



THE RED RIVER FLOODWAY EXPANSION PROJECT

Presentation to APEGM
September 21, 2005





OUTLINE

- Reason for the Project
- Design Update
- Contribution of Engineers and Scientists
- Environmental Approval Process
- Construction Status
- Project Budget



REASON FOR THE PROJECT



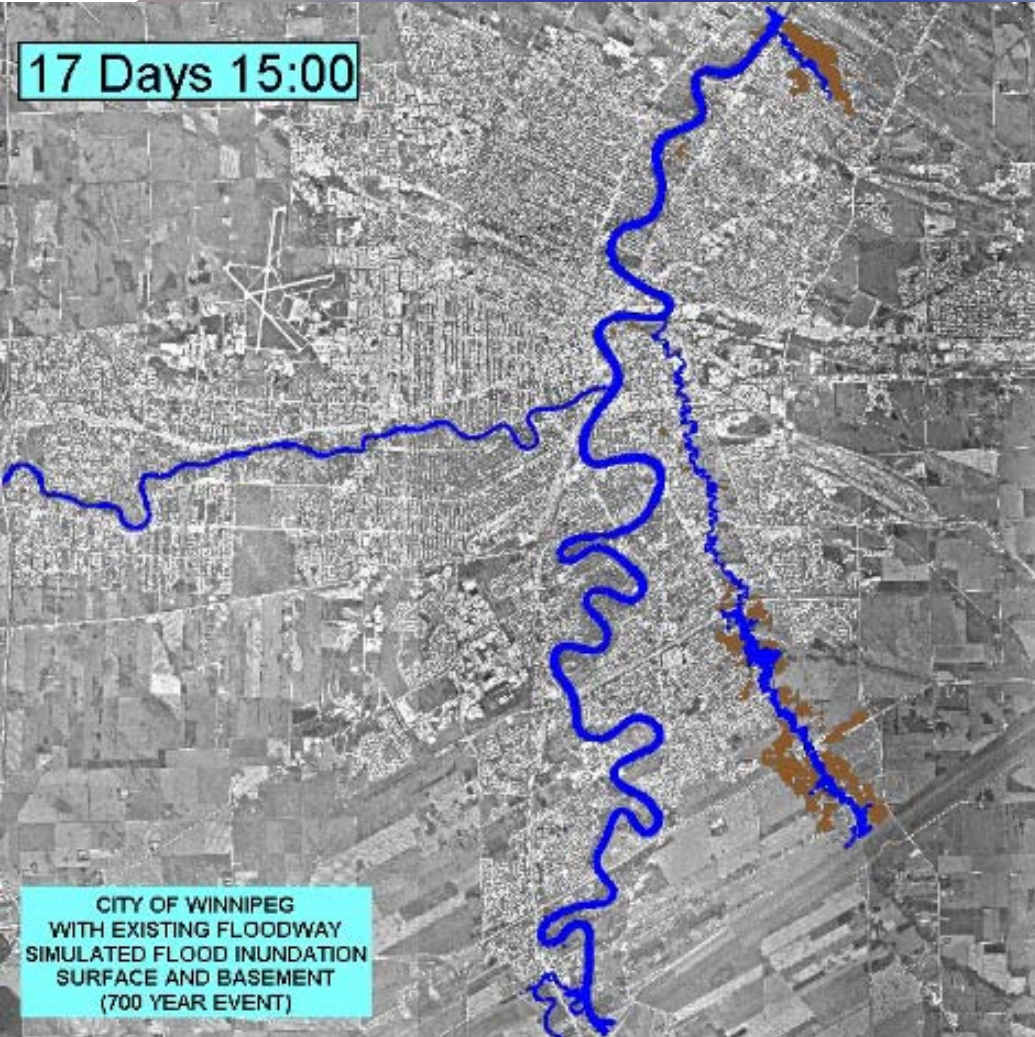
Benefits of the Floodway Expansion Project

- Provide protection against a 1 in 700 year flood
- Protect 450,000 residents (140,000 homes) in Winnipeg, East St. Paul and West St. Paul
- Protect over 8,000 businesses
- Protect against in excess of \$12 billion in damages from a 700 year flood
- Protect against significant environmental devastation
- Provide construction employment
- Improve infrastructure
- Provide economic and recreational opportunities



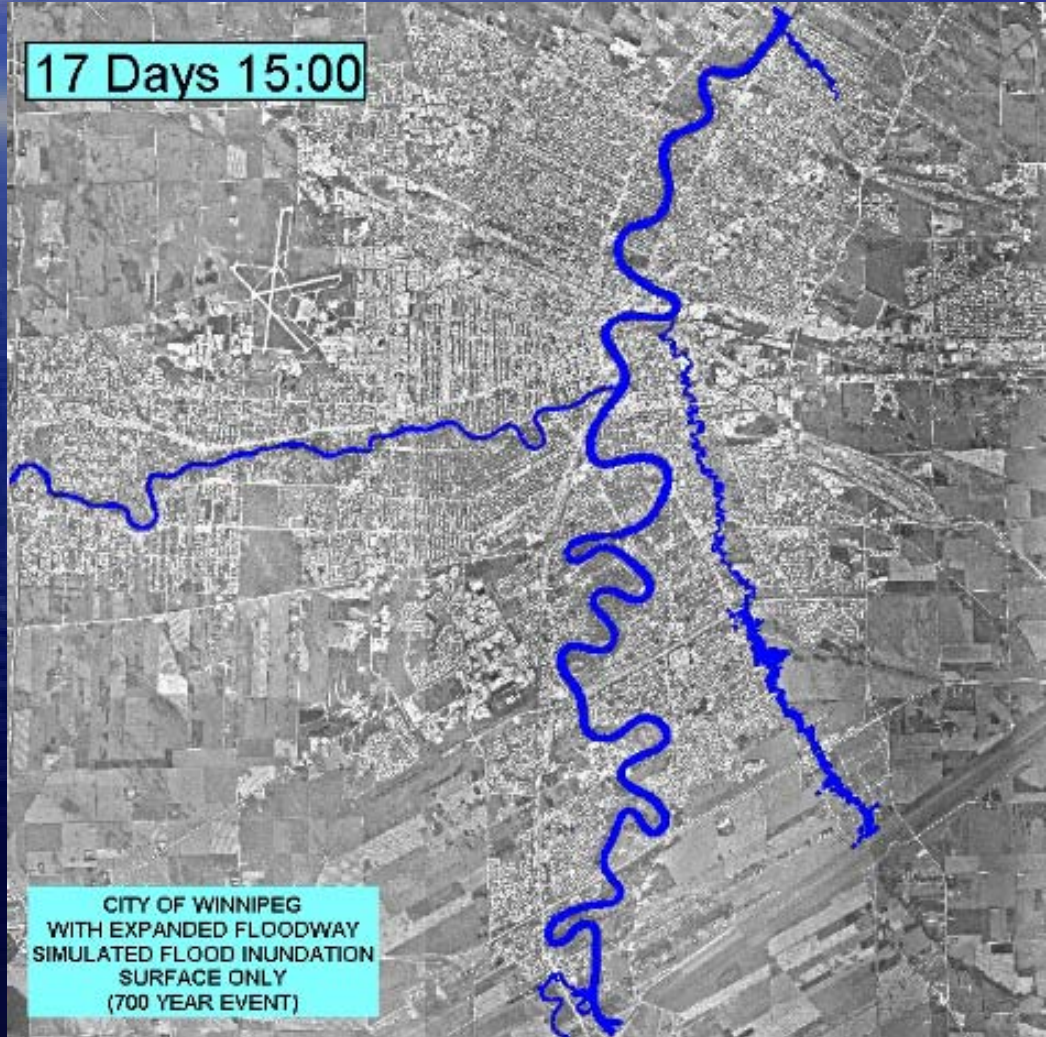
2D Simulation

17 Days 15:00



CITY OF WINNIPEG
WITH EXISTING FLOODWAY
SIMULATED FLOOD INUNDATION
SURFACE AND BASEMENT
(700 YEAR EVENT)

17 Days 15:00

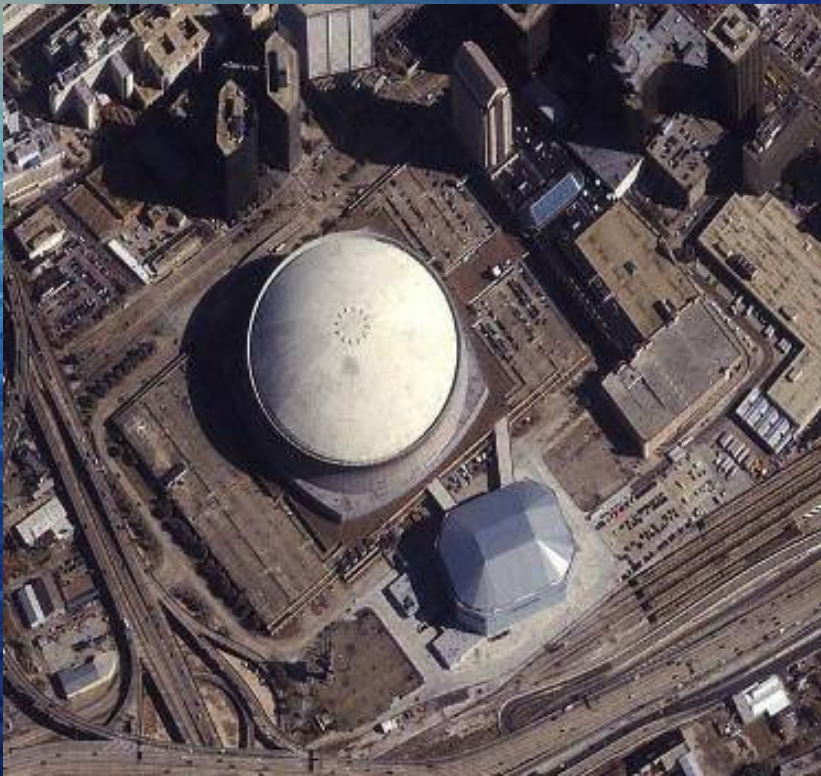


CITY OF WINNIPEG
WITH EXPANDED FLOODWAY
SIMULATED FLOOD INUNDATION
SURFACE ONLY
(700 YEAR EVENT)



Real Life Reminder

- New Orleans is currently experiencing the impact of overland flooding resulting from Hurricane Katrina





DESIGN UPDATE

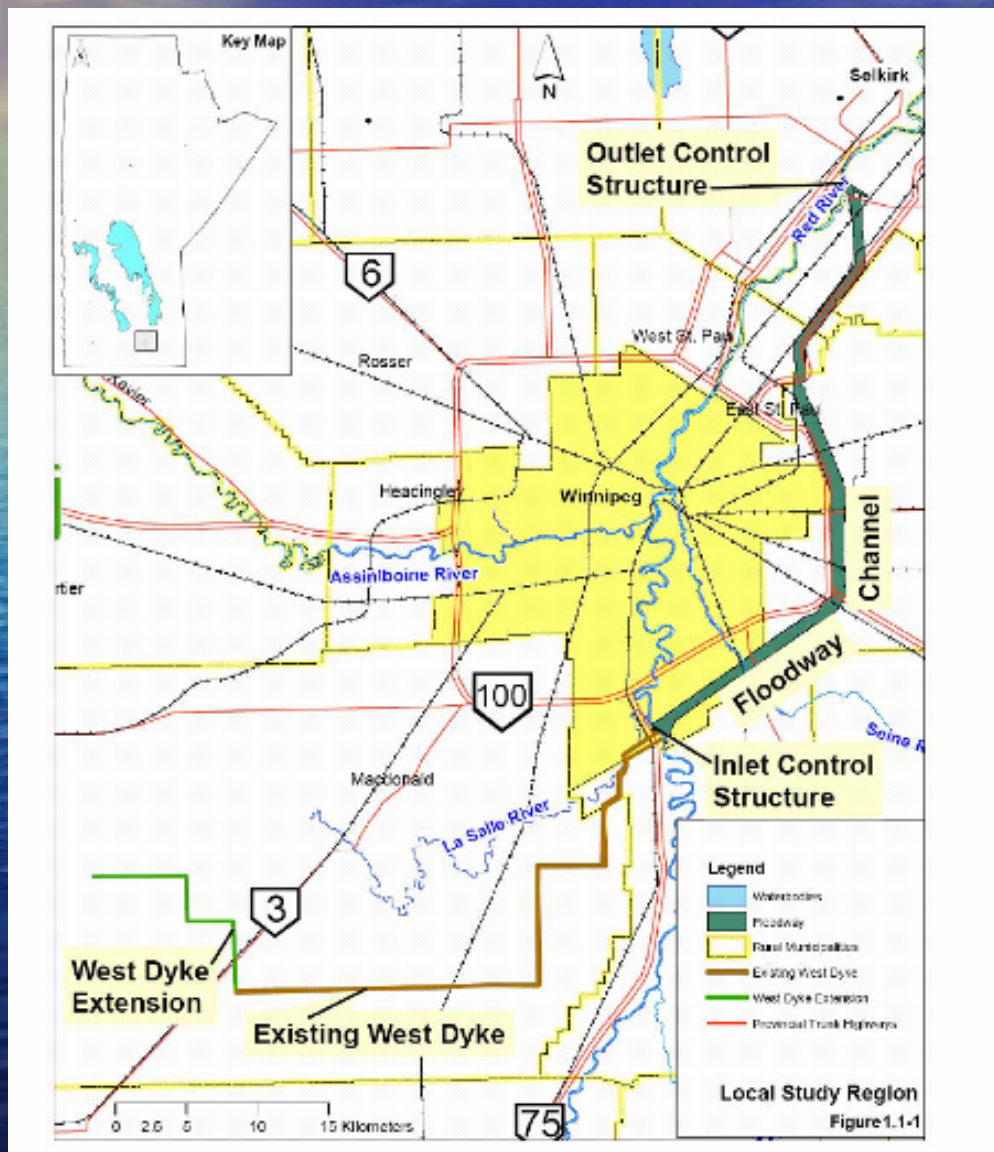


Expansion Design

- Pre-design data collection started Spring 2003
- Actual pre-design started December 2003
- Pre-design completed July 2004
- Detailed design started Fall 2004 (on-going)



Expansion Components



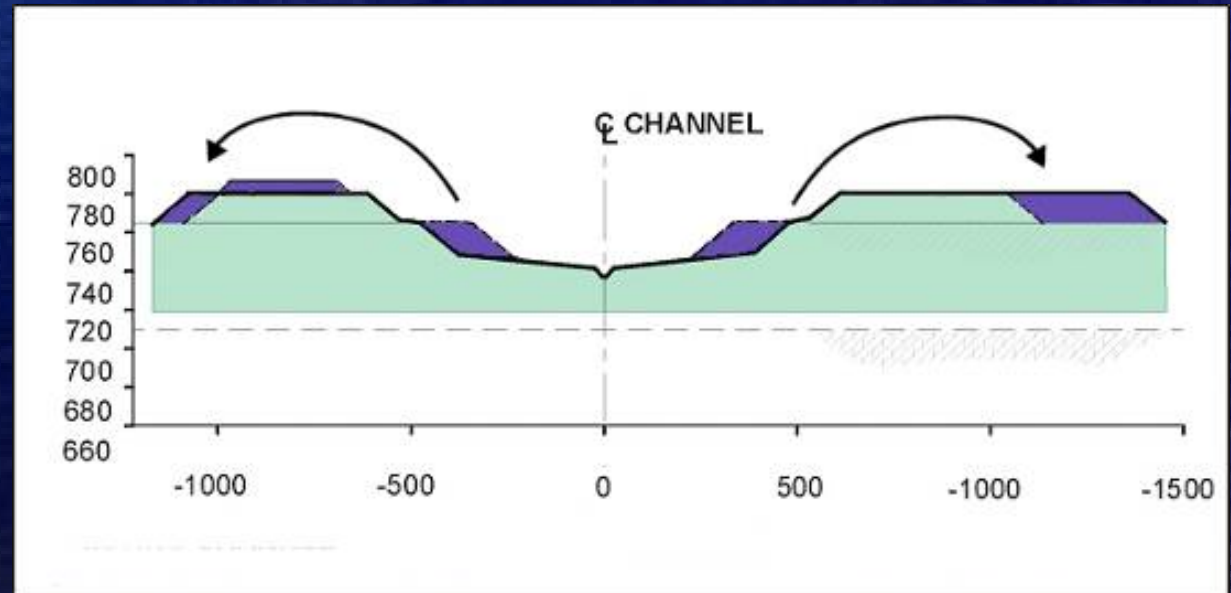
- 1 Floodway Channel Expansion:** Widening channel to handle larger floods than 1997 Flood.
- 2 Inlet Control Structure:** Improvements, Enhanced Safety Features.
- 3 Outlet Structure:** Expansion and design improvements, erosion control
- 4 Channel Crossings:** Drainage Systems, Bridges, Utilities.
- 5 West Dyke:** Extension and Enhancement of Existing West Dyke System

5 Main Components of Floodway Expansion Proposal



Channel Enlargement

- Increase flow capacity from 1,700 to 4,000 cms (60,000 to 140,000 cfs)
- Widening – No deepening
- 21,000,000 m³ (27,500,000 yd³)
- No additional land to spoil excavated material





Improvements to the Inlet Structure



- Enhances to fire protection system
- Enhances to security
- Upgrades to hydraulic systems
- Erosion control measures to protect the embankments



Enlarged Outlet Structure



- Widen outlet structure
- Widen outlet channel
- Energy Dissipation measures
- Erosion Protection on the West Bank of Red River



Upgrade of Highway and Railway Bridges



Highway 1 & CNR Sprague Subdivision

- 12 Bridges replaced and upgraded (6 Highway / 6 Railway Bridges)
- Bridges Widened and Lengthened
- Enhanced Safety Measures
- 60,000 people use highway bridges per day



Other Expansion Components

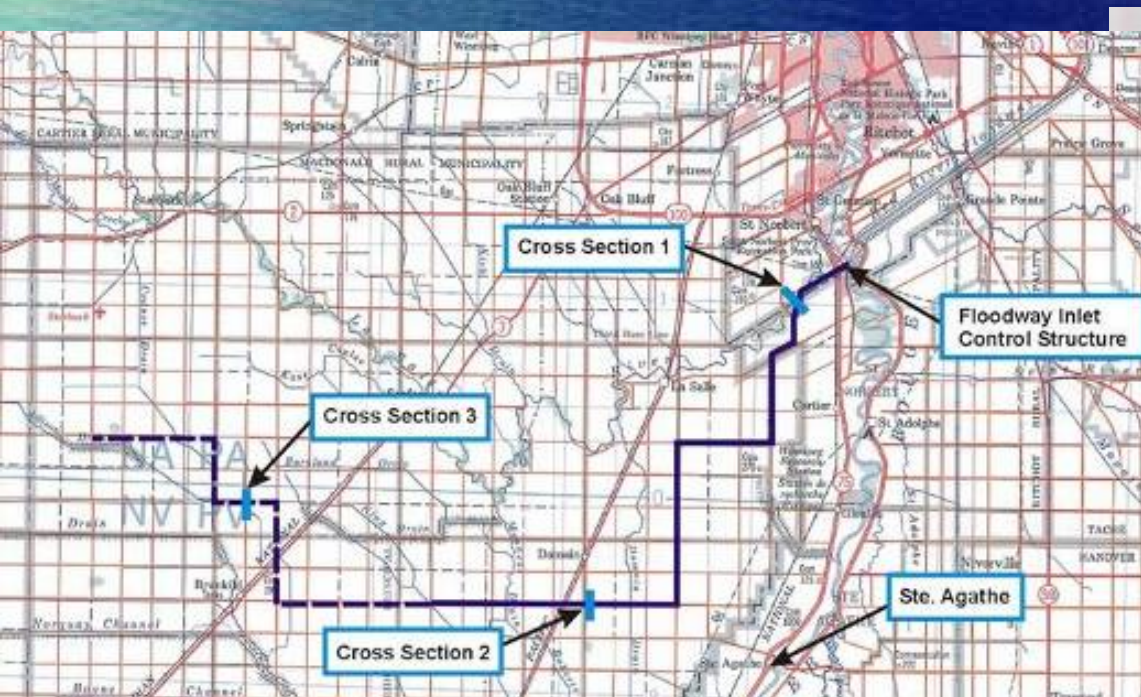
- Overhead Hydro Lines
- Telecommunication Cables
- Gas and Oil Pipelines
- Water mains
- City Aqueducts
- Seine River Siphon
- Drainage Structures





Expansion of the West Dyke

- Raising and extending
- Increasing freeboard up to 2 metres for 100 year wind





CONTRIBUTION OF ENGINEERS AND SCIENTISTS



Contributions of Engineers and Scientists

- Over 250 People Have Contributed Technically To Date
 - 3 Levels of Government
 - Consulting Community
 - Academia
 - The Public



Government

- Involvement as:
 - Project Proponents and Financial Sponsors
 - Technical Directors, Advisors, Project Managers
 - Regulators



Federal Government Departments

- Infrastructure Canada
- Transport Canada
- Fisheries and Oceans Canada
- Canadian Environmental Assessment Agency



Provincial Government

- MFA (a Crown Corporation)
- Province of Manitoba
 - Conservation
 - Water Stewardship
 - Transportation & Government Services



Municipal Government

- City of Winnipeg
 - Water & Waste Department
 - Public Works Department
- Rural Municipalities
 - Morris
 - Macdonald
 - Ritchot
 - Tache
 - Springfield
 - East St. Paul
 - West St. Paul
 - St. Andrews
 - St. Clements
 - Selkirk



Consulting Community

- Consultant firms



- Others





Engineering Disciplines Involved

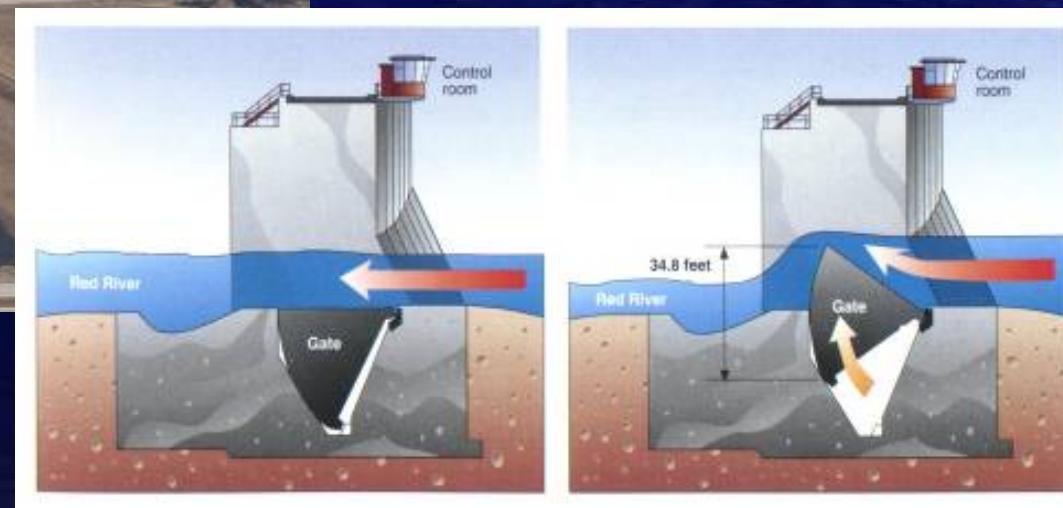
- Hydraulics/Fluid Mechanics
- Hydrology
- Geotechnical and Hydrogeology
- Structural
- Transportation
- Electrical
- Mechanical
- Municipal/Utilities
- Biology/Environmental Sciences



Hydraulics/Fluid Mechanics, Hydrology

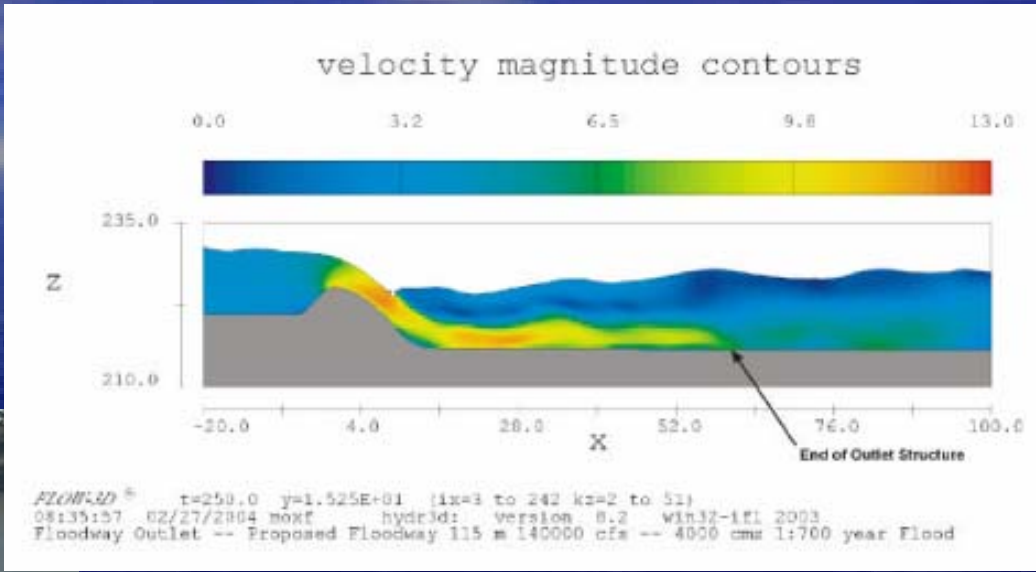


- Inlet Control Structure - *Dam Safety Analysis*





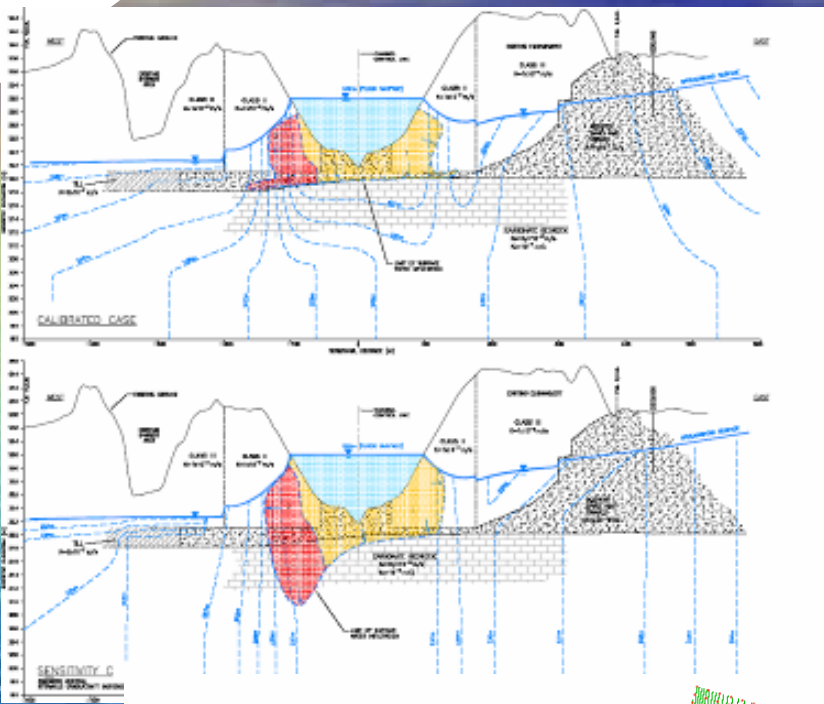
Hydraulics/Fluid Mechanics, Hydrology



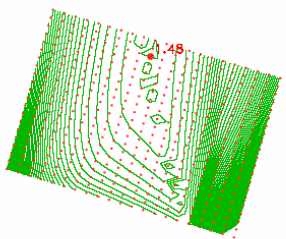
- Outlet Control Structure – *Energy Dissipation Improvements*



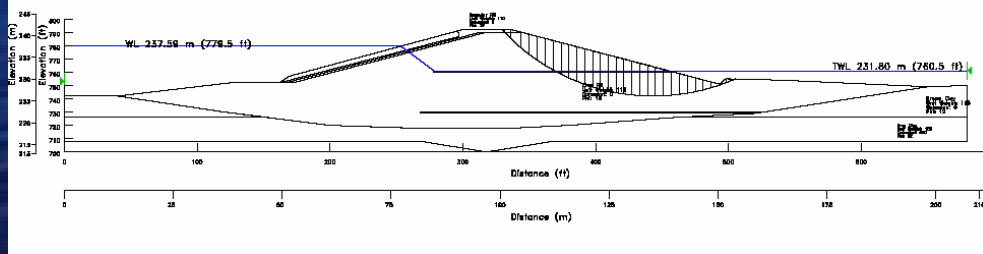
Geotechnical and Hydrogeology



Groundwater Modelling



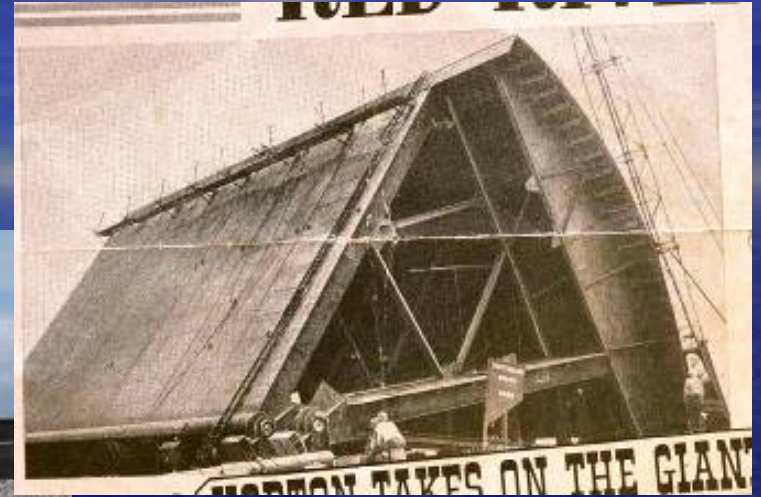
Slope Stability Analyses





Structural

- Structures/Gates
- Bridges



- *Replacement*
- *Retrofit/Rehabilitation*



Transportation

- *Road and Railway Code and Safety Improvements*





Electrical & Mechanical



- *Operator Servo Motors & Hydraulic Systems*



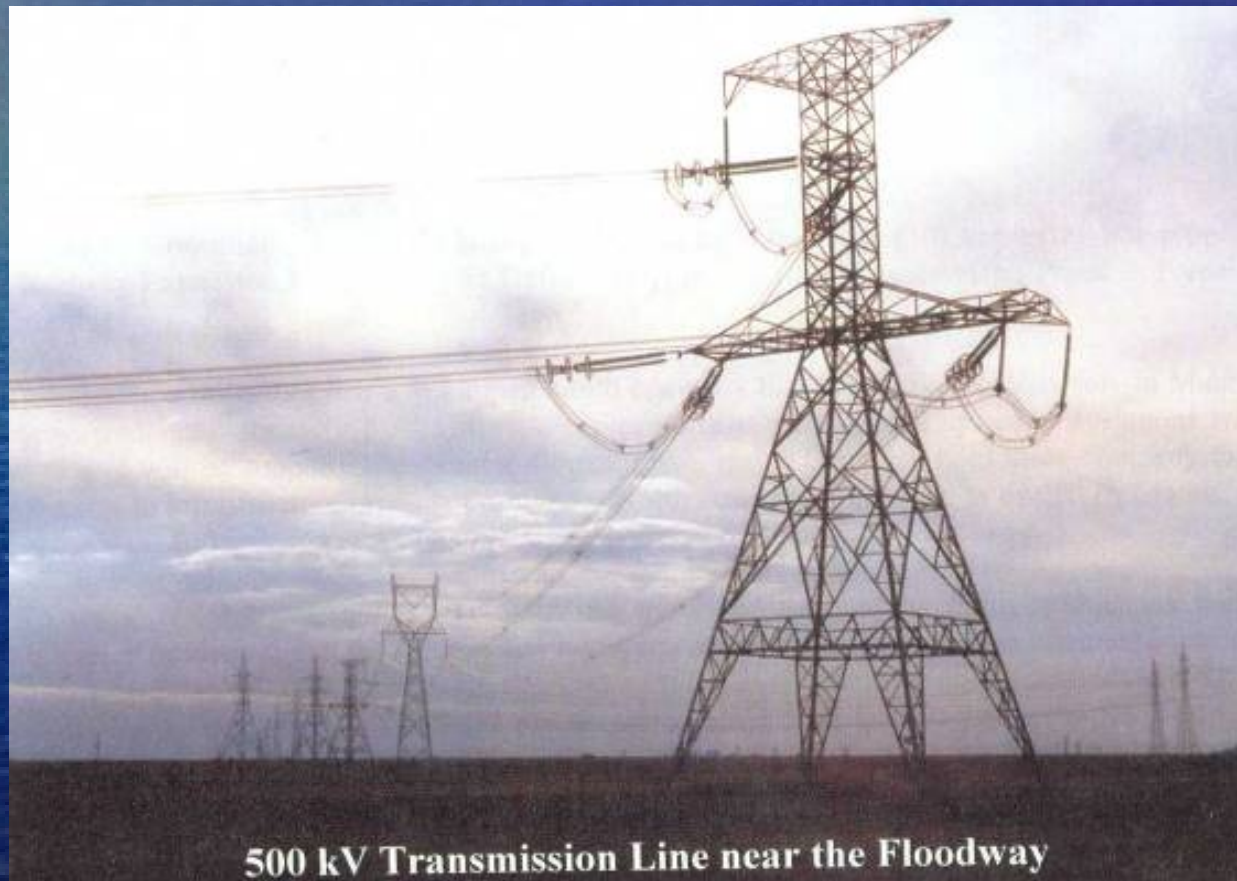
- *Controls & Power Supply*



- *Gate Trunions*



Municipal and Utilities



500 kV Transmission Line near the Floodway



Biology and Environmental Sciences

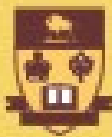
- Physical Environment
- Terrestrial and Aquatic Environment
- Socio-Economic Environment
- Public Consultation





Contributions of the U of M

- Outlet Model
 - Physical Construction
 - Analysis
 - Recommendations for Design Modification



UNIVERSITY
OF MANITOBA

Civil Engineering
Hydraulics Research and
Testing Facility







Contributions of the U of M

- Slope Stability Research Proposal
 - Data collection
 - Analysis
 - Recommendations for Design Modification

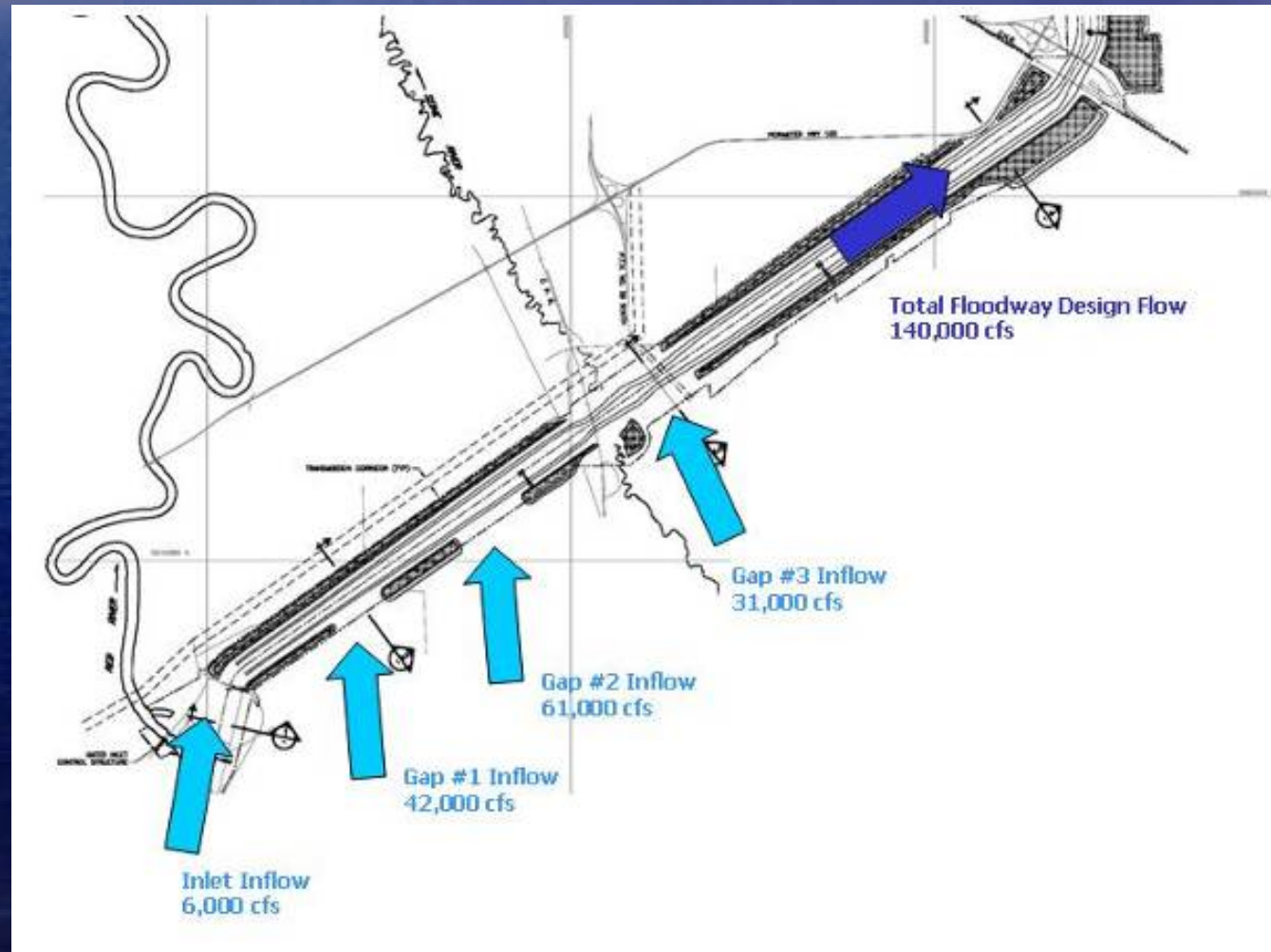


Civil Engineering
Geotechnical Department



Contributions of the CHC (NRC)

- TELEMAC 2D Numerical Model
 - Analysis
 - Recommendations for Design Modification





ENVIRONMENTAL APPROVAL PROCESS



Environmental Review Process

- Before construction could begin, the project required environmental approvals from Manitoba and Canada
- Under the *Canada-Manitoba Agreement on Environmental Assessment Co-operation*, Canada and Manitoba agreed that both governments will participate in a co-operative review of the project.



Environmental Review Process

- Public Consultation
 - Since January 2004, MFA has been listening to Manitobans about the project.
 - 4 Rounds of consultation – 3 of which were held prior to the filing of the EIS
 - More than 300 hours of stakeholder meetings
 - Approximately 20 community meetings and information sessions
 - Distribution of approximately 100,000 newsletters
 - Over 100,000 hits to MFA website



Environmental Review Process

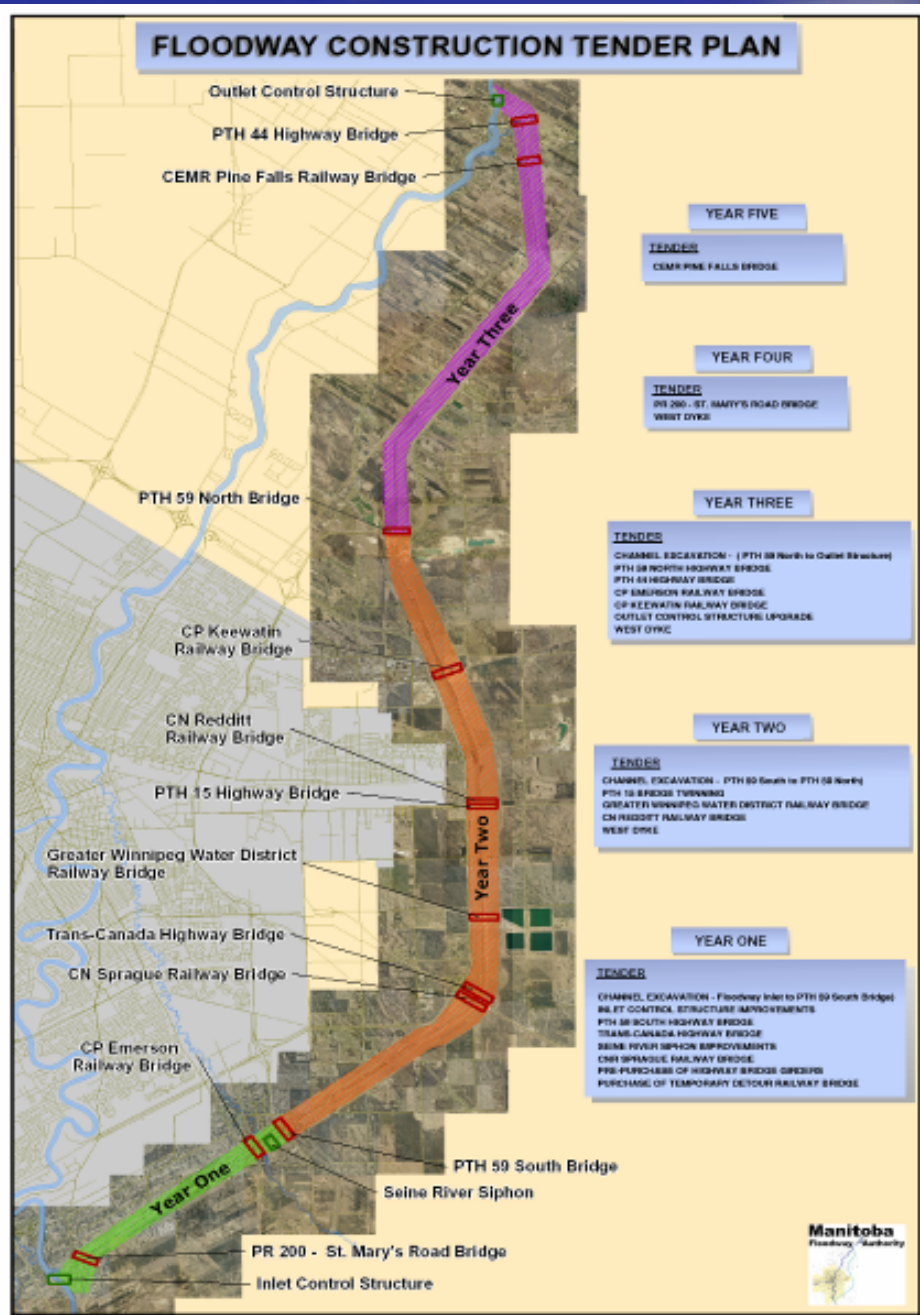
- Submitted EIS in August 2004
- Submitted EIS Supplementary Filing in November 2004
- Submitted response to CEC Information Requests in December 2004
- Manitoba Clean Environment Commission hearings mid-February to mid-March 2005
- Submitted additional information to Federal agencies in April 2005
- **July 8, 2005, MFA received**
 - **Federal approval**
 - **Provincial license**



CONSTRUCTION STATUS



5 - YEAR CONSTRUCTION TENDER SCHEDULE





Awarded Contracts

- First excavation contract awarded to Strilkiwski Contracting and Nelson House Forest Industries (Joint Venture) – Grande Pointe Embankment Gap - \$1.4 million





Awarded Contracts

- Highway bridge girders contract awarded to Lafarge Canada Inc. - \$20.9 million





Awarded Contracts

- Highway detour barriers contract awarded to Barkman Concrete Ltd. - \$400,000





Awarded Contracts

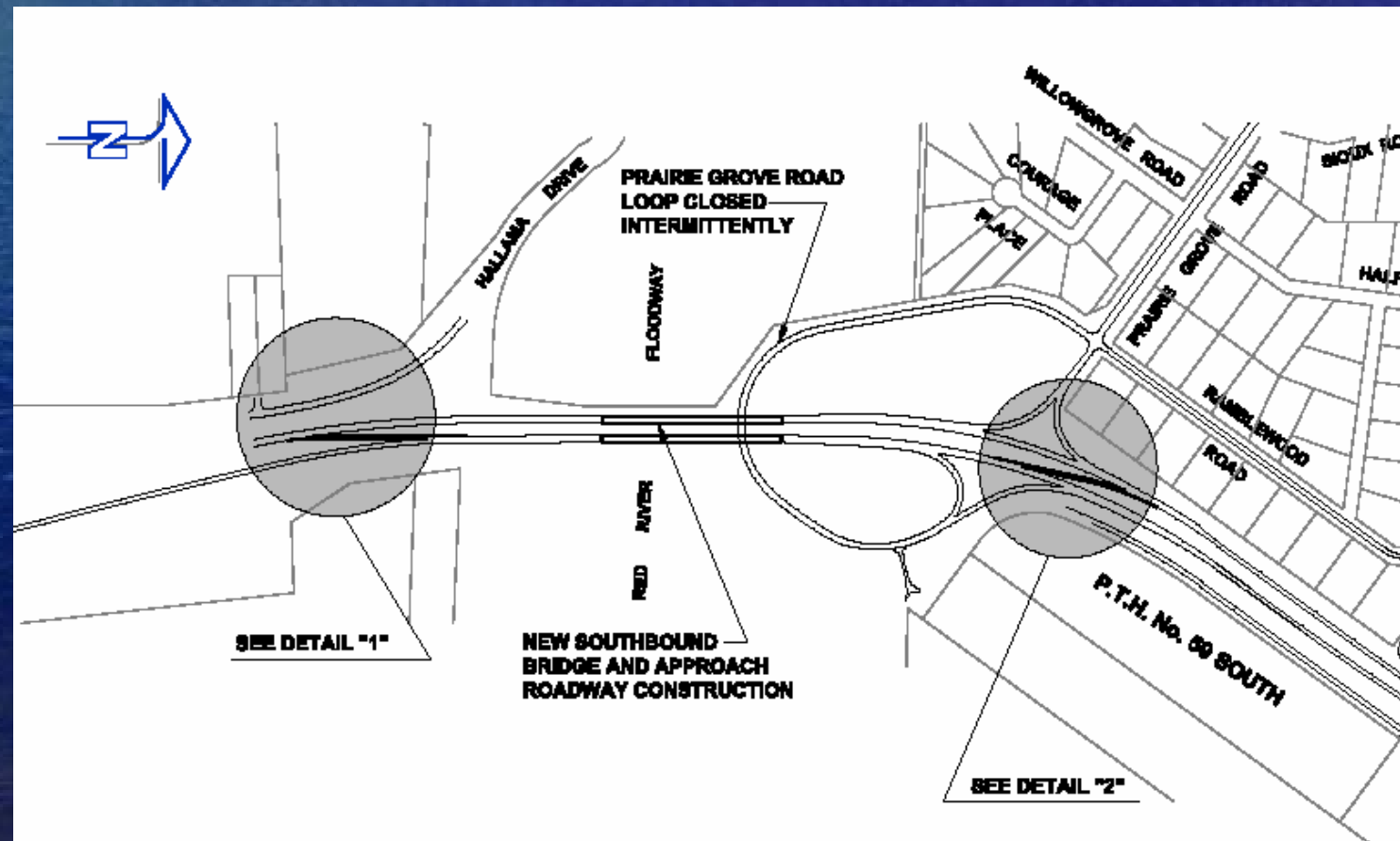
- Manitoba Hydro gas main awarded to Crown Utilities (sub: Unger) - \$1.1 million





Awarded Contracts

- PTH59 South Detour Construction awarded to Strilkiwski Contracting and Nelson House Forest Industries (Joint Venture) - \$600,000





Pending Contract Awards

- PTH 59 South Bridge (closed September 13, 2005)
- Trans-Canada Highway East Bridge
(Closing October 4, 2005)
- Second excavation contract – first channel widening
(Closing October 6, 2005)
- Other utility crossings



Near Future Tenders

- CNR Sprague Bridge
- Railway bridge temporary detour steel girders



PROJECT BUDGET



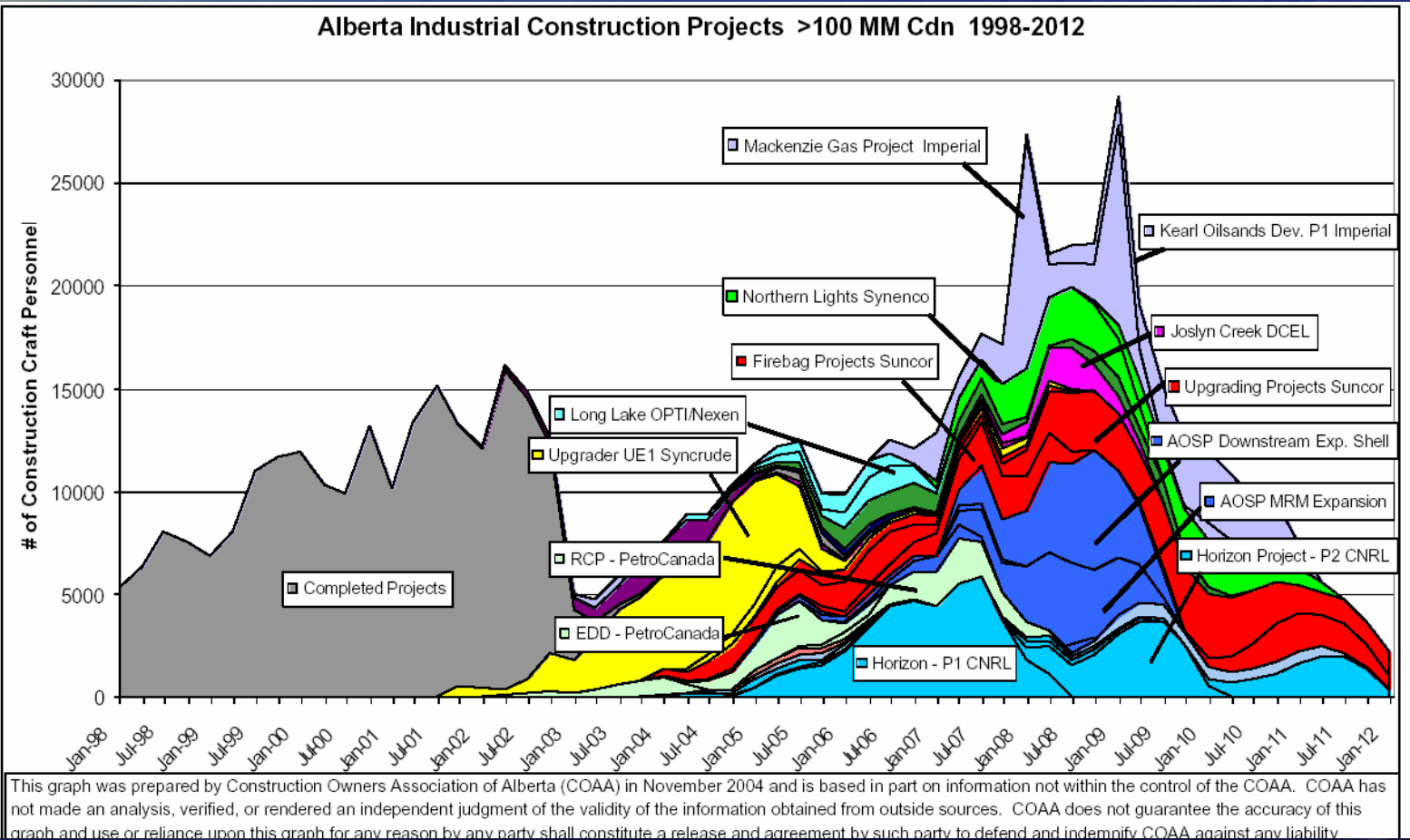
Project Budget Update

- Project budget (\$665 million)
- To date, \$240 million committed to project by Canada and Manitoba
- Canada and Manitoba currently in discussions to formally conclude full funding agreement



Cost Uncertainties

- Funding delays and uncertain fuel, concrete & steel prices and potential labour shortages could impact final budget





QUESTIONS ???

