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## Cape Dorset Sewage P Lake Lagoon Public Hearing

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## Outline of Presentation

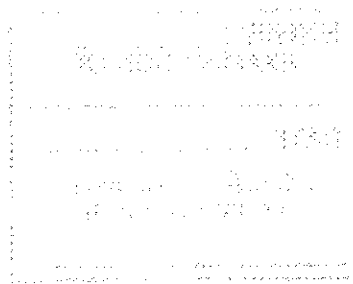
- Project description and purpose
- Site selection and selection process
- Design considerations
- System description
- Geotechnical Presentation by AMEC
- Looking forward
- Questions

## Project description and purpose

- Objective;
  - To develop a new sewage treatment system
  - The system is to be located in the area of P Lake
  - The system is to meet the requirements of the licensing agencies

## Project description and purpose

- Reasons for a new site;
  - Documented failure of the existing lagoon
  - The existing system could not be expanded
  - Environment Canada issued an order (2003)



## Site selection and selection process

- A number of potential sites were considered;

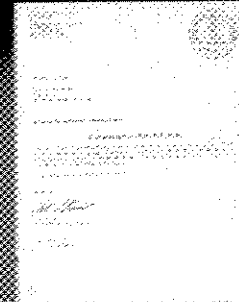
**Q Lake Lagoon Option** - In the winter of 2001/2002, the community's water supply pipeline froze, and Q Lake was used as the emergency back-up water supply source.

**Mechanical Plant** - Capital and operational costs are prohibitive.

**Site B Lagoon Option** - This site is currently used as the granular stockpile and is located at the end of the runway.

## Site selection and selection process

- Through consultation, the proposed site was selected.
- Water licence application was submitted.
- Owner of the facility is the main point of contact.
- Landfill site is not suitable for water treatment.
- Water and wastewater collection infrastructure.



## Design Considerations

- Terms of reference issued by C&GS and Dillon's proposal dated November 12, 2004. Briefly this includes the following:
  - Develop the 5, 10 and 20 year sewage generation values.
  - Calculate the lagoon size based on the community requirements.
  - Looking beyond the 20 year horizon, identify the potential for expansion.
  - Develop the conceptual layout for a Lake Lagoon which would include:
    - Site location.
    - Site layout for lagoon cells.
    - Location of the lagoon outlet.
  - Complete an assessment of the expected lagoon treatment.

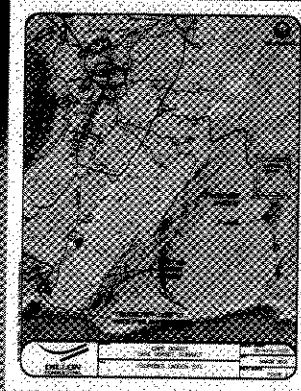
## Design Considerations

Mechanical Sewage Treatment Plant	Short-Retention Lagoon	Long-Retention Lagoon with Fall Decant	Long-Retention Lagoon & Wetland
<ul style="list-style-type: none"> <li>High operating cost.</li> <li>Requires supply select operations.</li> <li>Requires trouble shooting after startup.</li> <li>Requires daily pumping.</li> <li>Requires daily pumping.</li> </ul>	<ul style="list-style-type: none"> <li>Simpler O&amp;M compared to mechanical treatment.</li> <li>Higher risk of overflowing.</li> <li>Less storage.</li> <li>High risk of treatment.</li> </ul>	<ul style="list-style-type: none"> <li>High cost treatment.</li> <li>Requires freeze-over water.</li> <li>Wastewater is treated over the location of ice-free lake.</li> </ul>	<ul style="list-style-type: none"> <li>Includes a final polishing step.</li> <li>Requires nutrient removal.</li> <li>Requires more treatment capacity and final discharge.</li> <li>Requires regular treatment in the north for use.</li> </ul>

## Design Considerations

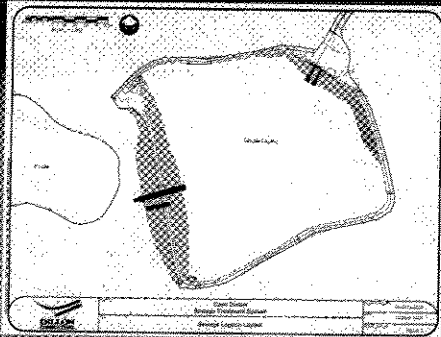
- The lagoon is designed to achieve the following discharge criteria:

- BOD<sub>5</sub> - 45 mg/L
- TSS - 45 mg/L
- Fecal Coliforms -  $1.5 \times 10^6$  FCB/100 ml



Proposed Lagoon Site

## System Description



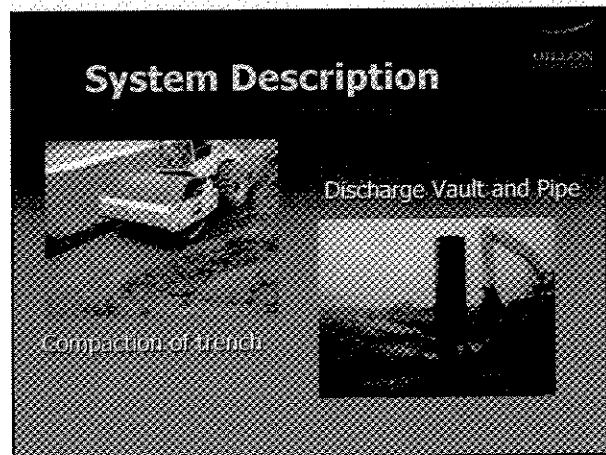
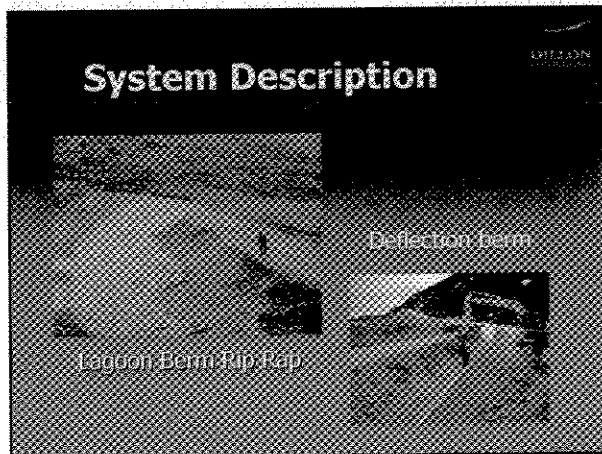
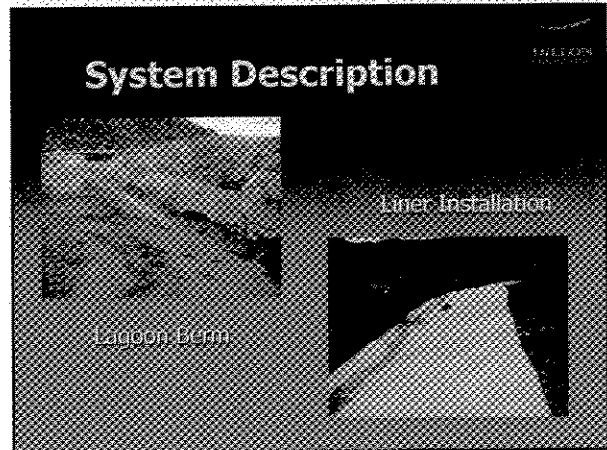
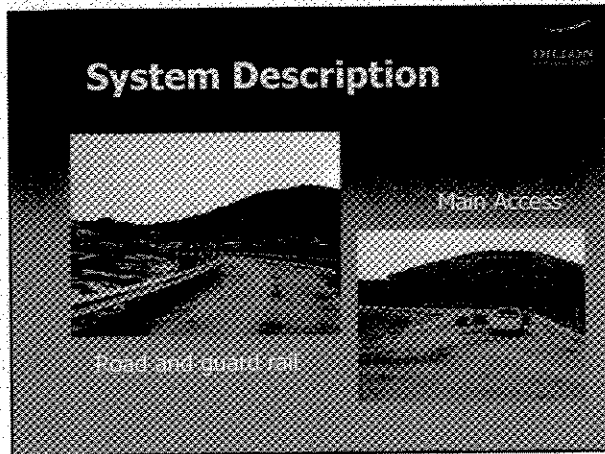
## System Description



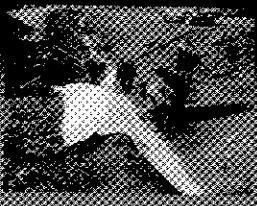
Road to site



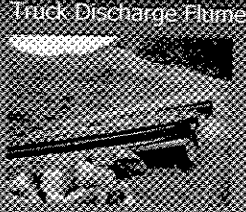
Drainage works



## System Description



Sealing Liner at Pipe



Truck Discharge Plume

## Effluent Quality Estimates

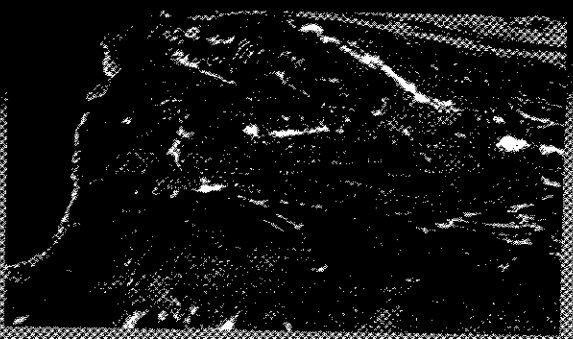
	Effluent Estimates

All data are estimates.

## Effluent Quality Limits

Parameter	Units	Maximum Average Concentration
Fecal Coliforms, FC	CFU/100 mL	$1 \times 10^6$
5 Day Biological Oxygen Demand, BOD <sub>5</sub>	mg/L	120
Total Suspended Solids, TSS	mg/L	100
Oil and Grease		No visible mass
pH		6 - 9

## Locations of Sampling Points



## Geotechnical Presentation by AMEC

## Looking forward

- Items to be addressed by the proponent;
  - Responses to any outstanding issues from today
  - Response to any draft licence conditions if issued by the NWB
  - Compliance to licence requirements if issued by the NWB

## Looking forward

- Licence Requirements may include;
  - Monitoring
  - Issuance and update of O&M
  - Issuance and Update of Spill Contingency Plan
  - Response to issues that arise from monitoring
  - Annual reporting to NWB

Questions?