Project Development Summary

North Marine Drive Public Workshops

Alignment Considerations

- Widening shall occur substantially to the north of the existing roadway.
- Minimize the damages to on-going operations of adjacent industrial business owners.

1

- Safe Geometric Design.
 - I Sight Distance
 - I Lane Taper
 - I Curve Radius

Nordstrom Impacts

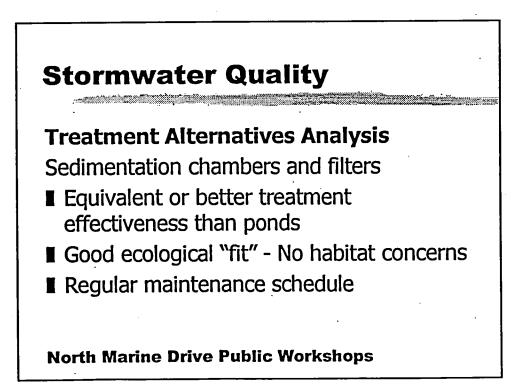
- Gate Relocations
- Fuel Tank Relocation
- Closing Center Driveway
- Combine Shipping and Receiving
- Reduction of Buffer
- Removal of Trees

Stormwater Quality

Treatment Alternatives Analysis

Bio-swales and ponds

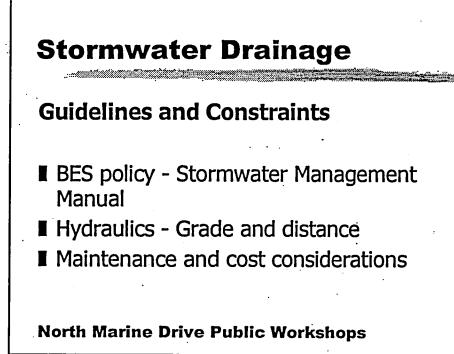
- Large foot-print
- Poor ecological "fit" Create potential habitat for undesirable and/or competitor species



Stormwater Drainage

Goals

- Provide WQ treatment where none currently exists
- Minimize the number of outfalls
- Design facilities to fit with other amenities



Stormwater Drainage

Outfall Locations and Elevations

- Locations and elevations are not known at this time, as drainage design is in very preliminary stages. A principle objective of the project is to minimize the total number of outfalls.
- BES policy guidelines and other goals are drivers for the location of outfalls. These include:

+ BES requirement that outfalls be located above "ordinary low water" level (approximately 3 feet elevation - City of Portland datum)

+ A desire to discharge to the lakes proper, and not the near shore "pools."

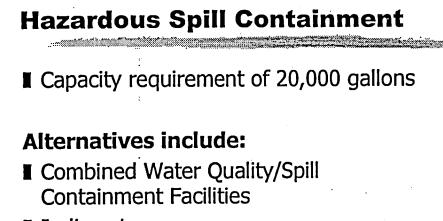
I A goal of minimizing the total number of outfalls.

Stormwater Drainage

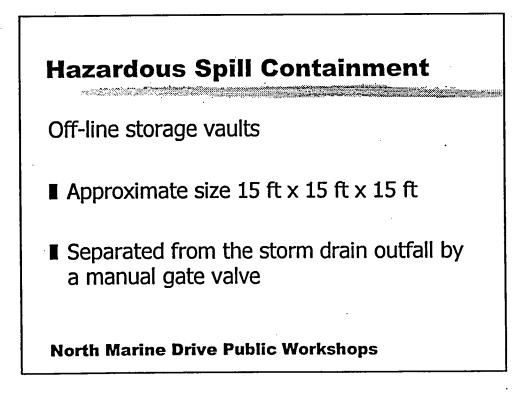
Pollutant Loading: Future Roadway vs. Existing Roadway

- Projected traffic volume is fixed. Pollutant loading will be at least as great for the future roadway, if not greater. Congested traffic may produce higher loading.
- BES has agreed to provide water quality treatment for the entire roadway where discharging to the lakes, as well as look for opportunities to provide additional treatment where none currently exists, e.g. the SBL parking lot drains.
- BES policy guidelines The Stormwater Management Manual directs the design of water quality facilities based on the impervious area and the design runoff.

tormwater Drainage	
Design Issue Water Quality Design Storm	Design Criteria 24-hour storm, 0.83 inches of rainfall
Water Quality Facility	Select from Approved
Treatment/Removal Efficiency	70% Total Suspended Solids + Total Maximum Daily Load (TMDL) requirements
Impervious Area Treatment	Management Level based on area



- In-line storage
- Off-line storage vaults



Budget

■ Total Project Cost - \$15.5 Million

I Design / Public Process - \$ 2.1 M

Construction Cost - \$ 13.4 M

