River Valley Neighbourhoods Flood Risk Study

Rossdale

Public Consultation - May 26, 2015

Drainage Services
Financial Services & Utilities

THE CITY OF Edmonton

Today's Meeting

1. Provide results of the studies done regarding drainage issues in your neighbourhood.
2. Discuss proposed flood mitigation improvements.
3. Share Drainage Services' process for moving improvements forward.
4. Outline next steps.
5. Answer questions/get your input and feedback.

After Today's Meeting

1. Summarize and share meeting input.
2. Consider community input in work ahead.
3. Report on progress and keep you informed.

Please hold questions until after presentation.

Study Objectives

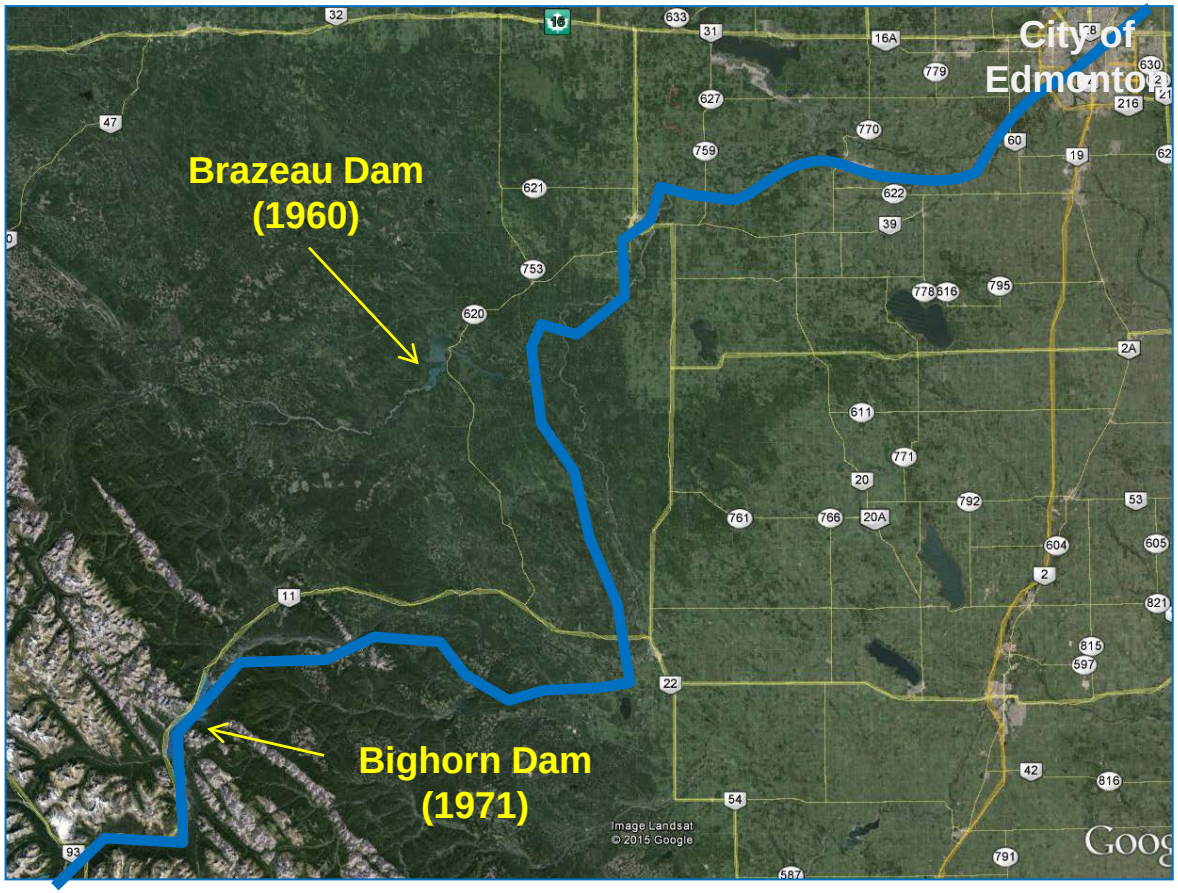
1. Comprehensive review and understanding of the existing drainage and sewer systems.
   - Cloverdale
   - Riverdale
   - Rossdale
2. Develop flood mitigation concepts to improve the level of flood protection in the neighbourhoods.

What is a 100 Year Event?

A 100 year event has a 1% chance of being exceeded in any given year.

Return Period	% Chance of Exceedance in any given year
100 year	1% (1/100)
50 year	2%
25 year	4%
10 year	10%
5 year	20%
2 year	50%

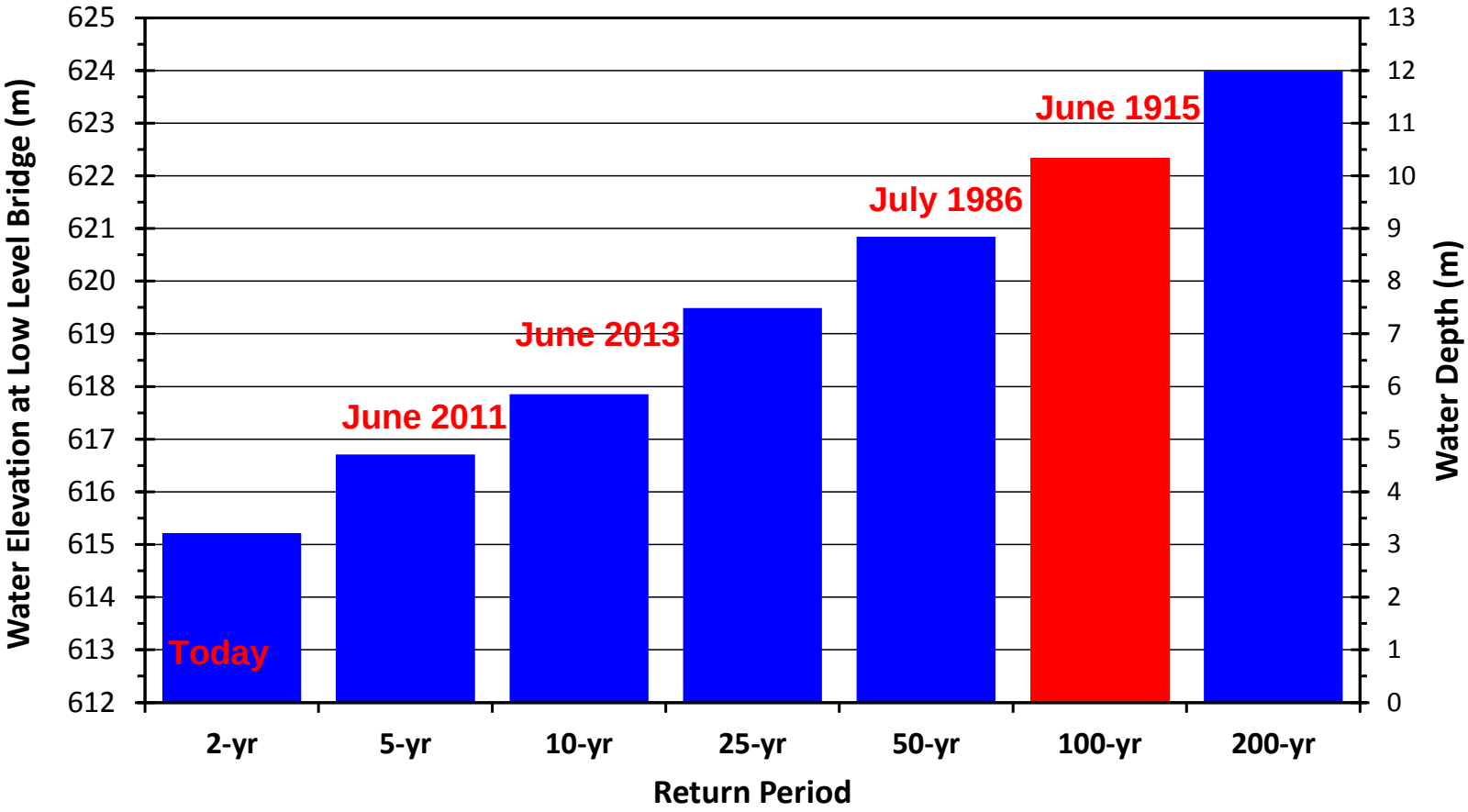
North Saskatchewan River



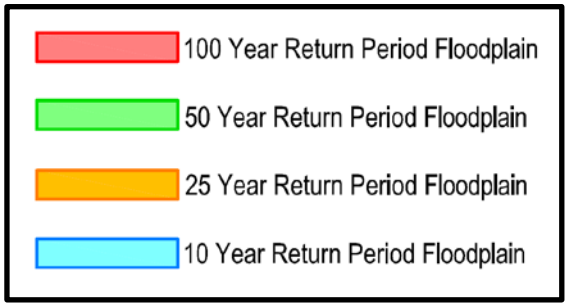
- River flows recorded since 1911(104 years)
- The dams have negligible impact on extreme peak flows events.

North Saskatchewan River

Water Levels



Floodplain Mapping



Note: This map shows the area on the ground surface that will be flooded due to high River water levels. It does not show properties that may experience sewer backups or underground parking floods.

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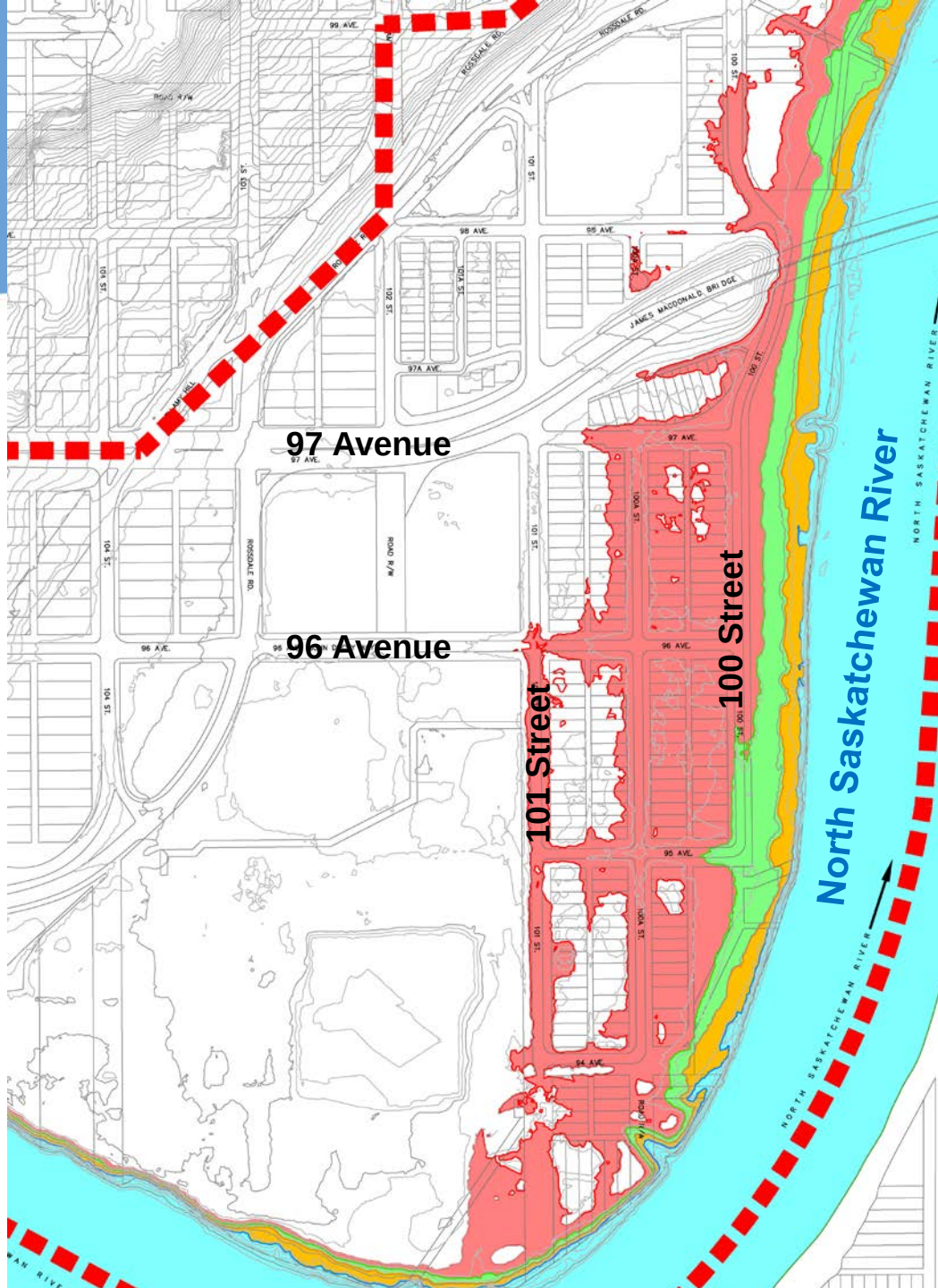
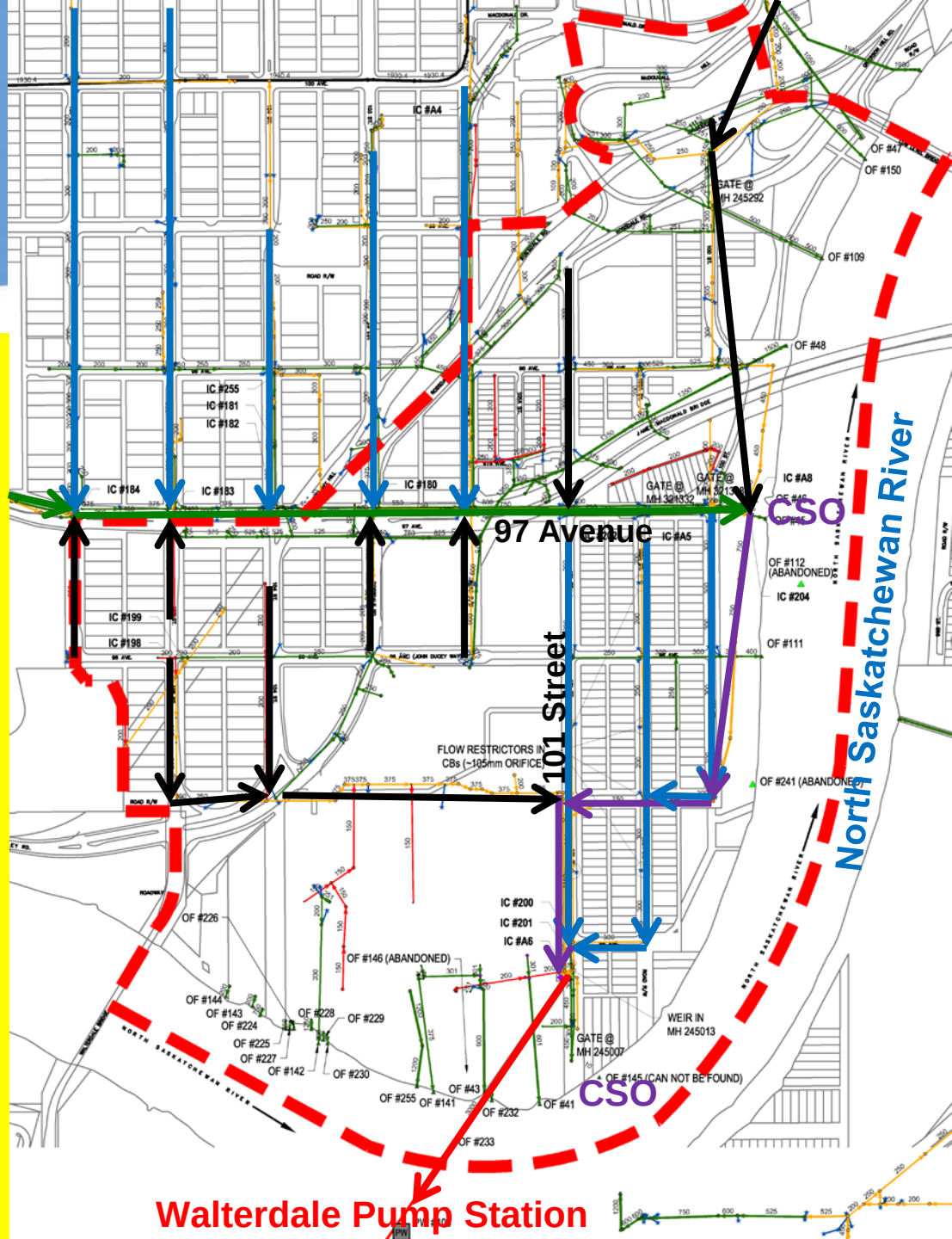


Existing Drainage and Sewer System

Combined Sewer System

Most properties in Rossdale are serviced by combined sewer pipes. Newer developments are serviced by sanitary pipes (flowing into combined sewers).

1. First pipes installed as early as 1907/1911.
2. 97 Avenue trunk collects flows from Downtown and Oliver area, generally south of 100 Avenue. (1950/1990)
3. 97 Avenue sewer bypass to pump station; excess flows overflow to CSO Outfall into River. (1956/1989)
4. Large diameter storage tunnel constructed under the River in 1994; flows are conveyed to Walterdale Pump Station across the River.
5. There has been several upgrades and modifications to the combined sewer system over the years.



Existing Drainage and Sewer System

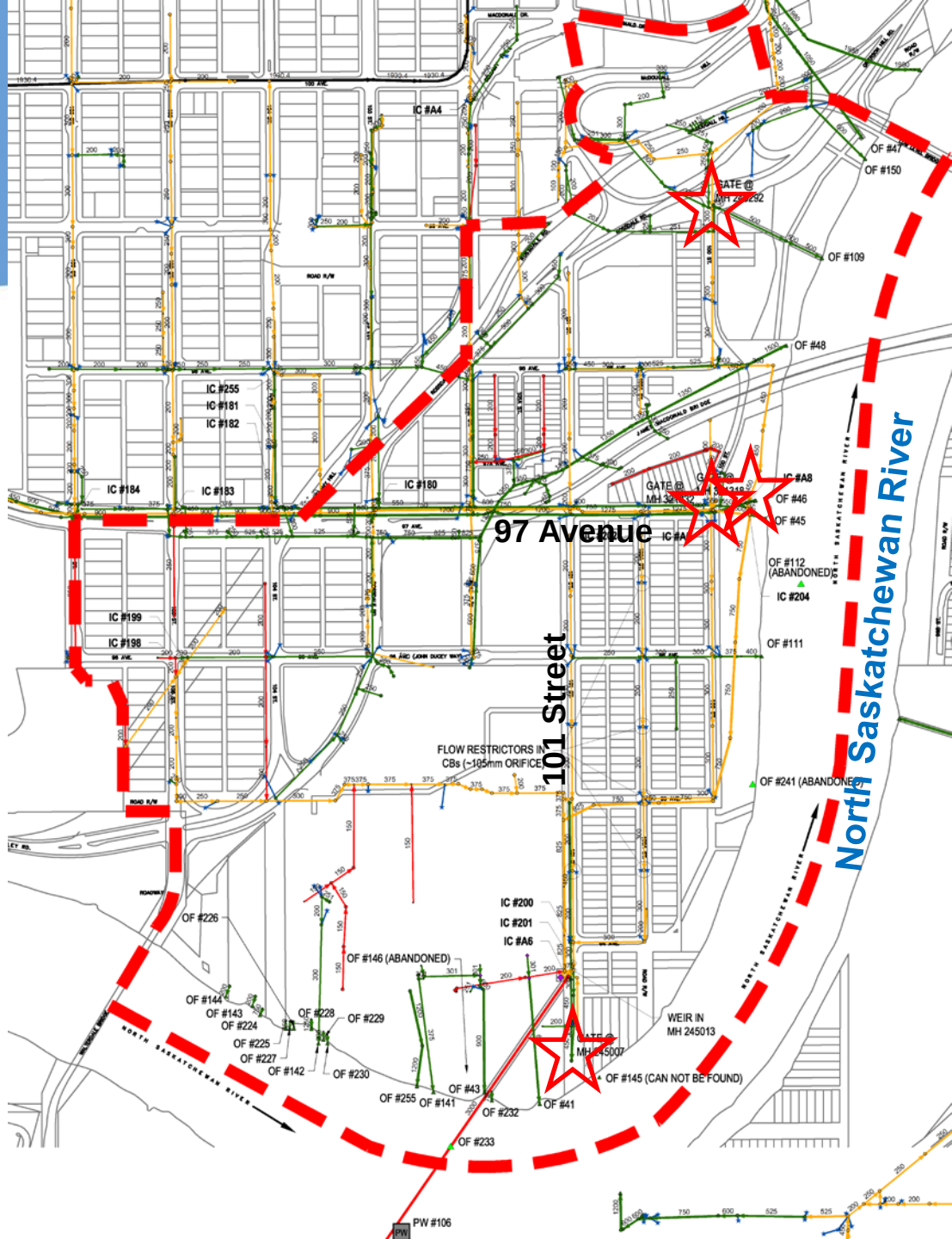
Storm Sewer System

Today, about 70% of the drainage basin is sewer separated. The other 30% still flows into the combined sewers.

1. **1930-1970 - 97 Avenue storm trunks collect flows from Downtown and Oliver area, generally south of 100 Avenue.**
2. **1950s – Partial sewer separation in Downtown area, connecting to 97 Avenue storm trunks.**
3. **1952 – Storm pipe connected to outfall on 101 Street.**
4. **1957 – Catchbasin reconnection on 96 Avenue to new outfall.**
5. **1970s – New storm trunk and outfall servicing West Rossdale area, northeast area, 97 Avenue and James McDonald Bridge.**
6. **1990s – New storm pipe and outfall to service northeast part of Rossdale.**

Manual Backflow Gates

- Manual gate at four outfalls in Rossdale (installed 1990).
- The gates are normally open.
- The gates are manually closed when the River is high to prevent River water from flowing into the combined sewer system.



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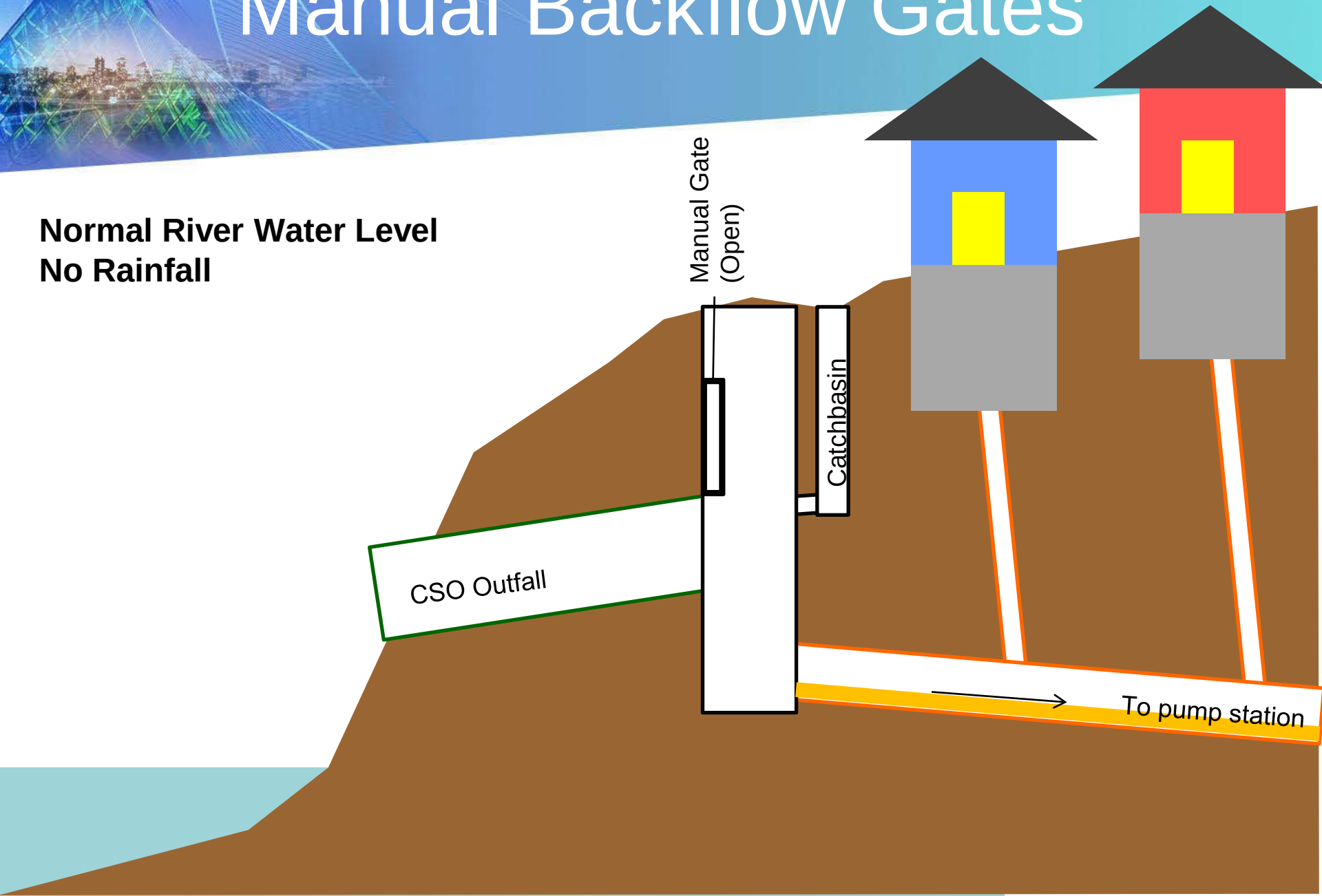
Manual Backflow Gates

- City has established protocol to close gates.

Outfall No.	Gate Closure Elevation (Water Elevation at Low Level Bridge)
	Existing Protocol
109 (100 St. / Rossdale Rd.)	617.50 m (1:8yr – River Water Level)
46 (east on 97 Avenue)	615.20 m (1:2yr – River Water Level)
45 (east on 97 Avenue)	617.50 m (1:8yr – River Water Level)
145 (south on 101 Street)	615.20 m (1:2yr – River Water Level)

Manual Backflow Gates

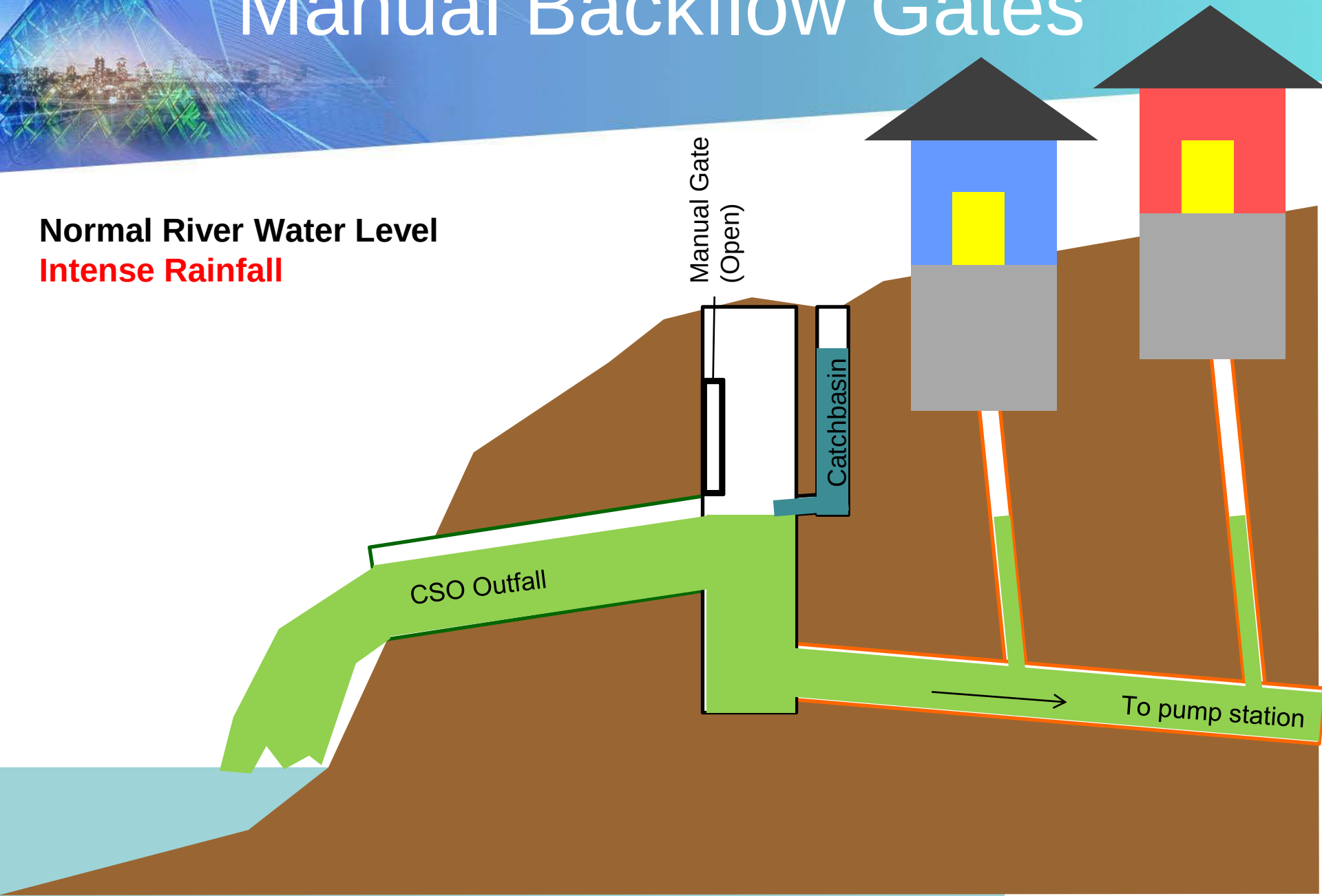
Normal River Water Level
No Rainfall



Manual Backflow Gates

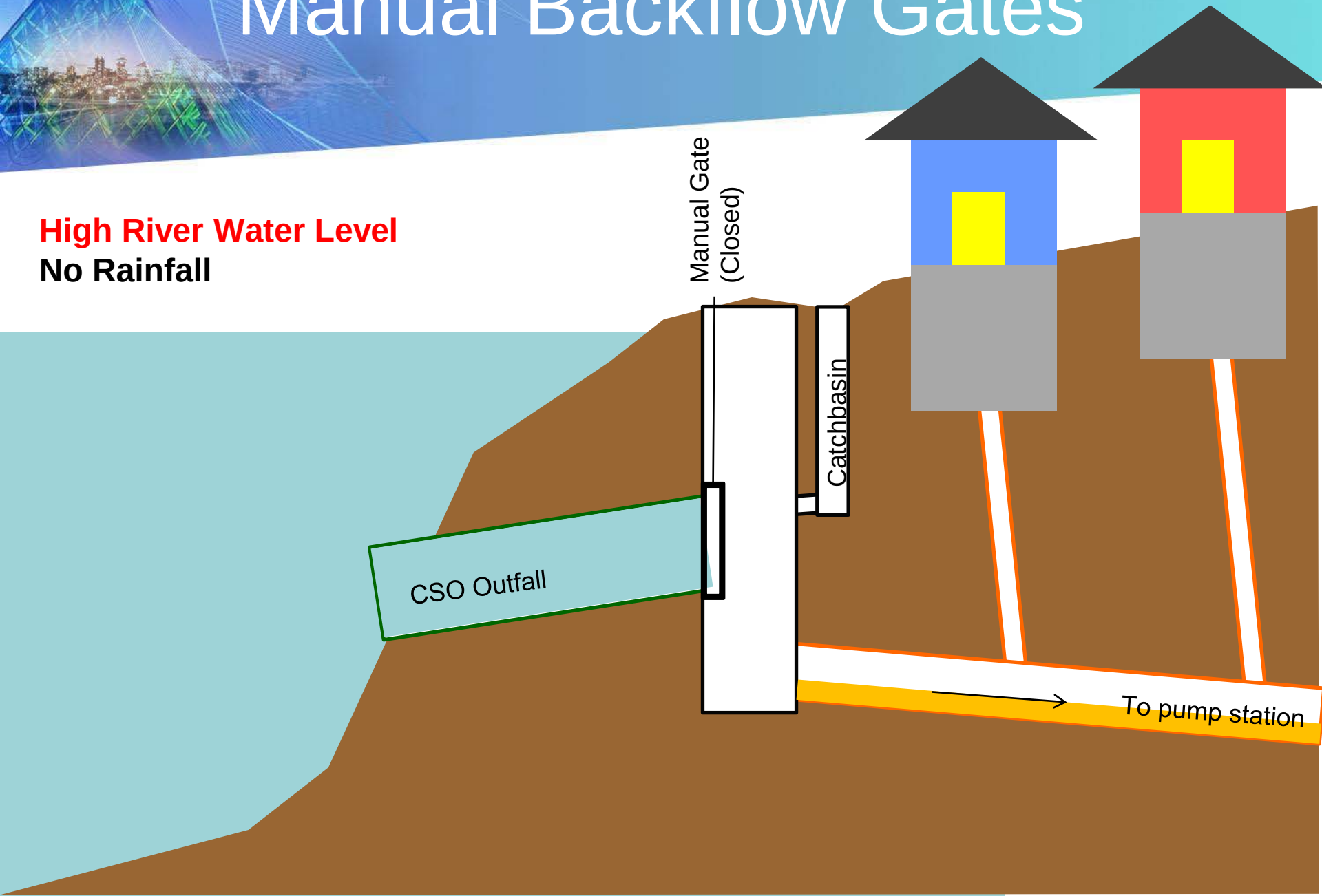
Normal River Water Level

Intense Rainfall



Manual Backflow Gates

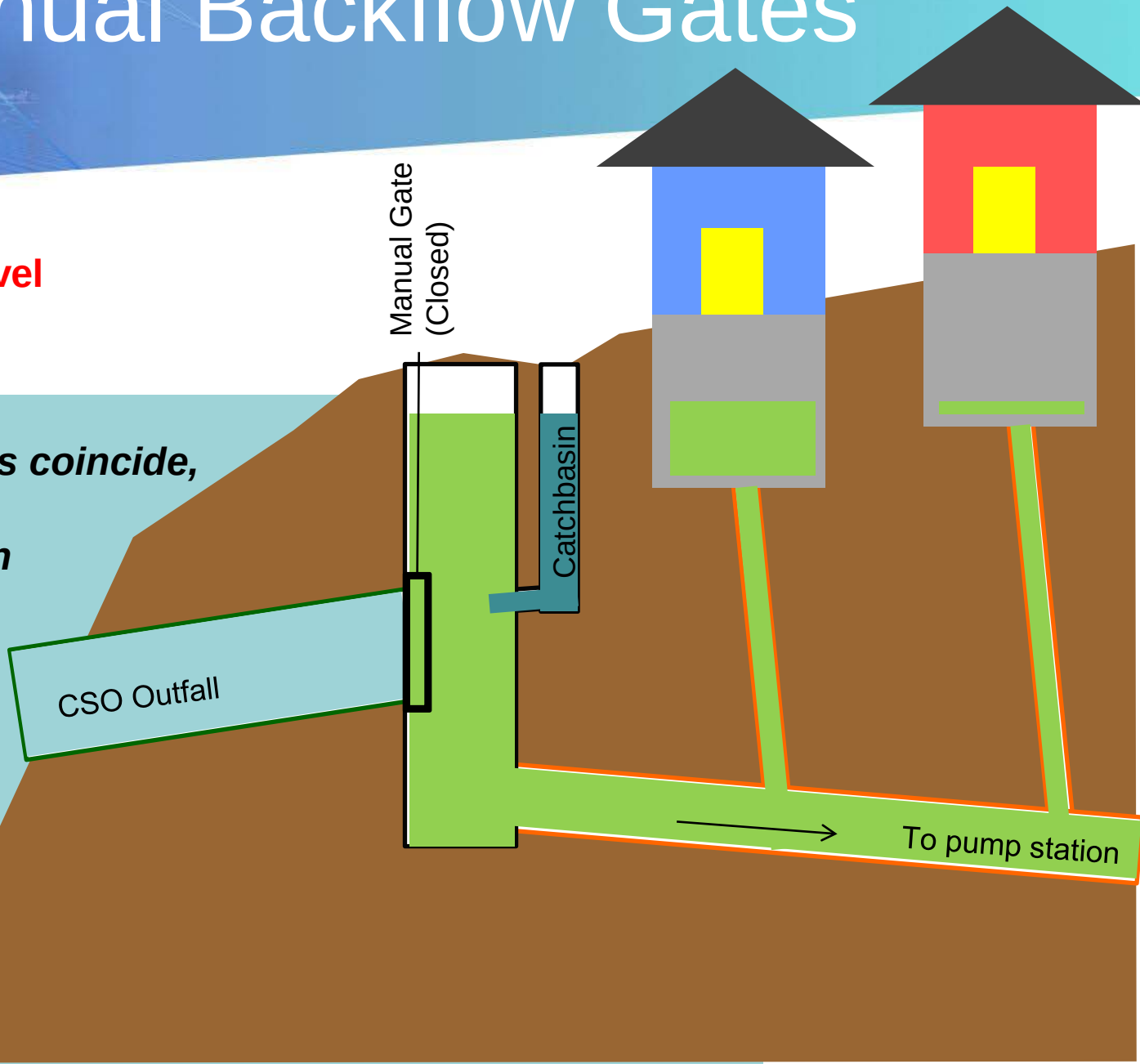
High River Water Level
No Rainfall



Manual Backflow Gates

High River Water Level
Intense Rainfall

Rare that both events coincide, but it did happen on June 20, 2011 and on June 25, 2013



Main Drainage Issues

Intense Rainfall

1- Too much storm runoff flowing into combined sewers (especially in southeast Rossdale) – SEWER BACKUP IN THOSE AREAS

2- Large flows from upstream neighbourhoods in 97 Avenue trunks – SEWER BACKUP WEST OF 101 STREET

3- Insufficient capacity of storm sewer system in West Rossdale, resulting in surface runoff flowing towards Southeast Rossdale – SURFACE FLOODS IN SOUTHEAST ROSSDALE (VERY LOCALIZED)

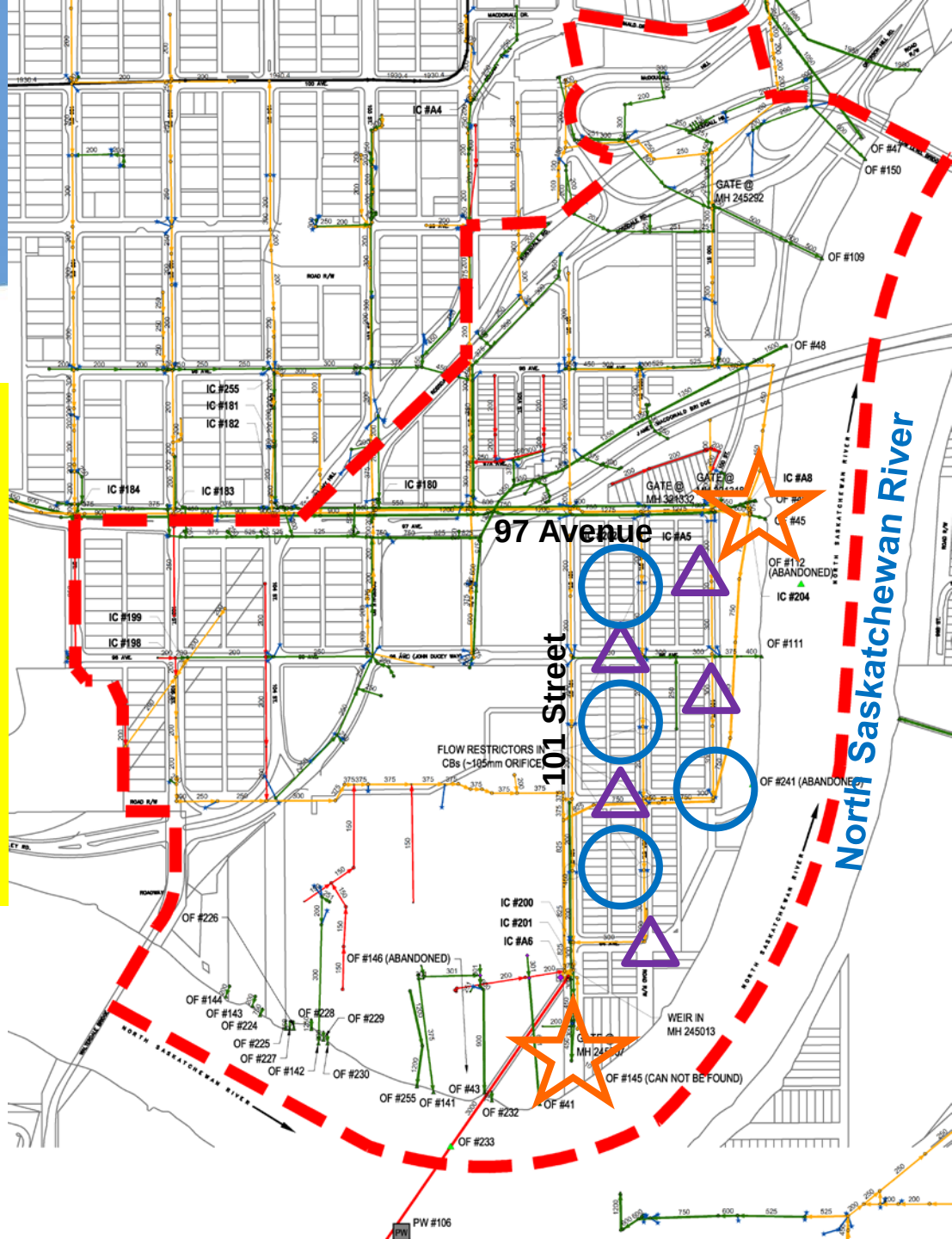
Main Drainage Issues

High River Water Level

1- River backflows into combined sewers via outfalls and interconnections – SEWER BACKUPS IN SOUTHEAST ROSSDALE

2- River water overflowing roads and entering catchbasins connected to combined sewer system – SEWER BACKUPS IN SOUTHEAST ROSSDALE

3- High River Water Levels flooding floodplain (>1:50 year) – SURFACE FLOODING IN FLOODPLAIN



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Main Drainage Issues

Top 5 Concerns According to Residents

1. High River water levels overflowing banks and flooding homes located near the River.
2. Erosion of the River banks.
3. Debris blocking street catchbasins.
4. Flooding of street during rainfall.
5. Very few residents mentioned experiencing sewer backups in the recent years.

Improvement Concepts

Main Objectives

- Increase the level of flood protection, and reduce flood risks throughout Rossdale due to:
  - Intense Rainfall
  - High River Water Level
  - Both at the same time
- Provide up to 100 year level of flood protection

Improvement Concepts

Intense Rainfalls

1. Provide additional sewer separation (catchbasin reconnections, new storm sewers and outfalls)

2. Prevent surface drainage from West Rossdale from flowing to Southeast Rossdale (new pond, surface grading modifications)

3. Provide servicing for West Rossdale redevelopment – storm and sanitary sewers

4. Reconnect existing combined sewers currently connected to 97 Avenue trunk to a suitable sewer pipe.

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Improvement Concepts

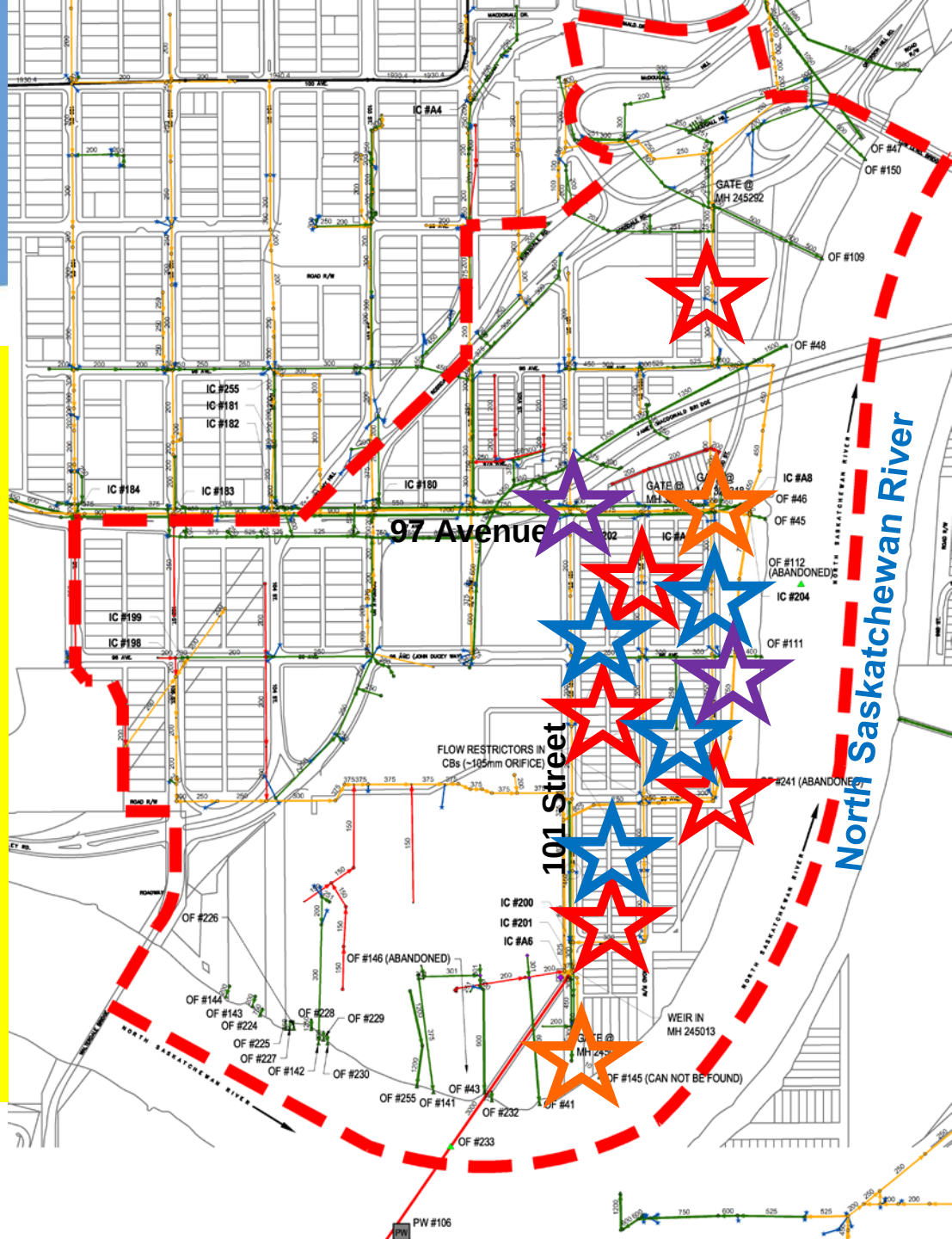
High River Water Level Sewer Backups

1. Prevent River water from entering the combined sewer system via the outfalls (e.g. flap gates at outfalls/interconnections, remove interconnections, remove manual backflow gates)

2. Prevent River overflow from entering into the sewer system via the manholes (manhole sealing)

3. Catchbasin reconnection to storm sewer system (if located in floodplain).

4. Redirect 97 Avenue combined sewer trunk to flow south on 101 Street towards storage tunnel and pump station, while allowing larger flow to overflow into River. Eliminate combined sewer trunk located along River banks.



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Improvement Concepts
High River Water Level – Sewer Backups

Manual Backflow Gate

- Conducted a thorough review of gate closure elevations.

Outfall No.	Gate Closure Elevation	
	Existing Protocol	Proposed Protocol
109 (100 St. / Rossdale Rd.)	617.50 m (1:8yr)	Never Close
145 (south on 101 Street)	615.20 m (1:2yr)	614.76 m (1:1.5yr)
46 (east on 97 Avenue)	615.20 m (1:2yr)	614.81 m (1:1.5yr)
45 (east on 97 Avenue)	617.50 m (1:8yr)	617.19 m (1:6yr)

Outfall is not interconnected with combined sewers anymore (to be confirmed)

Higher water level may cause sewer backups / and would introduce large flows to pump station and storage tunnel

- The City is in the process of updating the Protocol according to these recommendations.

Improvement Concepts
High River Water Level – Surface Floods

- Current Strategy:
  - Flood proofing of homes – by homeowner.
  - City installs sand bags at most vulnerable properties.

- Alternative Solutions:
  - Permanent Flood Barrier (i.e. berm, wall) along River.
  - Temporary Flood Barrier installed days before floods and removed after flood.
    - Flood barrier: Up to 2.3m high, 750m in length.

Improvement Concepts
High River Water Level – Surface Floods

- Alberta Government conducting Flood Study on North Saskatchewan River watershed.
  - Expected completion in 2015.

- Work with the Alberta Government to identify next steps and develop a flood mitigation plan.

Improvement Concepts
Enhanced Communications

- Provide early warning system for the residents when:
  - High River water levels that may cause flooding is forecasted.
  - Backflow gates may be closed, increasing sewer backup flood risks especially when it rains.

- Implement Communication Plan:
  - Email List
  - Community League
  - Street Signage
  - Social Media

Until improvements are in place, what can residents do to prevent flooding?

Physical Improvements:

1. Install **backflow valve on the sanitary service line** to reduce the risk of sewer backups in basement.
   a) Drainage Services has a Backflow Valve Subsidy Program.
2. Ensure **roof leaders** discharge to ground surface.
3. Ensure **lot grading** is sloped away from your home.
4. Install **weeping tiles**, connected to a sump and sump pump.
5. Ensure **sump pump** discharges on ground or into storm sewer.

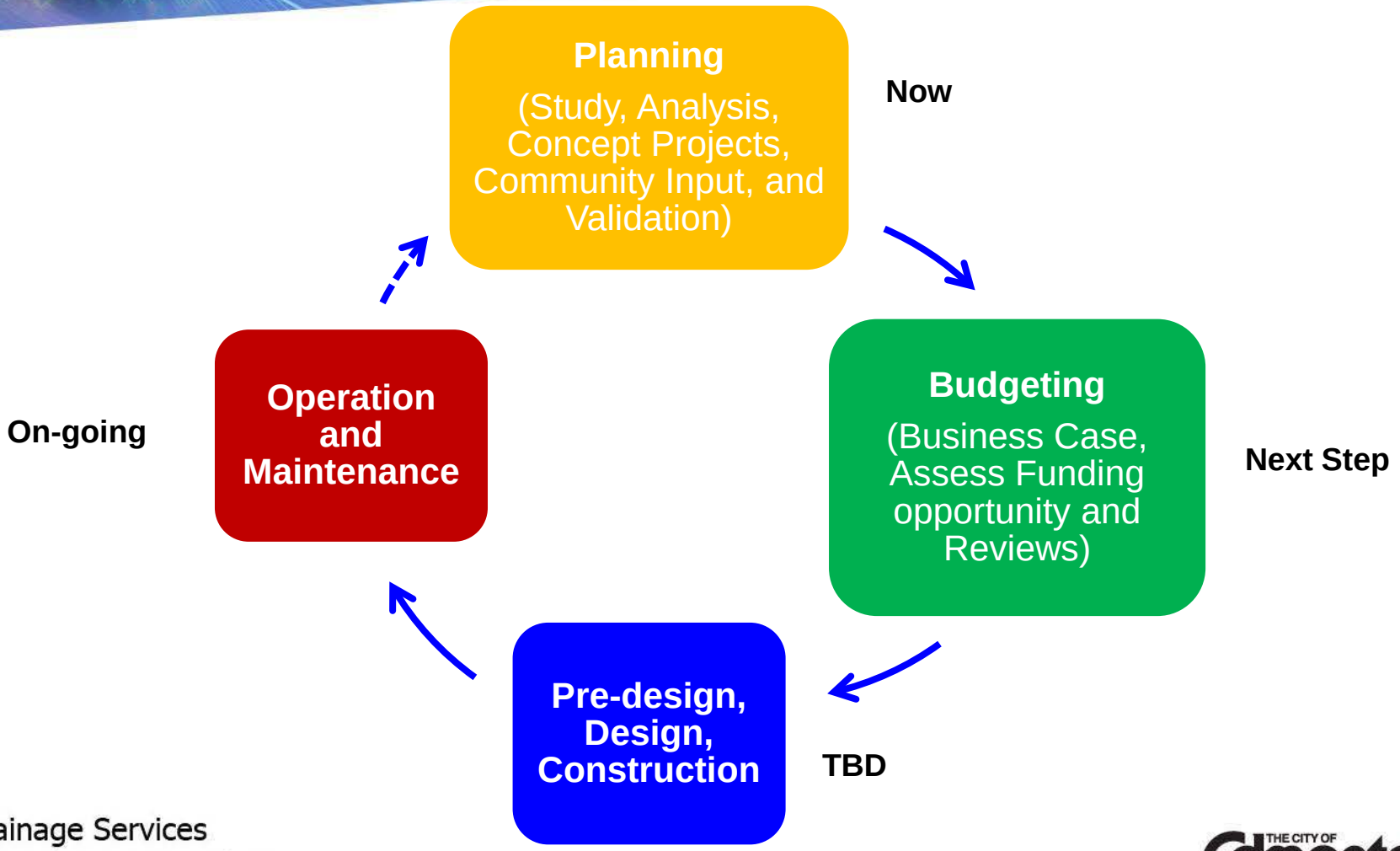
City of Edmonton's Flood Prevention Home Check-Up
*** Free Inspection and Recommendations by Drainage Specialist ***

Until improvements are in place, what can residents do to prevent flooding?

Prior to High River Water Level / Intense Rainfall:

1. Move valuables to high ground (not basement).
2. Ensure street catchbasins are free of debris.
3. Ensure eavestroughs are clean.
4. Park vehicles at safe location:
   a) Not in depressions on the streets.
   b) Not in underground garage.
   c) Not in floodplain.
5. Minimize water usage.

Next Steps


Planning
(Study, Analysis, Concept Projects, Community Input, and Validation)
Now
Budgeting
(Business Case, Assess Funding opportunity and Reviews)
Next Step
Pre-design, Design, Construction
TBD
Operation and Maintenance
On-going

Next Steps

1. Implement immediate improvements:
   a. Update backflow gate operation protocols.
   b. Improve communication during a potential flooding threat from high river levels.
2. Take input, validate and prioritize recommended improvements.
3. Look at how high priority projects can be advanced as quickly as possible.

Next Steps

4. Coordinate planning and work with:
   a. Drainage Services programs including Neighbourhood Renewal Program, Opportunistic Sewer Separation, Flood Mitigation Program and Sewer Upgrading Strategy.
   b. Other City departments like Transportation, Sustainable Development.
   c. Other organizations like Community League.
   d. Redevelopment Plans such as West Rossdale and North Rossdale.

Next Steps

5. Follow up with provincial North Saskatchewan River Basin Study.
6. Support homeowners via Flood Prevention Home Check-up and subsidies.

Questions
Comments