

MELIADINE PROJECT
SALINE EFFLUENT DISCHARGE TO MARINE ENVIRONMENT

INTRODUCTION AND OVERVIEW
JANUARY 11-12, 2021



AGENDA



- Project Design and Rationale
 - 3D Rendering Video
- Description of Project Components
 - Construction;
 - Operation; and
 - Removal and Reclamation
- Public Engagement and Community Response Update
- Alternative Assessment
- Overview of the Information Requests and Technical Comments

PROJECT DESIGN AND RATIONALE

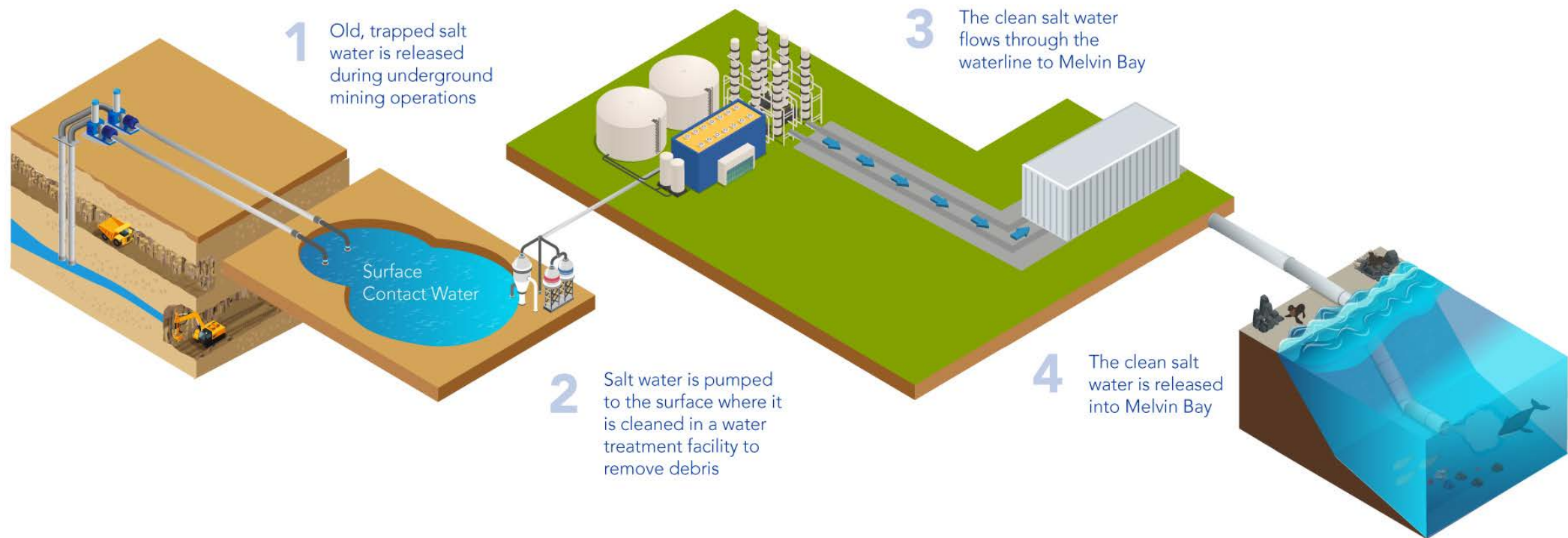


WATERLINE PROJECT



AGNICO EAGLE

- The waterline project is an amendment to the Meliadine Diffuser project that was approved in 2018 and **is a more sustainable solution to the water management challenges than increasing trucking.**
- To transport the current approved amount of water requires 20 - 40 trucks on the road per day. **To transport the increased amount of water by truck would require 150 – 300 trucks per day.**
- A 34-kilometer waterline from Meliadine to Itivia is proposed.
 - 2 x 16-inch-high density polyethylene (HDPE, a type of plastic) lines
 - The volume of water being released into Melvin Bay would increase from 800 – 1,600 m³ per day to 6,000 - 12,000 m³ per day (around 1.6 - 3.2 million US gallons per day)



3D RENDERING VIDEO

Agnico Eagle | Meliadine Saline Effluent Discharge

DESCRIPTION OF PROJECT COMPONENTS

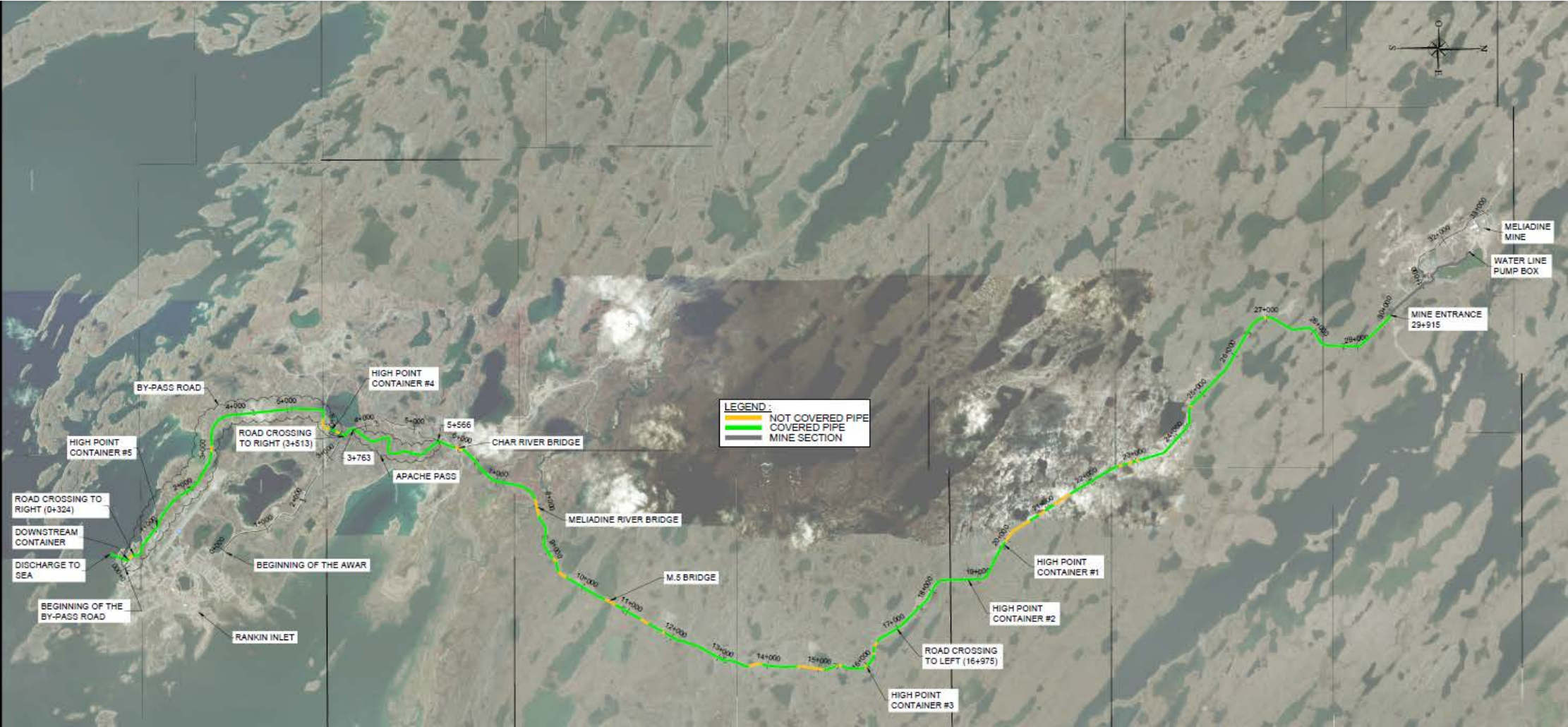


CONSTRUCTION



CONSTRUCTION UPDATE

Waterline General Layout

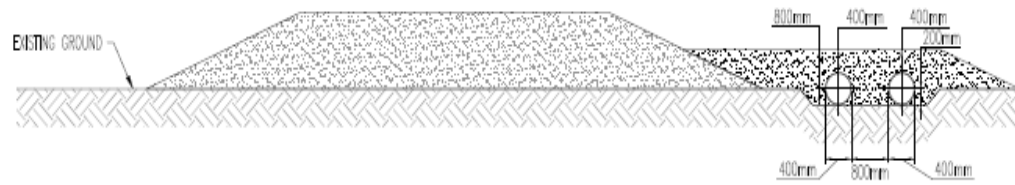


CONSTRUCTION UPDATE

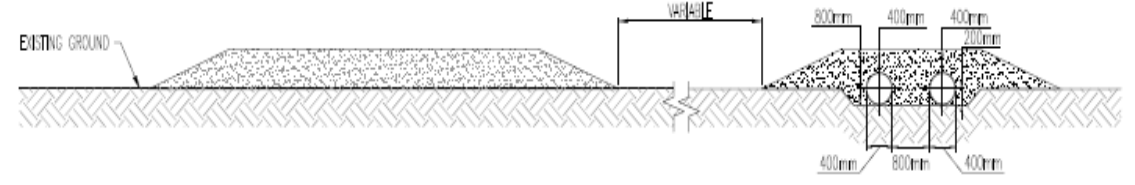
Waterline Typical Cross sections



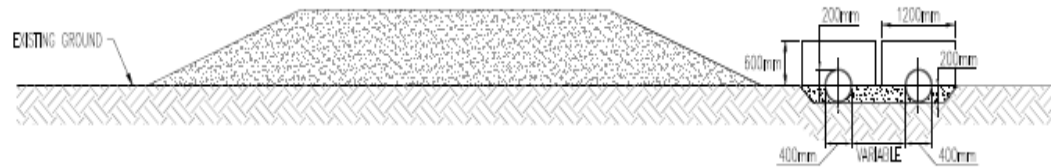
AGNICO EAGLE



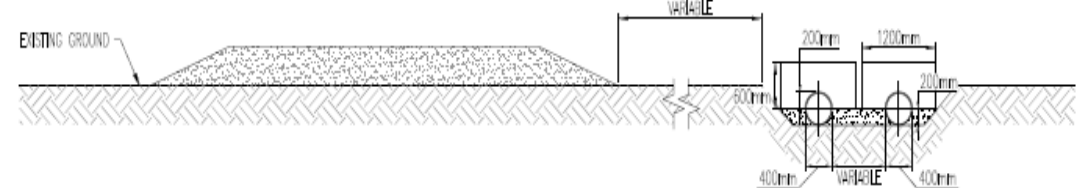
WELL DRAINED OVERBURDEN - ROAD EMBANKMENT TYPICAL SECTION 1
SCALE 1:50



WELL DRAINED OVERBURDEN - ROAD EMBANKMENT TYPICAL SECTION 2
SCALE 1:50



WET OVERBURDEN - ROAD EMBANKMENT TYPICAL SECTION 1
SCALE 1:50



WET OVERBURDEN - ROAD EMBANKMENT TYPICAL SECTION 2
SCALE 1:50

FRESHWATER ENVIRONMENT



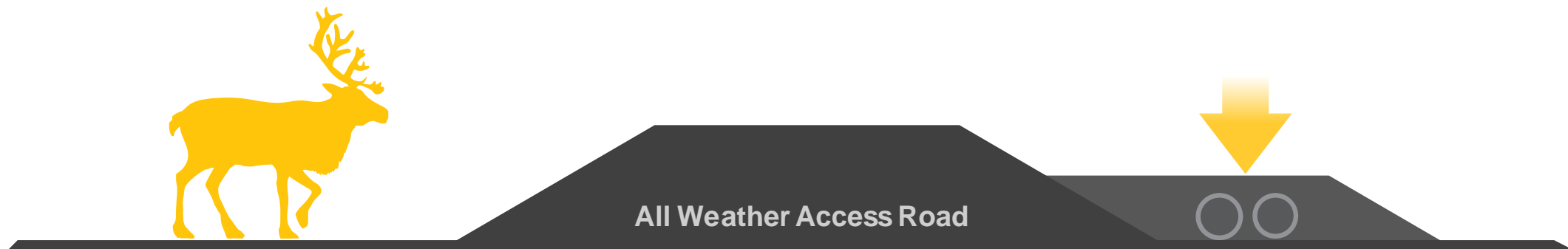
AGNICO EAGLE



- Culverts will be placed to allow continued passage of water, where required
- Waterline will be carefully positioned to allow for unobstructed flows during spring freshet conditions
- the waterline will run directly under, and secured to bridges, avoiding any potential disturbance to habitat below the high watermark
- Heavy machinery will not be used within the high watermark during installation

TERRESTRIAL ENVIRONMENT

- Waterline will run adjacent to the All-Weather Access Road to limit the disturbance footprint
- Installation of two 16" waterlines for wildlife crossing, contingency and limit volume of a potential spill
- 80-90% of waterline will be covered with fine-grained esker material to allow caribou passage
- no planned additional quarries required to obtain the materials required to cover the waterlines.
- Caribou from the Qamanirjuaq herd interact with the Project for an average of 11 days of the year, with the majority of these observations coming within the first two weeks of July. Construction will be timed to avoid this sensitive period.
- Effects to soil, terrain, and vegetation are expected to be limited to the footprint of the waterline within the easement of the AWAR
- Based on responses of permafrost to the AWAR, limited changes are expected to permafrost



HORIZONTAL DIRECTIONAL DRILLING

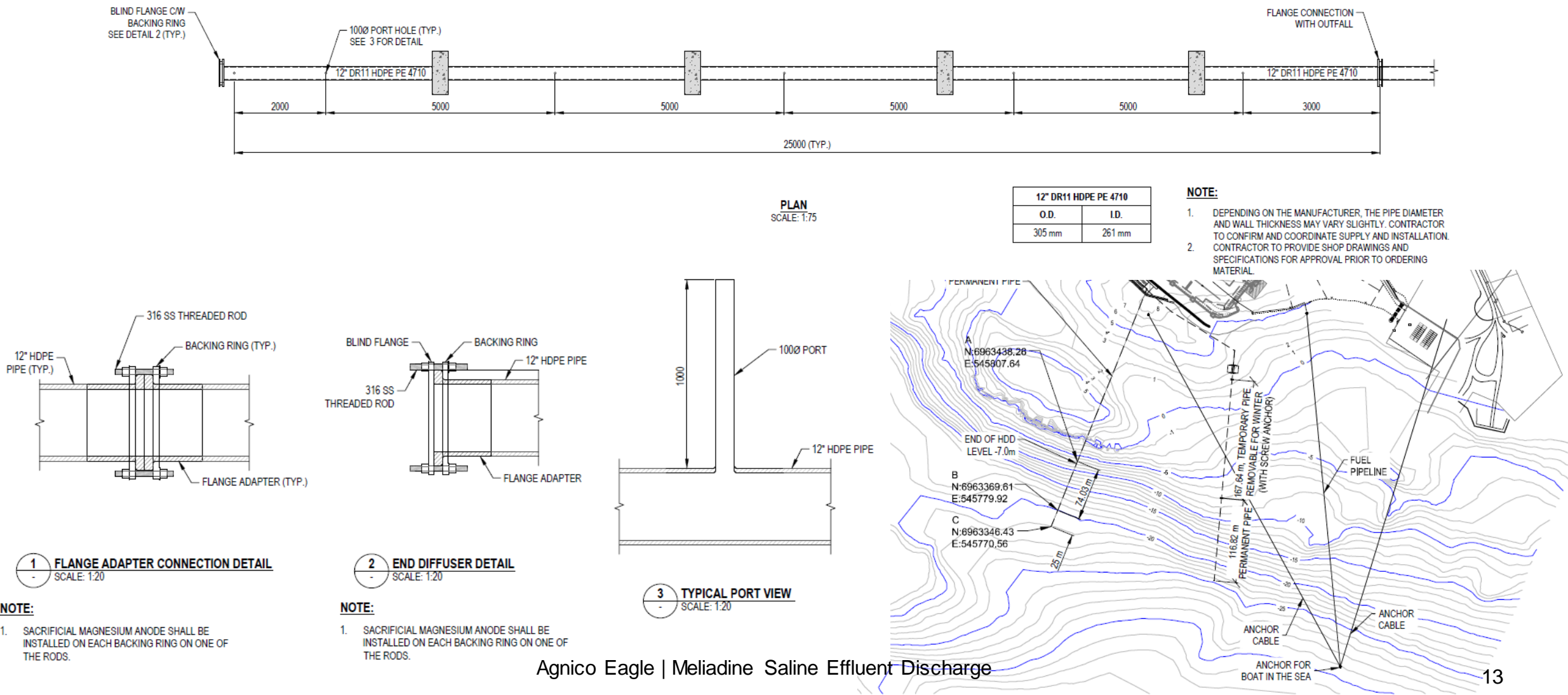
- HDD is the preferred method for the following reasons:
 - discharge would not be impacted by ice erosion during this period
 - open-cut method would create more bed sediment disturbance and result in higher levels of suspended sediment in the water column than HDD
- HDD method is currently used by Rankin Inlet for sewage discharge into Hudson Bay
- For HDD, turbidity in the water is a low risk as drilling residual will be recovered as the hole is being drilled. As such, only a minor fraction of the residual is expected to be released into the water. Residual will be disposed of appropriately
- Drilling associated with the HDD method is not expected to be louder than other activities that have occurred in the vicinity, including air transportation, nearby industrial activities, and community resupply activities



MELVIN BAY DIFFUSER



Diffuser Section with its 5 Discharge Ports

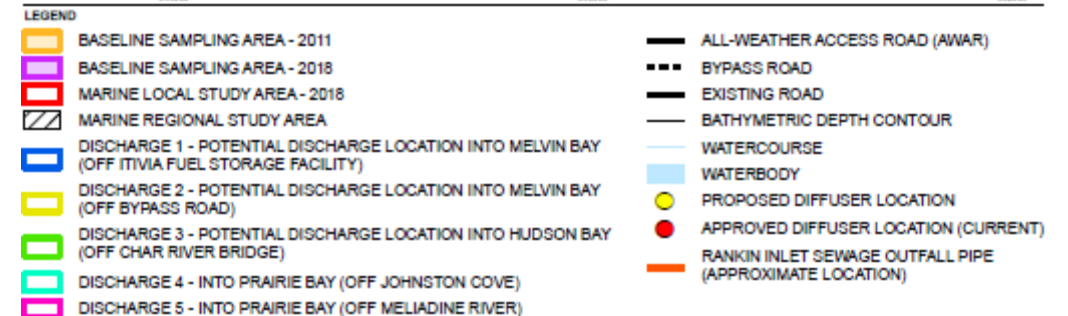
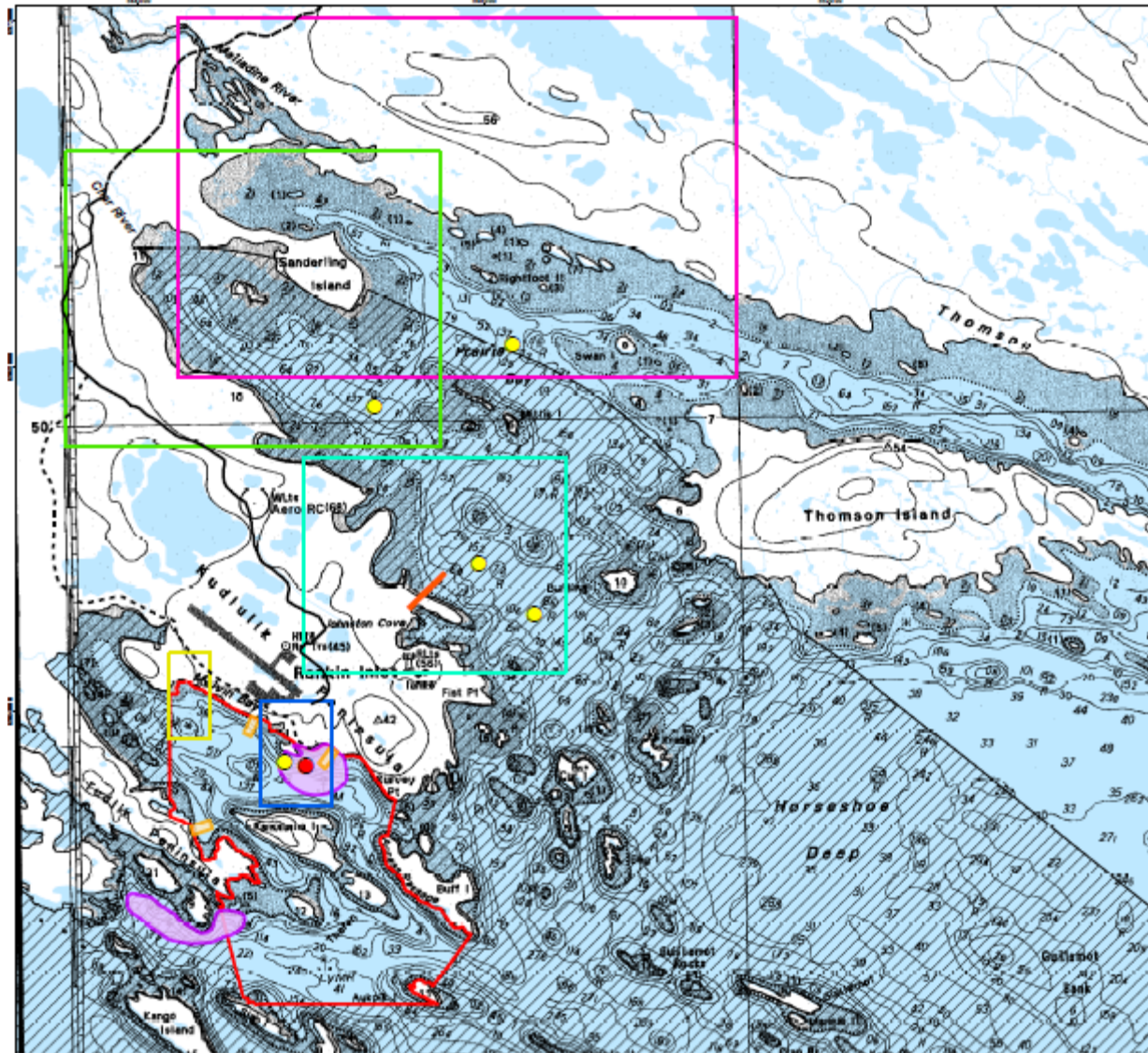


MARINE ENVIRONMENT



AGNICO EAGLE

- Treated groundwater will be discharged through an engineered marine outfall
- Discharge volumes of 6,000 - 12,000 m³ per day
- Effects to marine valued components limited to nearshore where construction and installation occurs and primarily limited to the construction period of a few months
- Effects from the discharge are limited to the mixing zone
- Discharge not anticipated to have measurable impacts to water quality or other valued components beyond the mixing zone
- 3D modelling confirms the discharge will meet edge of mixing zone criteria



OPERATION



SALINE WATER INFLOWS



Table 1. Annual Saline Water Treatment Results (Average Year Scenario)

Year	Surface Water Inventory (m³)	Total Discharge to Melvin Bay (m³/day)
2020	187,245	1,600
2021	333,953	1,600
2022	503,806	11,630
2023	277,768	11,515
2024	47,688	7,444
2025	0	7,987
2026	0	8,159
2027	0	7,729

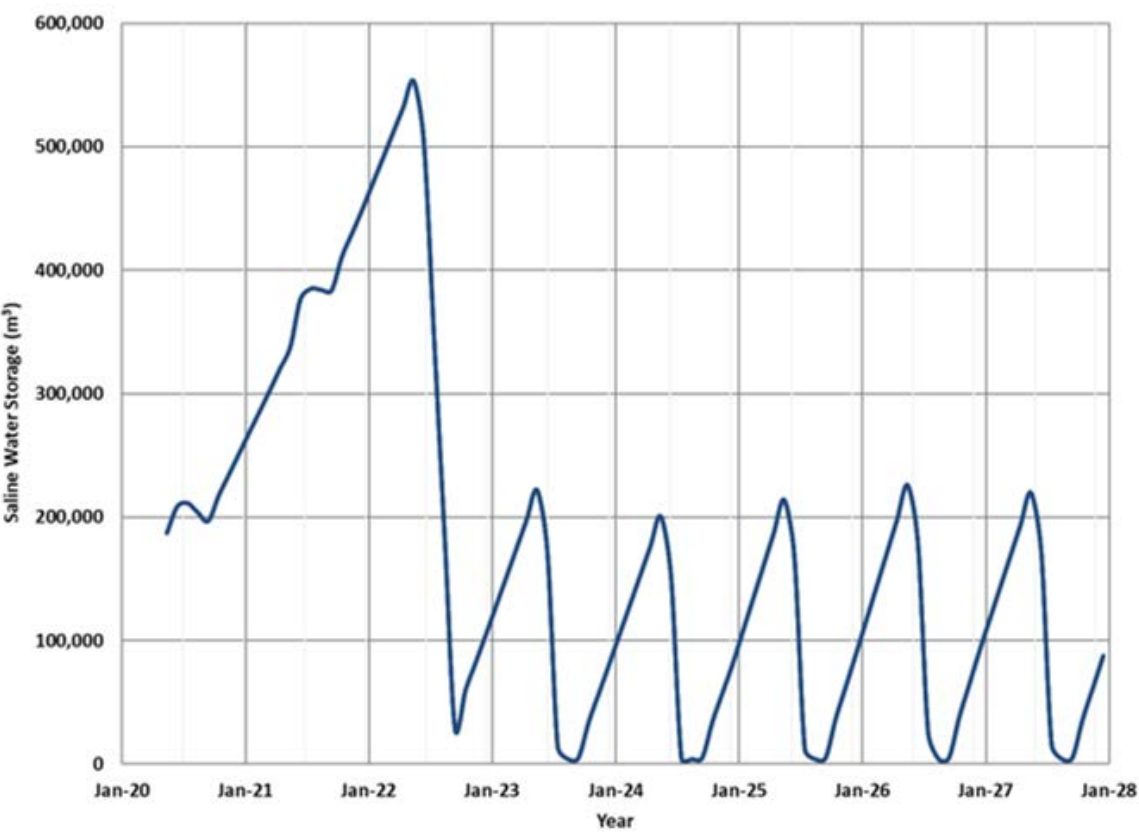


Figure 1: Accumulated Saline Water Storage on Site (Average Year Scenario)

MANAGEMENT PLAN



- Groundwater Management Plan- Appendix B
- Spill Contingency Plan- Appendix C
- Roads Management Plan- Appendix D
- Erosion and Sediment Control Plan for the Treated Groundwater Discharge- Appendix E
- Ocean Discharge Monitoring Plan- Appendix F

REMOVAL AND RECLAMATION



REMOVAL/RECLAMATION



- Infrastructure will be dismantled and removed upon cessation of activities related to ocean discharge.
- Infrastructure will be removed consistent with the Interim Closure and Reclamation Plan
- Removal of all physical hazards



PUBLIC ENGAGEMENT AND COMMUNITY RESPONSE UPDATE

AGNICO EAGLE'S CONSULTATION AND ENGAGEMENT IN SUPPORT OF THE NWB LICENCE AMENDMENT



Agnico Eagle's public participation and consultation approach includes partnerships with:

- Impacted communities;
- Inuit organizations;
- Regional Inuit groups;
- Elders,
- Land users; and
- Other stakeholders.

The Nunavut Impact Review Board process is designed to be aligned with Inuit Quajimajatuqangit guiding principles including:

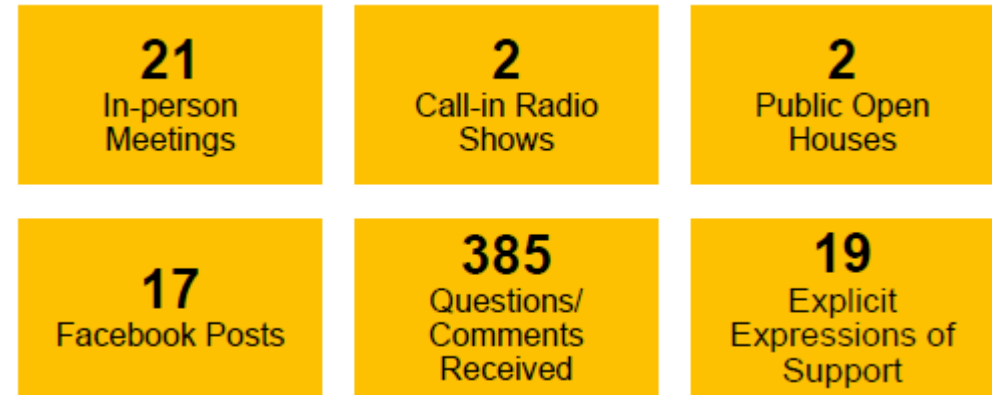
- Fostering good spirit by being open, welcoming and inclusive;
- Decision-making through discussion and consensus;
- Working together for a common cause: and
- Respect and care for the land, water and the environment.

WATERLINE PROJECT CONSULTATION

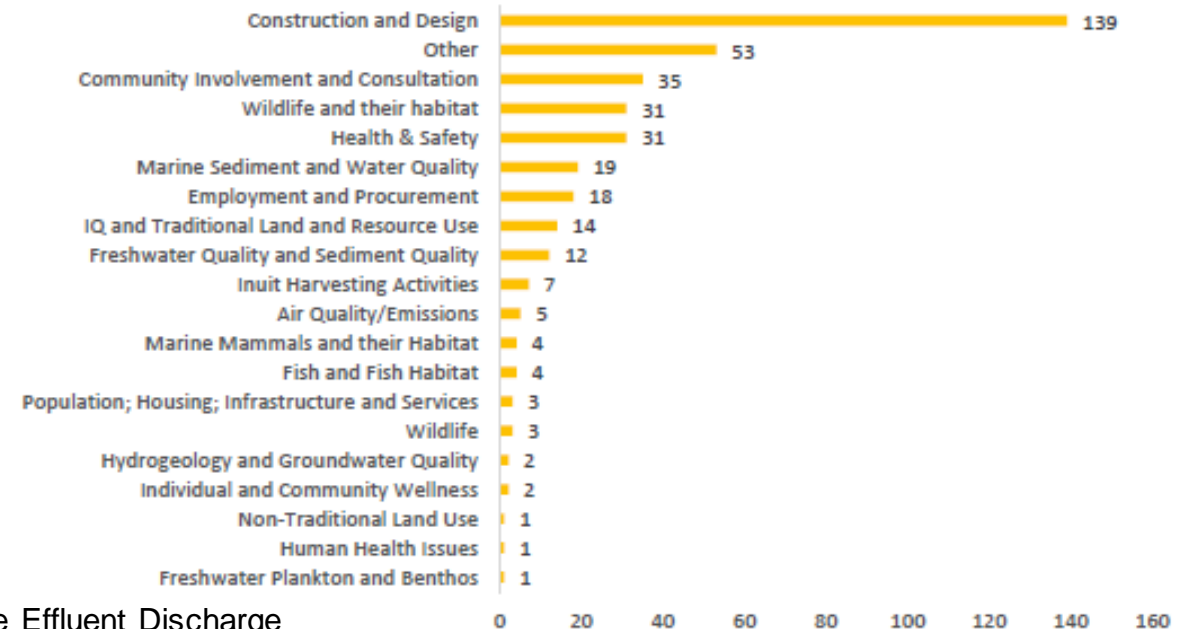


AGNICO EAGLE


- Consultations were held in March 2020, and a second round of consultations began in July 2020. The application is currently under review by NIRB. We anticipate some form of hearings later this year, and NIRB is seeking feedback on how to conduct the process.
- From the feedback received during the March consultations, Agnico Eagle discussed building crossings along the proposed waterline for caribou, ATVs, and snowmobiles.
- In the second round of consultations, we heard that some people prefer the waterline to increased trucking, however, there is a lot of concern around impacts to caribou.
 - To address the impacts to caribou, Agnico Eagle is looking at different options to cover the pipe instead of crossings.
- Additional Focus Groups were held since August 28, 2020.



Questions & Comments Received by Valued Component/Theme



WATERLINE CONSULTATION

#	Feedback and commitments	
1	Build crossing structures	
2	Use traditional Knowledge/IQ to identify areas for crossings structures or burying/covering locations	Elder representatives from the HTOs will be invited to site to inspect the All-Weather Access Road (AWAR) and identify locations where caribou crossing should be installed or where the waterline should be buried/covered
3	Use western science to identify areas for crossing structures	a) Collar Study b) Road observations c) Camera study of the road d) Camera study of existing waterline e) Road material study
4	Have a long-term monitoring study that will inform adaptive management	a) Site Visits for Elders b) Tracking Caribou with GPS collars c) Camera Study d) Road monitoring site + HTO program
5	Toll-free number for the community members to report problem along the waterline	
6	Leakage detection system on the waterline to be incorporated	
7	In the area of Apache Pass the waterlines will be routed on the East side of the rock outcrop	
8	Markers will be placed on the waterline for winter ID	
9	Agnico Eagle will bury/cover between 80-90% of the waterline and will continue to work with the HTO, KIA, Elders and the community on site specific locations. This will replace the commitment 1 to build crossing if this the preferred mitigation method 	

ALTERNATIVE ASSESSMENT



ALTERNATIVE: DISCHARGE VOLUME OF 20,000 m³/day



- Flow Rate- Application rate is 6,000 to 12,000 m³/day
- Alternative was considered to include diversion of surface contact water, including CP1 to manage larger volumes of water on-site.
- To limit effects from construction, the current design allows for an increase in discharge volume to 20,000 m³/day, with no additional construction.
- Modelling has confirmed that water quality will achieve dilution compliance within the mixing zone
- Additional assessment at 20,000 m³/day was provided as part of the information requests.

ALTERNATIVE: CONVEYANCE MODE FOR TREATED GROUNDWATER EFFLUENT



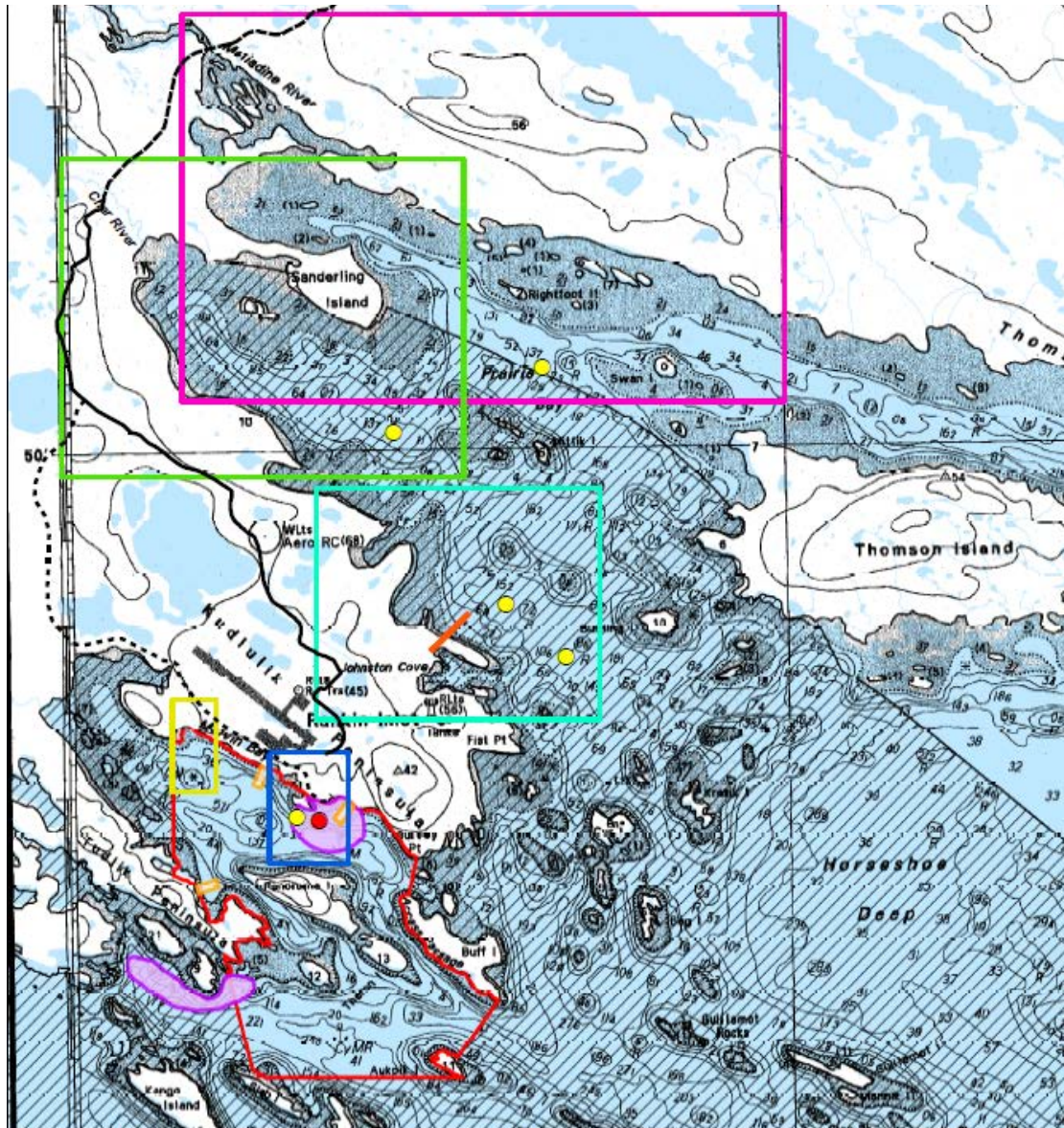
- Investigated the potential benefits and disadvantages of using one or two waterlines for the conveyance of treated groundwater
- Selected two waterlines:
 - Limit the diameter of the waterline
 - Allowance for maintenance on one line while the other continues to operate
 - Facilitate crossing by ATV/snowmobiles and caribou
 - Capacity to manage planned and potential alternative flow rates

ALTERNATIVE: DISCHARGE LOCATION AND TIMING OF DISCHARGE



AGNICO EAGLE

- Evaluated year-round discharge at current rate versus increased rate during open water
- Increase discharge window in Spring and Fall
- Different locations were considered

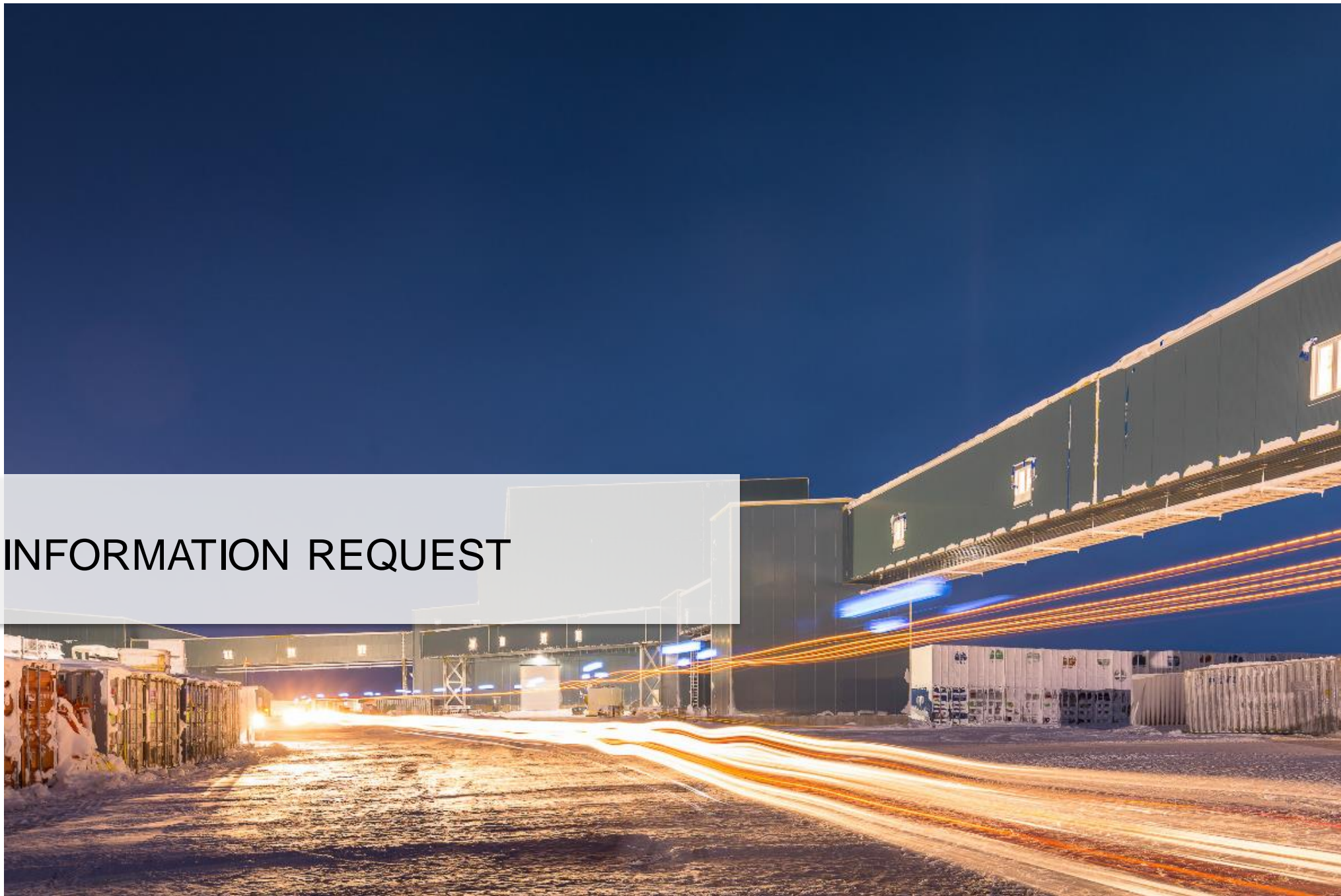


LEGEND	
	BASLINE SAMPLING AREA - 2011
	BASLINE SAMPLING AREA - 2018
	MARINE LOCAL STUDY AREA - 2018
	MARINE REGIONAL STUDY AREA
	DISCHARGE 1 - POTENTIAL DISCHARGE LOCATION INTO MELVIN BAY (OFF ITIVIA FUEL STORAGE FACILITY)
	DISCHARGE 2 - POTENTIAL DISCHARGE LOCATION INTO MELVIN BAY (OFF BYPASS ROAD)
	DISCHARGE 3 - POTENTIAL DISCHARGE LOCATION INTO HUDSON BAY (OFF CHAR RIVER BRIDGE)
	DISCHARGE 4 - INTO PRAIRIE BAY (OFF JOHNSTON COVE)
	DISCHARGE 5 - INTO PRAIRIE BAY (OFF MELIADINE RIVER)
	ALL-WEATHER ACCESS ROAD (AWAR)
	BYPASS ROAD
	EXISTING ROAD
	BATHYMETRIC DEPTH CONTOUR
	WATERCOURSE
	WATERBODY
●	PROPOSED DIFFUSER LOCATION
●	APPROVED DIFFUSER LOCATION (CURRENT)
—	RANKIN INLET SEWAGE OUTFALL PIPE (APPROXIMATE LOCATION)

ALTERNATIVE: CONSTRUCTION METHOD FOR DISCHARGE TO SEA

Method of Construction	Constructability	Environmental Impacts	Protection of Pipeline
Open Cut	<ul style="list-style-type: none"> Most popular method of construction due to cost and ease of installation Requires the least amount of equipment mobilization Likely to require blasting and cutting 	<ul style="list-style-type: none"> Due to the need to open cut the seabed this method will require a significant post construction effort for restoration to pre-disturbance levels and/or meet regulatory requirements Contamination concerns are minimal 	<ul style="list-style-type: none"> Pipeline would be covered with flowable fill and well protected from offshore and onshore activities Reduced integrity inspection opportunities Reduced need for repairs
Bottom Lay	<ul style="list-style-type: none"> Minimal equipment mobilization Ease of installation Pre-fabrication opportunities will speed up installation 	<ul style="list-style-type: none"> Intrusive seasonal removal and installation of pipeline Ease of pipeline inspection and repair Contamination concerns are minimal 	<ul style="list-style-type: none"> Potential increase of hydrodynamic damage to the pipeline Pipeline is well protected from offshore activities Likely to require yearly repairs
Horizontal Directional Drilling (HDD)	<ul style="list-style-type: none"> Large equipment mobilization cost and management Specialized skill for construction Can be installed without affecting offshore shipping activities Most expensive construction option 	<ul style="list-style-type: none"> Potential concern for drilling fluid frac-out Requires a pre-dredge trench, which will require post construction effort for restoration Minimizes installation footprint 	<ul style="list-style-type: none"> Pipeline is fully protected from onshore and offshore activities Minimal wear of pipeline Permanent installation and thus future removal impractical. Abandon in place will be required at the end of pipeline's life cycle

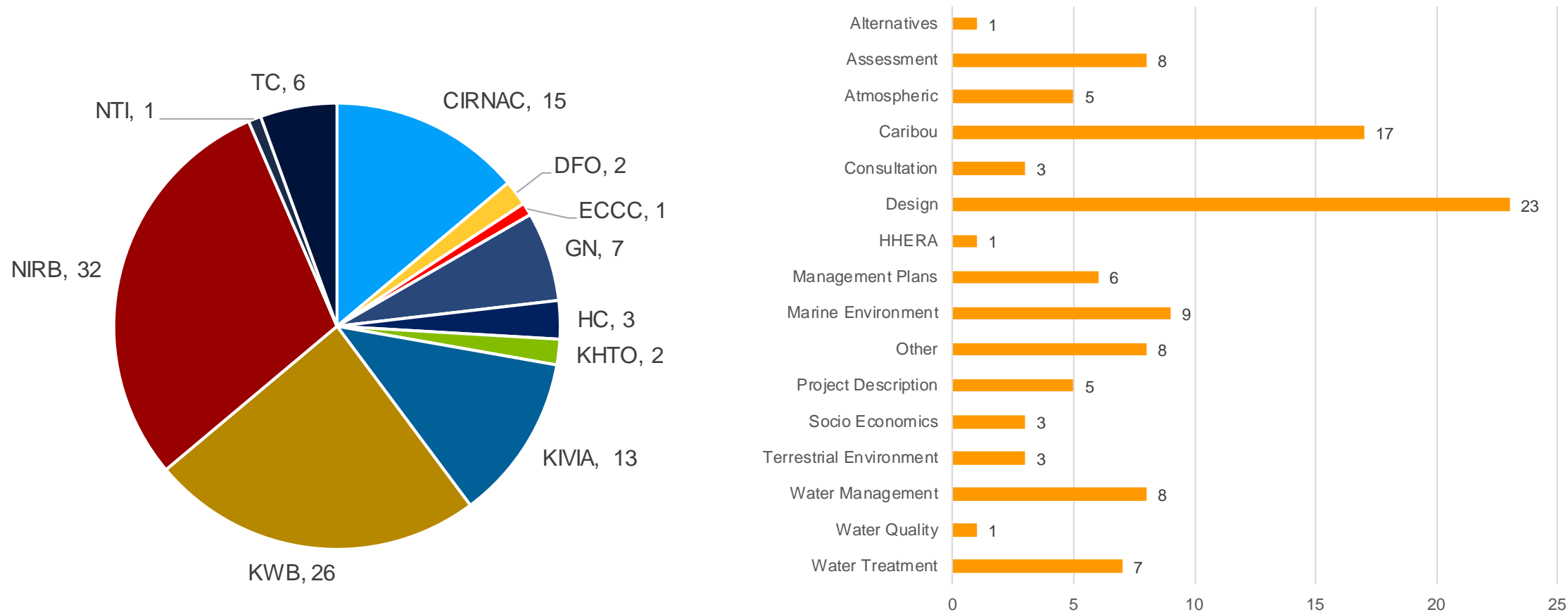
INFORMATION REQUEST



INFORMATION REQUEST – INTERVENERS AND THEMES



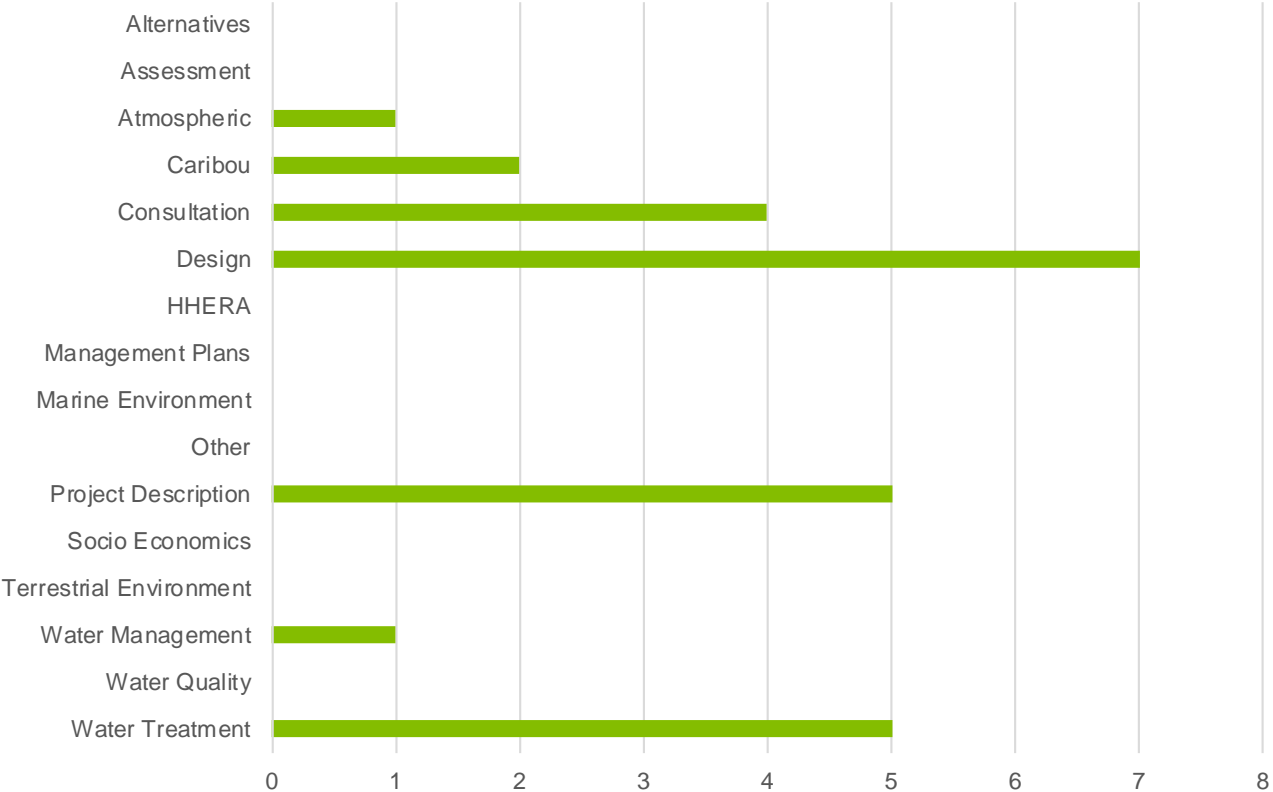
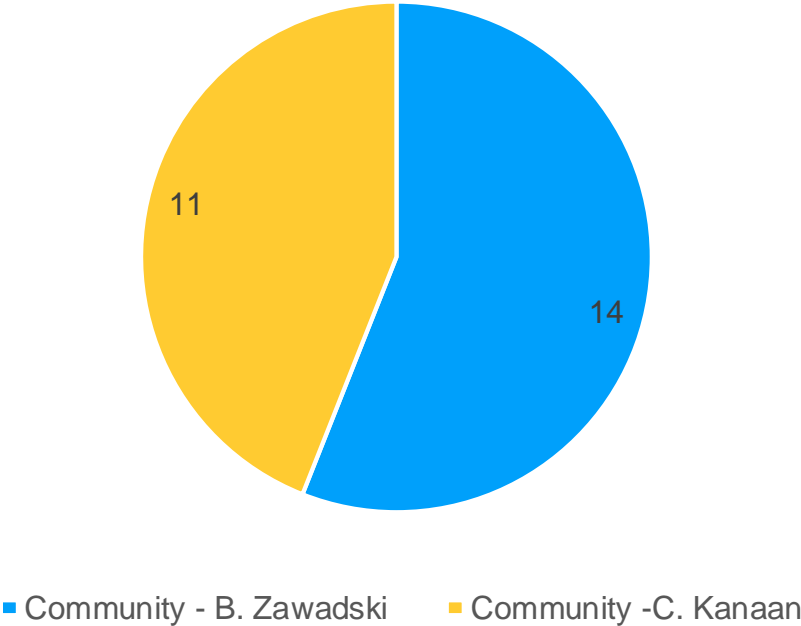
A total of 108 IRs were received



INFORMATION REQUEST - INDIVIDUALS AND THEMES



A total of 25 IRs were received



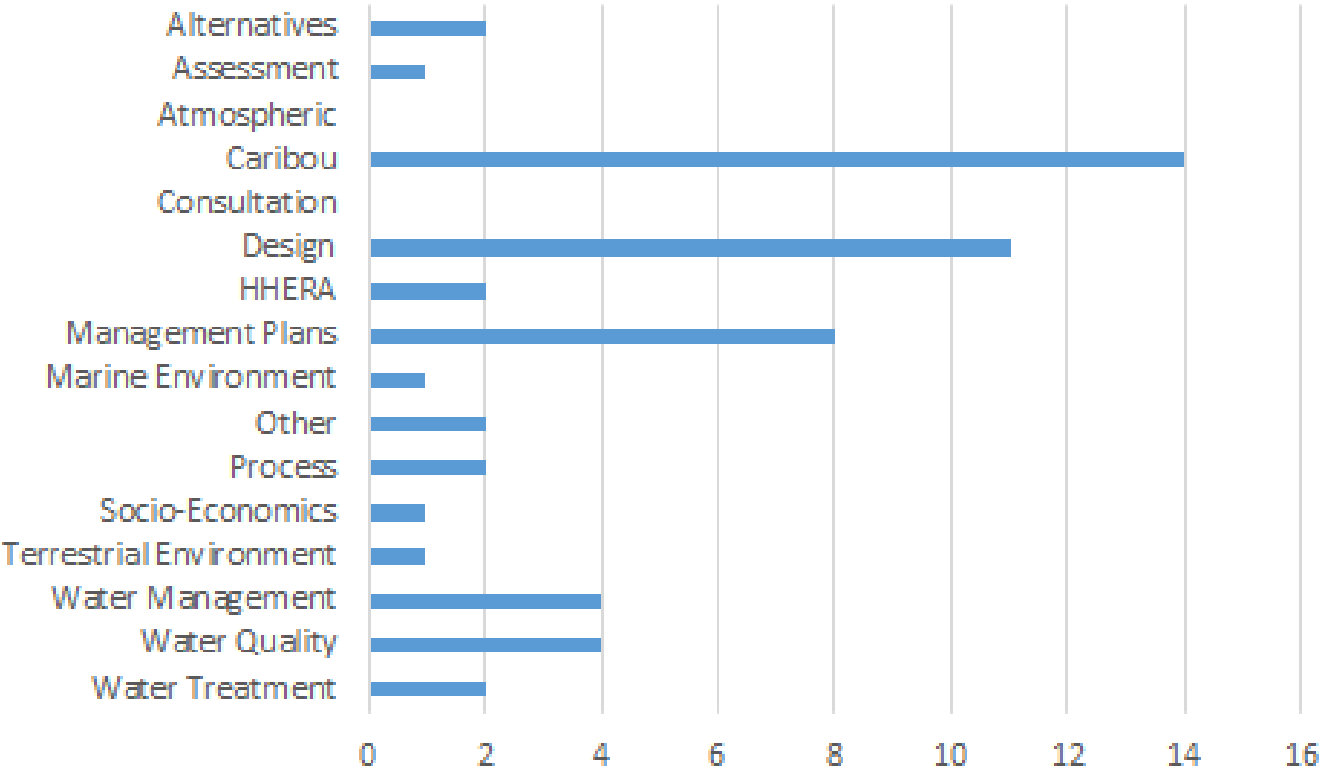
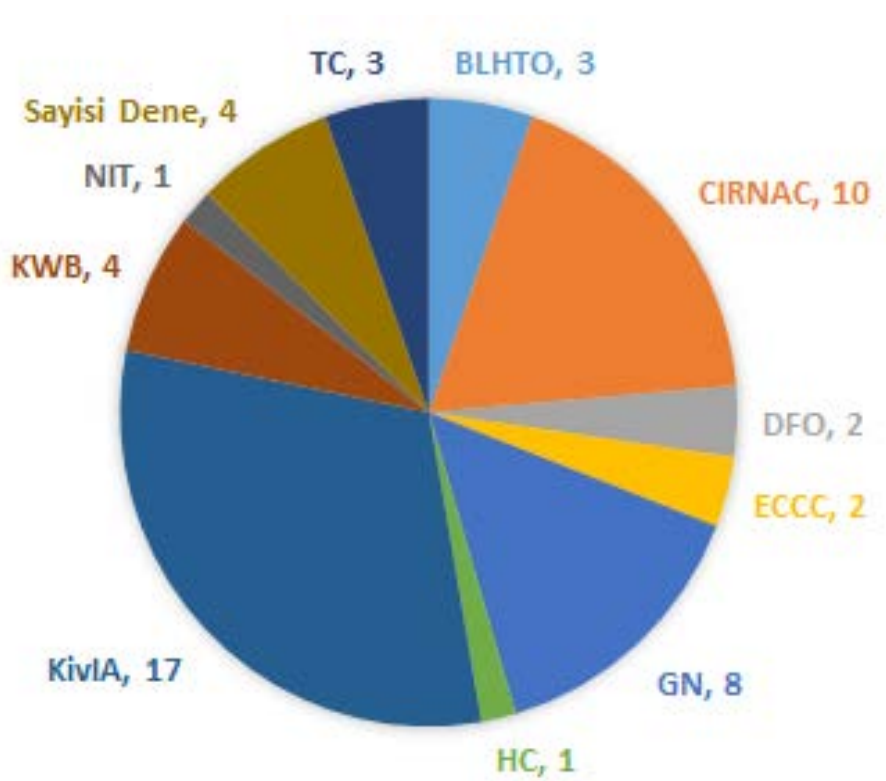
TECHNICAL COMMENTS



TECHNICAL COMMENTS



A total of 55 TCs were received



QUESTIONS ?

