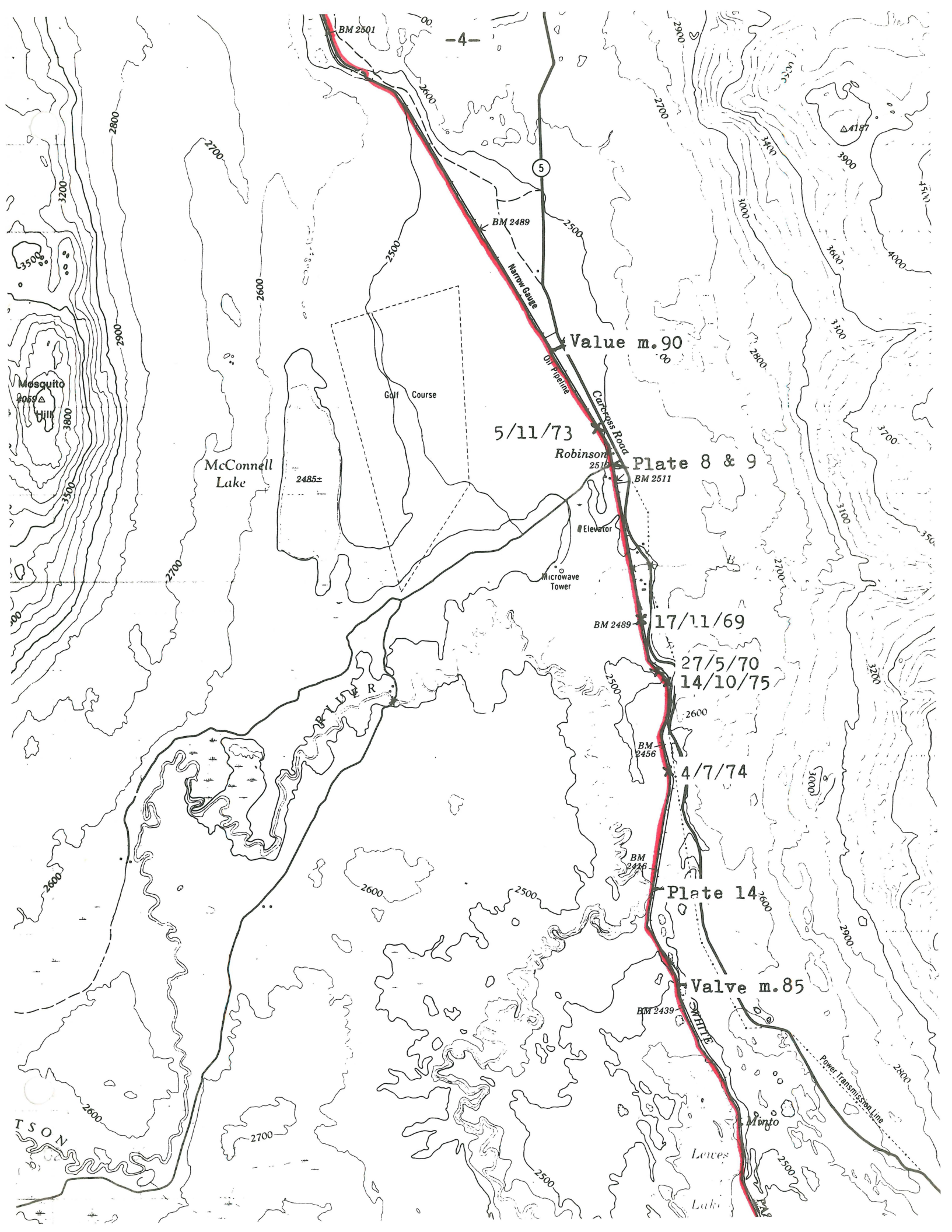
Map of pipeline from the Alaska-British Columbia border to Whitehorse.

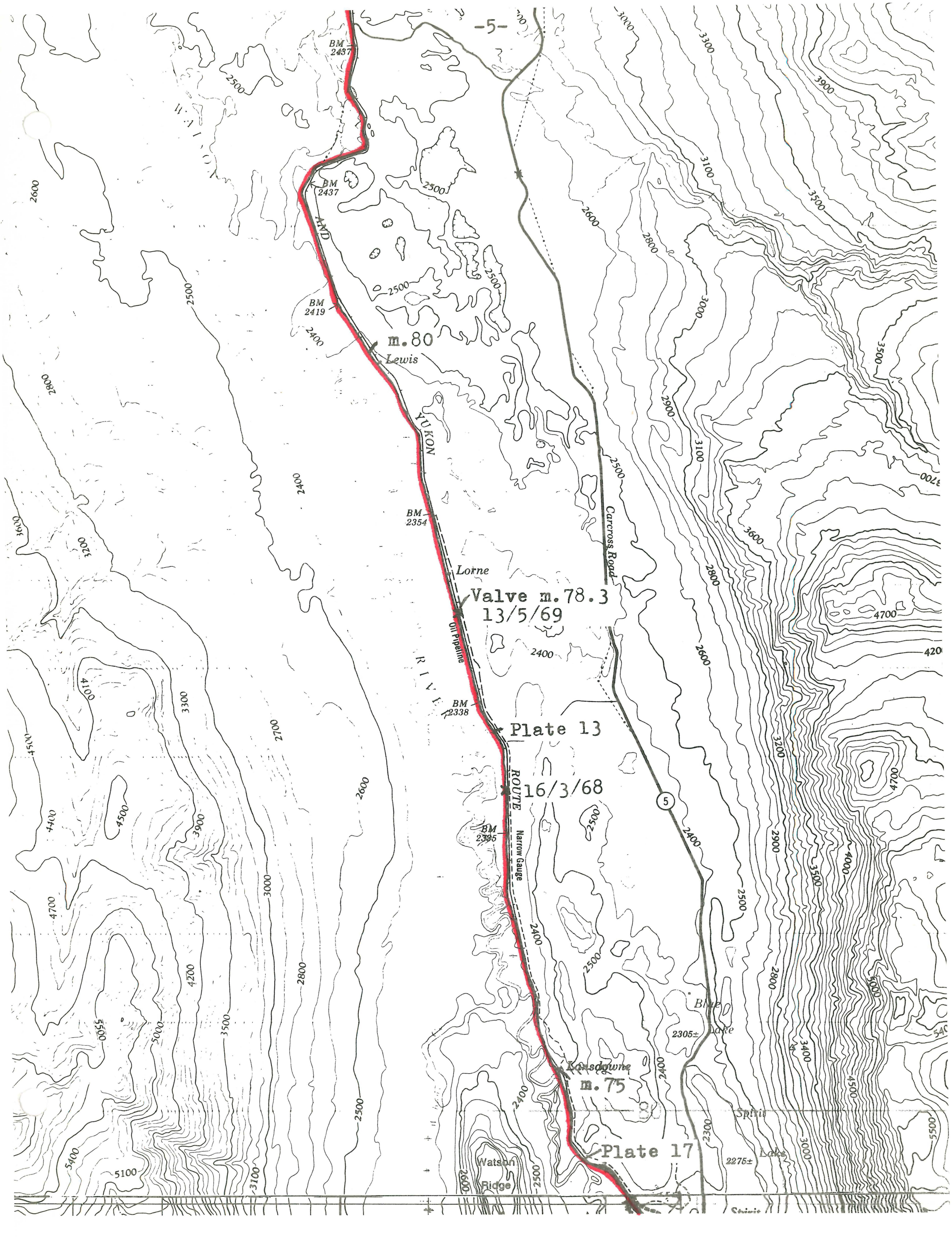
Marked on these map sheets are the mile posts at five mile intervals, the valves with the mileage indicated, the location of the plates found in the body of this report, and the location of the spills which have occurred since 1966. The spill locations are marked with an "X" and the date of the spill indicated beside it. These dates and locations were provided in a letter from Mr. C.W. Kingston written to Mr. C.E. Wykes which can be found in Appendix I.

The scale of these maps is 1:50,000, 1.25 inches equals one mile.

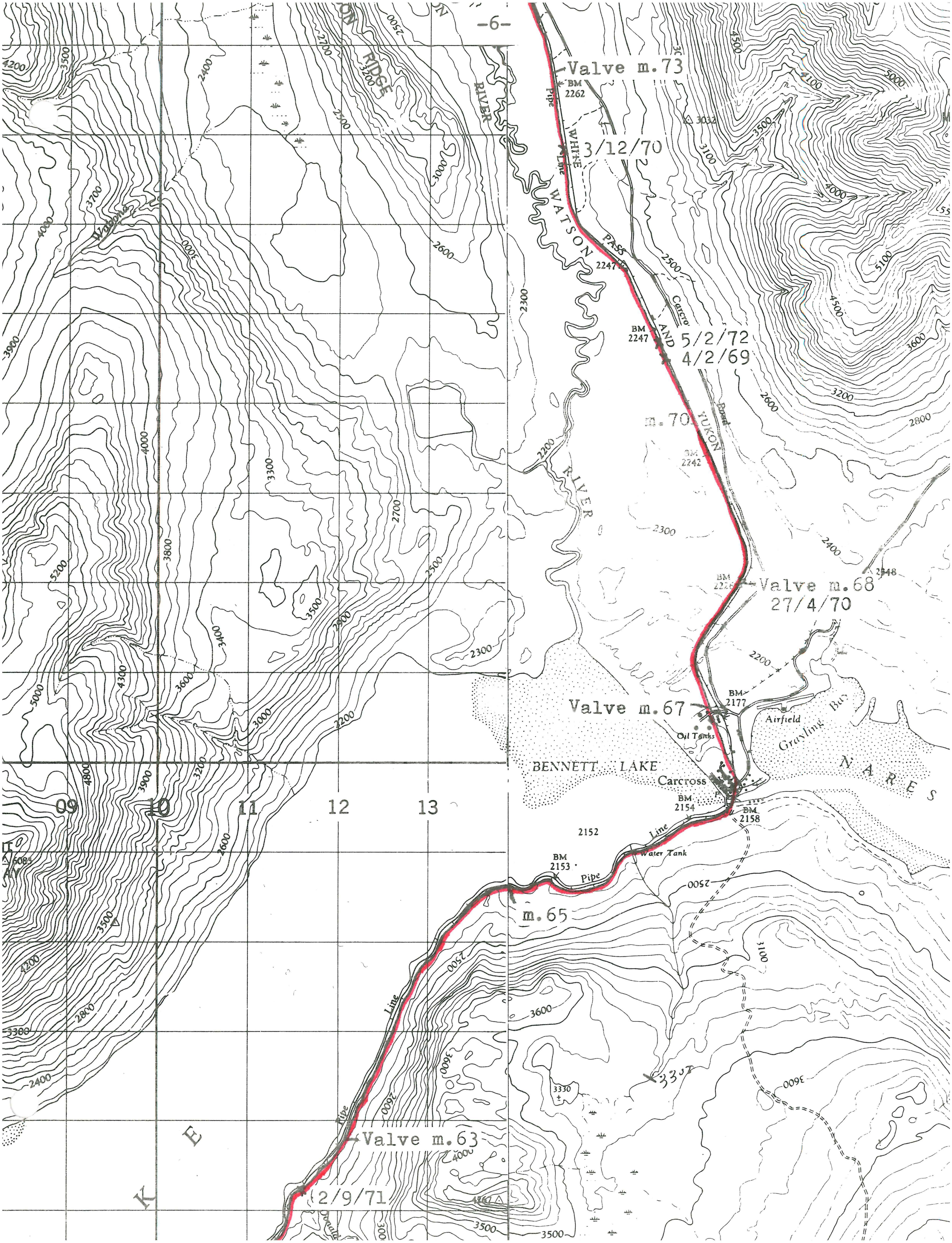

WHITEHORSE
TAKHINI
VALLEYVIEW
HILLCREST
RIVERDALE
CANYON CRESCENT
WIGAN
Alaska Highway
Oil Pipeline
Whitehorse Airport
Schwatka Lake
YUKON RIVER
WHITE PASS
Miles Canyon
m.110
m.105
12/11/69
29/8/69
4/7/74
1/10/66
21/3/70
Gas and Oil Tanks
Jail
Park
Reservoir
Pipeline (undergr)
Ski Lift
Microwave Tower
TV Tower
Gas and Oil Tanks
Oil Tank
Hospital
Historic Site
Navigation Light
Senior Citizens Home
Power House
Whitehorse Rapids
Fish Ladder
Dyke
Spillway
Whitehorse (Seaplane Base)
Narrow Gauge
Gravel Pits
Radio Towers
Fire Break
Trailer Park
Campsite
Rifle Range
Butts
Picnic Site
Gorge
Radio Tower 250
Mine Vocation School
Canoe Club
Pumphouse
Beacon
Water Pipeline (underground)
Water Pipeline
Tailings
Water Tanks
Open Pit Mine
Radio Tower
Abandoned
Gate
Aband Mine
BM 2371
BM 2340
BM 2242
BM 2393
BM 2411

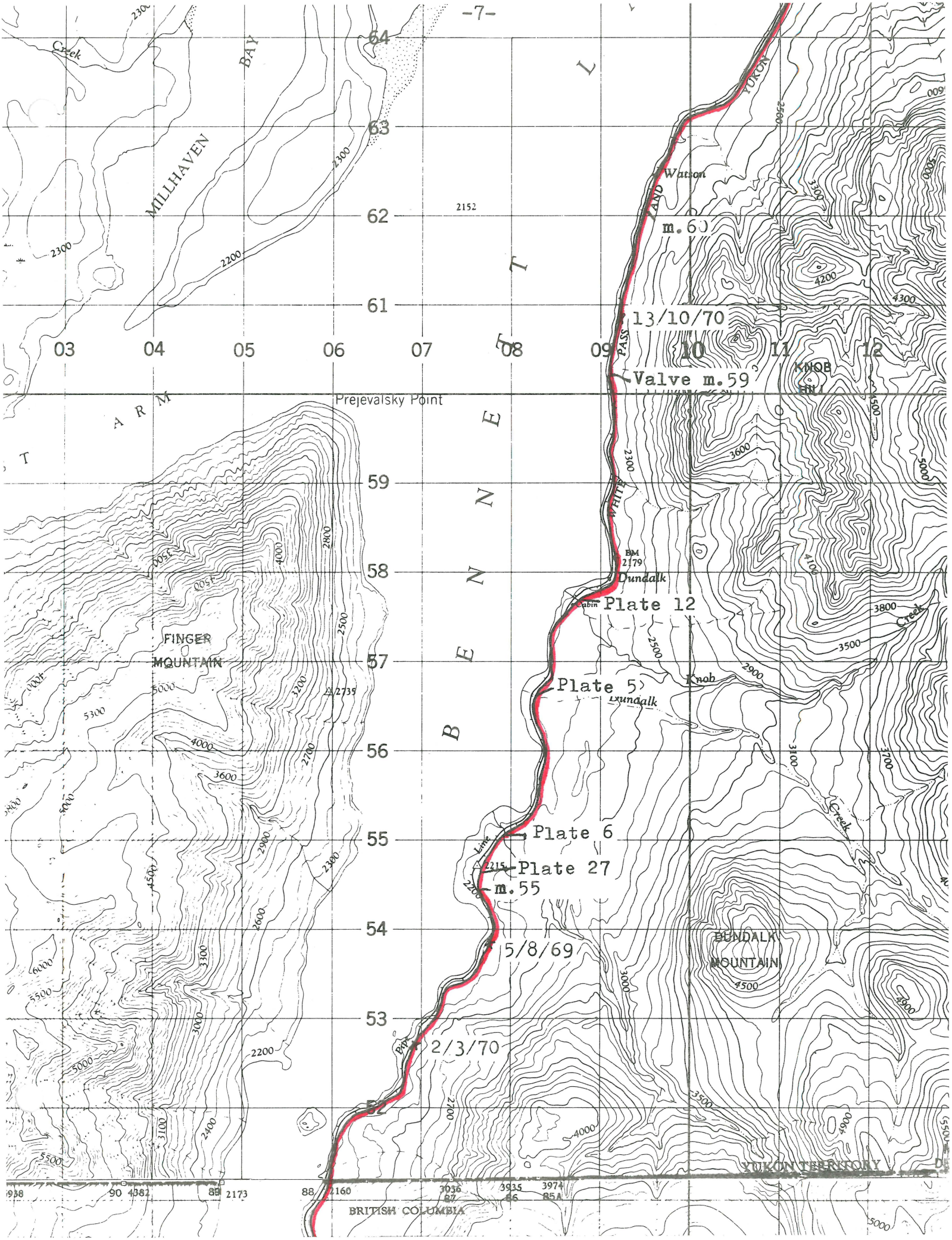

-3-
19/11/69
BM 2432
Gravel Pit
Campsite
Gravel Pit
Sports Track
Mile Post 905
Oil Pipeline
WHITE
PASS
AND
YUKON
ROUTE
BM 2451
RCMP
Narrow Gauge
Power Line
Plate 7
Valve m.101.6
Whitehorse City Limits
20/8/69
21/8/69
m.100
Open Pit Mine (abandoned)
BM 2507
City Limits
GOLDEN HORN MOUNTAIN
Murray Lake
BM 2515
Swamp
Wolf Hill
BM 2465
Cowley
m.95
Creek
Cowley
Lakes
Plate 29
BM 2464
Cowley

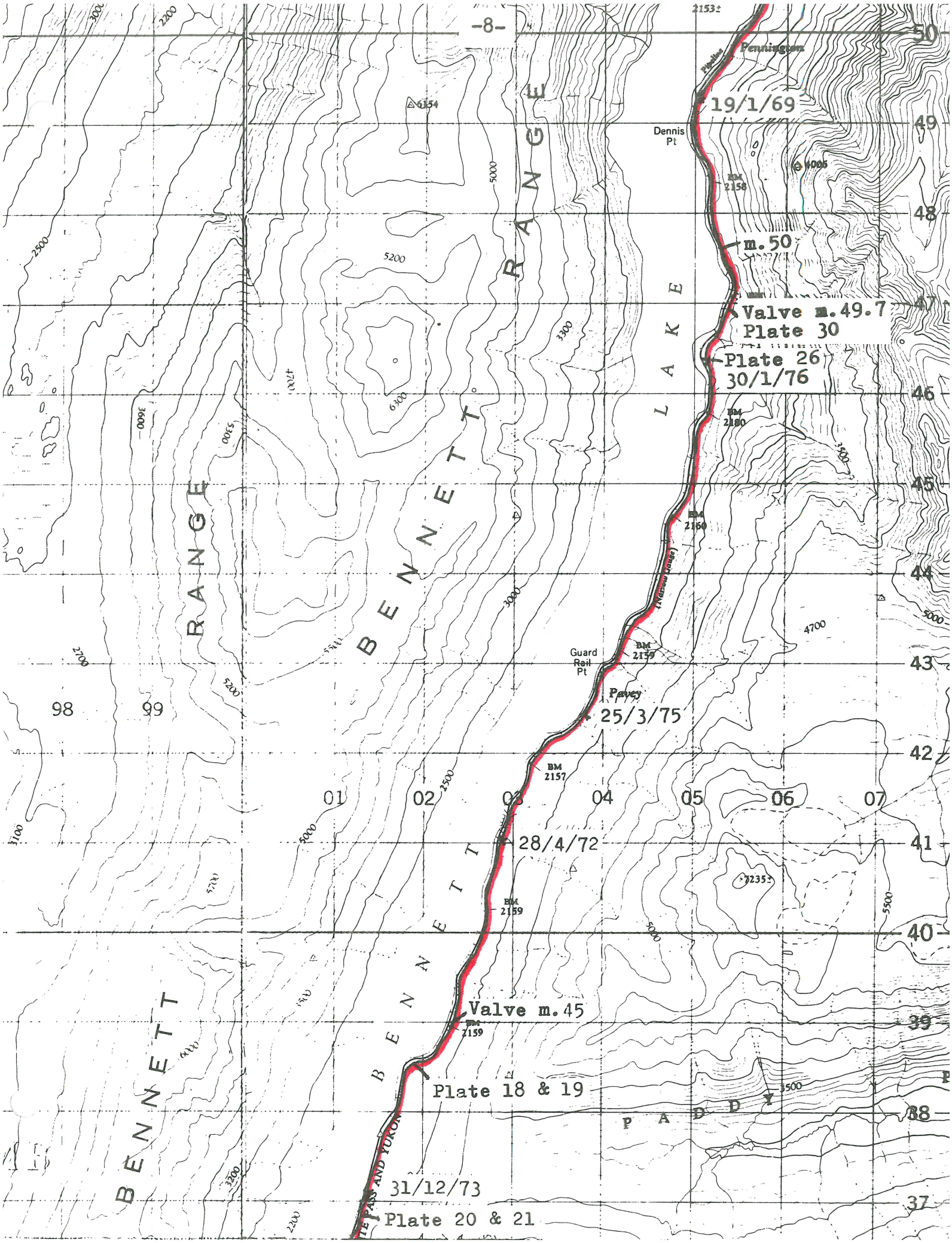

BM 2501
BM 2489
Narrow Gauge
Value m.90
Oil Pipeline
Carcross Road
Golf Course
Mosquito
Hill
McConnell
Lake
2485±
5/11/73
Robinson
2510
Plate 8 & 9
BM 2511
Elevator
Microwave
Tower
BM 2489
17/11/69
27/5/70
14/10/75
BM
2456
4/7/74
BM
2416
Plate 14
Valve m.85
BM 2439
WHITE
Power Transmission Line
Monto
Lewes
Lake
TSON

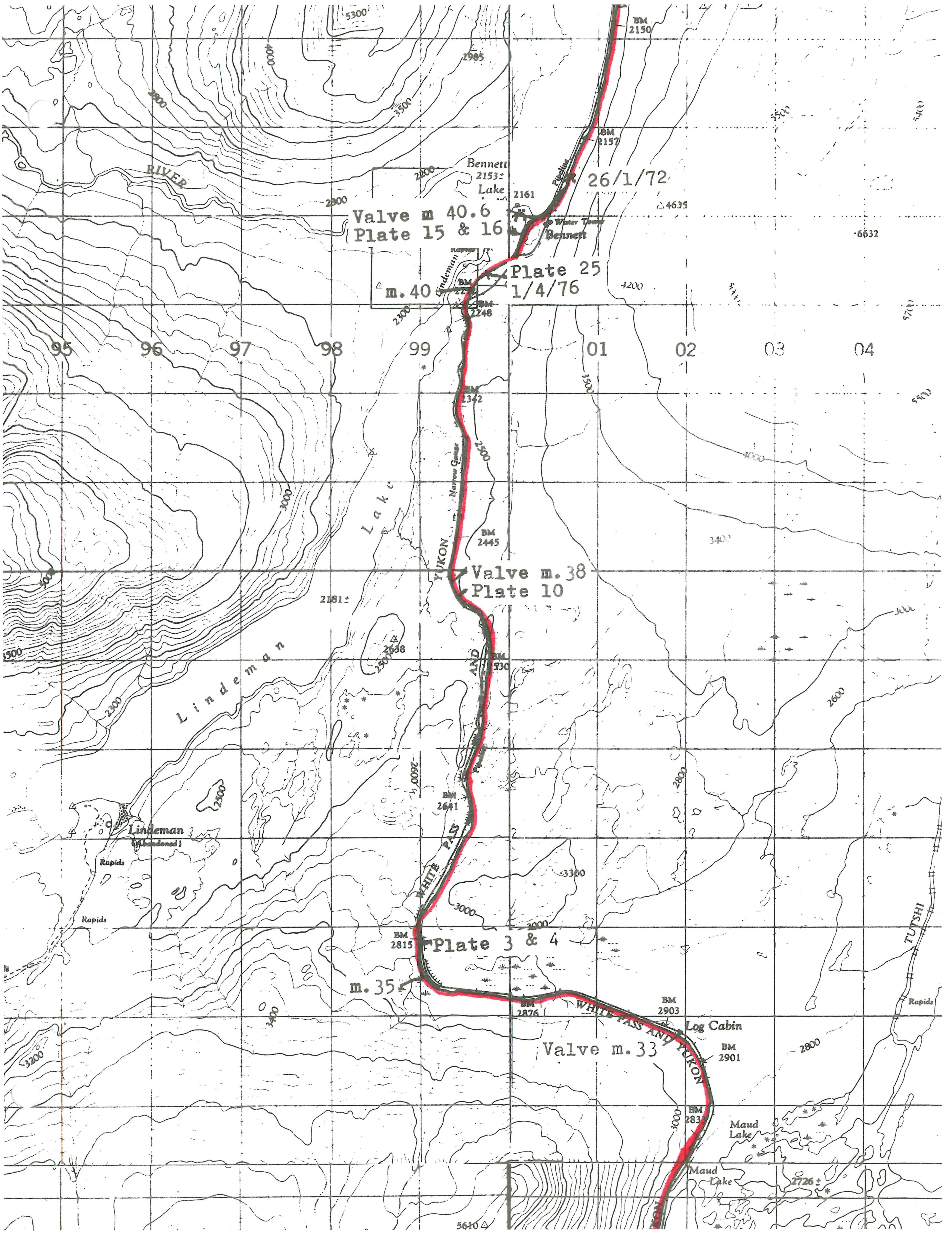


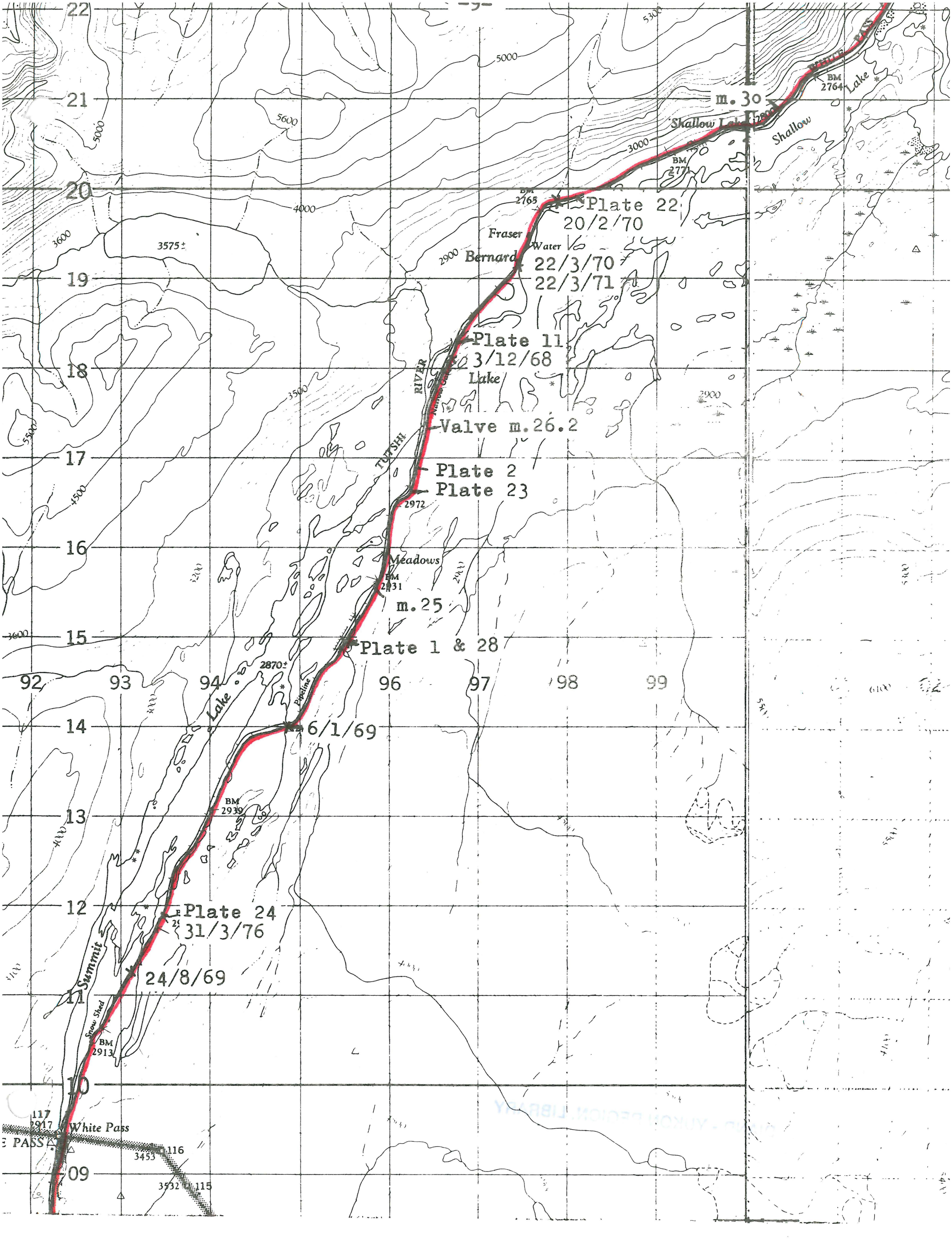
m.80
Lewis
YUKON
AND
RIVER
ROUTE
BM 2437
BM 2419
BM 2354
BM 2338
BM 2335
Lorne
Valve m.78.3
13/5/69
Oil Pipeline
Plate 13
16/3/68
Narrow Gauge
Carcross Road
5
Blue Lake
2305±
m.75
Plate 17
Watson Ridge
Spirit Lake
2275±


Valve m.73
3/12/70
5/2/72
4/2/69
m.70
Valve m.68
27/4/70
Valve m.67
m.65
Valve m.63
2/9/71
WATSON RIVER
WHITE PASS AND YUKON
Pipe Line
BENNETT LAKE
Carcross
Airfield
Grayling Bay
Oil Tanks
Water Tank
NARES
09
10
11
12
13


MILLHAVEN BAY
Creek
Prejevalsky Point
ARM
BENNETT LAKE
WHITE PASS
YUKON
Watson
LAND
m.60
13/10/70
Valve m.59
KNOB HILL
Dundalk
BM 2179
Cabin
Plate 12
Plate 5
Plate 6
Plate 27
m.55
5/8/69
2/3/70
FINGER MOUNTAIN
DUNDALK MOUNTAIN
Knob
Creek
YUKON TERRITORY
BRITISH COLUMBIA
03
04
05
06
07
08
09
10
11
12
64
63
62
61
59
58
57
56
55
54
53
52


-8-
Pennington
19/1/69
Dennis Pt
m.50
Valve m.49.7
Plate 30
Plate 26
30/1/76
Guard Rail Pt
Pavey
25/3/75
28/4/72
Valve m.45
Plate 18 & 19
31/12/73
Plate 20 & 21
BENNETT RANGE
BENNETT LAKE
BENNETT
PADDY
98
99
01
02
03
04
05
06
07
37
38
39
40
41
42
43
44
45
46
47
48
49
50


Valve m 40.6
Plate 15 & 16
26/1/72
Plate 25
1/4/76
m. 40
Valve m. 38
Plate 10
Plate 3 & 4
m. 35
Valve m. 33
Bennett
Bennett Lake
Water Tower
Pipeline
Lindeman
Lindeman Lake
(Abandoned)
Rapids
Log Cabin
Maud Lake
TUTSHI
RIVER
WHITE PASS AND YUKON
Narrow Gauge
95
96
97
98
99
01
02
03
04
BM 2150
BM 2157
BM 2248
BM 2342
BM 2445
BM 2641
BM 2815
BM 2876
BM 2903
BM 2901
2153±
2161
2181±
2658
2726±
5610
4635
6632
5300
2985


m.30
Shallow Lake
Shallow
Lake
WHITE PASS
BM 2764
BM 2771
Plate 22
20/2/70
BM 2765
Fraser
Water
Bernard
22/3/70
22/3/71
Plate 11
3/12/68
Lake
RIVER
TUTSHI
Valve m.26.2
Plate 2
Plate 23
2972
Meadows
BM 2931
m.25
Plate 1 & 28
2870±
Pipeline
Lake
6/1/69
BM 2939
Plate 24
31/3/76
24/8/69
Summit
Snow Shed
BM 2913
White Pass
2917
117
E PASS
3453
116
3532
115
3575±
5000
5600
5300
4000
3600
3500
3000
2900
4500
92
93
94
96
97
98
99
22
21
20
19
18
17
16
15
14
13
12
11
10
09