

Initial Infiltration/Inflow (I/I) Control Projects

King County, Washington



Engineering & Planning Subcommittee

November 14, 2007

Agenda

-  Introductions
-  Recap Initial I/I Project Purpose and Selection
-  Project Status and Schedule
-  SSES Progress Report
-  Predesign Approach
-  Flow Monitoring Report
-  Next Steps

Executive's Recommended I/I Control Program

-  Approved by Council – May 2006
-  Program Recommendations for I/I Reduction:
 - Implement 2-3 Initial Projects
 - Work on private property where called for
 - KC to fund I/I projects from funds set aside for CSI projects
 - Conduct pre- and post-project flow monitoring

Initial I/I Projects

Implementation Objectives

-  Test Planning Assumptions, adjust if appropriate
-  Document lessons learned from work on private property
-  Test ability to cost-effectively reduce enough flow to delay, eliminate or reduce downstream CSI projects
-  Apply the Draft Standards, Procedures and Guidelines to project work
-  If projects are successful, proceed programmatically to apply I/I reduction planning to all CSI project planning

Project Selection Criteria

- ☁️ Use field tested I/I rehab technologies
- ☁️ Projects have mid-range B/C ratio
- ☁️ Adequate level of service in conveyance to allow time to do I/I rehab
- ☁️ I/I project should take place close to budgeted time frame for associated CSI project
- ☁️ Project will not require extraordinary permitting
- ☁️ Total budget for all selected projects is \$25 M

I/I Initial Project Areas



10/11/06 – E&P
selected four project
areas for pre-design
& SSES work

- Bellevue (Eastgate)
- Issaquah
- Renton
- Skyway (Bryn Mawr)



South Renton Interceptor

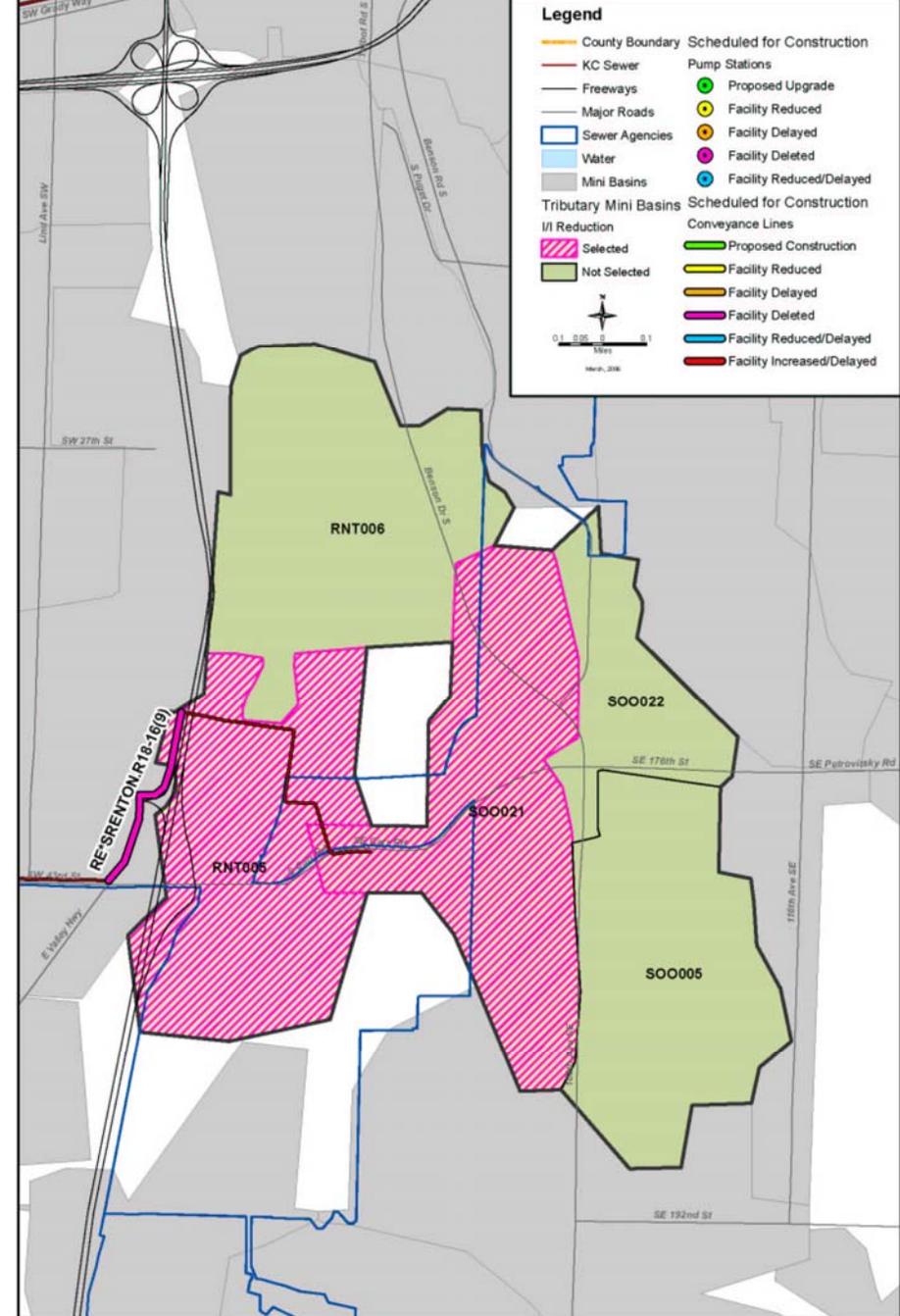
☁️ Renton (Soos Creek basin no longer included)

☁️ B/C Ratio = 3.3

☁️ 1 mini-basin

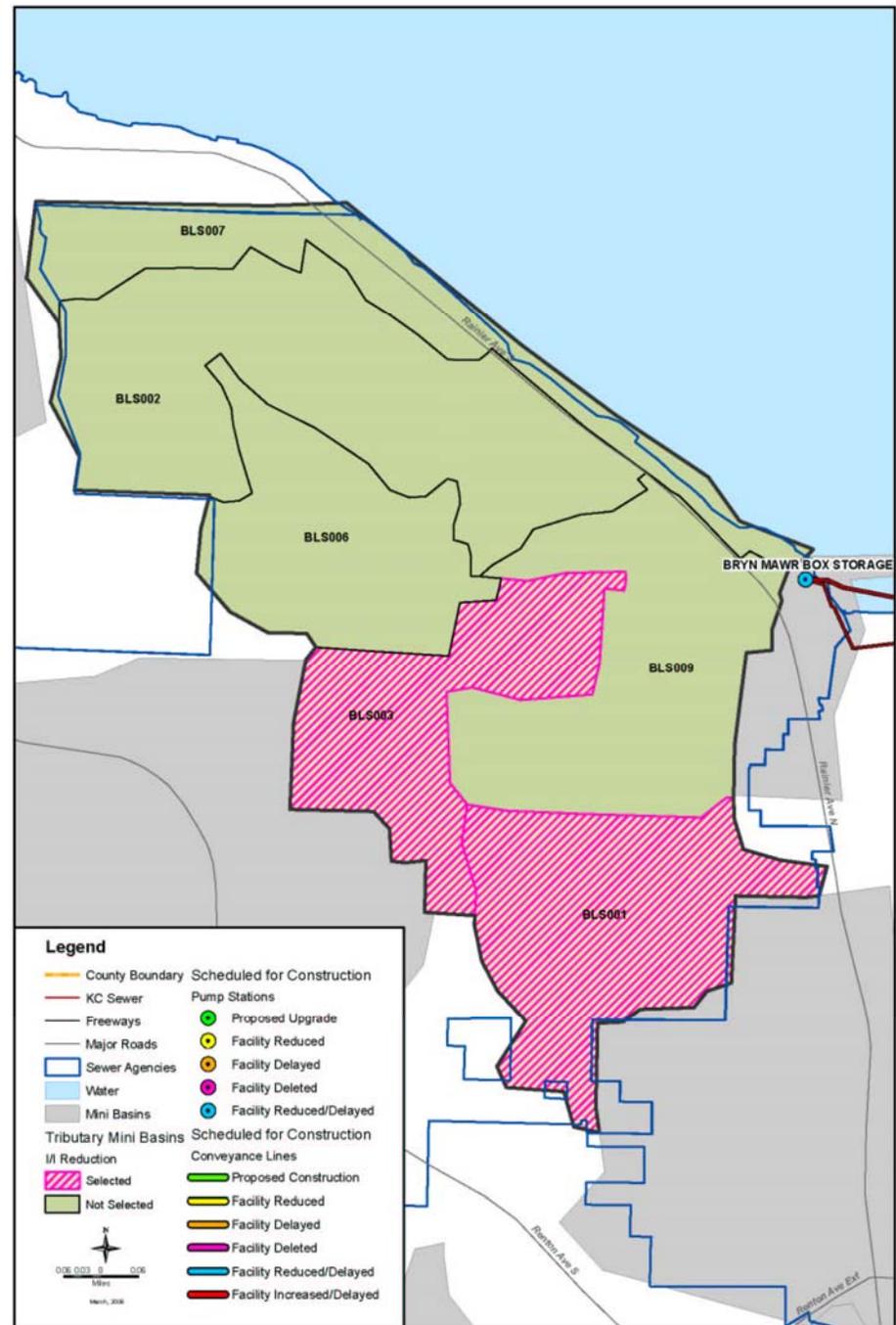
☁️ 119 Private Properties

☁️ I/I Reduction = 0.81 mgd



Bryn Mawr Storage

- ☁️ Skyway Water and Sewer District
- ☁️ B/C Ratio = 1.4
- ☁️ 2 mini-basins
- ☁️ 557 Private Properties
- ☁️ I/I Reduction = 2.04 mgd



Project Status

-  Interlocal Agreements in Place
-  Pre-Design Kick-off meetings held with host local agencies
-  SSES Underway
-  Flow Monitoring in all basins + upstream of associated CSI project
-  Pre-Design Engineering Contract

I/I Initial Project Schedule

March 2007 – February 2008	Sewer System Evaluation Survey (SSES)
July 2007 – November 2008	Pre-design
Sept. 2007 – March 2008	Pre-project flow monitoring
Fall 2008	Final Project Selection
2009	Design of 2-3 selected I/I reduction projects
Winter 2009/10	Construction Contract Bidding
2010-2011	Construction
Sept. 2011 – March 2012	Post-project flow monitoring

SSES Progress Report

 Smoke/Dye Testing Complete

 CCTV Schedule:

- Renton, completed targeted area in October
- Skyway, in progress, complete in November
- Bellevue, scheduled for Dec. – Jan.
- Issaquah, scheduled for Jan. – Feb.

Smoke Testing Videos

Predesign Approach

Team Organization

- Basin leads established for each project area

SSES Investigations – Analysis of Results

- Smoke testing completed
- CCTV investigation of mains and laterals continuing

Mapping of Project Areas Completed

- Includes available side sewer information available from local agencies

Predesign Approach

Basin Approach

- Initial field assessments
- Identify and document I/I sources
- Select rehabilitation components and techniques
- Estimate cost of rehabilitation
- Estimate I/I removal quantities
- Confirm benefit/cost of proposed improvements
- Predesign report with project recommendations

Predesign Schedule

SSES Investigations

- CCTV to be completed by end of Feb 08

Confirmation of Benefit/Cost

- July 08

Completion of Predesign

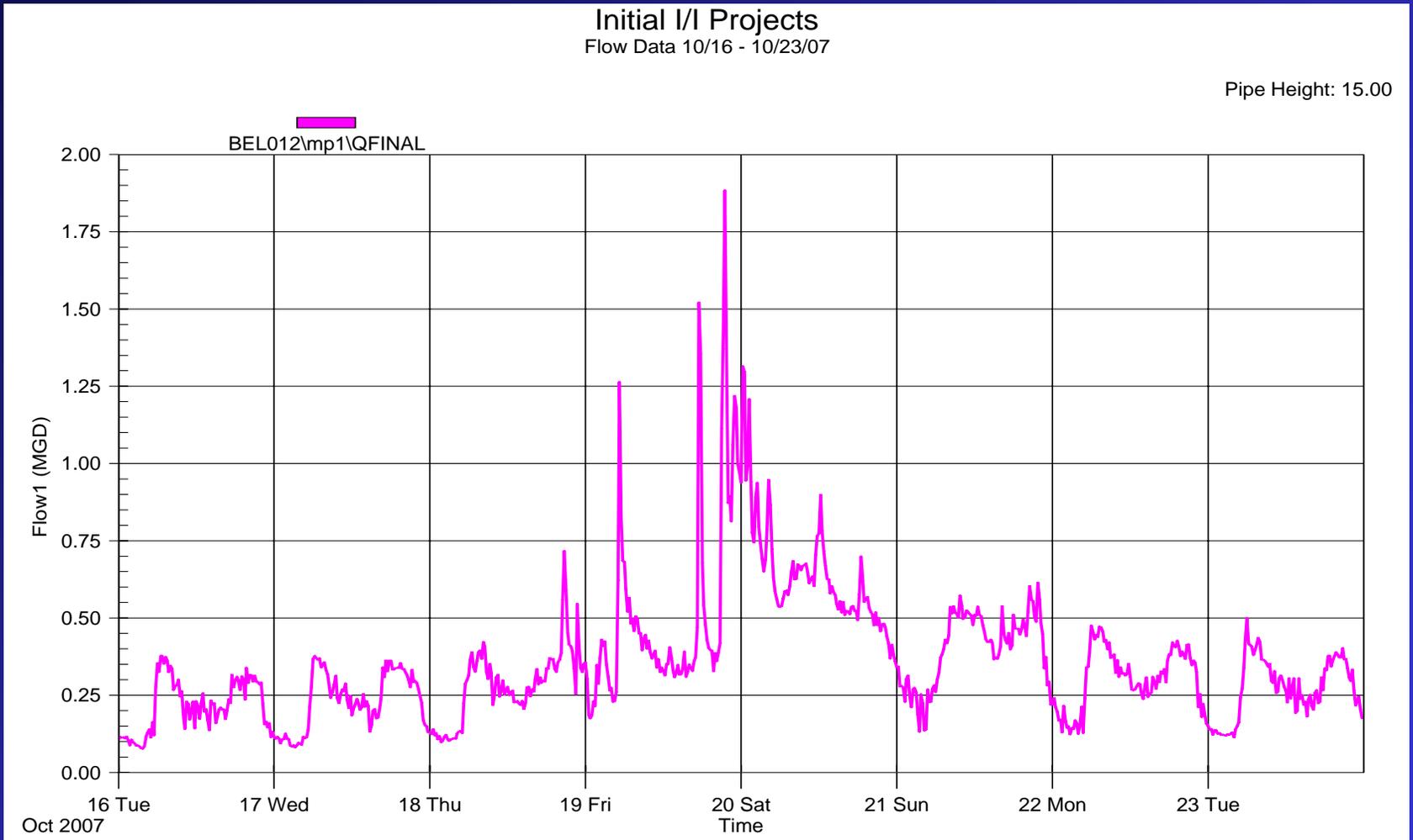
- Nov 08

Initial I/I Projects Flow Monitoring

-  ***Flow Meters installed, verified and collecting data starting September 1, 2007***
 - 10 mini basin meters
 - 4 subtraction meters
 - 3 control basin meters
 - 3 meters upstream of CSI facilities
-  ***Average Uptime for September and October = 94% (minimum Uptime requirement for this project = 90%)***
-  ***Small to relatively significant responses to rain events on 9/30, 10/02, and 10/19 – 10/20/07***

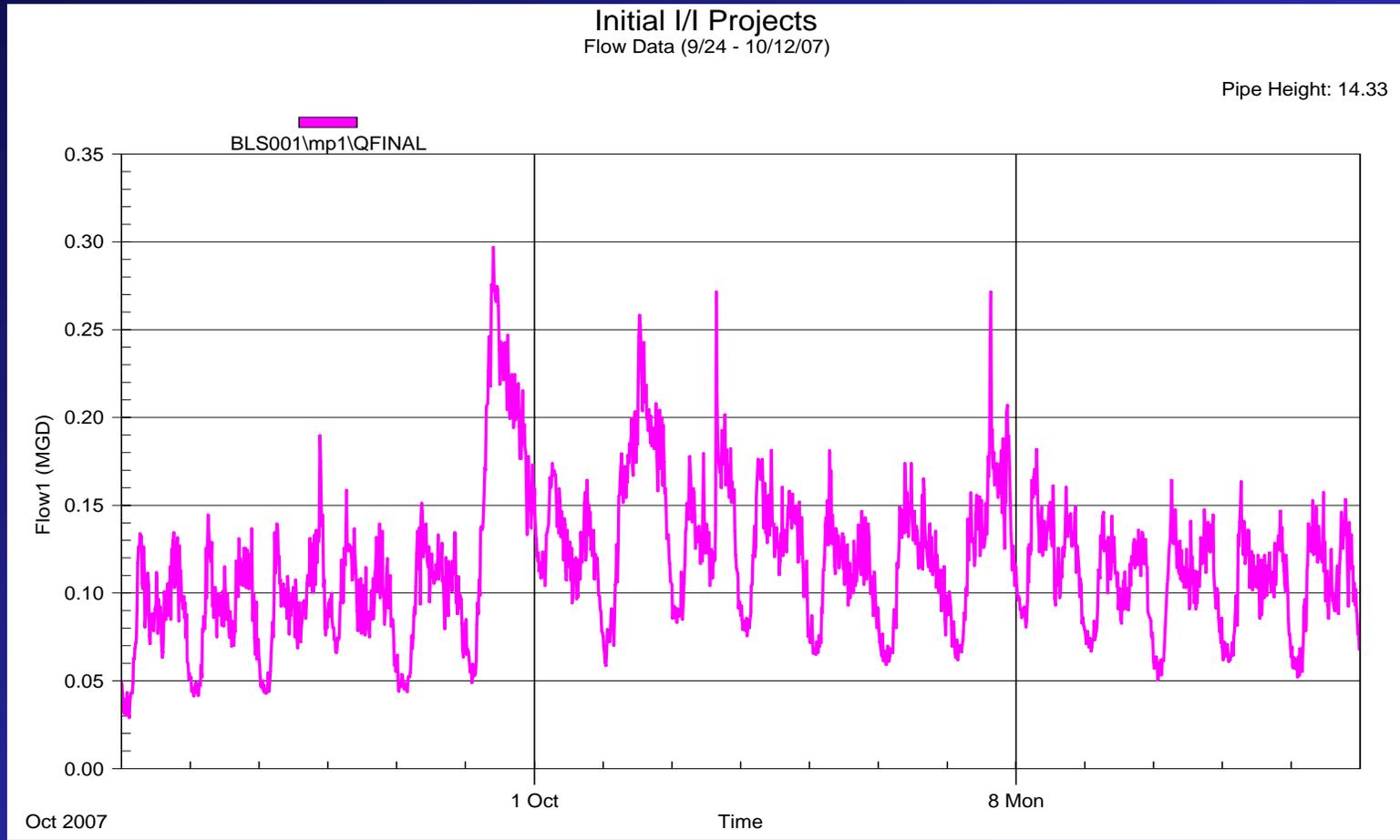
Impact of I/I on Flow Volume

Significant fast response and recovery to 10/19-20 rain events



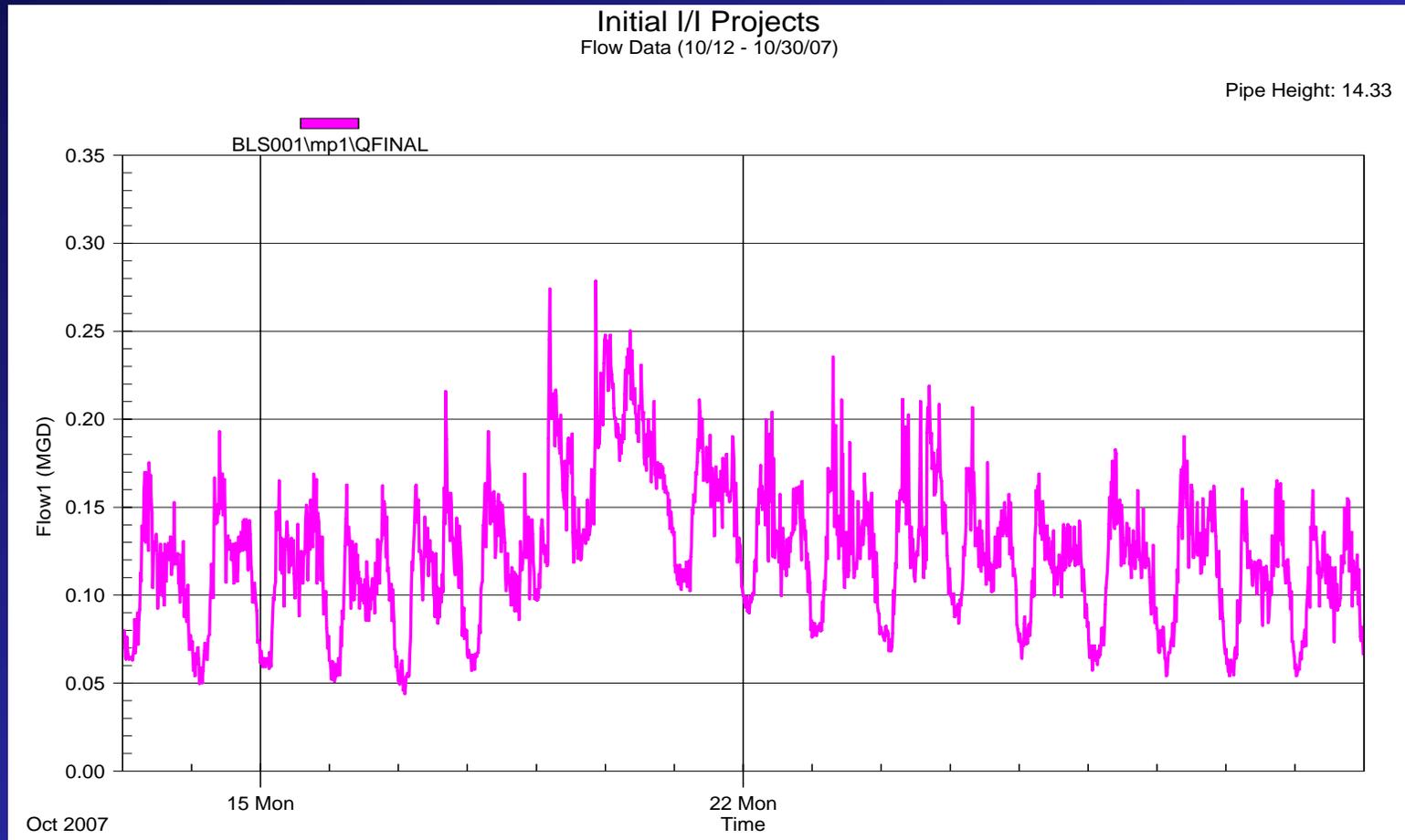
Impact of I/I on Flow Volume

Significant fast response and slow recovery to 9/30 & 10/02 rain events



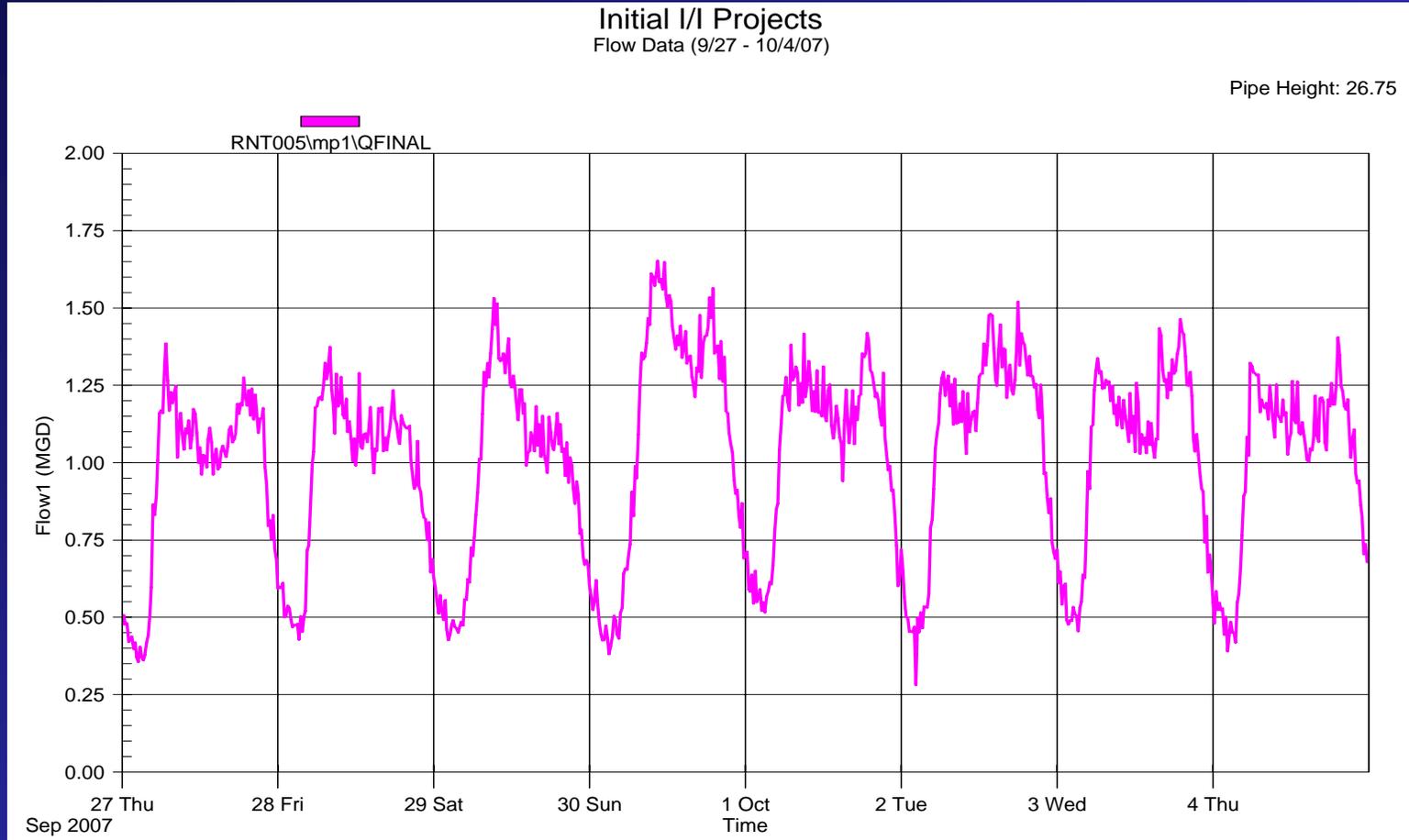
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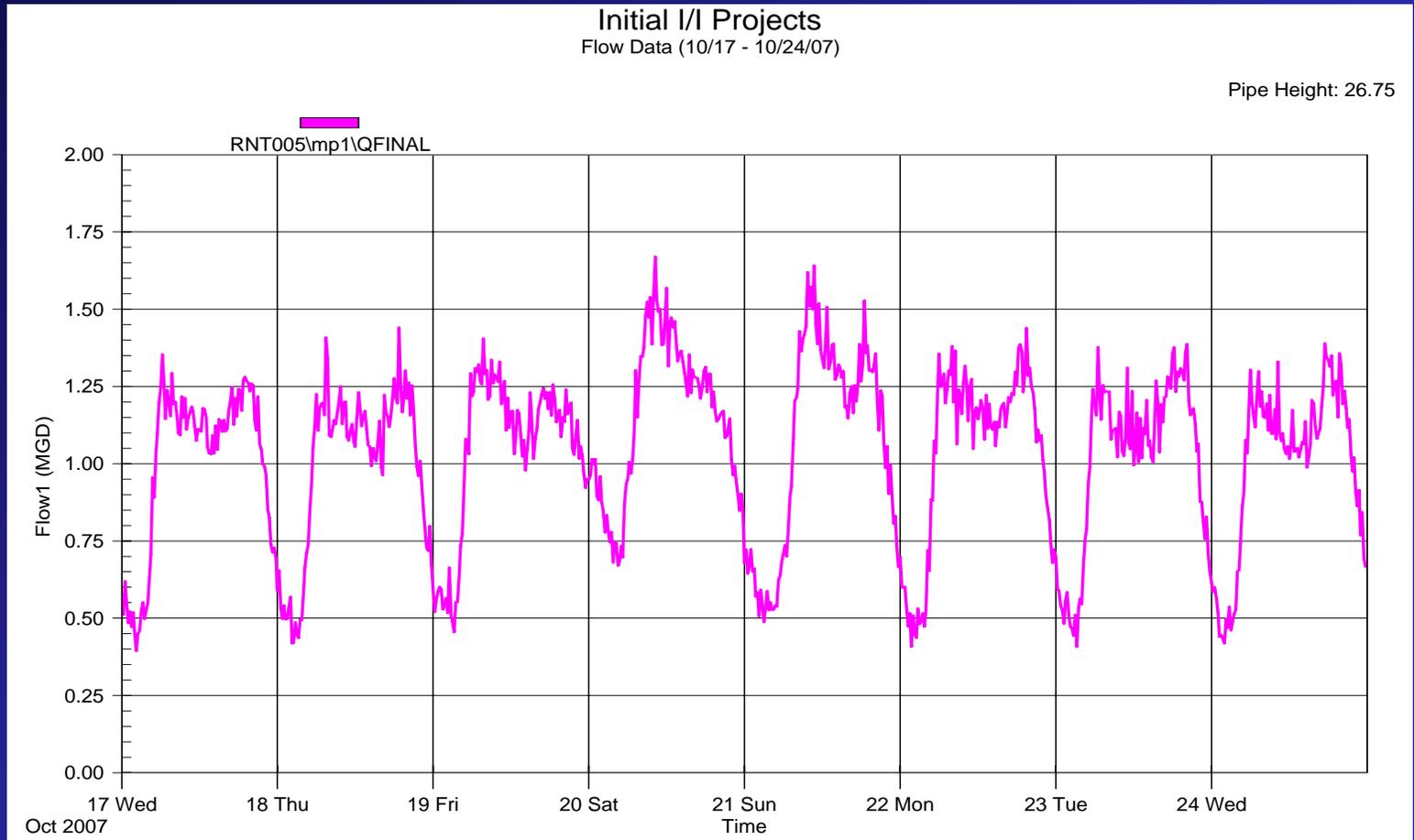
Impact of I/I on Flow Volume

relatively smaller response to 9/30 & 10/02 rain events



Impact of I/I on Flow Volume

relatively smaller response to 10/19- 20 rain events



Next Steps

- ☁️ Complete SSES Work
- ☁️ Complete Pre-Design Field Evaluations
 - Surface/Groundwater Impacts
 - Geotechnical/Environmental
 - Accessibility and Constructability Issues
- ☁️ Analysis of SSES results
- ☁️ Cost-Estimating and Feasibility Analysis
- ☁️ Estimate I/I Reduction
- ☁️ Confirm Cost-Effectiveness of Proposed Projects
- ☁️ Community Relations and ROW Planning
- ☁️ Pre-Design Report and Project Recommendations
- ☁️ Final Project Selection
- ☁️ E&P Meetings at Key Intervals

Questions?

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