Real Time Control To Manage Wet Weather Flows

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Public Works

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Infrastructure and Source Water Planning

Presentation Overview

- What is RTC?
- Why RTC & What Will it Achieve?
- Background
- Major Tasks
- Description of Proposed RTC System
- Next Steps

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- Community
- People
- Processes
- Finance

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What is RTC?

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Computerized optimization for control of:

- Flow gates & chambers, CSO Tanks, pump stations
- Sensors that measure flow, level, status (more eyes and ears in the system)
- Assists operators in making complex decisions over a very vast sewer network and in response to spatially variable and dynamic storms

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Typical Static Control of CSO – Does not respond dynamically to flows resulting from storms

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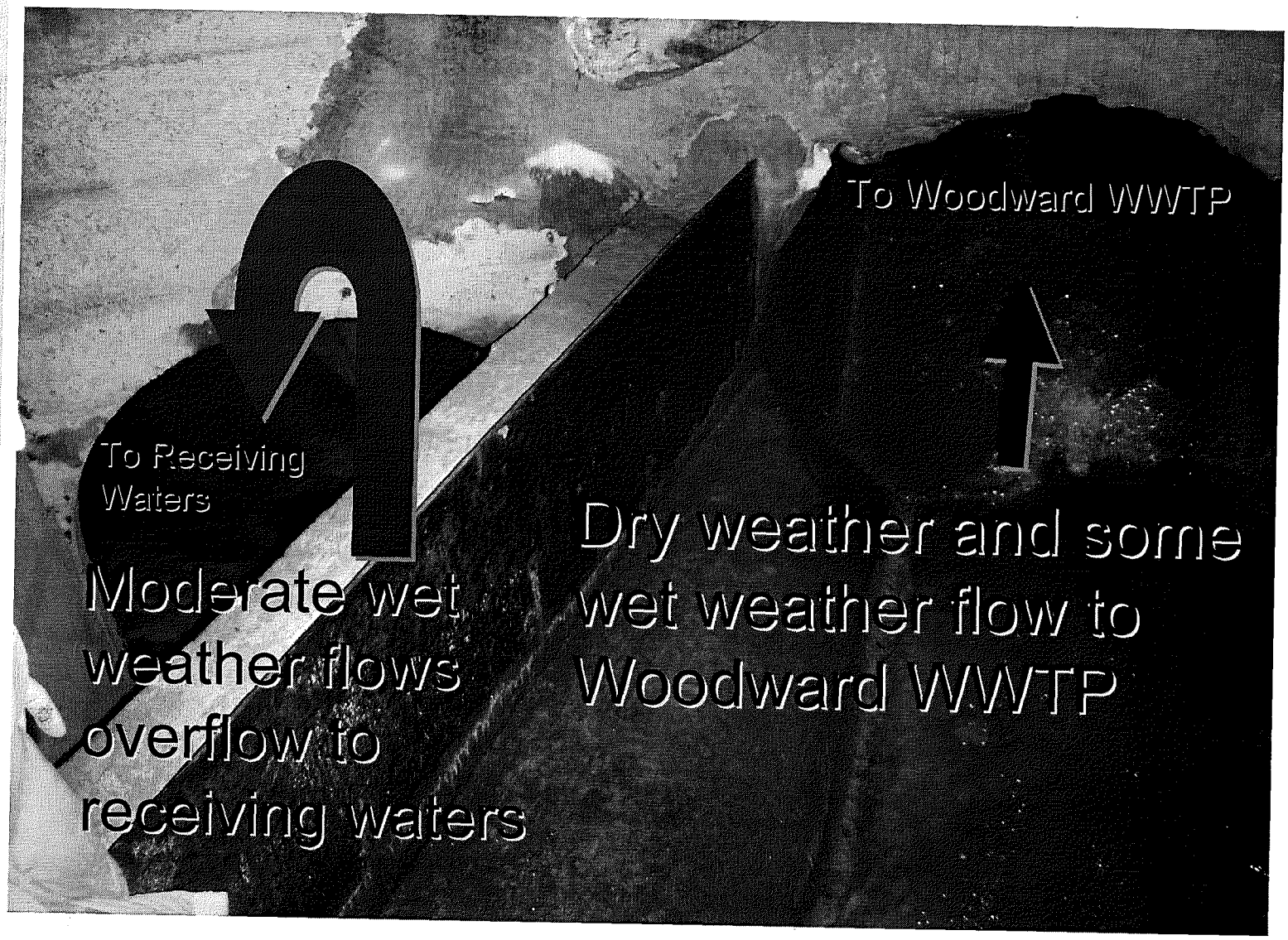

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Replacing static CSO structures with gates that modulate in response to storms and varying flows reduces CSO volume and meets targets!

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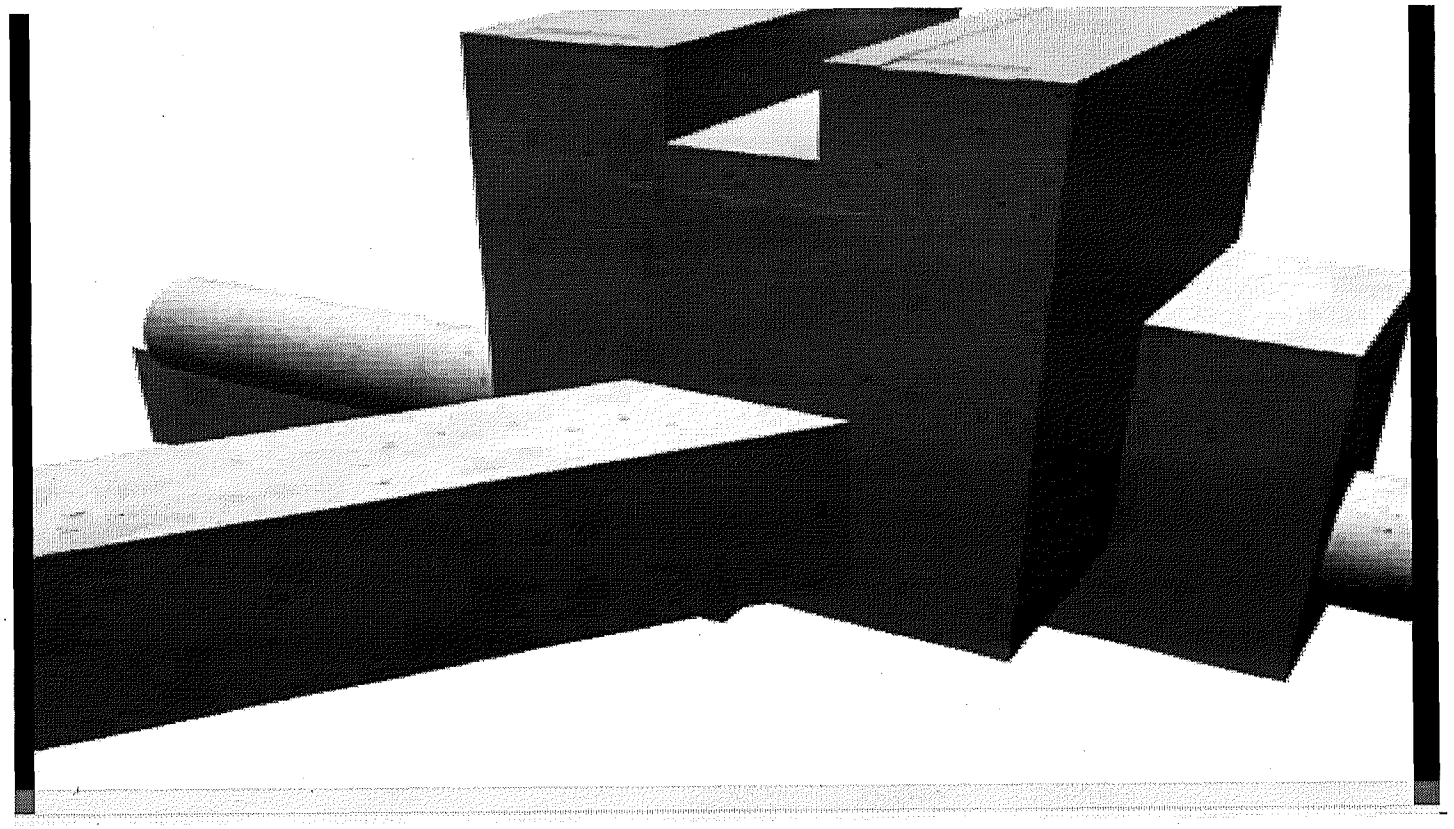

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Why RTC?

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•Existing infrastructure lends itself to RTC because it already has gates, CSO tanks, pump stations and other necessary components.

• Leverages same hydraulic model as used by SERG team.

•Represents the best **"bang for your buck"** solution for CSO control with the least investment in new infrastructure vs. next best option!

•Delist Hamilton Harbour as a pollutant hotspot and Area of Concern.

What Will RTC Achieve - The Targets!

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- **MOE Procedure F-5-5**

VOLUME!

90% System-wide CSO Capture

Beach/Recreational Water Body Contact Protection

POLLUTANT LOADINGS!

- **Hamilton Harbour Remedial Action Plan (HHRAP)**

CSO Pollution Targets for Total Suspended Solids, Phosphorous, Ammonia-Nitrate

FREQUENCY!

- **Sensitive Area Targets – Cootes Paradise**

No more than one CSO per year in an Average Year

Background - What has been completed or is in progress?

- Completion of RTC strategy development
- Completion of preliminary design of RTC regulators, sampling and flow monitoring to ensure design meets quality objectives.
- Real Time Control System Integration for System Operation (in-progress)

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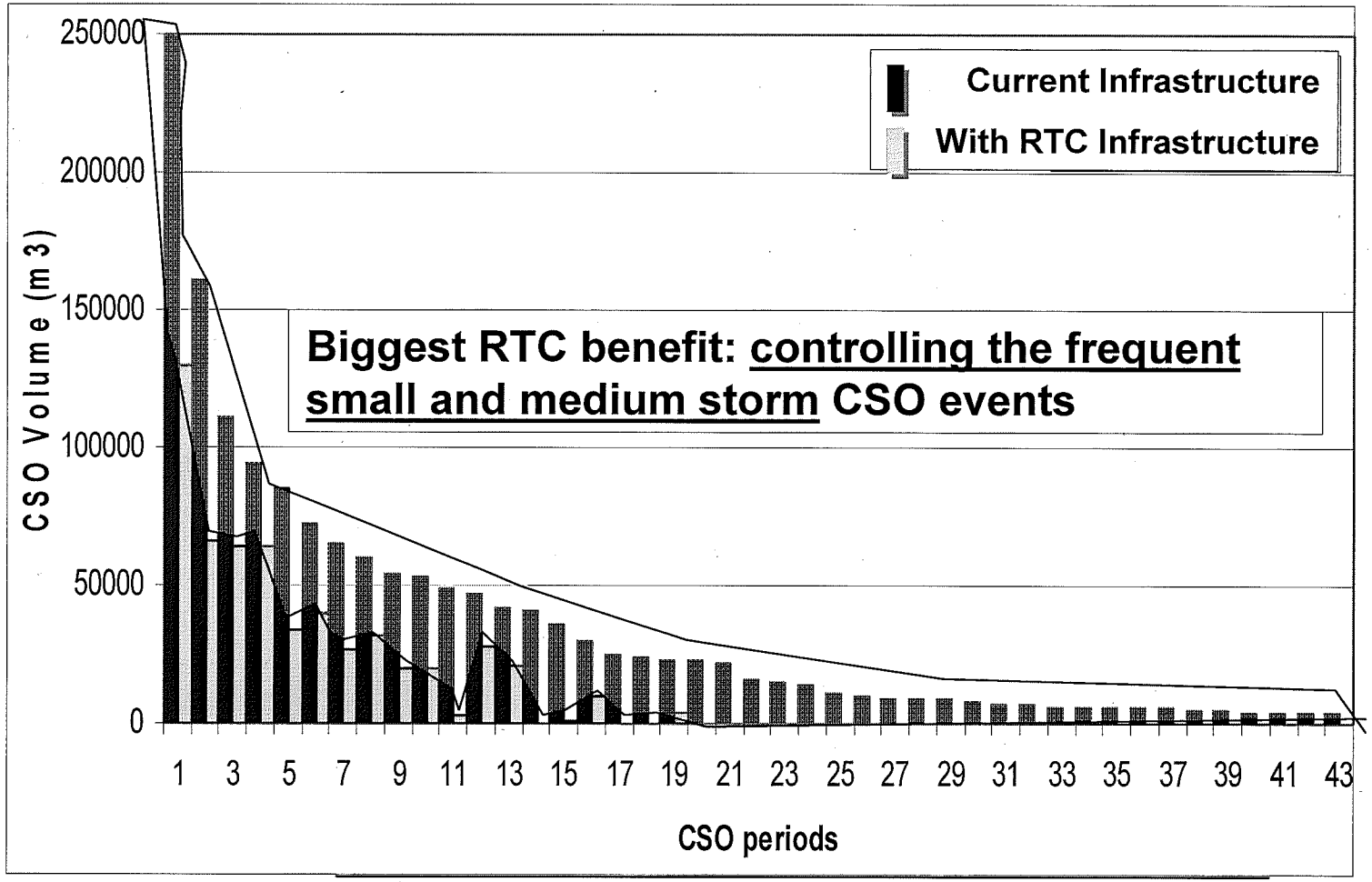
CSO volumes before RTC & after RTC



Environment & Sustainable Infrastructure

Overview of the City's Interceptor Sewers and CSO's

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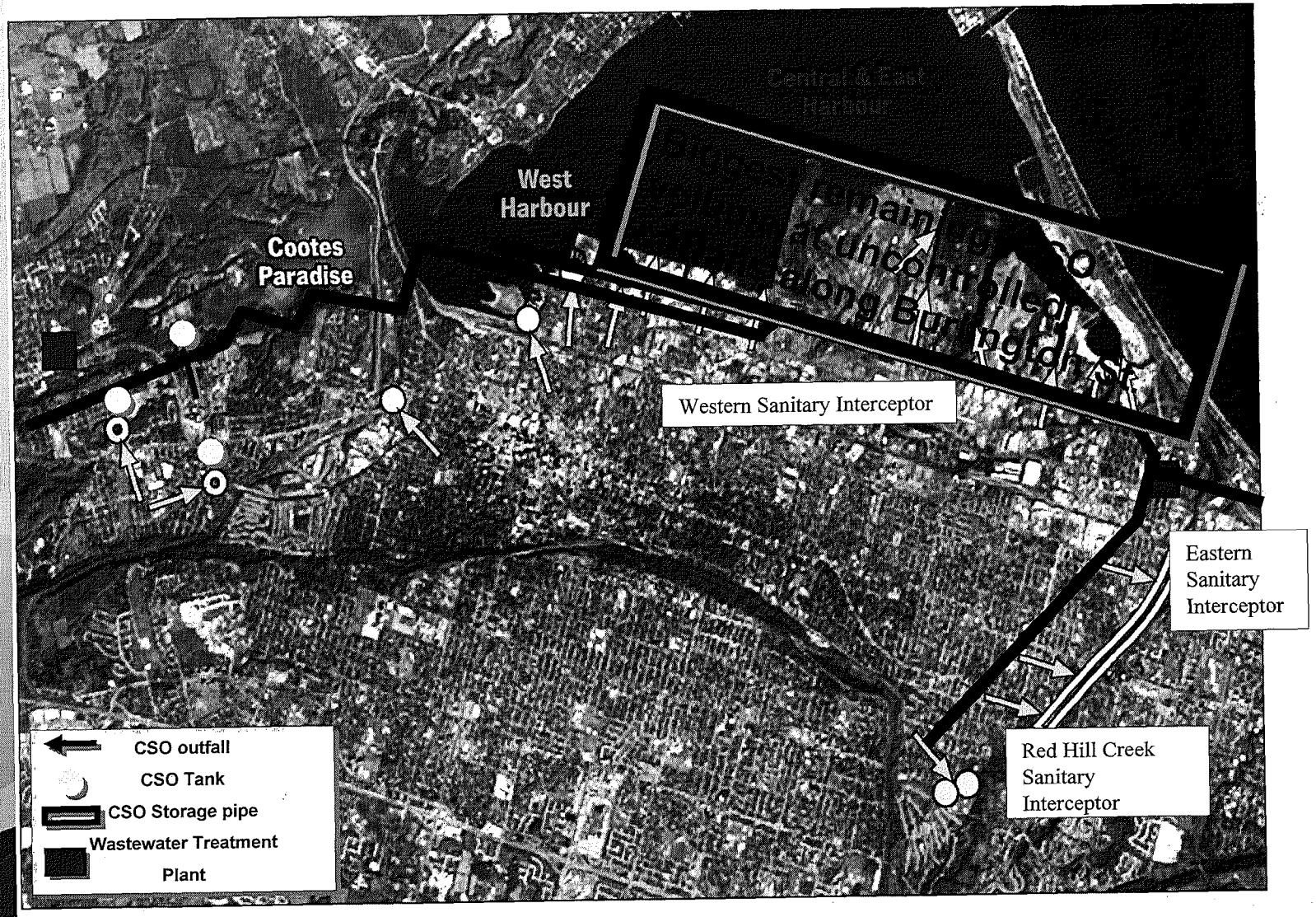

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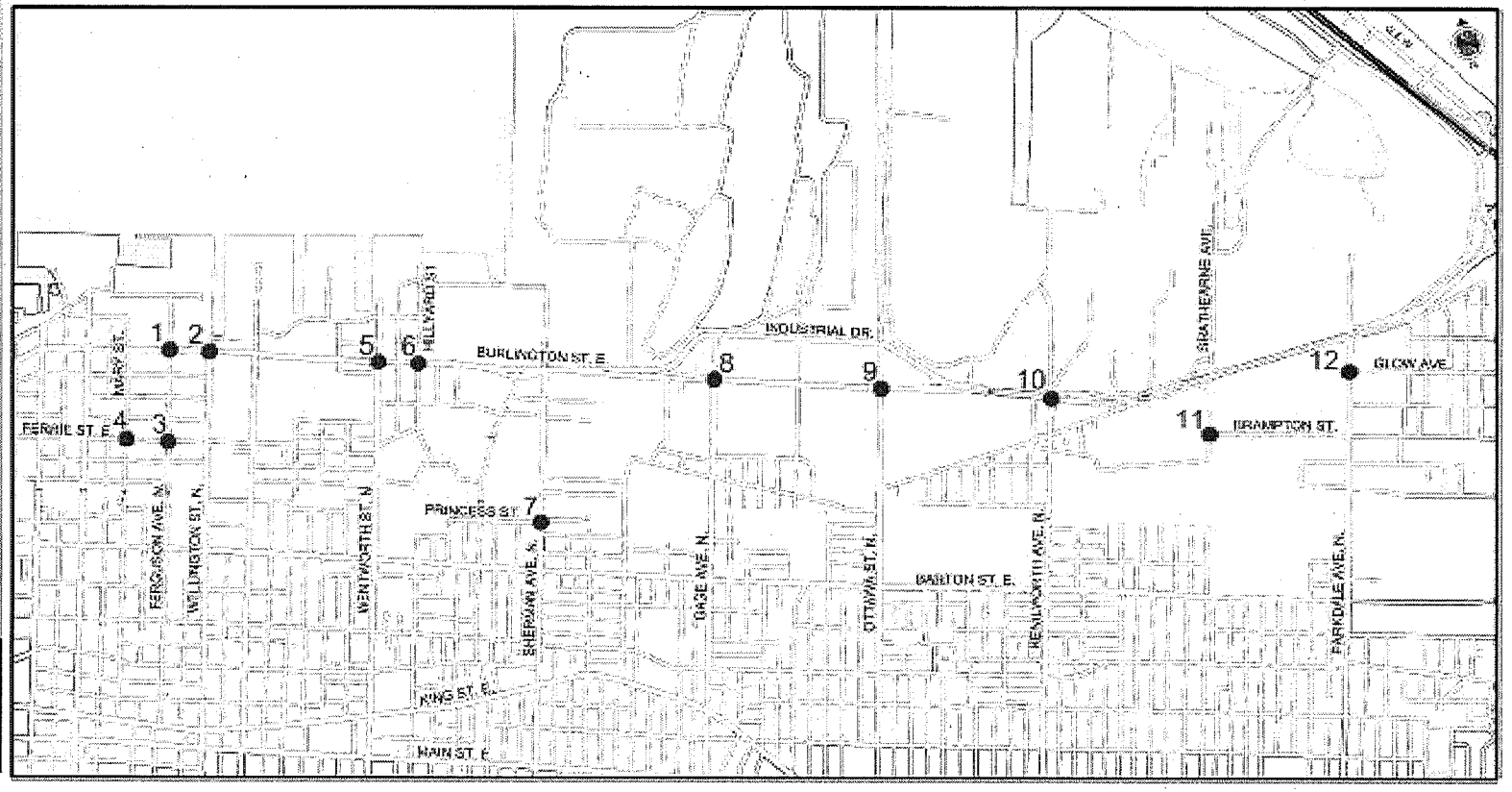
Greatest Volume of CSO along Burlington St. Outfalls

Also provide the greatest opportunity to reduce overflow volume.

Location Plan



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Major Tasks/Subprojects

1) **RTC Computer Model (complete) & All-Pipes Model Development (underway)**

2) **CSO Pollutant and Flow Characterization Program (complete)**

- refining final volume control needed based on pollutant concentration.
- designed to be repeated on a regular 5 yr schedule to satisfy compliance commitments and track our progress as required by the Ministry of the Environment.

3) **Design of RTC Construction/Enhancement Projects and Computer Architecture**

- CSO control, surcharge control, operational improvements

Refinement/calibration of hydraulic model; flow/rain monitoring & field verification

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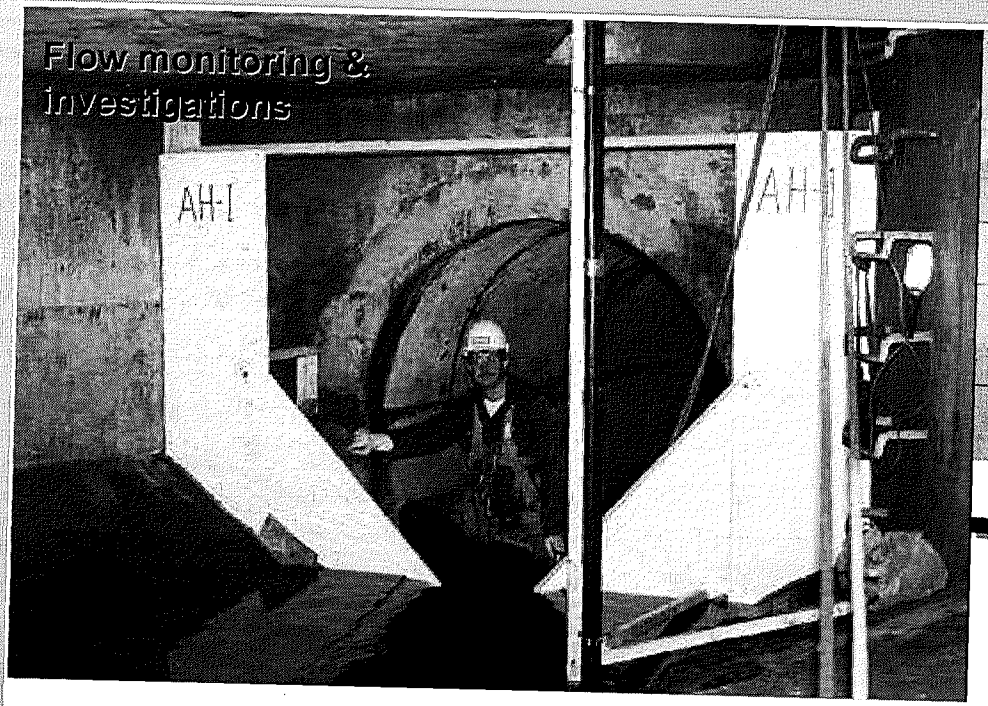

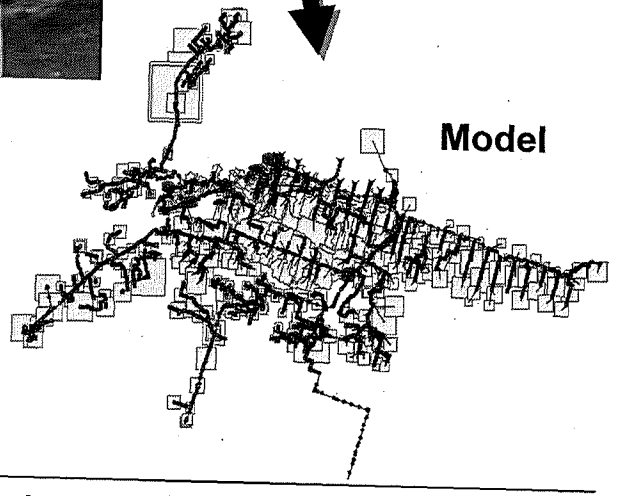

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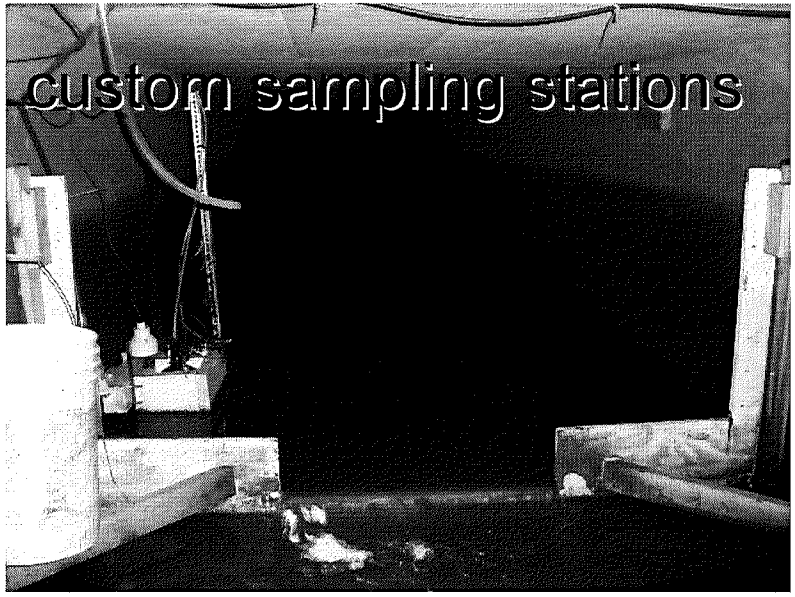
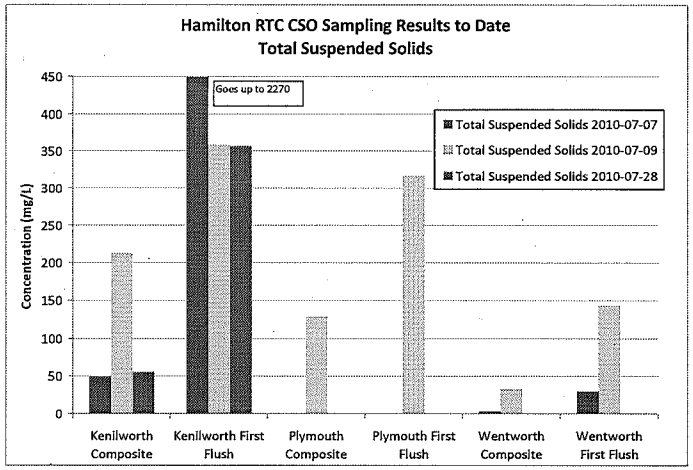
CSO pollution characterization



analysis

results



refine RTC operation & designs

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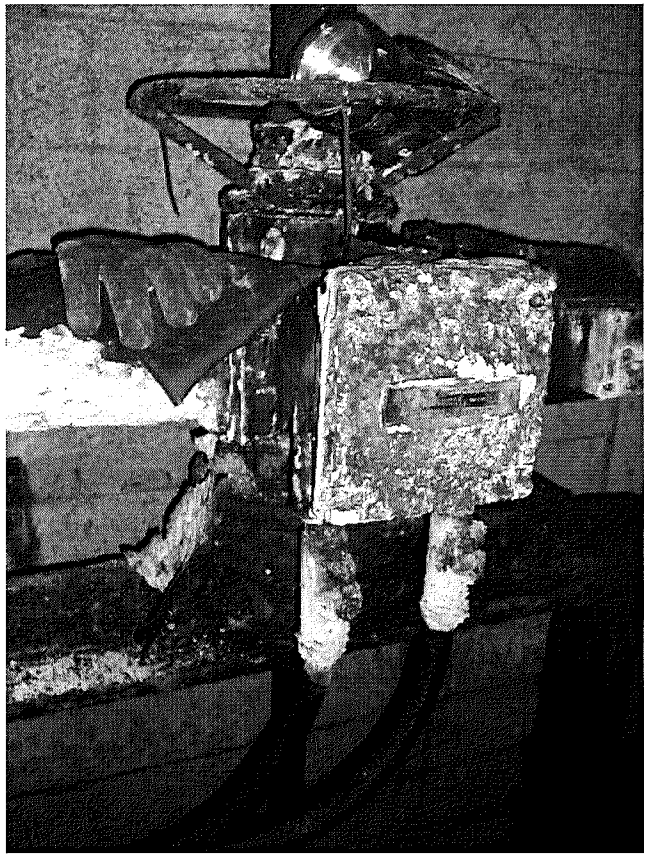
Example of what's in the ground:

Existing Site Requiring Upgrade: Ferrie and Ferguson Actuator and Sluice Gate



Example of CSO Outfall – Planned new gate/regulator to capture CSO at Wellington/Burlington

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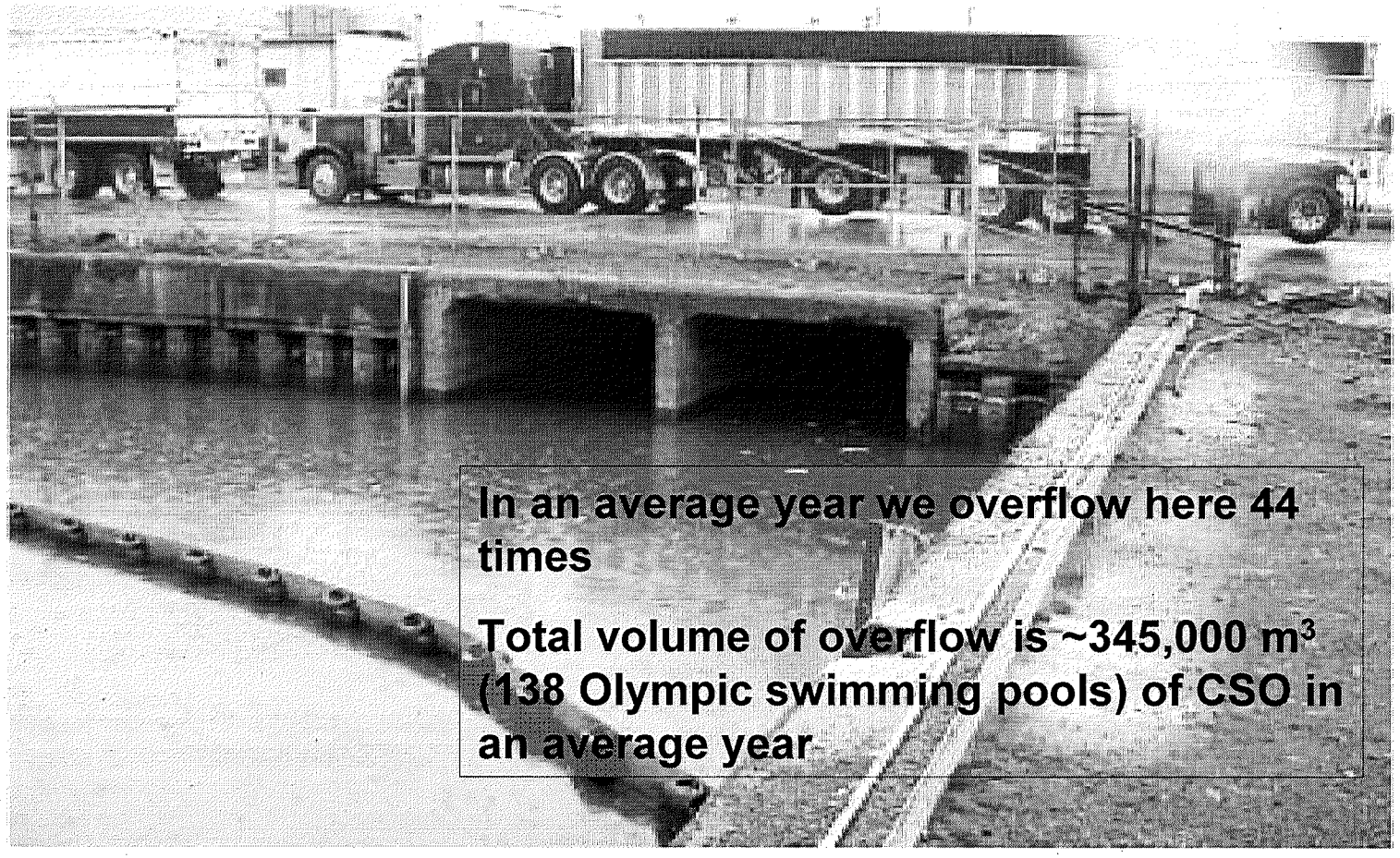

System Upgrades and RTC Implementation

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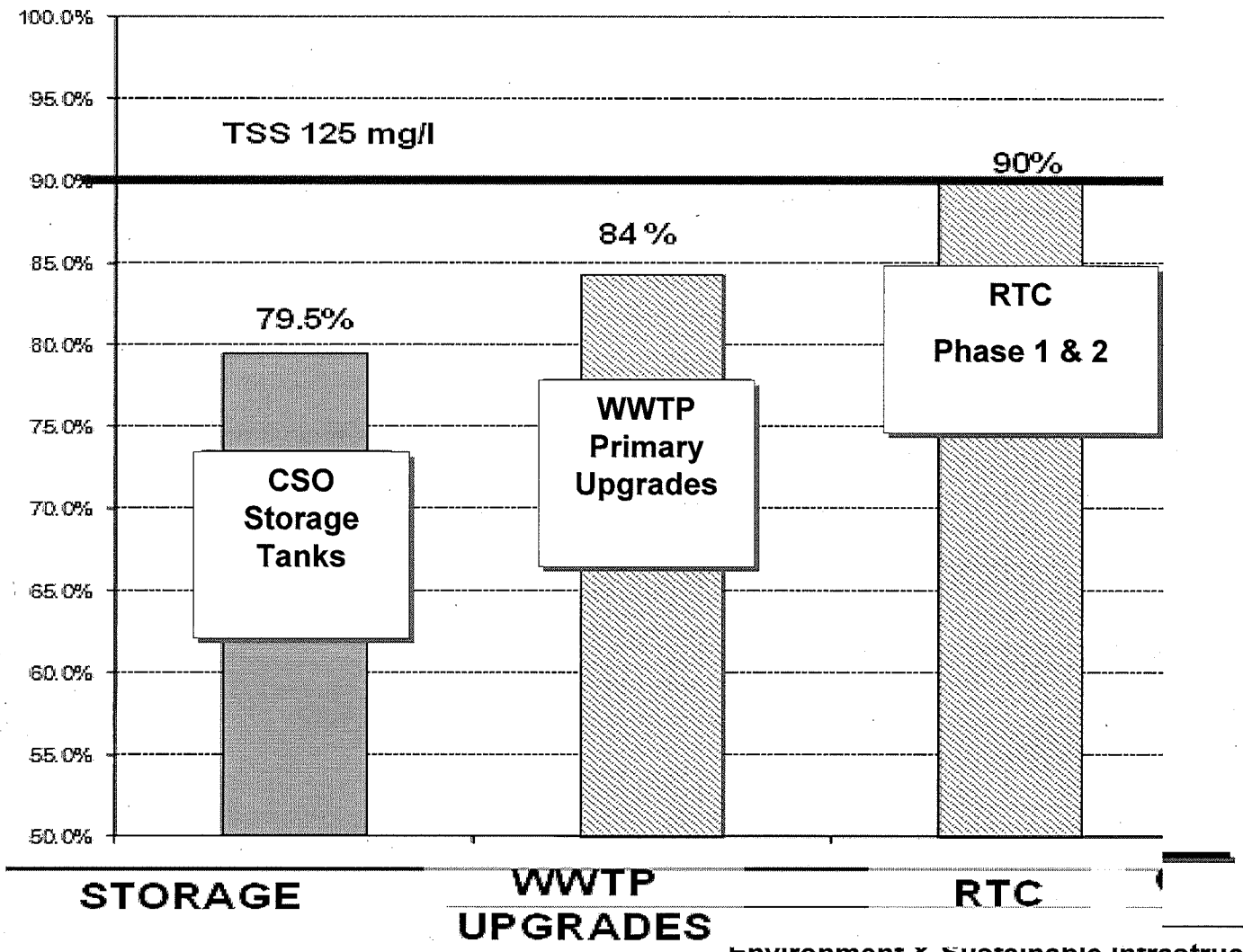

RTC Tank & Regulator Upgrades for CSO Control – Phase 1

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Site Location	Cost Estimate	Type of Site
Wellington / Burlington	$3.6M	New Site - CSO Control
Mary / Ferrie	$1.4M	Existing Site - upgrade required
Main-King CSO tank	$3.8M	New Control Site + Tank instr. & pump modifications– maximize tank use
Kenilworth / Burlington	$4.3M	New Site - CSO Control
Strathearne / Burlington	$4.6M	New Site - CSO Control
Greenhill CSO tank	$0.9M	Existing Site Retrofits – maximize tank use
Red Hill Creek Super Pipe	$0.2M	New Actuator/Power-back-up & Control Philosophy – maximize tank use
Bluebell/Lavender	$0.02M	Existing Site – Weir Adjustment
Dundas Equalization Tank	$0.4M	Existing Site - Pump Upgrades (to regulate flows from Waterdown to Woodward)
Sterling CSO	$0.6M	Existing Site - Weir Adjustment
Main/Ewen Chamber and McMaster CSO Tank	$1.8M	Existing Site – Sluice gates and pump modifications to maximize tank use
Total Phase 1 CSO Control Sites	**$21.62M**	

~~CSIF funded~~ 2012 deadline

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RTC Regulator Upgrades – Phase 2

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Site Location	Cost Estimate	Type of Site
Ferguson / Ferrie	$1.7M	Existing Site-New Regulator
Wentworth / Rosemary	$1.5M	Existing Site-New Regulator
Hillyard/Burlington	$2.1M	New Site-New Regulator
Gage / Burlington	$2.2M	Existing Site-New Regulator
Burlington/Ferguson	$0.9M	Existing Site-New Regulator
Burlington / Ottawa	$1.8M	Existing Site-New Regulator
Total Phase 2	**$10.2M**	**Added to Phase 1 Sites, designed to achieve 90% control**
Total Phase 1 & 2 RTC	**$31.82M**	

Next Steps

- Proceed with property acquisition to Q3 2011

- 3 sites to be funded via Canadian Strategic Infrastructure Fund (CSIF) with completion by Q3 2012.

- Remaining Phase 1 sites/some Phase 2 to be budgeted 2013-15.

- Rest of Phase 2 sites budgeted 2015-17.

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Answers

Questions &

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Answers

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