



# WELCOME

## Scarborough Waterfront CSO/Stormwater Outfalls Control and Flood Protection Study

### Public Open House #3

Take this opportunity to speak with project staff and find out more about the study's recommendations and design concepts for underground combined sewer overflow storage facilities.



# Our Study Objectives

The purpose of the study is to:

1. Identify ways to manage the impacts of combined sewer overflow (CSO) and stormwater discharge into the Scarborough Waterfront, and
2. Examine the existing stormwater drainage and combined/sanitary sewer systems and identify the causes of basement flooding and surface flooding (*severe ponding on streets during extreme storms*), and make recommendations to reduce future flooding.



# Tonight's Open House

The primary objective of tonight's meeting is to present the Alternative Designs for projects which fall under Schedule C of the Class Environment Assessment process. This will include:

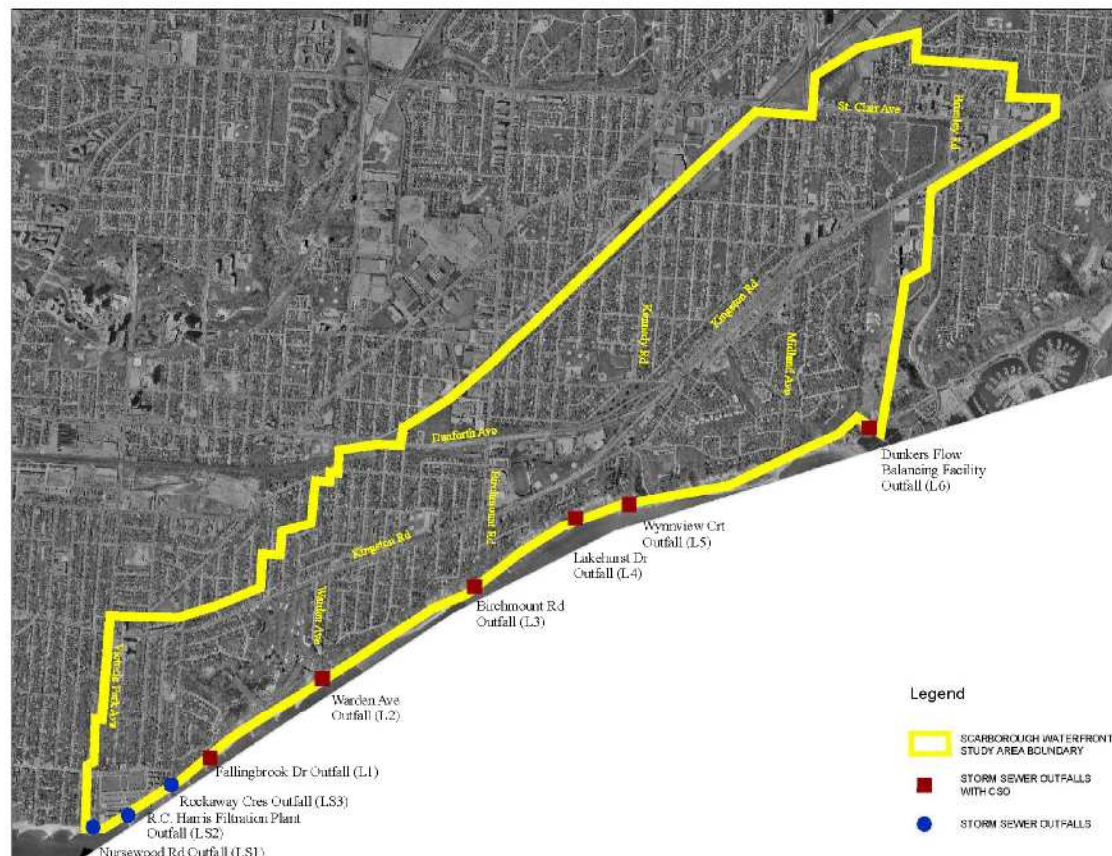
- Providing background information on the study;
- Presenting criteria for selecting the alternative design concepts;
- Presenting the preferred designs;
- Receiving comments; and
- Outlining the next steps.

A summary of the study recommendations will also be presented.

# Study Area

The Scarborough Waterfront study area is loosely bounded by Victoria Park Ave. (W), Brimley Road (E), and sandwiched between the CN Rail (N) and Lake Ontario shoreline. It is served by a mixture of combined, partially separated storm and sanitary sewers.

- As of 2008, approximately 35% of the area was serviced by combined sewers, 45% with partially separated sewers and 20% with separated sewers.



# Municipal Class Environmental Assessment (EA) Process

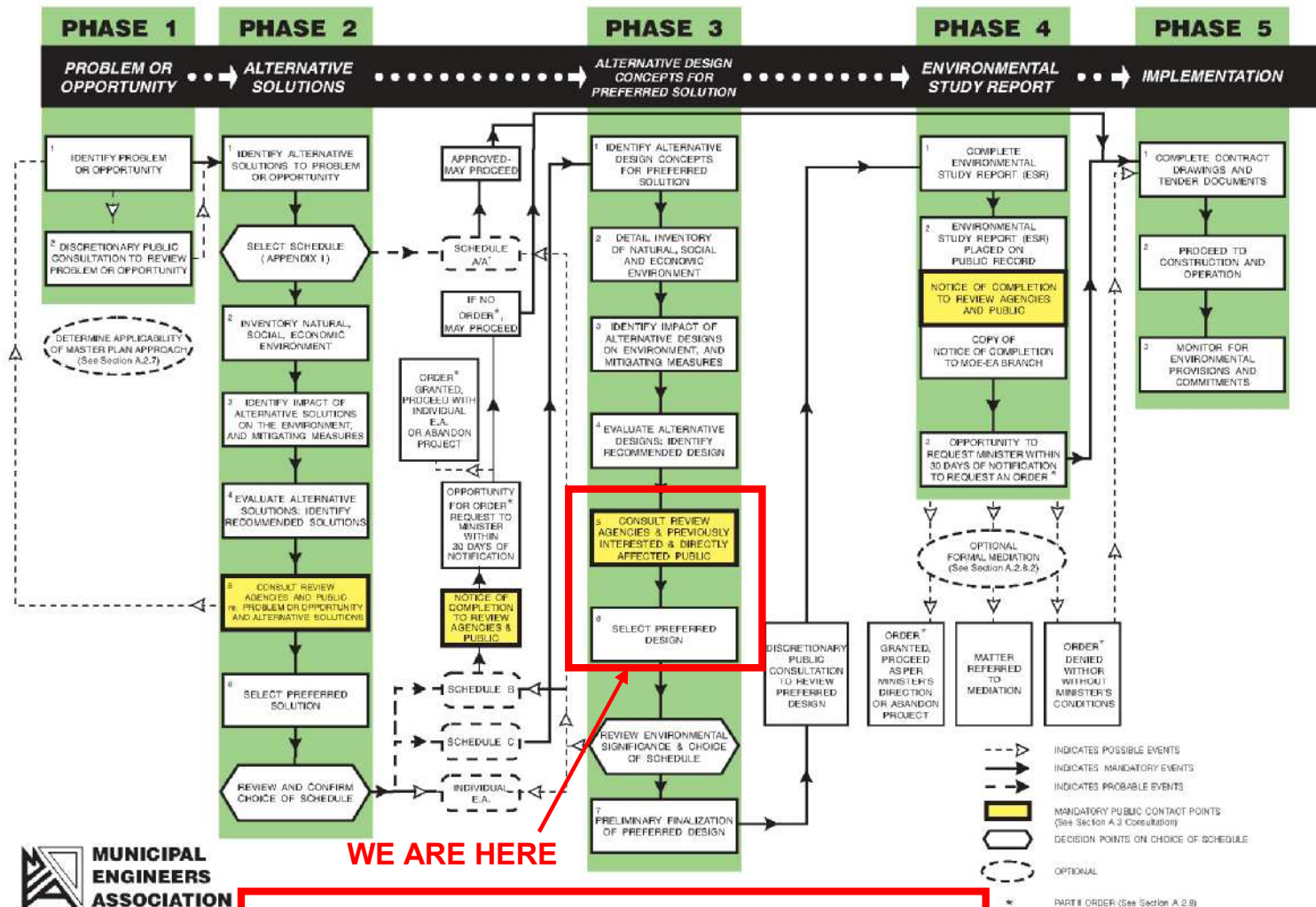
- The City of Toronto must follow the Municipal Class EA process to meet the requirements of Ontario's EA Act for all infrastructure projects.
- The EA Act requires the “protection, conservation and wise management of the environment” while undertaking infrastructure enhancements.
- The EA process is also an opportunity for the public and reviewing agencies to provide input throughout the project.



# EA Process

## EXHIBIT A.2 MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the Municipal Class EA



WE ARE HERE

This study is following a Schedule 'C' process

\* PART B ORDER (See Section A.2.8)



# Recommended Solutions

The evaluation of options revealed that the preferred solution(s) include:

## Source Control

- Naturalized Landscaping Approaches to reduce and slow stormwater runoff



## Conveyance Control

- Installation of bioretention units to capture and treat stormwater



## End-of-Pipe Control

- Underground storage to store stormwater and combined sewer overflows until it can be treated





# Source Control

## Naturalized Landscaping Approaches

Representative lot-level measures which can be used to reduce stormwater runoff and improve water quality



**Downspout Disconnection**



**Rain Garden**



**Front Yard Naturalization**



**Front Yard Naturalization**

Results from the modeling exercise suggest that storm/combined sewer pollutant loadings to Lake Ontario could be reduced by as much as 17 percent depending upon the number of residents that implement the measures as shown.



**Pervious Driveway**

# Naturalized Landscaping Approaches How You Can Help!

## INTRODUCTION

As part of this project, a market research study was undertaken. The goal of the market research was to “evaluate the opportunities and constraints in the residential sector for at-source stormwater control measures for single-family properties and the municipal right-of-way and roadways in the study area”

## What Did We Do?

A market research study was undertaken with approximately 50 homeowners to determine:

- Values and perceptions as they pertain to the home landscape and select lot-level stormwater management BMPs.
- Landscape practices and other issues related to lot-level stormwater management.
- Where residents go and who they trust for landscape related advice.
- Constraints and opportunities within the target market.

## What Did We Find?

- Homeowners take great pride in their home and their lawns/gardens
- Marketing new approaches must therefore tap the deep emotional connection residents have with their home and landscape
- Lot-level Best Management Practices (BMPs) should be a collective vision - a new landscape paradigm
- Any future efforts must use trusted sources to engage the target market, e.g., retailers, architects/architectural designers, landscape architects, building contractors, landscape professionals, etc.

Provided on this and accompanying boards are examples of traditional landscape measures as well as measures which emphasize a more natural landscape approach. The naturalized approaches as shown are more consistent with the approach of this study which is to store, infiltrate and/or cleanse stormwater runoff prior to discharging it to the lake.



# Conveyance Control

## Bioretention Units Implementation

Representative conveyance control measures (Low Impact Development - LID) within the municipal road right-of-way which can be used to reduce and slow stormwater runoff



**Bioretention unit on the road**



**Bioretention unit in a downtown/commercial boulevard**

The conveyance control measures as shown would be implemented as part of the City's road reconstruction/resurfacing program. Results from the modeling exercise suggest that storm/combined sewer pollutant loadings to Lake Ontario could be reduced by 10 percent over a 10 year period and 30 percent over a 50 year period.



**Bioretention unit within the boulevard**



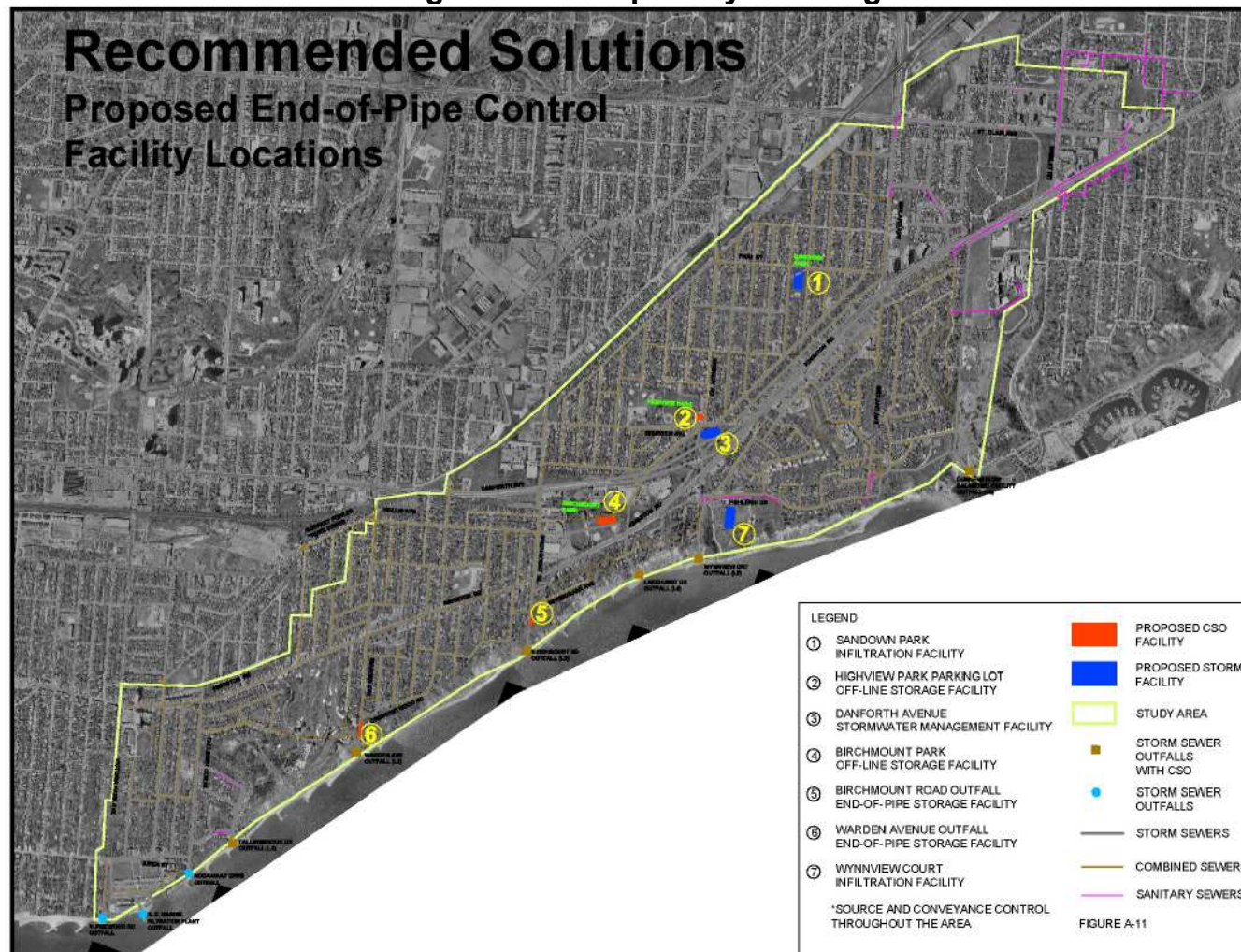
**Bioretention unit within the road right-of-way**



# End-of-Pipe Controls

Implementation of underground tanks, infiltration/exfiltration systems and wet pond

End-of-pipe treatment facilities which can be used for improving the quality of the stormwater and CSO, and in some cases reducing the overall quantity discharged to waterfront.





# End-of-Pipe Controls continued

Implementation of underground tanks,  
infiltration/exfiltration systems and wet pond

### Sandown Park Infiltration/Exfiltration Facility



**During Construction**



**After Construction**

### Danforth Ave. Stormwater Management Facility



**During Construction**



**After Construction**

### Highview Park Parking Lot Underground Storage Tank



**During Construction**



**After Construction**

### Birchmount Park Underground Storage Tank



**During Construction**



**After Construction**



# End-of-Pipe Controls continued

Implementation of underground tanks, infiltration/exfiltration systems and wet pond

**Birchmount Rd. Underground CSO Tank**



**During Construction**



**After Construction**

**Warden Ave. Underground CSO Tank**



**During Construction**



**After Construction**

**Fishleigh Dr. Infiltration/Exfiltration Facility**



**During Construction**



**After Construction**

**Results from the modeling exercise suggest that combined sewer overflow volumes to the Lake would be reduced by 90 percent and storm sewer pollutant loadings would be reduced by 25 percent.**

## Illustration and Purpose of the Underground CSO Storage Facilities

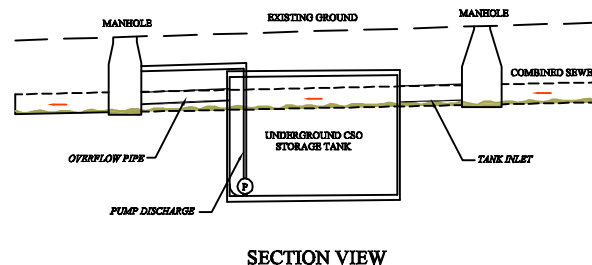
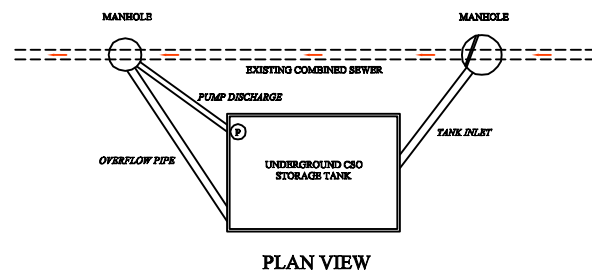
Underground Storage Facilities are required in order to store combined sewage that would otherwise be discharged directly to Lake Ontario. The facilities are located underground and therefore do not impact existing land uses except during the construction period. There are various factors such as odour, noise, and disruption to local residents which need to be considered during the design and construction of the facilities. The steps that are required to mitigate any impact to local residents are outlined on a separate board.

Provided below is an illustration of how the proposed facilities would operate.

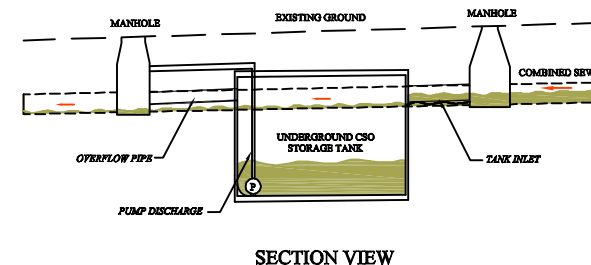
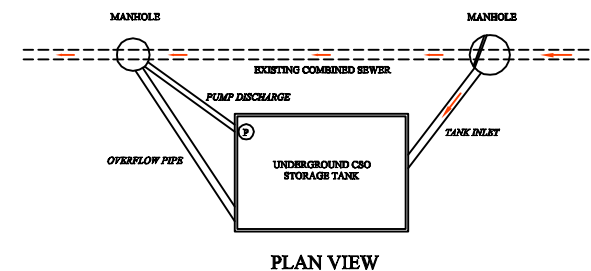
During dry weather periods, or during smaller rainfall events, combined sewage flows bypass the CSO storage facility and are conveyed directly to the Ashbridges Bay Sewage Treatment Plant (ABSTP).

During larger rainfall events, part of the combined sewage is diverted (and stored) in the CSO storage facility. This will occur approximately 10-20 times per year. The combined sewage will then be pumped to the ABSTP when capacity becomes available.

GENERAL CONDITIONS



DURING AND AFTER LARGER RAINFALL EVENTS





# Evaluation of Alternative Designs

Each alternative design was evaluated according to the following criteria:

## **Natural Environment**

- Terrestrial System
- Surface Drainage and Groundwater
- Soil and Geology

## **Technical Considerations**

- Technical Feasibility
- Impact on Utilities
- Performance Water Quality & Water Quantity

## **Social-Cultural Environment**

- Odour Control
- Noise
- Impact on Adjacent Residents
- Impact on Park Usage
- Traffic Impacts
- Land Ownership

## **Economic Considerations**

- Capital Cost
- Operation and Maintenance



# RECOMMENDED CSO/FLOOD CONTROL PROGRAM

Program Type	Actions
Residential Source Control Program	<ul style="list-style-type: none"><li>•City to undertake a Social Marketing program. The primary steps associated with the implementation of the program for residential areas are provided below.<ul style="list-style-type: none"><li>•1. Marketing Campaign<ul style="list-style-type: none"><li>– 2.1 A visually-based advertising campaign</li><li>– 2.2 Web-based tools and resources</li><li>– 2.3 Joint ventures with key stakeholders</li><li>– 2.4 Landscape Consultation Service</li><li>– 2.5 Workshops</li></ul></li><li>•2. Demonstration Sites</li><li>•3. Community Visioning Session</li></ul></li></ul>
Conveyance Control Improvements	<ul style="list-style-type: none"><li>•City to implement LID measures as part of road reconstruction/resurfacing program</li></ul>
End-of-Pipe Control Improvements	<ul style="list-style-type: none"><li>•City to construct four underground combined sewer overflow (CSO) storage tanks and three stormwater management facilities.<ul style="list-style-type: none"><li>•4 underground (CSO) storage tanks:<ul style="list-style-type: none"><li>-Birchmount Rd. underground CSO tank</li><li>-Warden Ave. underground CSO tank</li><li>-Highview Park parking lot underground tank</li><li>-Birchmount Park underground tank</li></ul></li><li>•3 stormwater management facilities:<ul style="list-style-type: none"><li>-Sandown Park infiltration/exfiltration facility</li><li>-Fishleigh Dr. infiltration/exfiltration facility</li><li>-Danforth Ave. stormwater management facility</li></ul></li></ul></li></ul>



# RECOMMENDED CSO/FLOOD CONTROL PROGRAM

Program Type	Actions
Flood Protection	<ul style="list-style-type: none"><li>•City to undertake underground storage tanks construction, pipe replacements, sewer separations and downspout disconnection.</li><li>-Cluster 1: sewer separations at Avalon Blvd.</li><li>-Cluster 2: underground storage tanks at Pinegrove Ave. Area</li><li>-Cluster 3: sewer separations at Kennedy Rd. Area</li><li>-Cluster 4: pipe replacements at McIntosh St.</li><li>-Cluster 5: downspout disconnection</li></ul>



## MITIGATING THE IMPACTS

The proposed construction of the underground facilities will require approvals from several agencies. The following mitigative measures are proposed:

- The proposed tanks and associated controls will be underground and hence not visible.
- The construction sites will be fenced for safety reasons. Access to and from the waterfront (Birchmount Rd. and Warden Ave. tanks) will be provided during construction, where possible.
- Attempts will be made to minimize the number and quality of trees to be removed. Additional planting will occur where trees need to be removed due to construction.
- Noise and dust control measures will be implemented in order to minimize the impact to residents adjacent to the proposed facilities.
- Temporary municipal services (water, sewers, utilities) will be provided during the construction period. (Birchmount Rd. and Warden Ave. tanks)
- Consideration will be given for the construction to occur in the late fall/winter to avoid interference with park usage (Highview Ave. and Birchmount Park).



# Next Steps

After this Open House, the study team will consider all comments on the recommended solution and finalize the preferred design.

An Environmental Study Report for the study will be prepared and a 30-day period for review is expected to take place in the summer or fall.

For information on this project, or to submit your comments, please contact:

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