CUMULATIVE EFFECTS ASSESSMENT FOR THE MARATHON PALLADIUM PROJECT

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LIMITATIONS OF THE ASSESSMENT

Challenges in Cumulative Effects Assessment (CEA) (Duinker and Greig, 2006):

- Application of CEA in project-level impact assessment
- Focus on the approval of projects as opposed to sustainability
- Lack of understanding of ecological thresholds
- Separation of cumulative effects from project-specific impacts
- Weak interpretations of cumulative effects
- Inappropriate handling of potential future developments

SURFACE WATER QUALITY

The EIS Addendum concludes that cumulative effects (CE) are not predicted based on:

- Lack of spatial overlap between the residual effects of the Project and project and activities in the Project Inclusion List (PIL).

WHAT CONDITIONS ARE NECESSARY TO VALIDATE THE CONCLUSION OF THE CEA?

- Prediction of the water quality model (lab-based) are met
- Water treatment technologies are sufficient to achieve quality guidelines

CONCERNS?

- Verification of model predictions during project activities
- Accidents and malfunctions
- Potential for CE in Lake Superior

SURFACE WATER QUALITY

RECOMMENDATIONS

- Conduct field-based validation of the model before and during the activities of the Project.
- Develop and implement a water quality monitoring program that includes stations in Lake Superior at the mouths of Hare Creek and Angler Creek, and additional stations west of those locations.
- Consult Pays Plat FN during the development of the water quality monitoring program.
- Establish a communication channel to share the results of the monitoring program on a regular basis with Pays Plat FN.
- Develop an early warning procedure to notify Pays Plat FN of detrimental changes in water quality as soon as they are reported.

CHANGES IN WILDLIFE HABITAT

The EIS Addendum concludes that "*overall adverse cumulative residual environmental effect on wildlife habitat is predicted to be not significant.*"

ON WHAT ASSUMPTIONS IS THE CONCLUSION BASED?

- Habitat suitability models predict that habitat is abundant in RSA.
- For migratory birds, population limitation occurs outside of breeding season.
- Project-specific effects are small compared to commercial timber harvesting.
- Displaced wildlife will occupy available habitat within LSA and RSA. (Supported by ECCC)

CONCERNS?

- One size does not fit all: Differential responses could be anticipated in species adapted to early successional habitats or residents with low dispersal rates (i.e., amphibians, reptiles)
- Mitigation success? Translocations have low success rates in species with strong homing tendencies.

CHANGES IN WILDLIFE HABITAT

CONCERNS?

- Habitat suitability models (HSMs) are spatial models of the distribution of habitat deemed adequate for a species based on presence – and, occasionally, absence – data.
  - Model components of the ecological niche.
  - This models do not account for species interactions (i.e., predator-prey, competition, etc.), and dispersal capabilities.
  - Thus, HSMs almost certainly overestimate the habitat available for any given species.
  - By how much can HSMs overestimate habitat? Model validation using field data is required.

- Are populations of migratory birds limited outside of the breeding season?
  - Generalization is not justified.
  - For some species, evidence suggests population limitation in the wintering grounds. For most species, evidence is lacking.
  - Precautionary principle should apply.

CHANGES IN WILDLIFE HABITAT

CONCERNS?

- "*Project-specific effects are small compared to commercial timber harvesting.*"
    - "Compared-to" approach to assessment of significance is faulty in logic and provide limited information to decision-makers (Joseph, 2019; Noble, 2020)
    - Cumulative effects are changes to the environment that are caused by an action in **combination** with other past, present and future human actions (IAAC, 2016).
    - Stressors cannot be easily added because their effects are not necessarily equivalent.
        - Commercial timber harvesting results in mosaic in landscape with varying effects on wildlife populations.
        - Cumulative effects may be also be synergistic.
    - Population demography may change in response to thresholds in disturbance, rather than in a linear fashion.

CHANGES IN WILDLIFE HABITAT

CONCERNS?

- Displaced wildlife will occupy available habitat within LSA and RSA. (Supported by ECCC)
    - Evidence to support the claim is not presented.
    - Two species-specific scenarios (assuming no site fidelity):
        - If breeding habitat is not limiting, increased occupancy of alternate available habitat may result in increased density within the LSA and RSA, but no adverse effects on demographic rates.
        - If breeding habitat is limiting, increased density within the LSA and RSA may cause density-dependent adverse effects on the demographic rates.
    - If displacement into LSA and RSA occur, the direction and magnitude of possible demographic effects (species-specific) are uncertain.

CHANGES IN WILDLIFE HABITAT

CONCERNS?

- There is unaddressed uncertainty in the conclusions of the CEA.

PRECAUTIONARY PRINCIPLE IN ENVIRONMENTAL SCIENCE (KRIEBEL ET AL., 2001)

- Preventive action should be taken in the face of uncertainty.
- Burden of proof should be on the proponents of projects.
- A wide range of alternatives to harmful actions should be explored.
- Increase public participation in decision-making.

CHANGES IN WILDLIFE HABITAT

RECOMMENDATIONS

- Proponent should address uncertainty in the CEA.
  - Present a measure of the predictive capacity of the HSMs and discuss the magnitude of overestimation of the available habitat in the RSA.
  - Discuss how the demographic response to thresholds in the cumulative action of stressors could influence the significance in the CEA.
  - Present evidence supporting claim that the combined effect of forest management and other activities are sustainable in regards of wildlife habitat.
  - Provide a rationale to justify the assumption that effects of stressors are additive. Otherwise, discuss possible alternative scenarios (i.e., synergy) and their effects on the CEA.
  - Discuss potential significance of cumulative effects on migratory bird species under a breeding-limitation scenario.

REFERENCES

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