Driving Business Value Across the Enterprise

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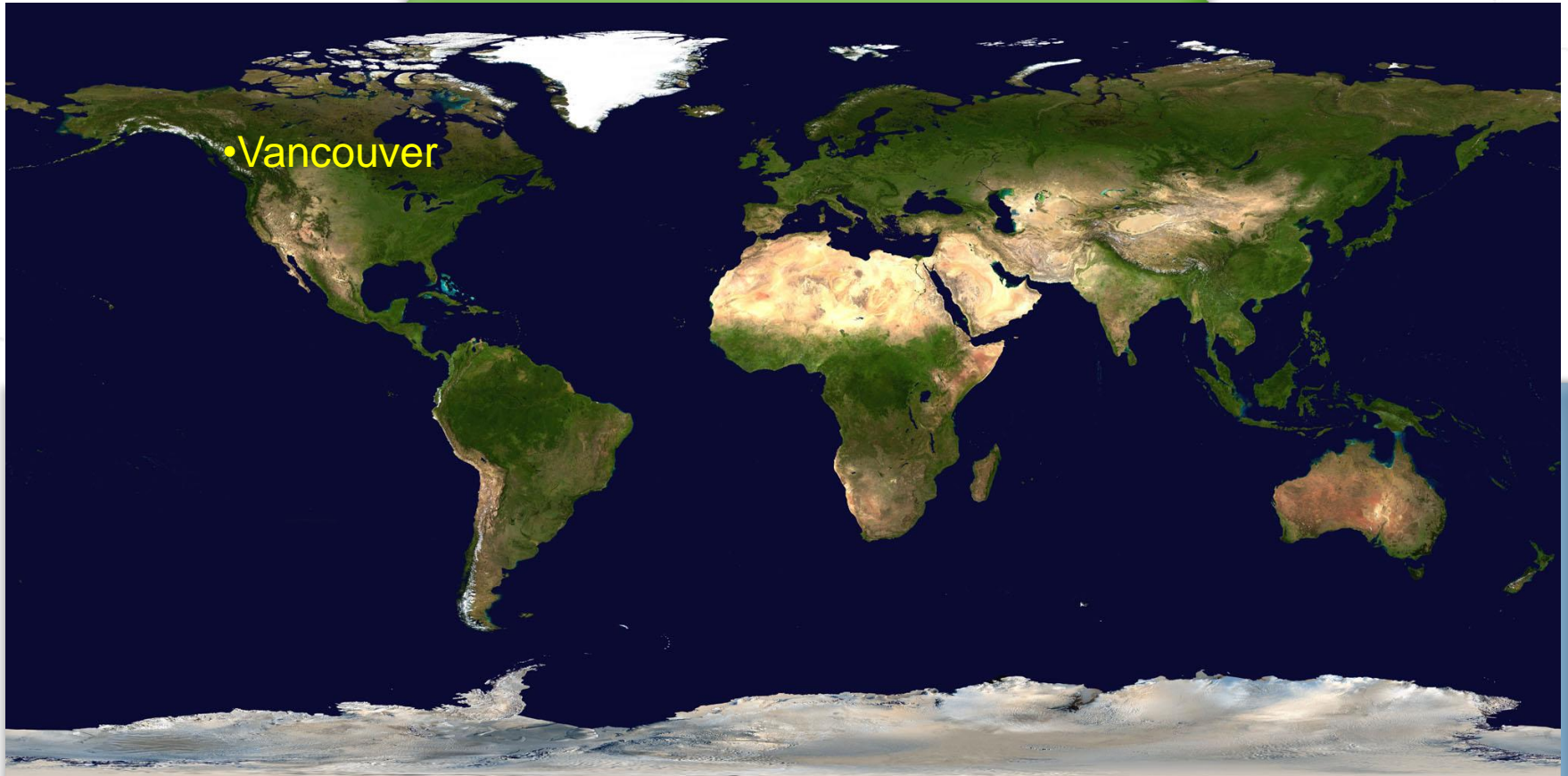gwong@gvrd.bc.ca

Agenda

1. Background

2. Business Challenges

3. Solutions and Benefits

4. Future Plans

5. Take-Aways

6. Q & A

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Background

- Greater Vancouver Regional District (GVRD)

•Vancouver

Building a sustainable region

3600 affordable housing units

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Business Challenges

1. Disparate Systems and Data

2. Obsolete Systems

3. Ever Changing Environments

4. Accessible Information and Self Service

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Disparate Systems and Data

Challenge

- Multiple User Interfaces
- Disparate Technologies
- Users required to learn different systems
- Data Redundancy
- Costly Support
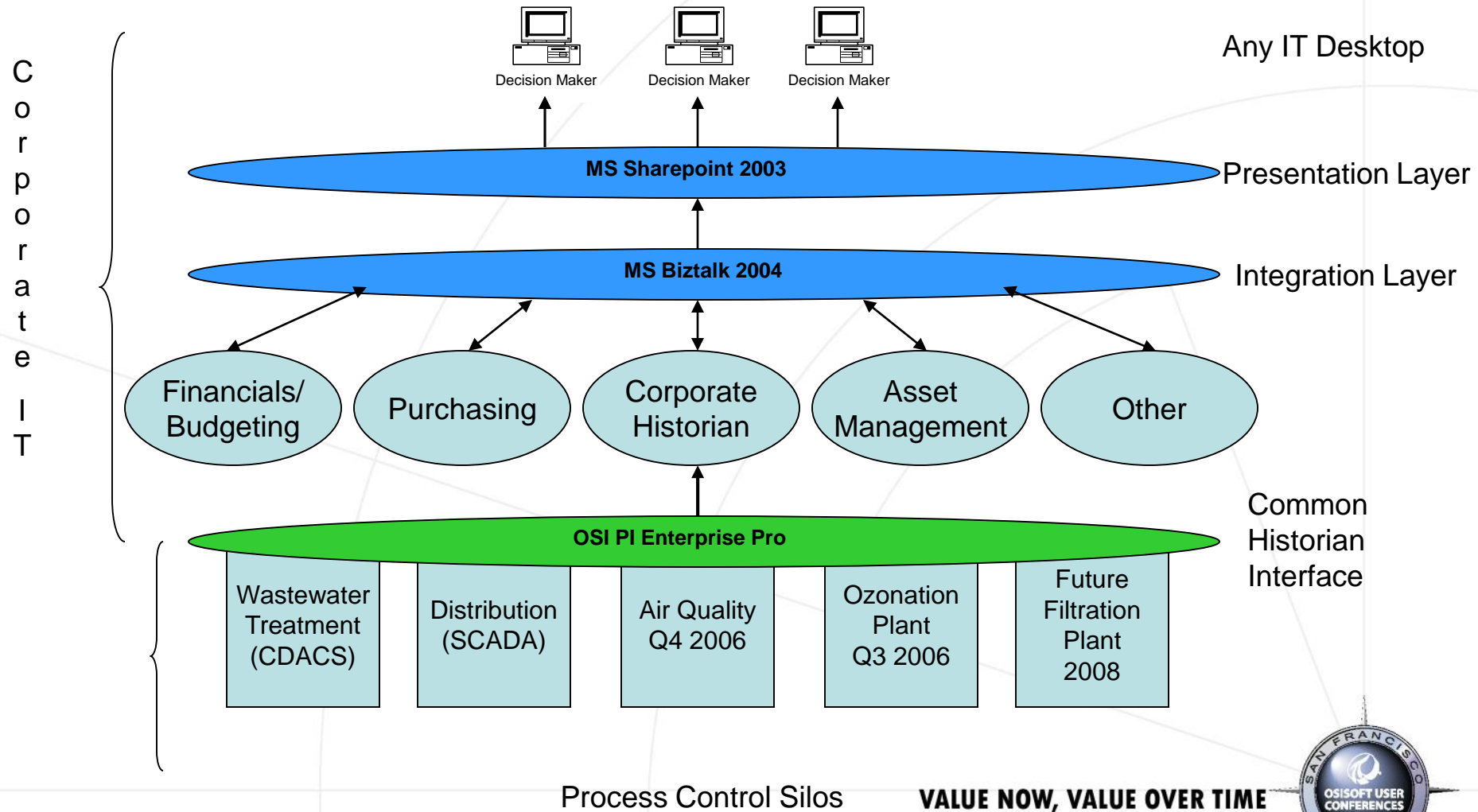- Enterprise Integration Issues

Solution

- One Corporate 250,000 tag OSI PI Enterprise Pro V3.4 server for all control system data
- Common User Interface using ProcessBook, DataLink, and RTWebParts
- Common web portal using Sharepoint across the organizaton
- MS Biztalk and PI SDK for data and application integration

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Production Architecture

Corporate IT

Any IT Desktop

Decision Maker   Decision Maker   Decision Maker

MS Sharepoint 2003 — Presentation Layer

MS Biztalk 2004 — Integration Layer

Financials/ Budgeting

Purchasing

Corporate Historian

Asset Management

Other

OSI PI Enterprise Pro

Common Historian Interface

Wastewater Treatment (CDACS)

Distribution (SCADA)

Air Quality Q4 2006

Ozonation Plant Q3 2006

Future Filtration Plant 2008

Process Control Silos

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Benefits

- Do not need to standardize control systems or other disparate systems

- Cost savings in the hundreds of thousands

- People know where and how to find information

- Learn one system using familiar tools

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Obsolete Systems

Challenge

- Eight unreliable, proprietary Historians across four Wastewater Treatment Plants (WWTPs)

- Imminent failure of an obsolete and cumbersome billing system that generates $165 million / yr in revenue from Water sales and Wastewater treatment

- Two month delay before Finance received preliminary billing information

- $100,000+ / yr support and maintenance

Solution

- Replaced unreliable Historians with PI redundant pair buffer nodes at each of four WWTPs sending data back to single Corporate OSI PI Server

- Corporate Historian Reporting and Information Systems (Codename CHRIS) - Based upon PI Enterprise, PI SDK, .Net, and MS Office, re-wrote the entire billing application

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Benefits

- Removing / converting 8 obsolete, proprietary Historian licenses for immediate savings $285,000 on licensing

- 100+GB of data in Sybase to 6GB in OSI PI

- Finance receives near real time billing information for forecasting

- More accurate and faster billing

- Support and maintenance costs projected to be reduced by 70%

- QA/QC on data with audit trail

- Reliable, supportable, cost effective, and intuitive applications that meet today's and future business needs

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CHRIS QA/QC Screen

CHRIS Admin Screen

Utilities Consumption Report

- Daily analysis for power generation / consumption

Ever Changing Environments

Challenge

- SCADA system to be replaced by 2007/2008 – Data continuity for water distribution and wastewater collection

- Water Operations Optimization – simulations, forecasting, and predictive modeling requiring operational and process data

- New Water Filtration Plant online in 2008 – Up to 40,000 new tags

- MS Office System 2007 pilot – portal and desktop evolving

Solution

- OSI PI Enterprise Corporate Server will be able to collect from new control systems

- All control system data resides in OSI PI Enterprise Server and is available for existing and future modeling and forecasting requirements

- CHRIS application built upon PI SDK is written in .Net 2.0, C#, and SQL 2005

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Benefits

- Scalable systems that are future proof

- Common interface through CHRIS, RtWebParts, DataLink, or ProcessBook

- Keeping an agile environment

- As new control systems are implemented, users continue receiving information they need to make better business decisions

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Accessibility and Self Service

Challenge

- How do we increase ROI further?
- Training and support increases as user demand increases
- Are the right people getting the right information at the right time?

Solution

- Results oriented, no fanfare
- Training: OSI on-site sessions, train the trainers model, and computer based training
- RtWebParts in production with SVG viewer on all 1200+ desktops
- DataLink and ProcessBook on request

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Benefits

- OSI PI is saving tax dollars, protecting the environment, and increasing safety

- Improved quality of life in the region

- Storm Sewer Overflow Predictor

- Iona Island Overflow Predictor

- Dam Monitoring System

- Self service – people are receiving the information required to make decisions

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Storm Sewer Overflow Predictor

Before PI:

- Data not available

- Could only view data on one SCADA console

- Data and trends could not be analyzed (eg. No Excel support)

- On the North Shore of Vancouver, overflowing storm sewers caused flooding in residential basements. The GVRD would receive calls after the overflow event – too late!

With PI:

- We now get data quickly, easily, and in real time

- Allows us to be very creative and efficient with what we can do with the data

- This is how the Storm Sewer Overflow (SSO) predictor was born

- Through DataLink, current flow data in Excel is compared to historical data to predict the probability of an overflow. The Spreadsheet is then stored as html files and made available on the Intranet. Now, no more overflows.

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SSO Predictor
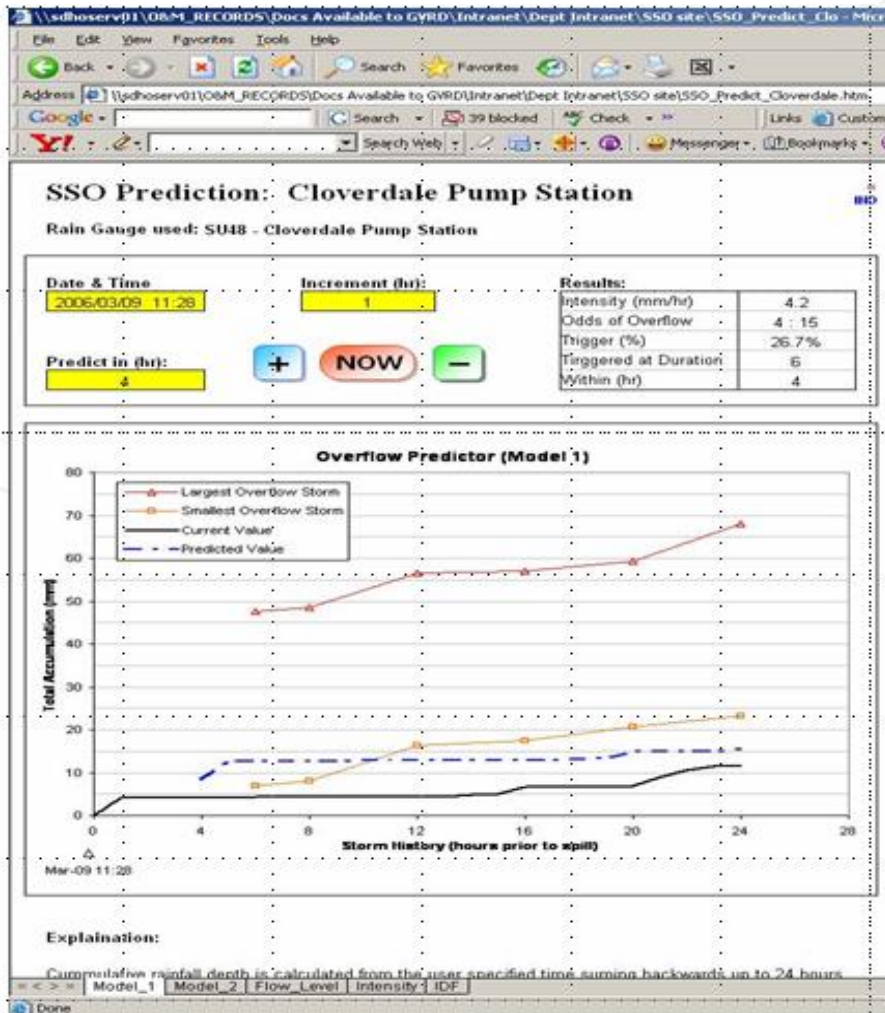
- If the website shows a high probability of overflow, GVRD crews can be sent out to open valves to prevent the overflow and flooded basements ($$$)!

- Marilyn Towill – "I've been monitoring the SSO Predictor and it gave me some comfort through the rainy holiday season knowing that no overflow was expected."

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Wastewater Overflow Predictor
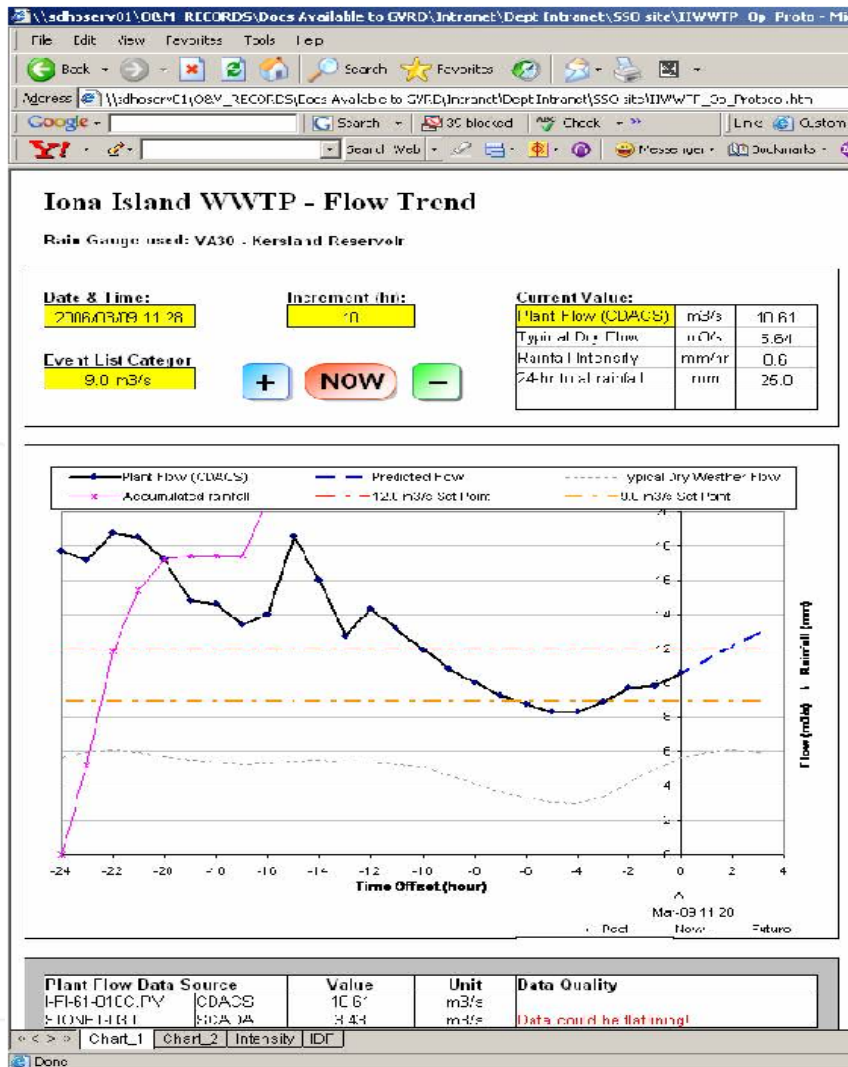
- If the wet well will exceed its safety limit, operators can drive pumps harder to keep the wet well at safe levels. This prevents raw sewage overflows, damage to the environment, and costs to the GVRD in fines.

- Up to $1,000,000 per violation

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Dam Monitoring

- GVRD dams are monitored for safe levels of flows and pressures

- Alarming is a challenge since alarm limits are not set points but instead are equations based on a lake level

- Currently the control system cannot handle equations for alarm limits without custom programming

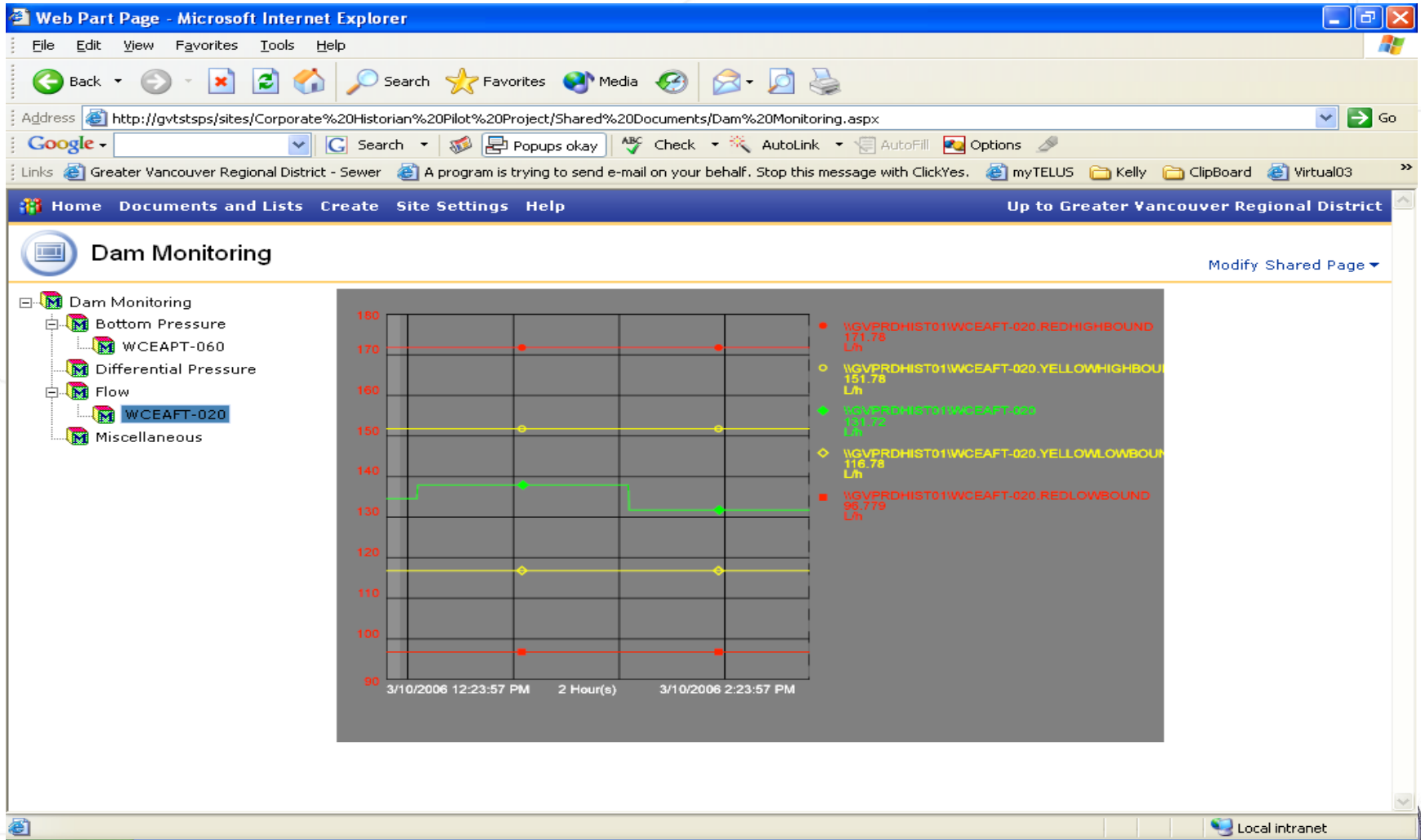**VALUE NOW, VALUE OVER TIME**

What's The Dam Solution?

- Calculated tags used for alarm limits

- Allows alarm limit history to be stored and trended along side monitored tags

- Tags are monitored by an e-mail program. E-mails are sent when alarm limits are breached.

- RtTreeView and RtTrend used in SharePoint for displaying alarm data

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RtWebParts Monitoring

Future Plans

- Continue Roadmap from 2004

- Ozonation Plant Information

- Air Quality Monitoring Information

- Water Filtration Plant Information

- More KPIs and reporting through Sharepoint / RtWebParts

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Take-Aways

Roadmap – vision backed by facts and expertise

Value – cost effective solutions that meet business needs

Momentum – continue to build upon your successes

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Q & A

"Keep the momentum going!"

Tom Heath
VP, Operations and Maintenance
GVRD

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