Skeena Watershed Conservation Coalition
Cultivating a sustainable future from a sustainable environment rooted in our culture and thriving wild salmon ecosystem

December 18, 2024

Coastal GasLink/TC Energy
BC Ministry of Environment
BC Ministry of Energy and Climate Solutions

Coastal GasLink and TC Energy Integrated Vegetation Management Plan – Public Comments

Skeena Watershed Conservation Coalition

Skeena Watershed Conservation Coalition (SWCC) is a diverse group of people living and working in the Skeena River watershed. Our board of directors and membership reflects the broad interests of the people in this region. We are united in understanding that short term industrial development plans, even 50-year plans, will not benefit our region in the long run if they undermine the social and environmental fabric that holds the watershed and its communities together. SWCC's mission is to cultivate a sustainable future from a sustainable environment rooted in our culture and a thriving wild salmon ecosystem.

Alexandra Golt from SWCC has reviewed the Coastal GasLink (CGL) Integrated Vegetation Management Plan (IVMP). Alexandra is a botanist who studied the impacts of glyphosate-based herbicides (GBH) on forest understory plant reproduction and morphology for both her undergraduate and graduate studies She is also on the board of the Northwest Invasive Plant Council (NWIPC). In her published research, she found that GBH application caused a reduction in pollen viability of prickly rose (a non-target species) by an average of 66%, as well as caused alterations in pollen and petal morphologies in flowers that may impact pollination and pollinator visitation. Additionally, she found that glyphosate residues persist in floral tissues for at least 2 years post-application. For her graduate studies, Alexandra continued her research on the impacts of GBH on forest understory plants and how those changes impact visitation by bumble bees. She found that glyphosate residues persist in fireweed flowers two-years post application and changed the fluorescence of the flowers. This could indicate potential changes in the signals presented to insect pollinators, affecting biocommunication between plants and pollinators. When comparing berry production in important fruit producing plants, Allie found that 91% of plants in control sites produced fruit whereas only 0.83% of plants in GBH-treated sites produced berries. It is important to note that these species were non-target plants and only received a low-dose application of GBH. These findings suggest that GBH may have greater implications on the ecological roles of fruit-producing plants and for the availability of food for animals in forest cutblocks and other disturbed areas than was previously acknowledged.

About the Wed'zink'wa/Morice Watershed

This section is cut and pasted from the Morice Fish Habitat Review (2013) by Eclipse GIS, SkeenaWild Conservation Trust and the Office of the Wet'suwet'en:

The Morice watershed is located in Wet'suwet'en territory, south of Houston, British Columbia. The watershed is bounded to the north by the Bulkley River drainage, to the west by the upper Kitimat and upper Zymoetz drainages, and to the east and south mainly by Nechako River tributaries.

The Morice Watershed is part of the Bulkley River basin and is fed by streams originating in both the Interior Plateau and the glaciated Coast Mountains. From the outlet of Morice Lake, the Morice River flows northeastward 80 km to join the Bulkley River near Houston, BC. The Bulkley River flows 150 km northwestward to enter the Skeena River at Hazelton, BC. The Skeena River flows 285 km downstream to Chatham Sound on the northeast Pacific Ocean.

The Morice River is a sixth order stream that drains a catchment area of 4,380 km^2 (comprising the southwestern portion of the Bulkley watershed. Elevations range from approximately 2,740 m to 560 m at the Bulkley confluence. Morice Lake (762 m) is the largest lake in the system and is the origin of the Morice River. Major tributaries include: Atna River, Nanika River, Thautil River, Gosnell Creek, Lamprey Creek, Owen Creek, and Houston Tommy Creek.

The contribution of high elevation snowmelt and ice melt runoff is important in maintaining adequate summer water levels in the mainstem and side channels of Morice and Nanika Rivers. Rainstorms in the fall and decreasing evapotranspiration yield moderate flows. The Morice River contributes on average more than 90% of the flows to the Bulkley River at their confluence, and up to 99% of flows at certain times. There is a steep precipitation gradient from west to east, as well as from the high alpine to the valley bottom in the drainage. Annual total precipitation ranges from approximately 2,250 mm in the Coast Mountains to under 500 mm along the lower Morice River.

The Morice watershed has high fisheries values and is a major producer of chinook, pink, sockeye, and coho salmon, and steelhead trout, which are fished by coastal and in-river aboriginal, commercial, and recreational fisheries.

Within the last 60 years, the Wet'suwet'en have witnessed one crisis after another that has brought Morice watershed, land use, and its resources into its present conditions; these include:

- Missing salmon and diminished abundance since the mid-1950s;
- Construction of 2,020 km of access roads;
- Logging of more than 750 km^2;
- Mountain pine beetle outbreak affecting at least 1,065 km^2;
- Loss of massive amounts of Wet'suwet'en cultural heritage;

- Erosion of Wet'suwet'en rights and title and the ability to exercise the rights;
- Climate change.

General Comments

It is important to note the summary on the critical condition of the Morice Watershed was completed in 2013, prior to the construction start of the CGL pipeline. The condition of this critical salmon, steelhead, and lamprey sub-basin was only made worse by CGL's activities and issues of chronic non-compliance mostly concerning erosion and sediment.

The CGL Integrated Vegetation Management Plan (IVMP) states the intention to use up to 24 potential herbicides with different active ingredients and adjuvants to control invasive plant species in and around the pipeline right-of-way (RoW). The proposed herbicide regime is alarming due to its sheer scale and the potential for cumulative effects. These herbicides represent a vast array of chemical compounds with varying levels of toxicity and persistence in the environment. This decision does not consider the long-term impacts of these herbicides, most of which have known persistence in soils and plant tissues, on non-target species.

During application, many non-target plants are exposed to herbicides due to spray drift or their proximity to targeted plants via the spray cloud/rain trajectory. Non-target plants can also be exposed to glyphosate in soil, due to translocation of herbicides from shoots of treated plants into the rhizosphere. Many studies indicate that herbicides:

- Negatively impact non-target plants: Some of these impacts are reduced pollen viability, inhibit and reduce anther dehiscence (pollen release), cause changes to floral florescence, alter floral morphology, and reduce fruit production. Additionally, residues can persist in plant tissue and soils, the impact of which is not fully understood.
- Contaminate water sources: Runoff from treated areas can carry herbicides into rivers, lakes, and groundwater, potentially harming aquatic life and impacting drinking water supplies.
- Harm wildlife: Herbicides can poison wildlife, disrupt food webs, and damage habitats. This includes birds, mammals, fish, and insects, impacting biodiversity.
- Disrupt soil health: Herbicide applications can deplete soil microorganisms, reduce soil fertility, and increase the risk of soil erosion. This can have long-term consequences for ecosystem resilience.
- Promote herbicide resistance: The widespread use of herbicides can lead to the evolution of resistant weeds, requiring even more potent and potentially hazardous chemicals to control them. This creates a vicious cycle of escalating chemical use and environmental damage.

All the listed herbicides and active ingredients are concerning. Here are examples of issues for some of the specific active ingredients:

- **Picloram** – Picloram is highly mobile and persistent in the environment, with a half-life in soil ranging from one month to several years. It can move off-site through runoff and groundwater. Picloram may also be taken up by nearby, non-target plants.

- **Glyphosate** – Glyphosate residues been found to persist in non-target plant species; specifically, in raspberry root tissues 12 years post-application and in floral tissues of prickly rose 2 years post-application. Additionally, changes in flower morphology may impact the biocommunication between plants and insect pollinators.
- **Aminopyralid –** A persistent herbicide that can remain in soil and water for months or years. Aminopyralid is highly mobile in the environment and can easily be taken up by non-target plants or leach into groundwater.
- **Imazapyr** – This herbicide has been found to cause toxicity in yarrow and fireweed, both of which were non-target species in powerline RoWs in northern Canada. Imazapyr's high phytotoxicity and persistence in soils indicate that it is not a suitable product if non-target species are in proximity of target species.
- **Triclopyr** – Herbicides with this active ingredient have been found to cause toxicity in non-target species, such as yarrow and fireweed, in powerline RoWs in northern Canada. A study on triclopyr dissipation in plant tissues found that more than 50% of residues remained 30 days post-application; implications of these residues is still unknown.

The effects of this persistence of residues are minimally explored; therefore, herbicide use should not occur in order to reduce potential impacts to native vegetation, insect pollinators, and animals. Instead, we suggest the use of other effective practices, such as mechanical methods (hand-pulling and digging) or biological methods (the introduction of natural predators, parasites, or pathogens) to control invasive plant species populations. Additionally, promoting the establishment and planting native plant species would be beneficial to preventing colonization of invasive plant species and help prevent erosion.

The CGL IVMP also presents various application techniques of herbicides. One of the methods, foliar applications, states as a benefit that application "…can be carried out at any time of the growing season" (CGL IVMP, p. 37). It is strongly recommended to not perform foliar applications at the beginning of the season during flowering in order to limit herbicide exposure to insect pollinators such as bumble bees. Bumble bees are the most prominent insect pollinators in the northern hemisphere and their populations are greatly impacted by herbicide applications. The risk of herbicide application is highest before plants reach the end of the reproductive phase (fruit onset).

The CGL IVMP does not disclose how they plan to access the pipeline RoW as most of the RoW is inaccessible by design by CGL. How will workers and quads or side-by-sides gain access for invasive species control? Based on images taken post-work, large woody debris was placed in the RoW to deter recreation vehicle use, prevent erosion, and provide habitat for invertebrates and small animals. Accessing the RoW would mean disrupting these habitats and causing more harm to an already damaged ecosystem, resulting in a longer recovery time for the environment. Continued human activity inhibits recovery of these damaged environments; CGL needs to provide this critical information to the public and how they plan to reduce damage to the recovering area of the RoW.

The proposed use of 24 different herbicides for the CGL pipeline RoW raises serious concerns about the potential environmental impacts. This extensive use of chemical treatments represents a significant threat to the delicate ecosystems surrounding the pipeline, potentially jeopardizing the health of wildlife, water resources, and human communities. The CGL IVMP states that these other optional methods of control may be difficult to design and implement; however, we cannot put a price on ecosystem health. We only have one environment, and it is our duty to protect it.

Closure & Recommendations

This watershed, and the entire CGL pipeline RoW, deserves a much higher level of stewardship to rebuild and ensure ecosystem integrity and basic functionality for salmon, steelhead, lamprey, and freshwater fish. The cumulative impacts of legally permitted construction and industrial activities have put both freshwater and terrestrial species at risk. Coastal GasLink & TC Energy have the opportunity to make better choices when it comes to pest management.

Improvements to the IVMP, such as planting pollinator friendly species, would seem to be a more common-sense approach. Additionally, working with local ecologists and Hereditary governed Wet'suwet'en knowledge holders to transform a portion of CGL's toxic legacy into something that will have a less harmful impact should be a priority. Another improvement would be to work with Hereditary leaders to examine planting potential agricultural, medicinal, or subsistence crops.

Do not add insult to injury by using toxic chemicals along the CGL right of way.

If you have any questions, please do not hesitate to contact SWCC at the above contact information.

Sincerely,

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Cc:

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