OBDL

Operation Beyond Design Limits

Exposed Pipelines

Agenda:

Waterbodies & Boaters

OBDL Reports

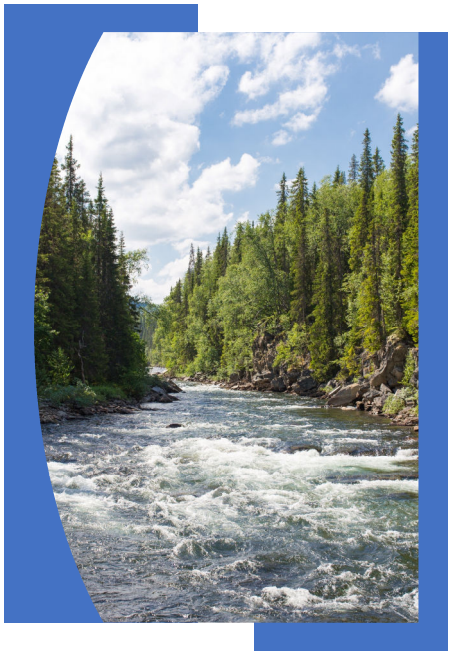
Is it navigable?

Scouring

Signs

Mitigation concerns

Where there's a water crossing at depth (laying on the bottom) or below depth (trenchless or HDD), there's a danger that pipelines can become exposed. When a company reports that they have confirmed there are no integrity concerns with the pipeline, including risks associated with external forces & third party activities, it's not integrity concerns we're worried about. It's public safety.



Hope, B.C., INCIDENT

A dangerous incident occurred after the 2021 floods near Hope, BC, in which a kayaker hit an exposed pipe in a river & had to be airlifted to hospital. This changed things for us when we realized that pipeline exposure can endanger the boating public in any season, as many boat year-round. . We had to start looking at OBDL in a different way. So, I thought I'd share those learnings with you, so we don't have to send so many Information Requests. With this information, you should be able to now anticipate what we want and provide the information in your OBDL reports.

OBDL Report

Describe the measures that the company has/will put in place to ensure that while the pipe is exposed it will not be subjected to any damage due to external forces (eg. Watercraft strike, ATV impact, weathering, erosion, etc.)

There are no immediate integrity concerns.

When an OBDL report comes in, I would start immediately researching to see if the waterway is navigable. If yes, then the OBDL becomes a public safety issue (i.e., a Damage Prevention issue) and I ask to be added as Team Member. I send IRs to companies, asking what they've done to warn the public.

Canoes, kayaks, airboats, rowboats, fish punts, flat-bottom ed boats, inflatable boats

I started to research the kinds of watercraft that are being used across Canada in the waterways that you mention in your OBDL reports. Boaters may be in kayaks, canoes, air boats, motorboats, flat bottom boats or even inner tubes.

Boating on Creeks

I looked at all the waterways that you presented in your reports. Most are in rivers, but your waterways included streams & creeks, & even swamps. One company reported that “the waterway is a creek, therefore there is no public safety issue”. But, this is often where boaters will travel. Even creeks can be navigable.

OBDL Report

Where is the exposure locations? Select all that apply)

- In a waterbody bed (example: River, Creek, Brook, Natural drainage channel, etc.)

Provide justification for the causes selected as well as any additional details or explanation that would help the CER to better understand the basic causes of this event

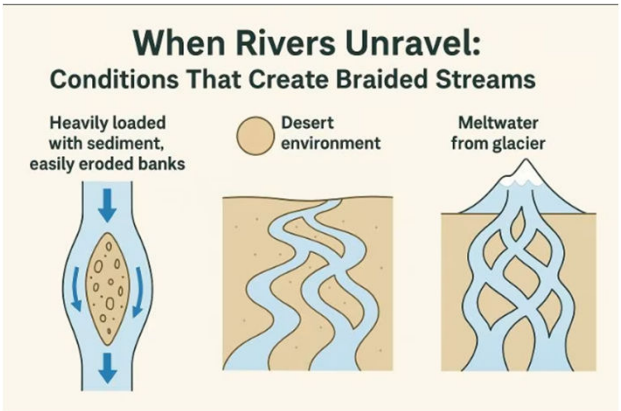
- The pipeline has become exposed as the result of river scour.

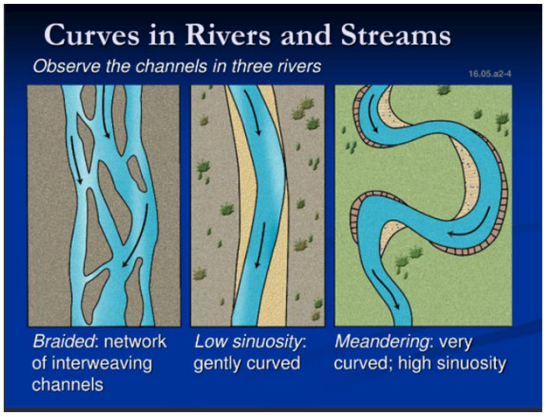
What is the cause of the pipe exposure?

- Hydro technical (Example: Flooding, River Meander, Avulsion, Channel migration, Bank erosion, River Bed erosion, etc.)

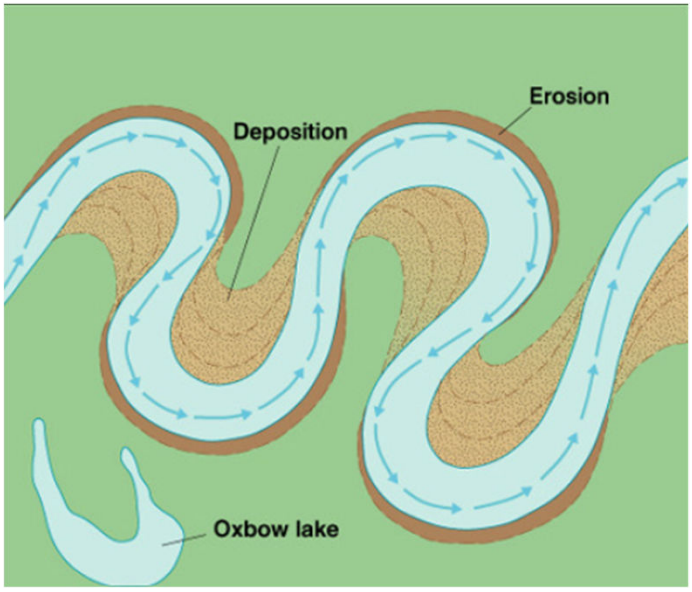
You'll recognize this wording in your OBDL reports: The result is hydro- technical and a result of river scour. Why is this important? River scour is well-known has one of the causes of pipeline exposure. It can be flood events that cause braiding or lowering of water during droughts or massive irrigation needs.

River Braiding





Pipeline exposures can occur over time during Spring freshets or occur suddenly during a flood event. These events can cause scouring or braiding, which can lead to pipeline exposure. **Braiding** is the formation of multiple channels in a single river created by rapid fluctuations in water flow and high sediment loads when a river overflows its banks, lowering water depth over the pipe, often exposing it. This is reportable in ORCA as '*Operation Beyond Design Limits*' (OBDL).



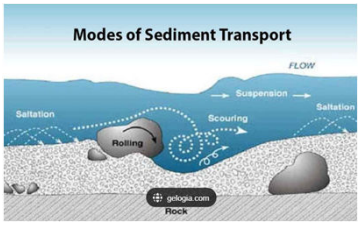
Scouring

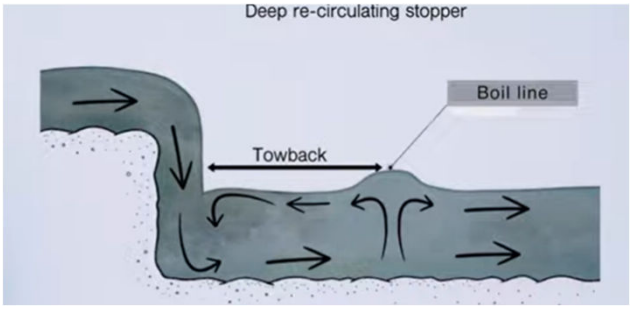
Scour

Scouring can be the erosion of soil as water flows on 1 bank and deposits sediment on the other bank in a meandering river.

Hole, Stopper, Hydraulic or Pourover

Scouring can be dangerous





Scouring is when the river flows forcefully over the pipeline and removes soil or rock under and around the pipeline, exposing pipe surface. **Hydraulics (Recirculating Water or 'Holes')** Hydraulics occur when water flows over a drop and creates a recirculating current. These can be dangerous if they are powerful enough to trap a kayaker. Learning how to recognize and avoid strong hydraulics is crucial.

Trees can be Strainers

During Spring Freshet, trees & boulders (large or small) can be pushed down a river in a flood & gather on an exposed pipe, causing damage to the coating & a safety issue to boaters. Fallen trees caught on exposed pipes can catch kayakers/canoeists. These trees create “strainers’ that catch paddlers as they allow water to pass but can trap a kayak or paddler. Paddlers say that Strainers are obstacles that let water through but not you. These are among the most dangerous river hazards & should always be avoided.

OBDL Reports

- **How deep is the pipeline exposure?**
  - The pipeline exposure is located above surface/at surface/ 1.5m below surface/3-4m below surface.
- **What is the length of exposure?**
  - 2.4m can be as impactful as 10m of exposure
- **Is the pipeline supported?**
  - Usually, companies often report that the section exposed is fully supported.
- **Most companies report no immediate concerns related to safety, environmental impact, or pipeline integrity.**
- **Include in your responses:**
  - Is there a risk of watercraft or other vehicle impact?

In your reports, we'll want to know if there's a risk of watercraft or other vehicle impact. Canoes, kayaks, ATVs or snowmobiles if in swampy areas. I consider how much exposure there is – & the lengths vary greatly (from 1m to 10m (32.91 ft)). Companies are very good at assessing if the pipe is supported or floating. But when you say you have no immediate concerns related to safety but there's no mention of possible impact by watercraft, then all we can think is that the company has not considered boaters.

Describe all actions taken or planned to address the consequences of the event including any evacuation

- Due to the remote & underwater location of the exposed pipe, the risk of third-party damage is low.
- There are no immediate integrity concerns to the Pipeline.

Remoteness is not a criteria that your judgement should be based on. We would choose highly remote areas to paddle for 2-3 weeks each year, where there were no humans travelling.

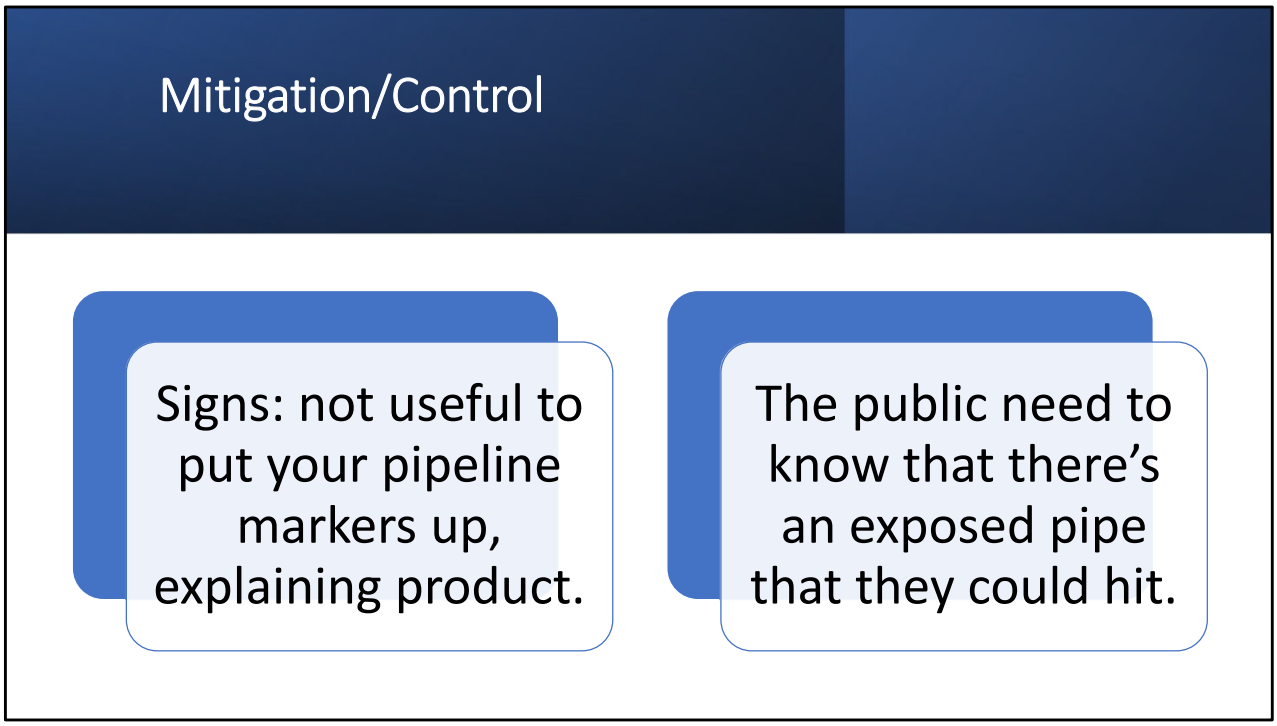
In situations, with wide rivers, recreational boaters can travel for 2-3 weeks with fully loaded canoes & kayaks. They'll use spurs to pull in behind to rest or stop for lunch. If they hit the pipe & the canoe goes over, they've now gotten all their gear wet, including sleeping bags, tent & food. That can limit their survival. A recent report shared that there were only 9 m of pipe exposed & it was behind a rip rap spur. That's 29.53 feet! Yes, if it's fully supported far below the surface, it's unlikely to be impacted by river users or the public. But in some cases, submerged pipelines can cause waves at the surface that can impact boaters.

Waves may or may not impact paddlers. Standing waves form when water flows over a submerged obstacle & maintains a consistent shape. These are common in rapids and can be fun to ride, but breaking waves occur when water moves too quickly over an obstacle, creating unpredictable movements that require quick adjustments.

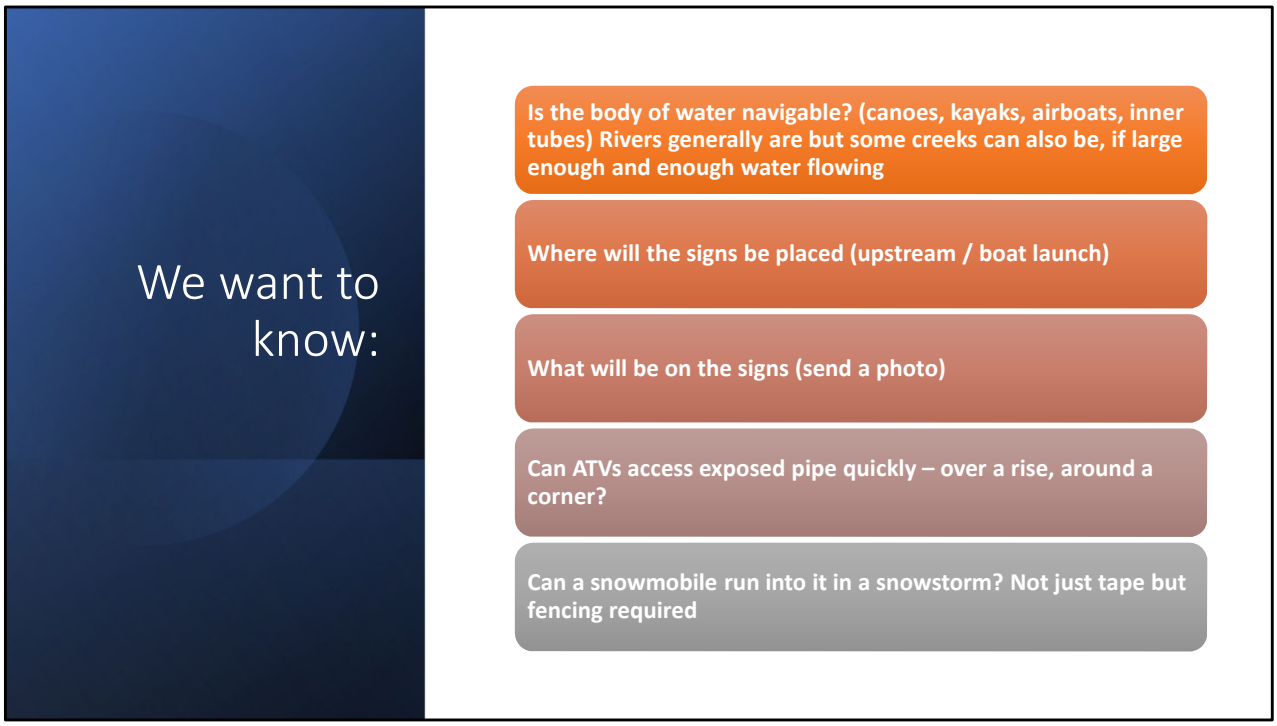
SIGNAGE

- Location of Signs

Location of signs: Posting signs beside the exposed pipe, is far too late to warn boaters. When the public run rivers in canoes & kayaks, in fast flowing water, we come quickly around a corner & can hit the pipe. Signs have to be at the "Put-in" or boat launch, if any. Just make sure signs are upstream. Kayakers & canoers need to know well in advance, so they can go downstream of the pipe exposure to "put in".
One company even responded that "the path along the river was not impacted", but that misses the boating safety issue entirely. In OBDL, companies need to put appropriate signs at all upstream boat launches, no matter the season. The public can be paddling all year round.



Let us know how & where you are addressing public awareness of your exposed pipe. When this pertains to signs, using your regular P/L marker signs doesn't make sense. Your P/L markers, with product information & emergency number – is not the information that's relevant to boaters. Putting your P/L marker with company name & product means nothing to a boater. You must warn them that there's a hazard downstream & what it is.



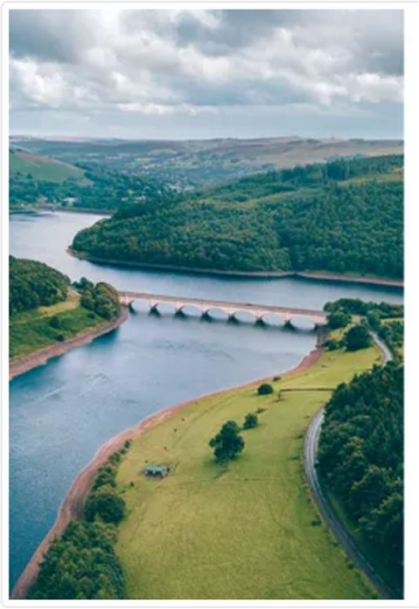
Include in your report if the waterway is navigable. We expect you to do some homework, to determine if recreational boaters or people fishing can go down the water body. We want to know how you're stopping the public from hitting the pipe.

Follow up

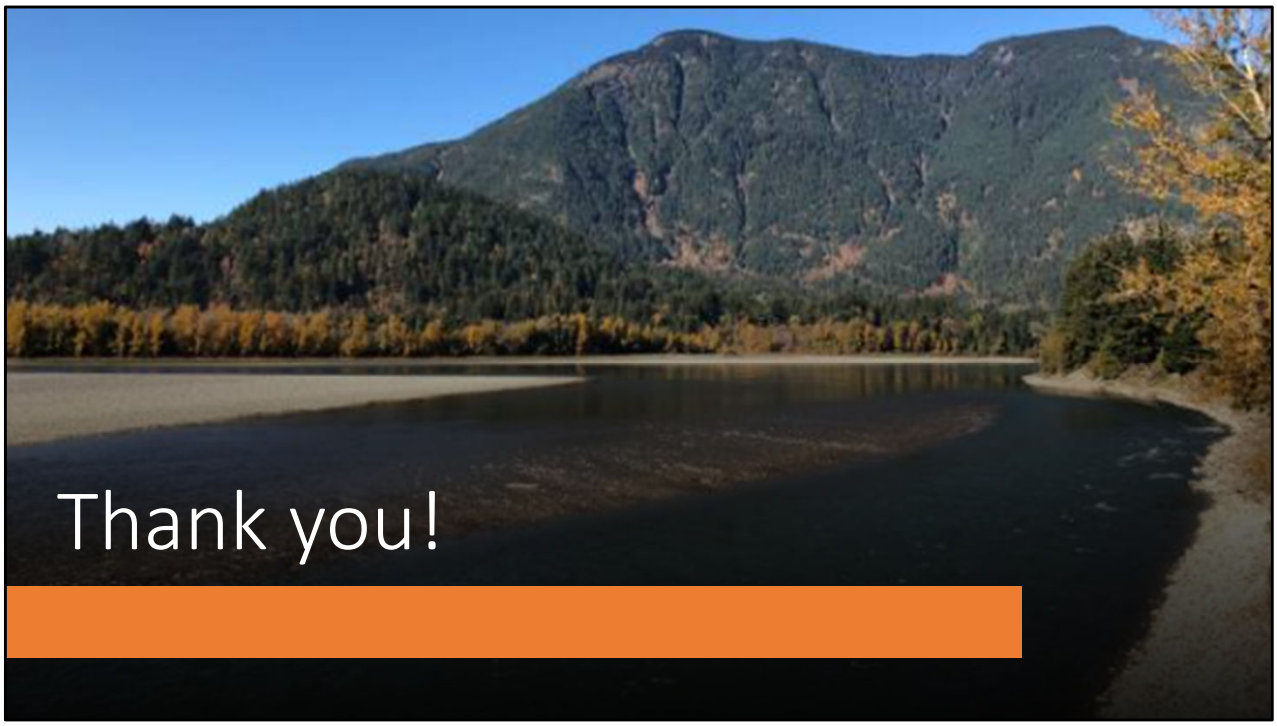
If the pipe is a danger to public = high risk, looking for prompt action Include repairs into a plan with date to be repaired/fixed

Companies need to include repairs into a plan but, if there's any likely impact to public safety, we'll want to see if you're addressing it quickly. To that end, enter date to be repaired/fixed. We understand that the pipeline exposure will also continue to be monitored under the Damage Prevention Program, which includes quarterly aerial patrols. Let us know when it will be fixed & if you've prioritized it according to the public safety issue as well as any integrity issues. Remember, boaters can be on the water all year round, depending on the latitude and if it freezes.

NEBC (Northeast BC upcoming projects)



The Commission, in 6.2.2.2. of the NEBC Project approval in the Peace Region states that there will be 4 potentially navigable watercourse crossings by trenchless crossing (HDD). Signs will be posted upstream of navigable watercourse crossing locations to warn boaters of potential disruptions & possible safety concerns.
Includes: Peace River, Kiskatinaw River & Henderson Creek.


Thank you!