



# Goffs Quarry CLC Meeting #9





# EA Supplemental Submission

- September 25, 2018 NSE requested supplemental information for the EA application which included:
  - Additional details on water balance model
  - Additional details on settling pond design and function
  - Analysis of any impacts from updated information
  - Details on preliminary reclamation plan
  - Clarification on impacts to offsite wetlands
  - Assessment of potential impacts to game sanctuary
  - Review need for electro fishing
  - Complete a MEKS





# Water Balance

- In consultation with Nova Scotia Environment (NSE), provide additional information regarding the water balance results, including flows in post-development conditions, groundwater seepage and model uncertainty.



# Water Balance

- The groundwater model and water balance estimate groundwater seepage differently. The groundwater model uses a geomean of hydraulic conductivities obtained during the baseline field program. The water balance estimates groundwater seepage into the quarry as infiltration within that radius of influence. The groundwater seepage estimate used in the water balance is within the range presented in the groundwater model.
- Actual groundwater seepage into the quarry and the extent of the groundwater drawdown is expected to be less than the conservatively estimated groundwater seepage values and extent of the ROI presented in the EARD.
- At the request of NSE, Golder has calculated the ROI based on a range of hydraulic conductivities. The upper-bounds seepage and ROI in this range are considered to be unrealistic (as described in the preceding sections) and not expected to be encountered.
- The quarry discharge will be controlled using sedimentation ponds designed to meet the water quality and quantity criteria. The discharge rate (L/s) will remain within the range of the observed stream flows which have been collected since 2017.



# Settling Pond

- Provide a detailed design of settling ponds. Provide an analysis of how the ponds will manage water discharge for both quantity and quality considering groundwater seepage and rainfall events in all seasons.



# Settling Pond

- **Water Quality** - The sedimentation pond will provide 24 hours of retention time to settle a specific range of particle sizes. This will provide the required settling to meet the NS Pits and Quarries guidelines of average Total Suspended Solids (TSS) concentration of 50 mg/L. With the reduction of suspended solids and associated adsorbed metals, the total metals concentrations are expected to be representative of background conditions.
- **Water Quantity** - when pumping is required parts of the quarry floor will be allowed to flood for water quantity control. Once the ponds are at grade, a hydrological model will be completed to estimate the existing pre-development peak flows and proposed post-development peak flows. The outlet of the pond(s) will be designed to maintain the pre-development peak flows during specific storm events (i.e., 2 to 100 year storm event).





# Impacts

- Using the information from the two above bullets, re-assess and evaluate impacts from the proposed works with sufficient supporting information to support statements around impacts to nearby and downstream watercourses (e.g., Holland Brook), and include any necessary mitigation measures resulting from this updated assessment.



# Impacts

- During the spring discharge events the flow from the quarry will be minimal compared to the flows within Holland Brook. Therefore, as long as the suspended solids criteria are met, the water quality at the discharge is not a concern during the spring. During the summer months when Holland Brook is experiencing low flow conditions additional settling within the sedimentation pond will assist in reducing the total metals concentrations at the quarry discharge. It is anticipated that the concentrations of Aluminium and Iron will be reduced at the discharge and will meet the CCME FWAL or be within the range of background concentrations which are naturally occurring in Holland Brook. With proper water management/handling, as outlined in the Water Management Plan, no impacts to Holland Brook are anticipated.





# Reclamation Plan

- Provide a preliminary reclamation plan for the quarry in consultation with NSE.





# Reclamation Plan

- Reclamation will be conducted to guard the safety of the environment and to promote the reinstatement of the natural habitat using suitable vegetation techniques to promote succession. Areas of the quarry to be reclaimed will have the quarry face backfilled at a 3:1 slope using overburden stored on-site from the original stripping of the site. Exposed bedrock will be capped with topsoil and steep outcrops will be suitably sloped. All disturbed areas will be covered with hydroseed and mulch, and trees and shrubs native to the area will be planted where possible. This will replicate the process used in the rehabilitation work carried out during the recommissioning/permitting stages for the Industrial Approval.





## Offsite Wetlands

- In consultation with NSE and Nova Scotia Lands and Forestry, survey all wetlands that may be indirectly affected by quarry development and provide an analysis of potential indirect effects. This includes wildlife and vegetation surveys, functional assessments and a proposed monitoring plan.



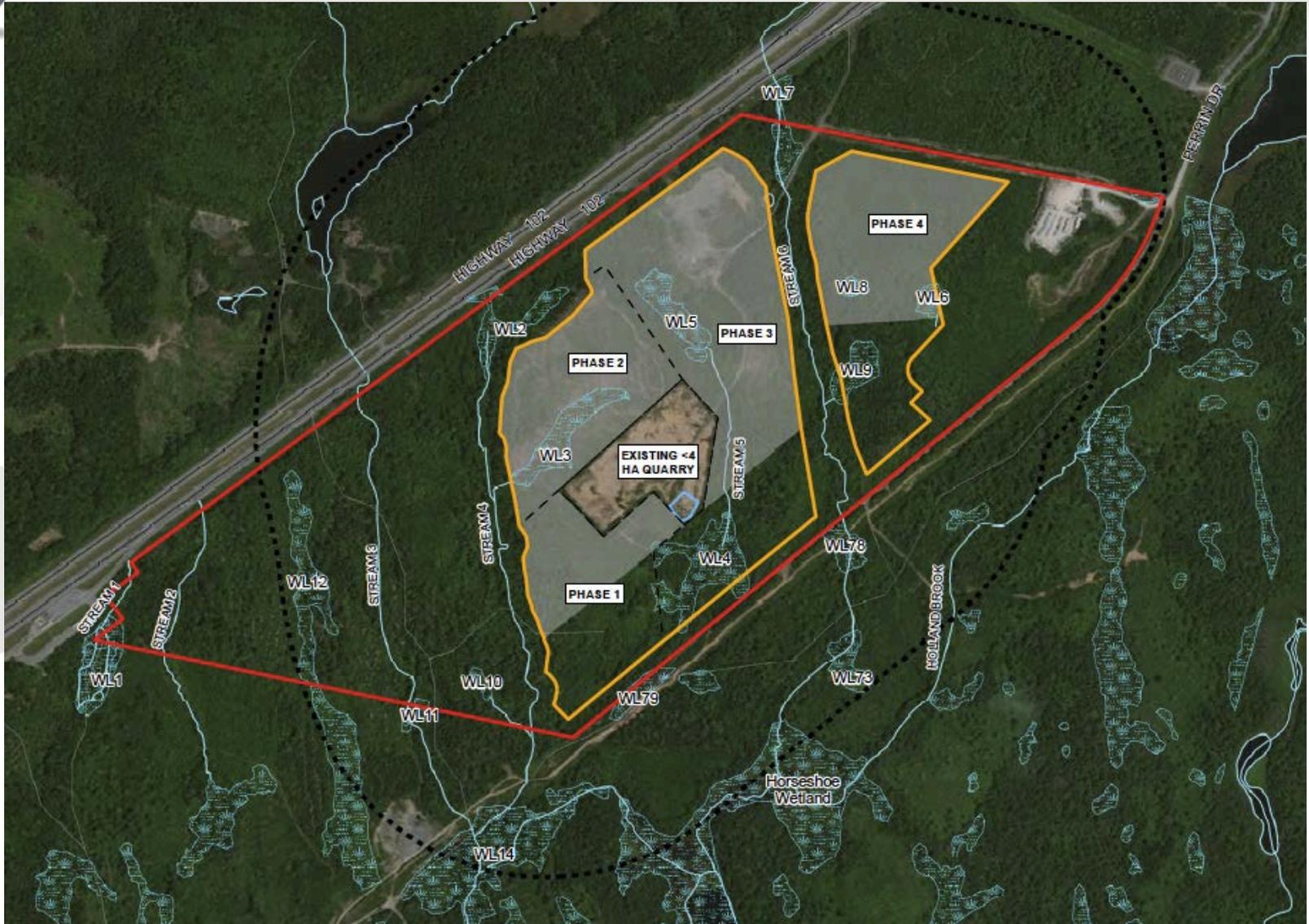
## Offsite Wetlands

- There are seven wetlands that may be indirectly affected by quarry development: Wetland (WL) 14, 78, 73, 79, the Horseshoe Wetland, and two small isolated wetlands south of Resource Road. Because these wetlands are located off-site, but within the predicted radius of influence of groundwater drawdown, WL 14, 78 and 79 were surveyed as part of the assessment for this Project. The two small isolated wetlands were not surveyed. It is Golder's opinion that the wetland survey completed provided enough detail to confidently assess potential effects of the quarry and recommend appropriate mitigation measures.





# Offsite Wetlands





## Offsite Wetlands

- Monitoring off-site wetland habitats during operation is not recommended at this time. However, Scotian maintains a monitoring network to assess for potential changes to groundwater and surface water. If there are changes observed to groundwater and surface water, a monitoring program will be expanded for off-site wetlands.





# Game Sanctuary

- Provide an assessment of any potential impacts to the Waverley-Salmon River Long Lake Wilderness Area. This includes impacts to ground and surface water, and any effects to wildlife through dust, noise, light or changes to movement of species.





# Game Sanctuary

- The Waverley-Salmon River Long Lake Wilderness Area is not within the surface water catchment of the proposed Project. Due to the distance from the Project, no impacts related to groundwater and surface water are anticipated in the Waverley-Salmon River Long Lake Wilderness Area.
- The potential for dust related impacts to the Waverley-Salmon River Long Lake Wilderness Area is low.
- Based on the distance from the Project (1.2 km), no impacts related to noise are anticipated.
- Light related impacts are not anticipated for the Waverley-Salmon River Long Lake Wilderness Area.
- The Waverley Salmon River Long Lake Wilderness Area is 8,908 ha in size and provides abundant, higher quality plant communities compared to the 41 ha of habitat within the Project Boundary. Based on the assessment of the Project, the potential impacts of the Project on the biodiversity values of the Waverley-Salmon River Long Lake Wilderness Area are negligible to low.





# Electro Fishing

- Consult with the Department of Fisheries and Aquaculture to design an electrofishing program for watercourses inside and outside the Project footprint. Provide results of an electrofishing survey to determine the relative abundance of fish species and if salmonids are present.



# Electro Fishing

- If it is determined, through the monitoring program, that there will be an adverse effect on fish and fish habitat, a Watercourse Alteration Approval/DFO Authorization will be required. In that case, additional data will have to be collected in these watercourses. Scotian will provide Nova Scotia Fisheries and Aquaculture the detailed methods for any future assessments to support an authorization or approval.





# MEKS

- Complete a Mi'kmaq Ecological Knowledge Study for the Project area.





## MEKS

- This MEKS mandate is to consider land and water areas in which the proposed project is located and to identify what Mi'kmaq traditional use activities have occurred, or are currently occurring within, and what Mi'kmaq ecological knowledge presently exists in regards to the area.





## MEKS

- **Traditional Use - Project Site Summary**
- Based on the data documented and analyzed, it was concluded that there is no Mi'kmaq use reported on the Project Site, or in the immediate vicinity.
- **Traditional Use - Study Area Summary**
- Bass and trout fishing were the most commonly reported activity by informants within the Study Area. Overall, the majority of activities took place in what this report categorizes as the Current Use timeline. There are enough current use activities occurring in the area to suggest concurrent use throughout all three timelines.





# MEKS

- Recommendations
- Based on the information gathered and presented in this report, there is a potential this project could affect Mi'kmaq traditional use in both the proposed areas. Although the possible effects of the project could be minimal, considering the number of traditional use activities and the overall size of the proposed project, it is recommended that dialog be initiated with the Assembly of First Nations, Sipekne'katik, and Millbrook, and that traditional use activities of the Mi'kmaq be reflected upon in the overall environmental presentation.





## Next Steps

- **Public Viewing - 30days ( until October 5, 2019)**
- The Gordon Snow Community Center, 1359 Fall River Rd, Fall River, NS, B2T 1E5
- Holiday Inn Express & Suites Halifax Airport, 180 Pratt and Whitney Dr, Enfield, NS, B2T 0C8
- Nova Scotia Environment, 30 Damascus Rd. Suite 115, Bedford NS B4A 0C1
- EA website (when available) <https://www.novascotia.ca/nse/ea/>
- NSE Review and decision within 50 days after





# Site Activity





## Site work and Blasting

- There were 3 blasting events in 2019 so far.
- A total of 150,000 tonnes was blasted and crushed
- No issues with blasting or crushing reported
- Anticipate 6 additional blasting events this year.
- Asphalt Plant is set up on site. Will begin production in September





# ENVIRONMENTAL MONITORING

- Sampling remains consistent with baseline.
- No adverse environmental impacts to report.
- Monitoring will continue as required.

