Montana Department of
ENVIRONMENTAL QUALITY

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Dear Reader:

Yellowstone Pipe Line Company (YPL) has proposed to replace its pipeline at the crossing of the Clark Fork River near Turah Bridge east of Missoula. Since the pipeline's construction in 1954, the river has changed at this location so that the pipeline is shallowly buried and at some risk of exposure and possible damage. YPL proposes a wet trench crossing.

The Montana Department of Environmental Quality (DEQ) must authorize a Short-Term Water Quality Standard for Turbidity Related to Construction Activity (318 Authorization) before YPL can begin construction. This action authorizes a temporary narrative water quality standard, in place of the numeric standard, for increased total suspended sediment and turbidity during the term of the construction.

DEQ released a draft environmental assessment (EA) for the 318 Authorization on December 3, 1999. Public comments were accepted through December 20, and a public hearing was held in Missoula on December 17. DEQ has made a number of revisions to the environmental assessment (EA) in response to public comments. This revised EA is attached. The primary points raised by commentors are summarized below, together with the DEQ's response. Various other minor changes were also made to the EA in response to comments.

COMMENT: Comments were received requesting that DEQ give more consideration to crossing techniques and/or timeframes that had a lower potential for impacts on fish.

RESPONSE: In a recent report to the Missoula County Conservation District, the Montana Department of Fish, Wildlife and Parks (MDFWP) identified two possible "windows" of time in which a wet trench crossing could be conducted with minimal impacts on fish. The windows are April 1 to April 15 and September 7 to October 7. DEQ has revised the EA to analyze alternative timing for the project. The 318 Authorization will require that a wet crossing be conducted between April 1 through April 15, 2000, if flows will not exceed 1500 cfs. If higher flows are anticipated, or if worker safety becomes an issue, the 318 Authorization will allow construction during the September-October period to avoid violation of water quality standards and ensure worker safety.

The April date was also selected because it is compatible with the need to conduct the pipeline repair before spring high water occurs. The revised EA reviews the flood scour depth at the site and the depth of the existing pipeline, and finds that the pipeline may be exposed at less than 100-year flows. The exposure of the pipeline creates a risk of damage or rupture. The resulting release of product could have major impacts on fisheries and water quality. Accordingly, DEQ has determined that it is preferable to

repair the pipeline before spring high flows. The April construction date will allow the repair to go forward before high flows, and at the same time will minimize impacts on fisheries.

COMMENT: Several commentors thought that the description of alternatives contained in the EA was weighted in favor of the wet trench crossing. Other commentors thought that the alternatives analysis needed to be expanded.

RESPONSE: DEQ has revised and expanded the description and impact analysis of alternatives (Paragraph 23) and the preferred alternative discussion (Paragraph 24) sections of the EA. The description of alternatives has been expanded, and has been edited to contain only factual information. Evaluative material has been moved to the alternatives analysis section, which has also been expanded.

COMMENT: Some commentors favored the aerial crossing alternative. DEQ was also asked whether it had documentation that aerial crossings were vulnerable to vandalism. Other commentors stated that any aesthetic impacts of an aerial crossing were outweighed by the impacts on the river from a wet crossing.

RESPONSE: DEQ has determined that an aerial crossing is not a reasonable alternative, based on evidence that potential impacts to fisheries and water quality from the wet crossing will be minor. Potential impacts to fish will be further reduced by conducting the wet crossing in early April or September.

The record does not contain documentation of vandalism incidents on exposed pipelines. However, DEQ believes that the risk of vandalism is an appropriate factor for consideration in its decision. An additional consideration, raised during public comment, is that an aerial crossing creates the potential for injury for trespassers who attempt to climb on the structure. The revised EA also notes that the short time frame available to repair the pipeline before high water may make it infeasible to design and construct an aerial suspension structure.

Aesthetic impacts of an aerial crossing are also an appropriate factor for consideration, given that the fish and water quality impacts of the April or September wet crossing would be minor.

COMMENT: Some commentors asked for more specific information and/or clarification of various points in the EA. For example, DEQ was asked to identify the basis for the assumption that 10% of the material disturbed in the river would wash downstream; to clarify the date of the proposed project; to provide the scour-depth calculations that were used to establish the burial depth of the pipeline; to provide the source of the Montana Department of Transportation (MDT) policy regarding attachment of utility pipelines to

MDT bridges; and to identify the basis for the determination that trenchless drilling technology was infeasible.

RESPONSE: The information identified in the Comment, as well as other information requested by commentors, has been supplied in the revised EA.

COMMENT: Several comments were received regarding the need for a discussion of mitigation measures. One commentor requested mitigation measures to address wetlands impacts.

RESPONSE: A mitigation section has been added to the revised EA. In the initial EA, mitigation measures were identified in the project description section and in the Tentative Authorization attached to the EA. The revised EA retains these measures and adds a discussion of the mitigation measures in a separate section. Wetlands impacts review and mitigation is the primary responsibility of the U.S. Army Corps of Engineers, which has reviewed this project under the federal Clean Water Act Section 404 wetlands permit program. DEQ provides comments on 404 applications during 401 certification.

COMMENT: Several commentors asked whether water quality sampling would be required. One comment called for the development of a monitoring plan to develop data to help the public understand the impacts of pipeline river crossings.

RESPONSE: The proposed 318 Authorization contains a requirement that water quality sampling be conducted during construction, with parameters and locations as directed by DEQ.

COMMENT: Several commentors asked DEQ to require YPL to use latest technologies in pipeline construction to ensure pipeline safety. DEQ was requested to include a discussion in the EA of such measures as double-walled pipe, hydrocarbon sensing cables, cushioning, remotely controlled block valves, inspection schedules, and spill contingency plans.

RESPONSE: DEQ has no regulatory authority over pipeline safety matters. Under its statutory authorities, DEQ can require measures to mitigate water quality impacts, and can require construction techniques that minimize impacts to water quality and aquatic habitat. The measures suggested by the commentors are beyond the scope of DEQ's authority over this project.

COMMENT: YPL told USFS that trench would be 24 feet deep below Missoula.

RESPONSE: At the request of the Lolo National Forest, YPL provided conceptual information for various river-crossing techniques for the Missoula to Thompson Falls

reconnection project. This 24-foot depth figure is a conceptual estimate of trench depth from the top of the bank. The depth of the trench below the bottom of the river bed is 7 feet, the same as is proposed for the Turah project.

After review of the EA and public comments, DEQ has decided to issue the 318 Authorization so that YPL can replace the pipeline using the wet trench method. In order to reduce impacts on water quality and the fishery, authorization is given to perform construction between April 1 and April 15, 2000. If stream flows exceed 1500 cubic feet per second during this period, or if concerns arise over worker safety, construction can be postponed to the period between September 7 and October 7, 2000. The authorization, which is attached, requires YPL to consult with DEQ before starting work to avoid conflicts with other projects on the river, appraise conditions of weather, snow pack, and stream flow, and receive direction on water quality monitoring. Other requirements are set forth in the authorization.

Thank you for your interest and assistance in this environmental review.

Sincerely,

Bonnie Lovelace

Bonnie Lovelace, Chief
Water Protection Bureau

REVISED ENVIRONMENTAL ASSESSMENT

DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING AND COMPLIANCE DIVISION

Water Protection Bureau

Name of Project: Yellowstone Pipeline Turah Crossing **Type of Project**: Replacement pipeline

Location of Project: Section 2, Township 12 North, Range 18 West **County**: Missoula

Description of Project: Yellowstone Pipe Line Company (YPL) proposes to replace a portion of its 10-inch petroleum products pipeline under the Clark Fork River about 400 feet downstream of the Turah Bridge (Figure 1). The Montana Department of Environmental Quality (DEQ) has prepared this EA to analyze the potential impacts of authorizing the needed Short-Term Water Quality Standard for Turbidity Related to Construction Activity pursuant to Section 75-5-318, MCA (318 Authorization).

Below the Turah Bridge, the Clark Fork River has changed significantly since construction of the pipeline in 1954. At that time, the active channel of the river was located beyond the right bank (looking downstream), where an oxbow is now located. The present channel was a low, wooded overbank area. When the bridge was built in the early 1960s, the river flow was constricted and directed into the overbank area. Consequently, the active channel migrated to its present location. Recent surveys completed by YPL indicate that the depth of cover over the pipe in mid-stream may be in the range of 1 to 3 feet. The most conservative calculated scour depth at this location is 2.8 feet (Table 1), placing the pipeline at risk of exposure and possible damage.

The new section of pipe would have 0.375-inch walls and a 2-inch concrete coating and would be placed about 40 feet upstream of the existing crossing. Two trackhoe excavators, working from the middle of the river toward the opposite banks, would excavate a trench that would allow burial 6 feet or more beneath the minimum streambed elevation across the active channel and into the overbanks. Material removed from the trench would be placed on the banks. The pipe would be carried to the bank using side boom equipment and pulled into the trench and to the opposite bank with a cable. The pipe would then be connected to the pipeline in the existing right of way beyond the high water marks and the trench backfilled. The in-stream activities are expected to take less than one day and would be accomplished as soon as possible in February.

The existing pipe would be abandoned in place. The pipe would be drained, cleaned, filled with slurry, and capped. No in-stream work would be necessary for pipe abandonment.

The crossing is located in a broad, diverging, laterally stable reach that is less conducive to bed scour. The burial depth is greater than twice the calculated depth of general scour during the passage of the 100-year flood, as required by Missoula County Floodplain Rules and Regulations. The pipeline would be buried at maximum depth for about 650 feet, taking into account any potential channel migration at this location.

Access is available to both banks on privately owned land within YPL's existing right of way.

Summary of Issues: The main issues associated with the proposed authorization are the potential impacts to fish and aquatic life from sedimentation, turbidity, and heavy metals.

Affected Environment & Impacts of the Proposed Project:

Key: Summarize impacts as follows: NA - Not applicable, N - No impact, B - potentially beneficial impact, A - potentially adverse impact, M mitigation required, P - additional permits required

Key	PHYSICAL AND BIOLOGICAL ENVIRONMENT
A	1. SOIL SUITABILITY, TOPOGRAPHIC AND/OR GEOLOGIC CONSTRAINTS (soil moisture, unstable soils or geologic conditions, steep slopes, erosion potential, subsidence potential, seismic activity) COMMENTS AND SOURCE OF INFORMATION: Pipeline reburial has been accomplished above the high water marks. Disturbed areas have been reshaped to their approximate original contours. No state action was required for this work. Once the crossing is finished, stockpiled topsoil would be respread and seeded with a standard riparian seed mix recommended by the County Conservation District. The banks in this area are not steep, but, to prevent soil loss into the river from the higher right bank, a coconut-fiber matting designed for shoreline stabilization (such as BonTerra CF7 Mat) would be spread after soil is replaced and seeded. The area is considered to be seismically active. Modern transmission lines in good repair are resistant to seismic effects, such as liquifaction, lateral spreading, and strong ground shaking (Bureau of Indian Affairs 1995).
NA	2. HAZARDOUS FACILITIES (power lines, hazardous waste sites, distances from explosive and flammable hazards including chemical/petrochemical storage tanks, underground fuel storage tanks and related facilities such as natural gas storage facilities and propane tanks) COMMENTS AND SOURCE OF INFORMATION: There are no hazardous facilities in this area. Staging areas and temporary fuel storage would be located away from the river. Although the existing pipeline would be in use during installation of the new pipe, the 40-foot buffer between the construction area and the existing pipe would be sufficient to avoid damage to the existing pipe.
A	3. AIR QUALITY (effects to and from project, dust, odors, emissions) COMMENTS AND SOURCE OF INFORMATION: Gaseous and particulate emissions from equipment would be short-lived and are not subject to state permitting. Any fugitive dust from the construction site adjacent to the proposed crossing must be controlled pursuant to the Clean Air Act of Montana.
N	4. GROUNDWATER RESOURCES & AQUIFERS (quality/nondegradation, quantity/reliability, distribution, uses/rights, # of aquifers, mixing zones)

A	5. SURFACE WATER RESOURCES (quality/nondegradation, quantity/reliability, distribution, uses rights, stormwater controls, source of community supply, community treatment, mixing zones) COMMENTS AND SOURCE OF INFORMATION: See Attachment A for a discussion of surface water impacts. During construction, water quality would be monitored as directed by DEQ to ensure compliance with water quality standards.
A	6. VEGETATION AND WILDLIFE SPECIES AND HABITATS, INCLUDING FISHERIES AND AQUATIC RESOURCES (threatened, endangered, sensitive species, prime habitat, population stability, potential for human wildlife conflicts, effectiveness of postdisturbance plans) COMMENTS AND SOURCE OF INFORMATION: Riparian vegetation adjacent to the proposed crossing has been heavily modified by human activities. The overstory consists of mature cottonwoods. The understory is dominated by introduced herbaceous species. Changes in the river's course have dried the site, allowing invasion by ponderosa pines. New depositional areas along the river, required as seedbeds for cottonwood reproduction, are largely lacking in the area, further complicating the viability of the vegetation community. The existing right of way has been kept clear of tall vegetation since the original construction to aid aerial inspections of the pipeline. No new tree clearing was done or would be done under the proposed action. Herbaceous vegetation was lost when the trench was constructed above the river and would be replaced by seeding and by viable seeds, roots, and rhizomes in the replaced topsoil. Terrestrial wildlife in the area could be temporarily disturbed during the brief construction period, although individuals are likely used to humans due to rural residential development and the traffic on the nearby road. No new disturbance to terrestrial wildlife habitat would occur as a result of the proposed action. For a discussion of the fisheries impacts, see Attachment B.
AP	7. UNIQUE, ENDANGERED, FRAGILE, OR LIMITED ENVIRONMENTAL RESOURCES (biologic, topographic, wetlands (within 1 mile), floodplains (within 1 mile), scenic rivers, natural resource areas, etc) COMMENTS AND SOURCE OF INFORMATION: All of the action alternatives would temporarily impact wetlands at the site. The wetlands at the site are less than one acre in size with marginal wetland characteristics and would only be temporarily disturbed, either by equipment access or during the short time trenches are left open. A 404 permit and a county floodplain permit have been obtained for the proposed river crossing method.
A	8. LAND USE (Waste disposal, Agricultural Lands (grazing, cropland, , forest lands, prime farmland), Recreational Lands (waterways, parks, playgrounds, open space, federal lands), Access, Commercial and Industrial Facilities (production & activity, growth or decline), Growth, land use change, development activity) COMMENTS AND SOURCE OF INFORMATION: Land uses in the vicinity of the proposed crossing are primarily agricultural and rural residential and would not be affected by the proposed action. Recreational activity on the river, such as floating and fishing, could be disrupted during the daylong crossing, but the effects would be minor due to the time of year.
N	9. HISTORICAL, CULTURAL, & ARCHEOLOGICAL (sites, facilities, uniqueness, diversity) COMMENTS AND SOURCE OF INFORMATION: There are no known historical, cultural, or archaeological resources in the river that would be disturbed by the proposed action. There would be no new disturbance outside of the existing right of way on the adjacent upland areas.

A	10. AESTHETICS (visual quality, nuisances, odors, noise) COMMENTS AND SOURCE OF INFORMATION: Equipment would be visible in the river and the upland right of way for a short time during construction. The water would be clouded with sediment for a short time until the river flushes the sediment down stream. The upland right of way would be bare of vegetative cover until regrowth occurs within 1 to 2 years.
N	11. DEMANDS ON/ CHANGES IN ENVIRONMENTAL RESOURCES INCLUDING LAND, WATER, AIR OR ENERGY USE (need for new or upgraded energy sources, potential for recycling, etc)

Key	IMPACTS ON THE HUMAN POPULATION
N	12. CHANGES IN DEMOGRAPHIC CHARACTERISTICS (population quantity, distribution and density, rate of change)
N	13. GENERAL HOUSING CONDITIONS (quality, quantity and affordability)
N	14. POTENTIAL FOR DISPLACEMENT OR RELOCATION OF BUSINESS OR RESIDENTS
N	15. PUBLIC HEALTH AND SAFETY (Medical services and facilities, Police, Fire Protection & Hazards (see #21, Emergency Medical Services, (see land use for waste disposal))
N	16. LOCAL EMPLOYMENT AND INCOME PATTERNS (quantity and distribution of employment, economic impact)
N	17. LOCAL AND STATE TAX BASE AND REVENUES
N	18. EFFECTS ON SOCIAL STRUCTURES AND MORES (standards of Social Conduct/Social Conventions) DEMAND ON SOCIAL SERVICES (law enforcement, Educational Facilities (libraries, schools colleges, universities) welfare, etc)
N	19. TRANSPORTATION NETWORKS (condition and use of roads, traffic flow conflicts, rail, airport compatibility etc)
N	20. CONSISTENCY WITH LOCAL ORDINANCES, RESOLUTIONS, OR PLANS (conformance with local comprehensive plans, zoning or capital improvement plans)

NA	21. REGULATORY RESTRICTIONS ANALYSIS (Are we regulating pursuant to a police power? Does the Agency action restrict the use of the property beyond the minimum necessary to achieve compliance with the Act? What are the costs of such additional restrictions resulting from proposed permit conditions? Are other less restrictive ways of achieving the same goal? See your assigned legal counsel for assistance preparing this section.) COMMENTS AND SOURCE OF INFORMATION: Conditions imposed by DEQ with the 318 Authorization are required to comply with the Montana Water Quality Act and do not restrict the use of the applicant's property beyond the minimum necessary to achieve compliance with the Act.

22. Summary of Magnitude and Significance of Potential Impacts: As noted in Attachment A – Section 5, Surface Water Resources, and Attachment B – Section 6, Fisheries Resources, the proposed action (February wet crossing) would result in a short-term release of about 120 tons of sediment into the river. Most of this material would be redeposited within about 300-360 feet of the trench. The magnitude and duration of this release would have an insignificant impact on water quality in this stretch of the river. Heavy metals would be mobilized with the sediment. The metals concentration added to background levels would not exceed acute standards and, therefore, would not be significant. Any redds within 300-360 feet down stream of the trench would probably be impacted. Any losses would likely be insignificant in terms of the total fishery of this stretch.

23. Description of and Impacts of Other Alternatives Considered: Section 75-5-318, MCA, requires DEQ to determine whether there are reasonable alternatives that preclude the need for a narrative turbidity standard.

    A. No Action: Under this alternative, DEQ would not authorize a short-term turbidity standard, and YPL would not be able to make a buried crossing. Unless YPL elected to make the crossing without disturbing the river bed, the risk of exposure and possible damage of the existing pipeline due to bed scour would remain with the continuing risk to water quality and fisheries of a leak or spill into the river. This alternative would avoid any impacts associated with a wet crossing of the river.
    B. In-place Lowering: Under this alternative, YPL would lower the existing pipeline in place. The pipeline would be dug out, suspended over the water for inspection and refurbishing, and then lowered into a deepened trench. Exposing the pipe and deepening the trench under it would result in removing more material than would digging a new trench and would release more sediment to the river. More equipment would be in the river for a longer period to keep the pipeline elevated during inspection, refurbishing, and trench deepening. The pipe could be damaged when it is dug out, resulting in the need for replacement. This method is also extremely unsafe for workers. This alternative would result in greater disturbance and sediment production than the proposed action and would not eliminate the need for a narrative standard.
    ~~C.~~ Trenchless Technology (directional drilling and horizontal boring): Core samples of the river bed taken at the bridge by the Montana Department of Transportation (MDT) indicate that the river bed is composed of dense, coarse, sandy gravel to below the proposed trench depth. This material is not conducive to drilling or boring because it cannot be fluidized by the drilling fluid and is not stable enough to be cut and removed

in a drilling fluid stream, as would be the case with competent rock. Bed material that is not removed in the drilling fluid stream could remain in the drill path or collapse and present an obstruction to the bit, reamer or pipeline. Drilling fluid could escape the bore and be released into the river. This alternative would not require a 318 Authorization because no construction activity would occur to increase turbidity.

D. Flumed Crossing: A flumed crossing would involve damming the river above and below the pipeline crossing, installing flume pipe through the dams and across the construction area to carry the river's flow, and pumping the area between the dams dry. The trench would then be cut across the channel, the new pipeline lowered in, and the trench refilled. Finally, the flume and dams would be removed. A flumed crossing is not technically feasible because of the channel width, flow volume, and low banks. If this alternative were feasible, a 318 Authorization would be required before it could be implemented.

~~E.~~ Bridge Attachment: Attaching the pipeline to the Turah Bridge would not require a 318 Authorization because no construction activity would occur in the river to increase turbidity. Water quality and the fishery would not be affected. The bridge is under the jurisdiction of the Montana Department of Transportation. By rule (Section 18.7.230, Administrative Rules of Montana), MDT will not permit attachments if it is feasible and reasonable to locate the pipeline elsewhere. MDT has concerns with pipeline attachment to this bridge (Joe Kolman, memo, December 1999). The center pier settled due to scour in the 1980's. The bridge had to be jacked up and the pier caps built up. Riprap was placed to protect the piers, but has since washed away. The bridge is in a seismically active area and would have to be retrofitted before a pipeline could be attached. Bridges are sometimes vandalized. In addition, YPL would have to reroute the existing pipeline to the bridge and acquire new right-of-way easements. Bridge repairs or traffic accidents could present a risk of damage to a pipeline attached to the bridge.

~~F.~~ Aerial Crossing: The pipeline would be suspended from cables stretched between towers on either side of the river. The towers would be set well back from the banks to avoid damage from high flows and channel movements. The pipeline would be visible and exposed to potential vandalism for at least 650 feet. An aerial crossing would carry the risk of injury to trespassers. Some disturbance of the river could occur when the cables and pipe are pulled across, but sediment production, and the impacts to the fishery, would be much less than the proposed action. Construction of an aerial crossing would take 4 to 6 weeks in addition to the time required to design the structure and acquire new right-of-way easements from landowners. Design of the structure would be complicated in this seismically active area. YPL is evaluating its existing aerial crossings for possible removal, maintaining that buried crossings are safer, require less maintenance, have no significant visual impact, and are more acceptable to landowners and their interests.

G. Timing: To reduce fisheries impacts, the Montana Department of Fish, Wildlife and Parks has suggested the periods April 1 to 15 or September 7 to October 7 as alternatives to the February construction date in the proposed action (Ladd Knotek, Addendum). The April window would avoid impacts to spring-spawning species. There would likely be some impact to pre-emergent brown trout fry, but spring runoff, which typically occurs soon after this period, would flush fine sediments from bottom gravels. This time period

would also minimize impacts to aquatic invertebrates that have evolved to survive high flows and sediment loads in the spring. Because of the higher sediment loads associated with higher stream flows, copper concentrations could exceed the acute standard if the work is performed when flows are greater than about 1500 cfs. The September-October window would follow emergence of the fry of spring-spawning species and precede fall spawning and would have the least sediment-related impact on the fishery. Stream flows would also be well below 1500 cfs.

24. Preferred Action Alternative (and Rationale): The preferred alternative is to issue a 318 Authorization for the period of April 1 through 15, 2000. If stream flows during this period exceed 1500 cfs, or if YPL has concerns for worker safety, construction can be postponed until September 7 through October 7, 2000. The work would be accomplished according to YPL's proposed action with additional mitigation measures required (see Paragraph 25 below). The calculated scour depth of 2.8 feet indicates that, during a 100-year flood event, occurring about once in a hundred years, the existing pipeline would be exposed. Since the pipeline is buried at less than the calculated scour depth, at least in part, a lesser flood event, which could occur more frequently, could expose the pipe. Local conditions, such as stream flows, bed and channel characteristics, and the kind of debris carried by flood water, would determine the likelihood of exposure and the possibility of damage to the pipeline, if any, resulting from exposure. The risk of exposure and the possibility and magnitude of damage to the pipeline cannot be predicted with certainty. The preferred alternative would allow reburial of the pipeline to reduce the chance of future damage and a possible spill into the river while reducing the project's potential impacts to the fishery. Issuing the 318 Authorization for the September-October window could reduce fishery impacts further, but would not remove the risk of potential pipeline damage during the next spring runoff. No Action would not cause a change in water quality but would leave the pipeline at risk of damage that could result in a spill of fuel into the river. In-place Lowering of the existing pipeline would not minimize the magnitude of the change in water quality or the length of time during which the change would occur. Because of the composition of the bed material, successful application of Trenchless Technology is doubtful. Flumed Crossing is not technically feasible on a river of this size. Bridge Attachment would eliminate the need for authorizing a temporary turbidity standard but is counter to the administrative rules and concerns of the Montana Department of Transportation, is beyond DEQ's authority to permit, and could result in a spill into the river due to flood, earth quake, or vandalism damage to the bridge, bridge repair work, or traffic accidents. Bridge attachment is not a reasonable alternative because the impacts of wet trenching are minimal. Aerial Crossing would greatly minimize the magnitude of the change in water quality but would expose the pipeline to vandalism that could result in a spill into the river, would be hazardous to trespassers, would have adverse aesthetic impacts, and would raise landowner concerns. There may not be enough time to complete easement acquisition, design, and construction of an aerial crossing before this year's spring runoff. An aerial crosing is not a reasonable alternative because the impacts of wet trenching are minimal.

25. Mitigation Measures

YPL's proposal contains a number of measures designed to reduce the impacts of a trenched crossing of the Clark Fork:

- Two trackhoe excavators will work from the middle of the river toward the opposite banks, reducing the time equipment will be in the river.
- Trench spoil will be placed on the banks rather than in the river.
- The pipe will be pulled across the river from the opposite bank, eliminating equipment from the river when the pipe is laid in the trench.
- The pipe used in the river crossing will be coated with concrete to protect it from damage and reduce buoyancy. The pipe will have a three-layer coating throughout for additional mechanical protection: fusion bond epoxy, adhesive, and high density polyurethane. Beyond the river crossing, where the pipe is not concrete-coated, the trench will contain padding to protect the pipe from rocks. Cathodic protection will be provided to prevent corrosion. All welds will be x-rayed.
- Work will be confined to the construction right-of-way and additional temporary workspace.
- Staging areas will be sited away from the river.
- Hard plugs will be maintained at the banks until just prior to installing the pipe.
- Disturbance to approach slopes and banks will be minimized.
- Erosion and sediment control devices will be installed to prevent the flow of topsoil or ditch spoil into the river in accordance with Best Management Practices for storm water runoff. Disturbed areas will be revegetated.
- Existing streamflow will be maintained at all times.
- Bottom contours will be reestablished after pipe installation.

Additional requirements that would be imposed by DEQ as part of the 318 Authorization include the following:

- To prevent leaks of petroleum products into the river, no defective equipment will be operated in the river or adjacent areas that could contribute surface flow to the river.
- No equipment will be fueled or serviced in areas adjacent to the river that could contribute surface flow to the river.
- Any excess material will be disposed of above the ordinary high water mark and not in wetlands.
- Clearing of vegetation will be kept to a minimum.
- The use of asphalt or petroleum-based products as riprap is prohibited.
- Water quality sampling will be required during construction as directed by DEQ.
- Final scheduling of the work will be made in consultation with DEQ, at least 2 weeks prior to starting work, and will include consideration of other disturbances that might be occurring upstream at the time, weather conditions, and snow melt runoff.
- All activities will be conducted in full and complete compliance with all terms and

conditions of any permit required by other agencies of state. federal, or local government.

26. Public Involvement: The draft EA was released on December 3, 1999, for a public review period of 15 days. Public notification of availability consisted of legal notices in the Missoulian, Montana Standard, and Great Falls Tribune newspapers, posting on DEQ's internet website, and mailing of copies of the EA to known interested individuals, groups, and government agencies. A public hearing was held in Missoula on December 17. Written comments were accepted through December 20, 1999.

27. Other Bureaus and Governmental Agencies with Jurisdiction:

Missoula County Planning Office – Floodplain Permit
Missoula County Conservation District – 310 Permit
Montana Department of Natural Resources and Conservation – Special Use License
US Army Corps of Engineers – 404 Permit

28. Cumulative Effects: The Turah Bridge will undergo riprap replacement by the Montana Department of Transportation in 2001. Due to the two years of time separating the pipeline action and the bridge work, no cumulative effects are anticipated. MDT has no plans for major modifications or replacement of the bridge. There are no projects permitted upstream of the crossing that could contribute additional impacts. There are no permit applications under consideration by DEQ for projects upstream of the crossing.

Recommendation for Further Environmental Analysis:

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

Rationale for Recommendation: The impacts of the preferred alternative would be of short duration. The 318 Authorization would preclude violation of the Water Quality Act due to an increase in turbidity. Based on the above analysis, the concentration of any heavy metals that might be mobilized would not violate water quality standards, if construction occurs when flows are less than 1500 cfs. Sediment would cover any redds that might exist within about 300-360 feet down stream of the trench. This could result in impacts to some pre-emergent brown trout fry. Eggs should be hatched and most fry should have emerged from the gravel, so any impacts would not be a significant in terms of the total fish population of the Clark Fork River or of this stretch of the river.

DEQ believes that the analysis adequately discloses the potential impacts on water quality and the fishery, and that further information-gathering is not needed to verify the analysis or the conclusions. DEQ is relying on the Montana Department of Fish, Wildlife and Parks for expert opinion regarding the timing of the project and other measures to minimize impacts to fisheries.

References

Bureau of Indian Affairs. 1995. Yellowstone Pipe Line Easement Renewal Final Environmental Impact Statement.

Knotek, Ladd, Montana Department of Fish, Wildlife and Parks. Addendum to Team Member Report to Missoula County Conservation District, January 10, 2000.

Kolman, Joe, Montana Department of Transportation Bridge Engineer. Memo to MDT Planning Division, December 21, 1999.

EA Checklist Prepared By:

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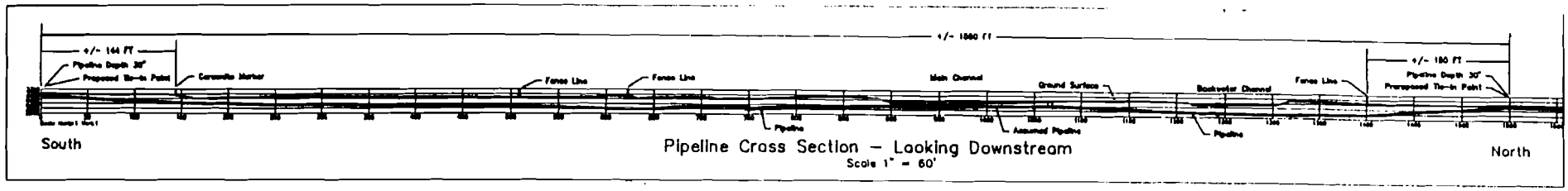
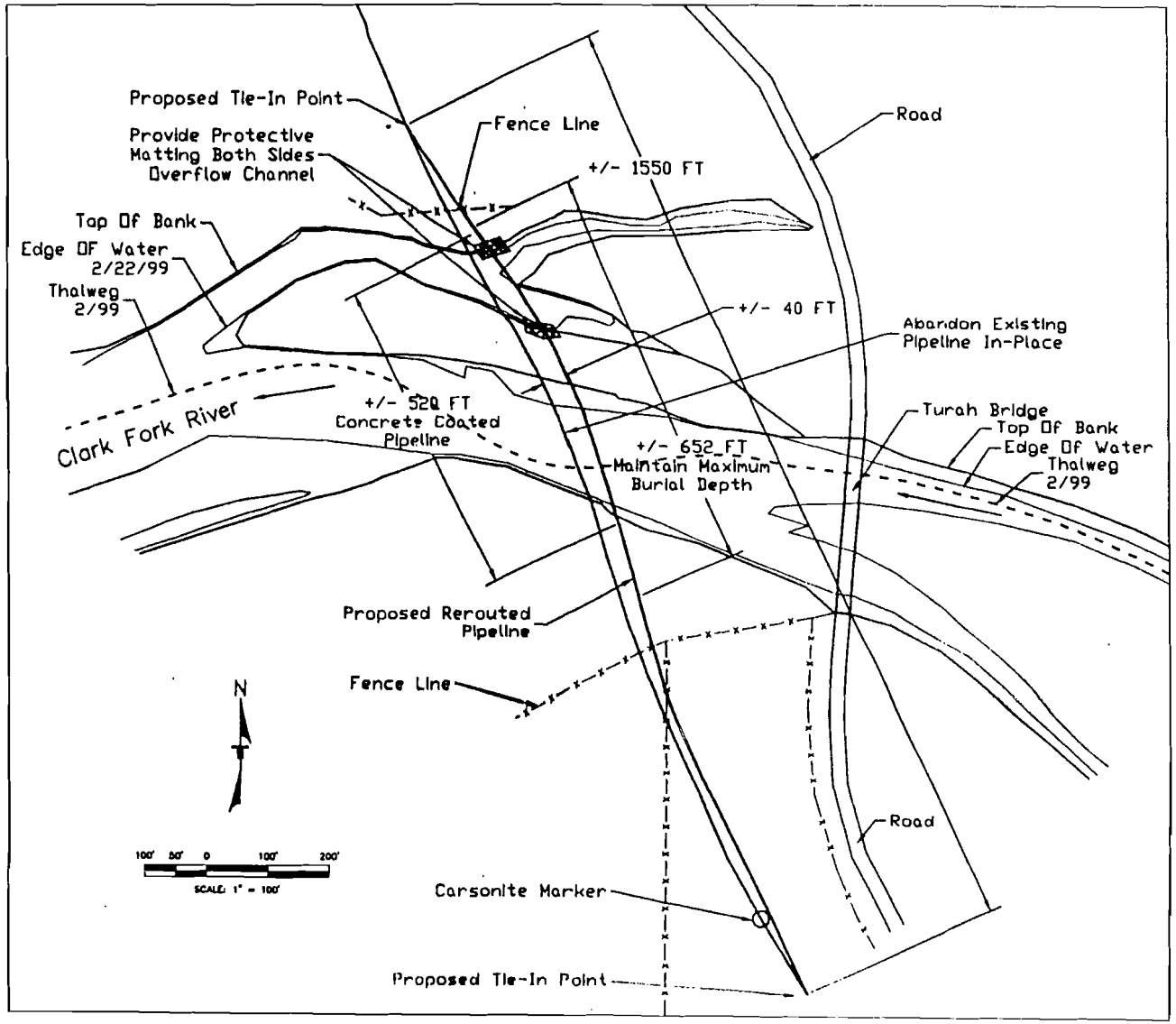
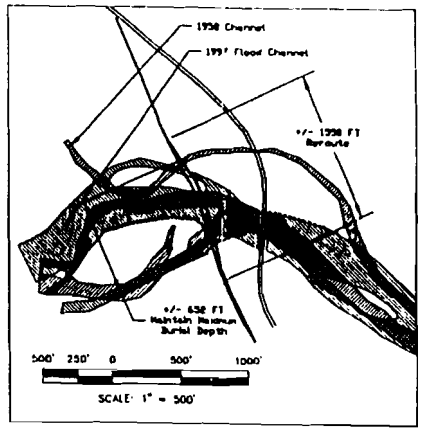
Approved By:

Bonnie Lovelace
Bonnie Lovelace, Chief, Water Protection Bureau

January 31, 2000
Date







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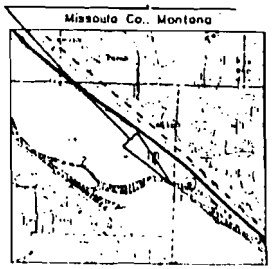
Missoula Co., Montana



Vicinity Map
NTS

Property Owners

Left Bank

Tom Johnson
P.O. Box 370
Clinton, MT 59825
406-258-6609

John & Kelleen Roseboom
13060 Crystal Creek Road
Clinton, MT 59825
406-258-6923

Right Bank

Dick Richardson
9355 Upper Miller Creek Road
Missoula, MT 59801
406-251-2470

DAN C. NEBEL, P.G. DENNIS P. WALDEN, P.E.

CAD # C:\PROJECTS\1999\28995003_315_8\MP315-6.dwg

YELLOWSTONE PIPELINE AT TURAH BRIDGE

FIGURE 1

Table 1. Results of bed scour depth calculations (based on information submitted by YPL to Missoula County with its floodplain permit application).

CLARK FORK RIVER SECTION 2, TOWNSHIP 12 NORTH, RANGE 18 WEST						
RIVER SECTION	FLOW, cfs[1]	METHODOLOGIES	SCOUR DEPTH, ft BED MATERIAL SIZE, in			
			2.0	4.0	5.0	6.0
Constricted Flow at Existing Crossing	26.000	Modified Laursen[2]	1.2	0.1	-0.6	-1.4
		Blench Equation[3]	1.3	0.6	0.2	-0.4
		Critical Tractive Force[4]	2.1	0.3	-0.6	-1.6
		Maximum Permissible Velocity[5]	2.8	0.9	-0.1	-1.6

[1] 100-year frequency design flood for the Clark Fork River above the Blackfoot (Federal Emergency Management Agency. 1988. Flood Insurance Study, Missoula County, Montana and Incorporated Areas)

[2] Developed for calculating scour where bridges or other structures constrict the flow in a channel; uses the mean depth of the channel before scour occurs. (Emmett, W.W. 1972. The Hydraulic Geometry of Some Alaskan Streams South of the Yukon River. US Geological Survey Open File Report)

[3] Developed for use with gravel bed rivers in Alaska; gives the average scour depth. (Blench, T. 1966. Mobile-Bed Fluviology. University of Alberta Press. Edmonton)

[4] Based on the critical shear stress of the bed material. The shear stress exerted by the flowing water on the channel bed is compared to the shear stress of the bed material at the point of impending motion (critical shear stress). (Chang, H.H. 1988. Fluvial Processes in River Engineering. John Wiley & Sons, Inc. New York)

[5] Based on the maximum permissible velocity for which bed scour will not occur. If the mean velocity during a design flood exceeds the maximum permissible velocity, bed scour will occur. (Chang, H.H. 1988. Fluvial Processes in River Engineering. John Wiley & Sons, Inc. New York)

YELLOWSTONE PIPELINE TURAH CROSSING ENVIRONMENTAL ASSESSMENT

ATTACHMENT A – SECTION 5, SURFACE WATER RESOURCES

SUMMARY OF POTENTIAL IMPACTS ON WATER QUALITY

Streambed disturbance during the construction of the pipeline crossing would result in the release of considerable amounts of sediment into the stream. Besides the possible physical effects of the sediment on fish and stream bottom organisms there would be a visible cloudiness or turbidity of the water. In addition, it is also possible that metals associated with the sediment could have an effect on aquatic life. These possible effects are discussed below. The main physical effects would be limited to the trench width and about 300-360 feet downstream, which is a relatively insignificant part of the approximately 120 total miles of the Clark Fork River above Milltown Dam. Spring runoff would redistribute the deposited sediment and restore the affected streambed to pre-construction condition. The resulting turbidity, or visual impact, would last less than one day and would effect a relatively small section of the stream and thus would not be significant. The maximum probable concentration of 15 micrograms per liter of copper in the river resulting from the increase in suspended sediment would be less than the water quality standard of 20 micrograms per liter and would be much lower than the high concentration of 160 micrograms per liter that occurred naturally during spring runoff in 1998.

Two additional construction windows were considered, April 1-15 and September 7-October 7. The stream flow regime during September is very similar to the original January analysis and is assumed to be the same.

The April time period was examined in detail below. The expected concentration of copper is 16-17 μg/l as a result of the construction activity. This range is also less than the water quality standard.

DISCUSSION

The average suspended sediment load in the Clark Fork River during January of 1997 was 29 tons per day and during January of 1998 it was 18 tons per day (USGS, 1999). During spring runoff in June of 1998 the suspended sediment load exceeded 6000 tons per day. Sixty-five to ninety percent of the suspended sediment was smaller than 0.062 mm in diameter during 1998. The concentration of total recoverable copper in the Clark Fork River at this point during 1998 ranged from 5 to 160 micrograms per liter during the year (USGS, 1999).

The following calculations assume that there would not be significant inputs of sediment to the stream from construction activities on or near the stream banks due to the use of best management control practices for sediment. This stream crossing would involve excavating and replacing the material in a trench that will be 35 feet wide at the top and 5

feet wide at the bottom and 7 feet deep (Dennis Walden, personal communication December 1999.). The cross sectional area would be 140 square feet (((35+5)/2) x 7). In this reach the wetted channel of the river is about 170 feet wide, so the total volume of material disturbed in the stream channel would be about 23,800 cubic feet (140 x 170).

Assuming the weight of this material is 100 pounds per cubic foot and that 10 percent of the material is washed down stream (Dennis Walden, personal communication December 1999) during removal and replacement. Then about 120 tons of material would be washed downstream [(23,800 x 100 x.1)/2000] during the crossing construction. It is estimated that the crossing construction would take about 12 hours (Dennis Walden, Rick Walsh, personal communication, December 1999).

Extrapolation from the data given in the Yellowstone Pipeline Missoula to Thompson Falls Reroute EIS, Draft Specialist Report Surface Water, indicates that essentially all of the material with a diameter greater than 0.5 millimeter will settle on the stream bottom within 50 feet of the trench and essentially all of the material with a diameter greater than 0.1 millimeters (fine sand or coarser) will settle on the stream bottom within 300-360 feet of the trench (Marc Golz personal communication). Based on 1961 Montana Department of Transportation Turah Bridge core drill data, (from a site less than 400 feet upstream of the pipeline crossing) about 96 percent of the material excavated from the pipe line trench would have a diameter greater than 0.075 millimeters (Terry Yarger, personal communication December 1999). Then conservatively Assuming that about 90 percent of the material is larger than 0.1 mm in diameter, then 90 percent of the material washed downstream from the trench will settle to the stream bottom within 300-360 feet. Of the material washed downstream, only 10 percent of the total material would be carried farther than 300-360 feet downstream. Although much of this fine material would settle out in the slack water upstream of Milltown Dam, some of the fine clays could travel many miles downstream. Because the Blackfoot River, with about the same flow as the Clark Fork River, joins the Clark Fork River at this point the concentration of suspended sediment downstream of Milltown Dam would be diluted by about 50 percent. Because this material will settle over a long distance of the stream bottom, the thickness of the deposit would be very thin at any point in the stream, and the deposition would be unlikely to effect stream bottom organisms, fish or fish spawning sites.

In the 300-360 feet immediately downstream of the trench where the material with a diameter greater than 0.1 mm will settle, it is likely that there will be a substantial impact on fish, spawning sites and stream bottom organisms. Increased velocity and flow during spring runoff would redistribute the deposited sediment and restore the affected streambed to pre-construction condition. Thus, this impact would be short term.

Apparently there is no data on the metals concentrations of sediment in the stream bottom that has not been disturbed since mining began in the drainage. The data that is available is for areas where material has been deposited recently and for soils on the stream banks.

The estimate of the probable increase in metal concentrations resulting from the disturbance at the pipeline crossing was based on the amount of fine material that will

likely remain suspended in the water. The concentration was calculated using this load and the January mean flow from 1986 to 1998. The USGS data indicates that the concentration of total recoverable metals, especially copper, increase as the concentration of suspended sediment increases. Because this relationship appears to be linear, it is reasonable to assume that increasing concentrations of sediment resulting from pipeline construction would cause corresponding increases in the concentration of copper and other metals in the water. It was assumed that the increase in the concentration of metals resulting from the increase in suspended sediment from the pipeline construction would be similar to the increase in concentration of metals which occurs normally when the suspended sediment load increases in the stream due to increased flow.

Actually, the concentration of metals in the material contributed from the pipeline construction would probably be much lower than the concentration of metals in the material normally suspended in the water. The pipeline crossing is in an area where down-cutting, rather than deposition, is occurring as evidenced by the need to re-bury the pipeline because it is too near the surface of the streambed. It is likely that almost all of the material that will be disturbed by the pipeline crossing was deposited long before mining in the Butte area contributed significant amounts of metals to the stream sediment.

As a worst-case analysis, the total suspended sediment concentration increase of about 12 milligrams per liter (calculations are given on the following page) was added to the background concentration during January, about 11 milligrams per liter. Then the metal concentrations corresponding to a total suspended sediment concentration of 23 milligrams per liter was estimated from the 1998 data (USGS 1999). Of all of the metals measured by the USG S at this site, only copper appears to be increased by this amount of increase in the suspended sediment. The corresponding sediment concentration would result in a copper concentration of 11 to 15 micrograms per liter which is much less than the 160 micrograms per liter which occurred during spring runoff in 1998 and is well below the acute standard of 20 micrograms per liter. This method of estimating copper concentration almost certainly results in a value higher than the concentration that would actually occur. Even so, because of the relatively low resulting concentration and the short duration of the increase (about 12 hours), the increase in copper concentration in the water resulting from the pipeline construction would not be expected to have an effect on aquatic life.

As mentioned earlier, it is very likely that much of the suspended sediment from the pipeline crossing would be deposited where the river slows down in Milltown reservoir. In addition, dilution by the Blackfoot River will reduce the turbidity below Milltown Dam. It is possible that there would be some increase in visible turbidity for many miles. However, this turbidity increase would be of short duration (12 hours to a day or so depending on the distance downstream) and would be considerably less visible than that which normally occurs during spring runoff. Thus, the increase in turbidity would not be significant.

An alternative method of estimating the increase of the copper concentration downstream of the construction site is based on using fine-gained bed sediment metal concentrations and corresponding water quality data from the USGS Open-File Report 99-251.

The bed sediment data was from samples collected from the surface of pools and other low-velocity areas near Turah. The total concentration of metals in these sediments was measured. Because of these two factors this method will produce a very protective estimate of potential total recoverable copper resulting from the construction.

At Turah the fine-grained bed sediment contained 413 µg/g copper. Assuming this is the concentration of copper that will be associated with the suspended material it is equivalent to 0.413 µg Cu/mg sediment. The estimated increase of suspended sediment is 12.4 mg/l, then, 5.1 µg/l copper will be added to the ambient copper concentration of 11 µg/l that exists in January which results in 16.1 µg/L copper. Again, this concentration is less than the acute standard for copper.

Calculation of total recoverable copper concentrations during April 1-15 construction window down stream of the Turah bridge follow.

The Clark Fork River flow and total suspended sediment data for period April 1-15 from 1994 through 1999 were obtained from published USGS water resources data.

The flow varied from a low in 1995 of 906 cfs and TSS of 13 mg/l to 2870 cfs and TSS of 110 mg/l in 1996. The mean flow for the period was 1512 cfs with a mean TSS of 34 mg/l. The mean total recoverable copper concentration was estimated to 21 µg/l at these conditions, which exceeds the acute water quality standard for copper (20 µg/l). Construction activities should not proceed if the river flow is about 1500 cfs because the ambient copper concentration is estimated to be near the acute water quality standard.

The estimates of copper concentrations were made using ratios of copper and TSS obtained from the USGS open-file report 99-251. The mean flow for April 1-15 (not including 1996) is 1240 cfs with a mean TSS of 19.6 mg/l. The estimated TSS increase as a result of construction is 12 mg/l (described above). The TSS concentration during construction would be about 32 mg/l. To estimate the resulting total recoverable copper concentration two TSS/Cu ratios that bracketed the TSS estimate above were used to derive the final in-stream concentration during construction.

The calculations follow.

1) (16 µg/l Cu x 32 mg/l TSS)/28 mg/l TSS = 18.3 µg/l Cu
2) (22 µg/l Cu x 32 mg/l TSS) / 53 mg/l TSS = 13.2 µg/l Cu

The mean of the estimates is about 16 µg/l Cu (15.8 µg/l Cu). Which is less than the acute standard of 20 µg/l.

Another method to predict the affect on water quality from the disturbance of the streambed materials; is to use the information about Cu in the fine-grained bed sediment and the ambient water quality. As described above about 5.1 µg/l Cu could be added to the ambient copper concentration.

The ambient copper concentrations were calculated using 1) the compete flow/TSS record (1994-99) which included a flow nearly twice the recommended maximum of 1500 cfs and 2) the same calculations but excluding the 1996 high flow data.

1) 6 year average flow (1512 cfs, TSS 34 mg/l) which includes the 1996 high flow of 2870 cfs (TSS of 110 mg/l).

(14 µg/l Cu x 34 mg/l TSS)/15 mg/l TSS = 31.7 µg/l Cu
(22 µg/l Cu x 34 mg/l TSS)/53 mg/l TSS = 14.1 µg/l Cu
(11 µg/l Cu x 34 mg/l TSS)/22 mg/l TSS = 17 µg/l Cu

The mean copper concentration at a flow of 1512 cfs is estimated to be 21 µg/l. Because this estimate exceeds the copper water quality standard, construction is limited to flows less than 1500 cfs.

2) 6 year average flow (1240 cfs, TSS 19.6 mg/l) which excludes the 1996 high flow and TSS.

(14 µg/l Cu x 19.6 mg/l TSS)/15 mg/l TSS = 18.3 µg/l Cu
(22 µg/l Cu x 19.6 mg/l TSS)/53 mg/l TSS = 8.1 µg/l Cu
(11 µg/l Cu x 19.6 mg/l TSS)/22 mg/l TSS = 9.8 µg/l Cu

The mean copper concentration at a flow of 1240 cfs is estimated to be 12 µg/l.

3) The addition of 5.1 µg/l Cu (based on fine-grained bed sediment concentrations and associated TSS increase described above) the in-stream copper concentration would be about 17 µg/l. This concentration is less than the standard and is similar to the concentration calculated above.

Calculations

Assumptions

1) Streambed sediment bulk density is 100 lb./cu ft.
2) Deposition of streambed materials is uniform across the width of the river and downstream of the construction site.
3) Flow during construction will be 717 cfs (average January flow). The flow during the September construction period will be 732 cfs, which is assumed to be essentially the same as January. The flow during the April construction period will be 1240 cfs.
4) Hardness of the water will be 150 mg/l.
5) 120 tons of streambed material will be mobilized and move downstream.
6) Width of the wetted river channel will be 170 ft. and the width is constant downstream.
7) Length of the deposition zone will be 300-360 ft.
8) 90 percent of the streambed material mobilized will be deposited with in 300-360 ft.
9) 10 percent of the streambed material mobilized will be suspended sediment and travel beyond 300-360 ft.
10) 12-hour construction-disturbance time.

Calculation of the (uniform) thickness of the material deposited downstream within 300-360 feet of the construction site and across the river channel.

Volume of deposited material

120 ton (mobilized material) X 0.90 = 108 tons deposited within 300-360 feet.
108 tons X 2000 lb./ton X 1cu. Ft./ 100 lb. = 2,160 cu. ft. of streambed material

Area of deposition zone

170 ft. (width) X 300-360 ft. (length downstream) = 51,000-61,200 sq. ft.

Thickness of material deposited

2,160 cu. ft. ÷51,000-61,200 sq. ft. = 0.0353- 0.0424 ft. which is 0.42- 0.51 inch of material uniformly deposited. Note that the deposit will not be uniform. Near the trench the thickness of the deposited material will be much thicker than at 300-360 feet downstream.

Calculation of increased suspended sediment concentration.

Calculation of material suspended

120 ton (mobilized material) X 0.1 = 12 tons suspended material.
12 tons X 2000 lb./ton X 453.59 g/lb. X 1000 mg/g = 10,870,400,000 mg of suspended material.

Calculation of total water volume passing the construction zone in 12 hours.

717 cfs (river flow) X 28.316 (l/sec./cu. ft./sec.) = 20,302.57 l/sec.
20,302.57 l/sec. X 60 sec./min/ X 60 min/hr X 12 hr. = 877,071,110.4 l of water in the 12 hour construction period.

Calculation of the average increased suspended sediment concentration.

10,870,400,000 mg ÷ 877,071,110.4 l = 12.4 mg/l.

References

USGS 1999, Open-file report 99-251
Walden, Dennis, TERRACON. Personal Communication
Walsh, Rick, Montana Power Company. Personal Communication
Golz, Marc, Montana Department of Environmental Quality, Planning Prevention and Assistance Division. Personal Communication
Yarger, Terry, Montana Department of Transportation, Personal Communication
USDA Forest Service, 1999. Yellowstone Pipeline Missoula to Thompson Falls Reroute EIS, Draft Specialist Report, Surface Water

YELLOWSTONE PIPELINE TURAH CROSSING ENVIRONMENTAL ASSESSMENT

ATTACHMENT B – SECTION 6, FISHERIES RESOURCES

SUMMARY OF POTENTIAL IMPACTS ON FISHERIES

Active brown trout spawning areas within this reach, if present, would be impacted, resulting in the probable loss of one year's class of brown trout contribution to the population from the spawning area. There would be short-term minor effects on the populations of stream bottom organisms and adult fish for about 2 miles below the pipeline-crossing site. There would be no measurable long-term reductions in the number of adult trout except for a possible reduction in one year-class of brown trout. These effects can be minimized or eliminated by conducting the trenching from April 1-15 or September 7-October 7 during stream flows of less than 1500 cubic feet per second.

DISCUSSION

Fisheries resources in the Clark Fork River have been damaged by impaired water quality. The segment of the Clark Fork River that includes the proposed pipeline replacement is listed by the Montana Department of Environmental Quality (DEQ) as water quality limited in the 303-d list. This listing is due to impairment of cold water fisheries/trout uses by elevated concentrations of metals and nutrients and to alteration of habitat. The sources of these impairments are agriculture, channelization, mill/mine tailings and resource extraction.

The fisheries upstream from Rock Creek have been the most adversely affected. The segment of the Clark Fork River below Rock Creek, which includes the proposed pipeline-crossing site, shows significant improvement in fisheries resources compared to upstream sites, primarily due to the introduction of large volumes of cleaner water from Rock Creek. (Missoula Loop Pipeline EA 1996)

Salmonids present in this segment, in decreasing order of abundance, are: brown trout, rainbow trout, mountain whitefish, rainbow-cutthroat trout hybrids, westslope cutthroat, brook trout and bull trout (Missoula Loop Pipeline EA 1996). Other fish species occurring at the site include northern squawfish, slimy sculpin, largescale and longnose suckers. Limited trout population information from annual sampling from 1979-1985 is available for this segment (Montana Department of Fish, Wildlife & Parks (FWP) Application for Reservations of Water in the Upper Clark Fork River Basin 1986).

Trout population estimates ranged from 309 to 479 fish per mile. Most of the trout were longer than 12 inches (FWP Application for Reservations of Water in the Upper Clark Fork River Basin 1986). Based on this sampling, brown trout comprised approximately 53 percent of the total, rainbow trout 45 percent and the remainder of the population was composed of cutthroat, brook

and bull trout.

All of the trout species present in the Clark Fork River spawn in clean gravel in the river bottom and thus could be affected by deposition of sediment. The finer-grained sediments can clog the interstices of the gravel, preventing the flow of oxygenated water to the eggs, or they can coat the eggs themselves and prevent the transport of oxygen to the embryo. Larger-grained sediments are likely to have their greatest effect through the process of emtombment, whereby the emerging sac-fry are unable to push their way through these materials to the surface.

Brown trout and bull trout spawn in the fall while the other trout species spawn in March or April. Bull trout probably do not spawn in this section of the Clark Fork because of unfavorable temperatures. An exhaustive survey of the reach below the proposed pipeline crossing was not conducted, but active brown trout spawning sites were observed about one mile downstream of the proposed crossing. Other active brown trout spawning sites may be present between the proposed crossing and the active spawning sites that were observed (Dennis Workman, personal communication).

Although the habitat in the 360-foot reach below the pipeline-crossing site appears to be suitable for brown trout spawning, no spawning sites were observed. This may be because the depth of the water limited observation.

Rainbow trout probably use some sites below the pipeline crossing for spawning. Some of the sites they would normally use may be rendered unsuitable for spawning due to sediment deposition resulting from the crossing construction.

The rainbow trout that would normally use spawning sites downstream in the area affected by the construction will probably find alternate spawning sites.

Based on discussion in Attachment A, Surface Water Resources, there will be substantial deposition of sediment in the 300-360 feet immediately downstream of the proposed pipeline crossing and there would be some deposition of sediment in the 2.1 miles of stream between the pipeline crossing and Milltown Dam. The depth of deposited sediment within 300-360 feet of the pipeline crossing would probably destroy any active spawning sites in this reach. Only brown trout spawning sites present in the stream during the construction period would be affected.

Deposition of sediment resulting from pipeline construction would destroy some of the aquatic organisms living on the stream bottom. However, many of these organisms would move down stream. Drift or downstream movement of these organisms from upstream areas would repopulate the effected areas very quickly.

Although whitefish spawn in the fall it is unlikely that the deposition of sediment will have substantial effects on spawning success. Whitefish do not bury their eggs but broadcast them along the fringes of riffles and the eggs stick to the rocks until they hatch in the spring. Most of the eggs would be above the deposited sediment and thus most of the eggs would not be affected

(Workman, personal communication).

A bull trout biological assessment was prepared by the U. S. Army Corps of Engineers (COE) (1999) before their issuance of a 404 permit for the proposed pipeline crossing. The U.S. Fish & Wildlife Service (1999) concurred with the Corps finding that the project may affect, but is not likely to adversely affect, bull trout.

The only substantial impact to the fisheries/aquatic resources will be limited to brown trout in an area downstream of the proposed pipeline crossing. Active brown trout spawning areas within this reach, if present, would be impacted, resulting in the probable loss of one year's class of brown trout contribution to the population from the spawning area. Although recruitment from upstream brown trout populations will occur, there may be some temporary reductions in the population of adult brown trout in this reach.

The sediments effecting the impacted area will be flushed by spring runoff and these areas would be viable locations for active spawning next year. Because of this, no significant long term impacts to the overall fisheries resource are anticipated.

Two time periods of trenching were suggested by Montana Department of Fish, Wildlife and Parks personnel to minimize or eliminate potential fisheries and aquatic invertebrates impacts.

April 1-15 was suggested to minimize impacts to all fish in the spring. Rainbow trout begin spawning around mid-March and although some brown trout fry may still remain in the gravels, the trenching would be closely followed by higher spring runoff events which would have a flushing effect on the deposited sediment. Aquatic invertebrate impacts would also be minimized due to their life cycle evolution relative to spring runoff events (Ladd Knotek, Addendum to Team Report).

September 7- October 7 was also suggested to minimize fisheries impacts. During this time period, rainbow trout fry have emerged from river gravels and brown trout and whitefish have not started spawning. Water temperatures are cooler than typical August temperatures, which can stress coldwater fish species (Ladd Knotek, Addendum to Team Report).

Due to comparable stream flows, no significant long term impacts to the overall fisheries resource are anticipated if the project proceeds in the January – March time frame. If the project is conducted during the previously noted April 1-15 and September 7-October 7 time frames, impacts would be further reduced.

REFERENCES

Knotek, Ladd, Montana Department of Fish, Wildlife and Parks. Addendum to Team Member Report to Missoula County Conservation District, January 10, 2000.

Montana Departments of Environmental Quality, Natural Resources and Conservation,

Transportation, and Fish, Wildlife & Parks. 1996. Missoula Loop Natural Gas Pipeline Montana Power Company State of Montana Environmental Assessment.

Montana Department of Fish, Wildlife & Parks. 1986. Application for Reservations of Water in the Upper Clark Fork River Basin.

US Army Corps of Engineers. 1999. Yellowstone Pipeline Biological Assessment, July 1999.

US Fish and Wildlife Service. 1999. Letter to Alan Steinle, Corps of Engineers, September 10, 1999.

Workman, Dennis. Personal Communication.

Montana Department of
ENVIRONMENTAL QUALITY

Marc Racicot, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • E-mail: www.deq.state.mt.us

January 31, 2000

Yellowstone Pipeline
3180 Hwy 12 E
Helena MT 59601

RE: Authorization No. MT-008-00 Short-Term Water Quality Standard for Turbidity Related to Construction Activity Pursuant to 75-5-318, MCA VALID April 1, 2000 through April 15, 2000 and September 7, 2000 through October 7, 2000 at flows not to exceed 1,500 cubic feet per second.

Dear Applicant:

The Montana Department of Environmental Quality Water Protection Bureau has completed our review of your application for activity on Clark Fork River (Turah Crossing), in Missoula County. This activity herewith is qualified for a temporary surface water quality turbidity standard if it is carried out in accordance with the following conditions:

(1) Construction activities in or near the watercourse are to be limited to the minimum area necessary, and conducted so as to minimize increases in suspended solids and turbidity which may degrade water quality and damage aquatic life outside the immediate area of operation,

(2) The use of machinery in the watercourse shall be avoided unless absolutely necessary. To prevent leaks of petroleum products into waterways, no defective equipment shall be operated in the watercourse or adjacent areas capable of contributing surface flow to the watercourse,

(3) Precautions shall be taken to prevent spillage of any petroleum products, chemicals or other deleterious material in or near the watercourse, and no equipment shall be fueled or serviced in adjacent areas capable of contributing surface flow to the watercourse,

(4) All disturbed areas on the streambank and adjacent areas created by the construction activity shall be protected with temporary erosion control during construction activities. These areas shall be reclaimed with appropriate erosion control measures and revegetated to provide long-term erosion control,

(5) Any excess material generated from this project must be disposed of above the ordinary high water mark, not classified as a wetland, and in a position not to cause pollution to State waters, limited trench/spoil material may be temporarily placed in state waters if the transport of the material to an upland position is not practicable or the transport activity results in increased turbidity.

(6) Clearing of vegetation will be limited to that which is absolutely necessary for

construction of the project,

(7) The use of asphalt or petroleum-based products as riprap is strictly prohibited. Its use as fill material is also prohibited if it is placed in a location where it is likely to cause pollution of State waters,

(8) Water quality sampling will be required during construction with parameters and locations as directed by DEQ.

(9) This authorization does not authorize a point source surface water discharge. A MPDES permit is required for said discharge, and

(10) The applicant must conduct all activities in full and complete compliance with all terms and conditions of any permit for this activity issued pursuant to the Montana Natural Streambed and Land Preservation Act (310 permit) or the Montana Stream Protection Act (124 permit), and any valid Memorandum of Agreement and Authorization (MAA) negotiated for this activity.

(11) Two trackhoe excavators will work from the middle of the river toward the opposite banks, reducing the time equipment will be in the river.

(12) The pipe will be pulled across the river from the opposite bank, eliminating equipment from the river when the pipe is laid in the trench.

(13) The pipe used in the river crossing will be coated with concrete to protect it from damage and reduce buoyancy. The pipe will have a three-layer coating throughout for additional mechanical protection: fusion-bond epoxy, adhesive, and high-density polyurethane. Beyond the river crossing, where the pipe is not concrete-coated, the trench will contain padding to protect the pipe from rocks. Cathodic protection will be provided to prevent corrosion. All welds will be x-rayed.

(14) Work will be confined to the construction right-of-way and additional temporary workspace.

(15) Staging areas will be sited away from the river.

(16) Hard plugs will be maintained at the banks until just prior to installing the pipe.

(17) Disturbance to approach slopes and banks will be minimized.

(18) Erosion and sediment control devices will be installed to prevent the flow of topsoil or ditch spoil into the river in accordance with Best Management Practices

from storm water runoff. Disturbed areas will be revegetated.

(19) Existing streamflow will be maintained at all times.

(20) Bottom contours will be reestablished after pipe installation.

(21) Final scheduling of the work will be made in consultation with DEQ, at least two (2) weeks prior to starting work, and will include consideration of other disturbances that might be occurring upstream at the time, weather conditions, and snow melt runoff.

This authorization is valid for the period April 1, 2000 through April 15, 2000 and September 7, 2000 through October 7, 2000 at flows not to exceed 1,500 cubic feet per second. No authorization is valid for more than a one-year period of time.

Any violations of the conditions of this authorization may be subject to an enforcement action pursuant to the applicable provisions of the Montana Water Quality Act.

This authorization is granted pursuant to 75-5-318, MCA, and only applies to the activity described by your application. Any modification of the activity described in your application, which may result in additional turbidity in the stream, must receive prior approval from the Department. You may contact me at (406) 444-4626.

Sincerely,

Jeff Ryan
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