



Manage our Resources



Explore Innovative Solutions



Protect our Environment



Preserve our Community

CITY OF PORTSMOUTH WASTEWATER DIVISION

PEIRCE ISLAND WASTEWATER TREATMENT FACILITY PROJECT

CITY COUNCIL WORK SESSION

SEPTEMBER 29, 2014

SEWER DIVISION ROLE AND RESPONSIBILITY

- Operate and Maintain Existing Collection and Treatment Systems
- Comply With Regulatory Requirements
- Plan for Future Needs
- Provide Council With Necessary Information to Commit to a Compliance Path That Meets Needs of Today and Future



TONIGHT'S AGENDA

- Regulatory Status
- Design Update
- Construction Timeline and Impacts
- Cost and Rate Projections
- Regional Opportunities
- Compliance Path and Commitments



AT A CROSSROADS

- **Compliance Path Options**
 - Stay Course with Peirce Island Project
 - Pursue Aggressively Regional Solution at Pease

Regulatory changes and evolving conditions may significantly impact costs and risks with present path



EVOLVING CONDITIONS AT CROSSROADS

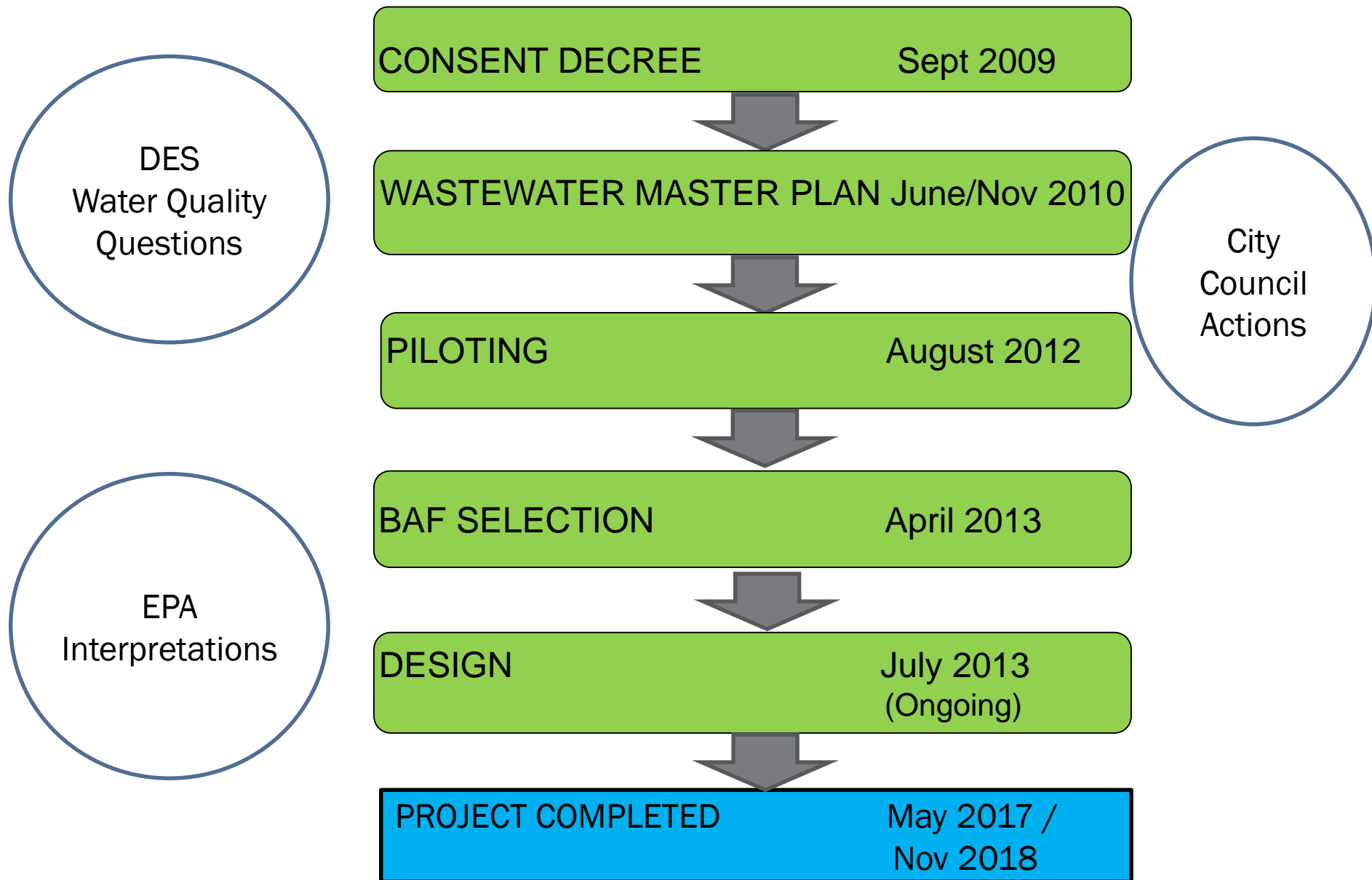
- Regulatory Changes – Bypass/Blending
- Cost and Rate Projections
- Regional Opportunities



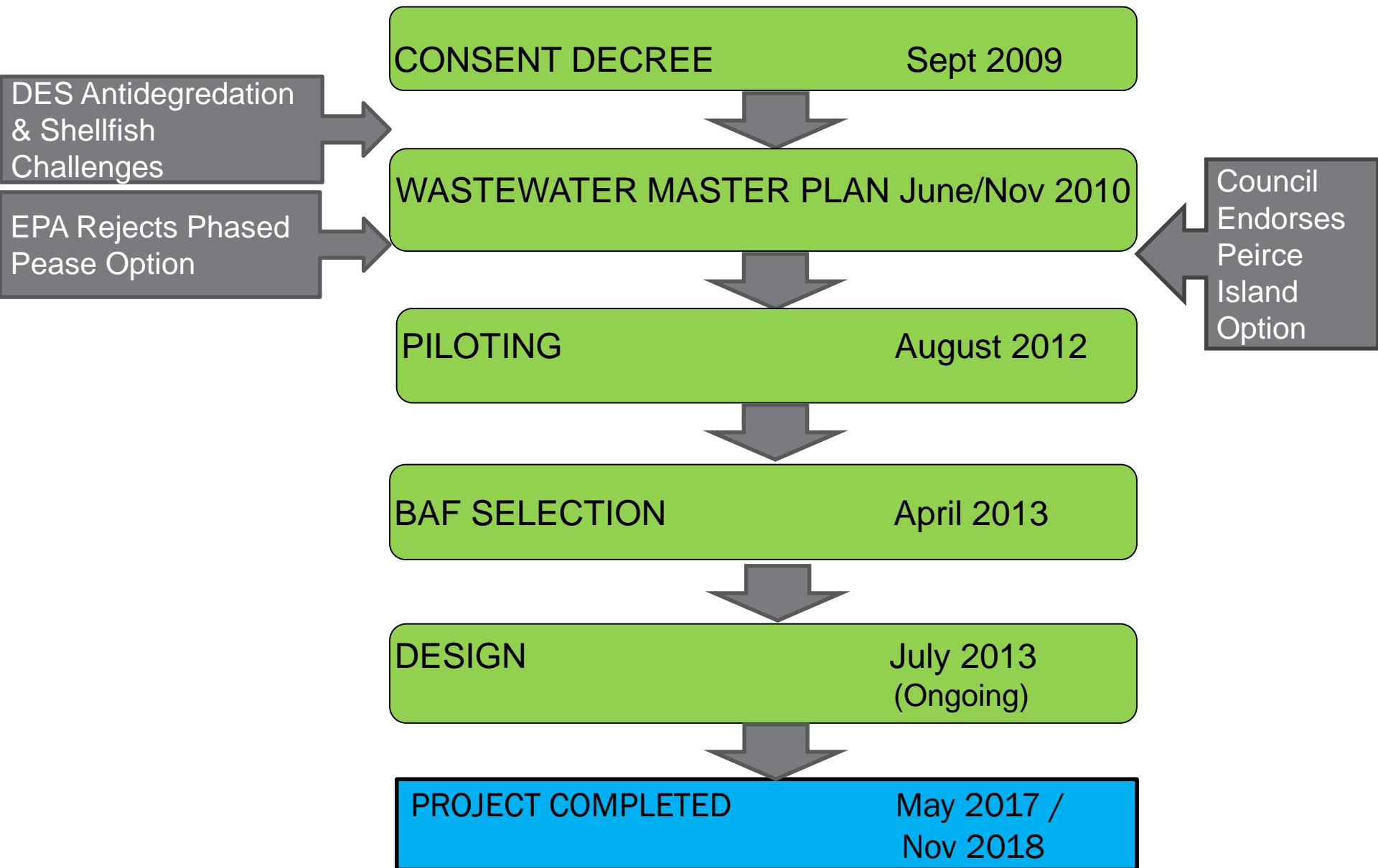
- **Challenging EPA Interpretations**
- **Investing in Water Quality Science**



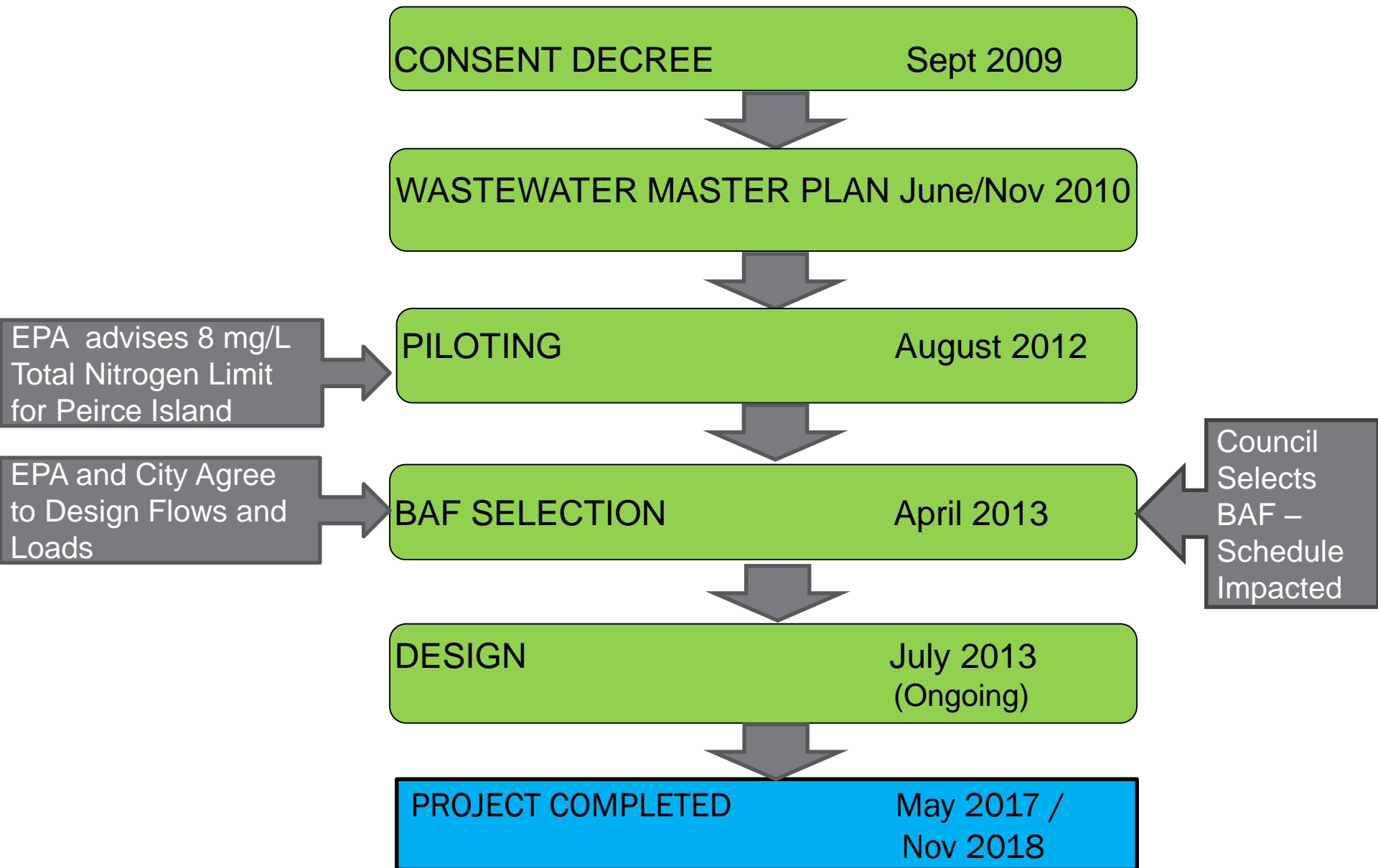
LEGAL FRAMEWORK



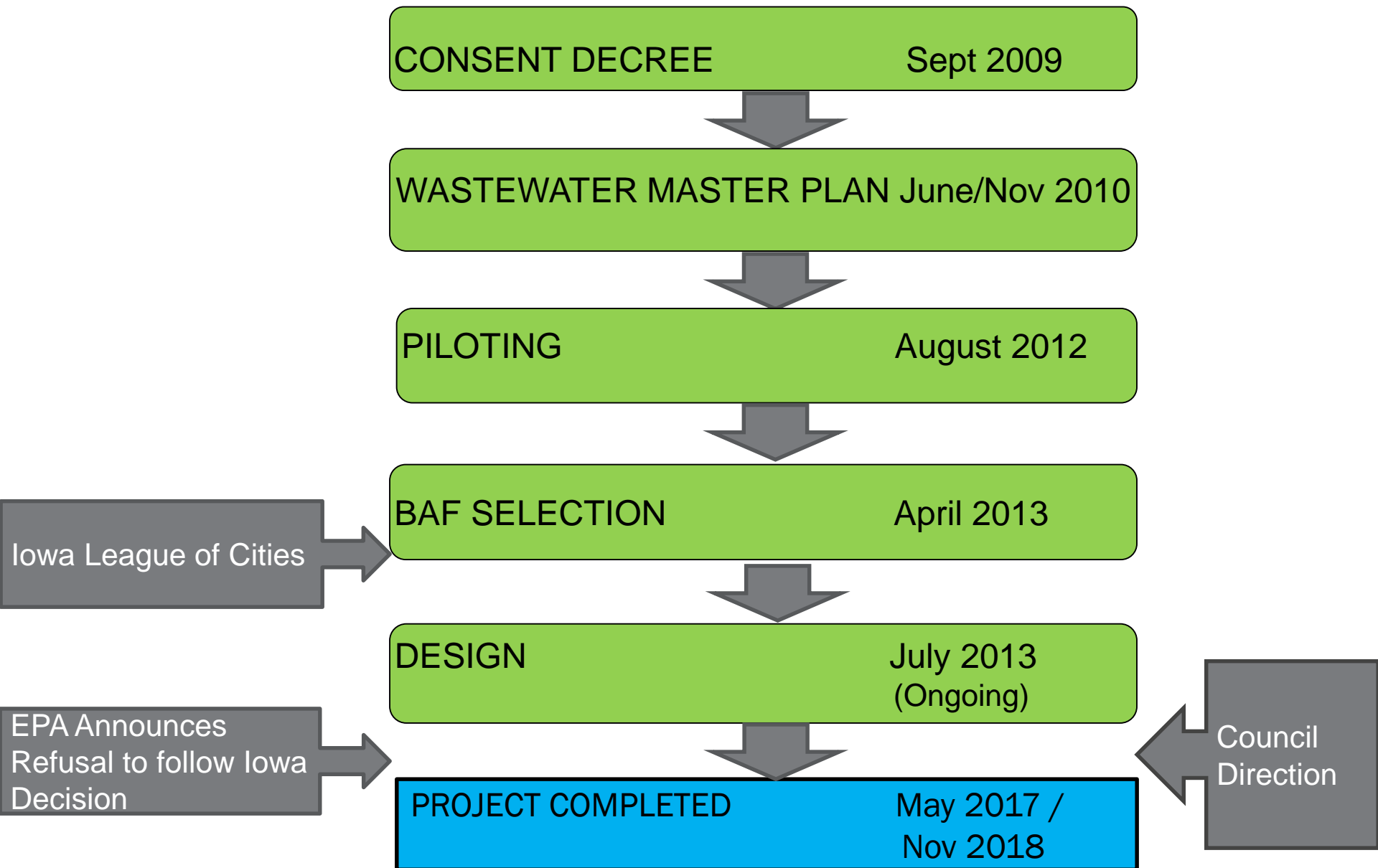
REGULATORY INTERSECTIONS



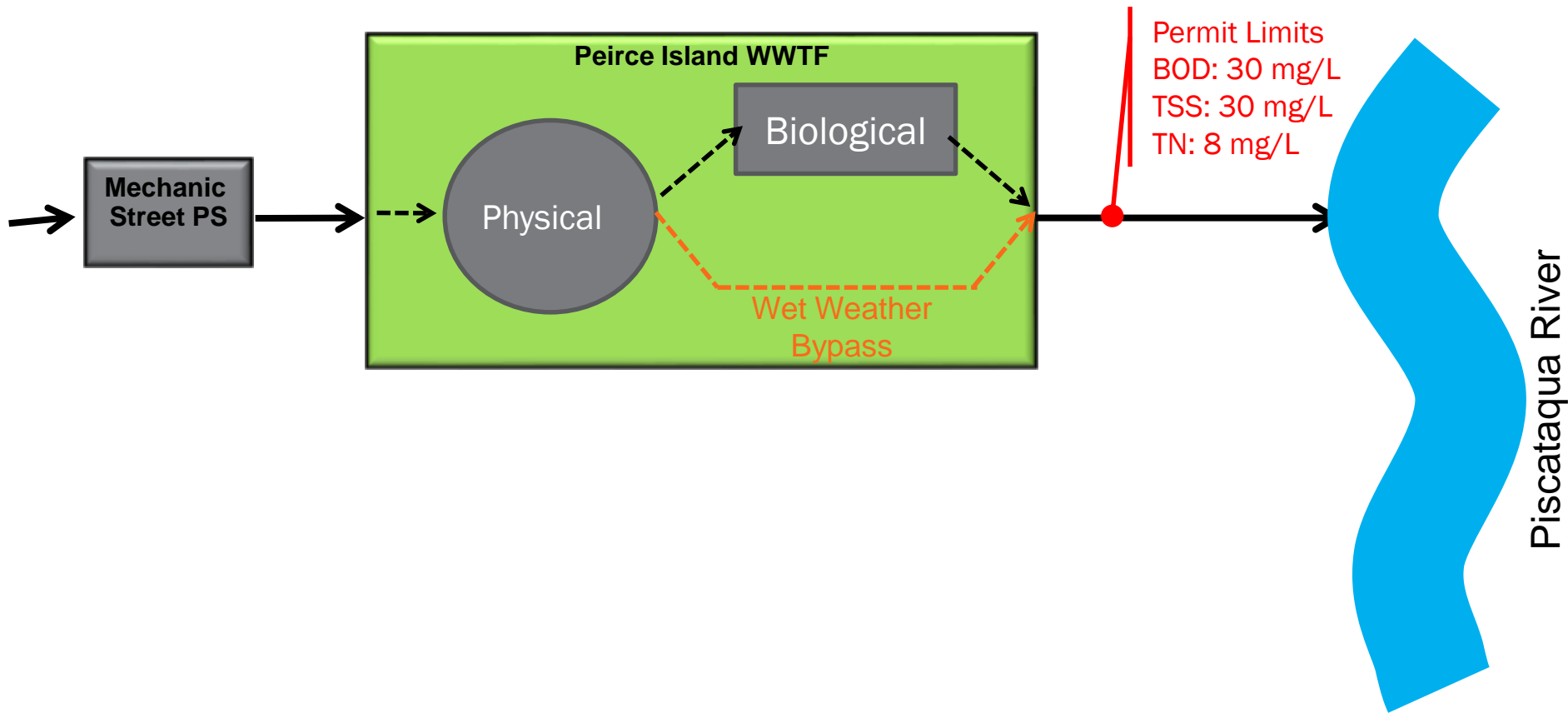
REGULATORY INTERSECTIONS



TODAY'S REGULATORY INTERSECTION



BYPASS AND BLENDING

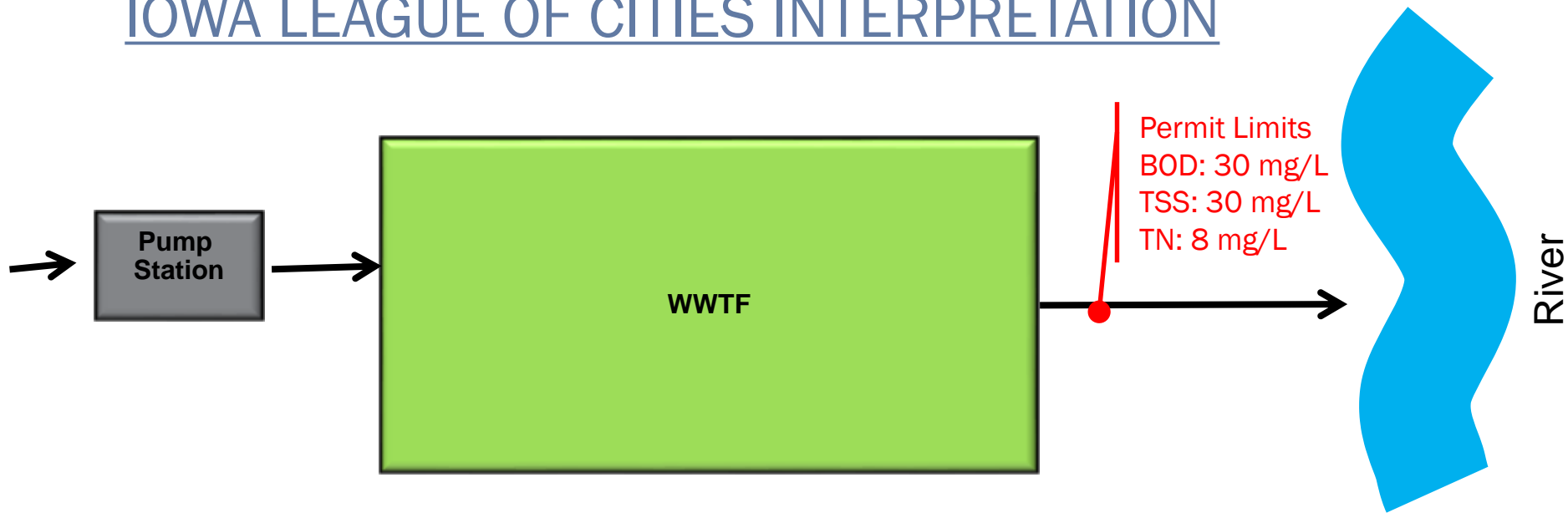


IOWA LEAGUE OF CITIES

Iowa League of Cities v. EPA, 711 F.3d 844 (8th Cir. 2013)

- Decided March 2013
- EPA Rejects 2014

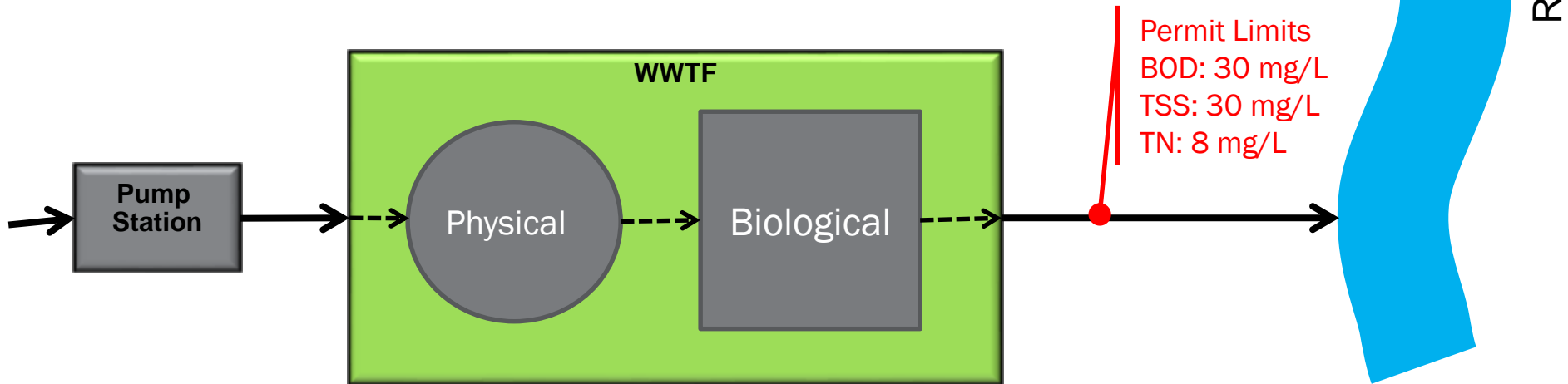
IOWA LEAGUE OF CITIES INTERPRETATION



IOWA LEAGUE OF CITIES INTERPRETATION



EPA INTERPRETATION



COMPLIANCE PATH RISKS FOR PEIRCE ISLAND WWTF

- Bypass Creates Non-compliance With EPA Interpretation of CWA - Bypass/Blending
- Possible Further Investment in Capital Infrastructure
- Potential Outside the Fence Line in Future



MANAGING RISK OF BLENDING/BYPASS RULE

- Participation in Bypass/Blending Legal Challenge up to \$25,000
- Involves Multiple Communities
- Direction from Council to Continue Challenge



MANAGING OTHER RISKS FOR PEIRCE ISLAND WWTF

- Supplemental Environmental Projects to Support 18-month CD Extension
- Participate in Water Quality Modeling Estimated at \$41,700
- Participate in Annual Water Quality Monitoring



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Where Are We Today

- Final Design Phase 1 to 10% - Completed
- Final Design Phase 2 to 30% - Completed
- City Council Input on BAF Height - Completed
 - April 14 and May 19, 2014



Where Are We Today

- Value Engineering – Completed
- Primary Clarifier Project Bid and Award - Complete
- Final Design Phase 3 to 60% - Mid October 2014
- Final Design Phase 3 to 100% - February 2015
- Bidding – Summer 2015
- Construction
 - Primary Clarifier Project – Begin Spring 2015
 - Secondary Treatment Upgrade – Begin Sept 2015



Value Engineering

- **Value** can be increased by either improving the function or reducing the cost
- Working with ARCADIS
 - Independent Group
 - Experts in Field
 - Critical Evaluation



Value Engineering

- City Goals for Value Engineering
 - Validate Decisions
 - Idea Generation
 - Reduced Capital and/or Life Cycle Costs
- City Constraints
 - Biological Treatment Process Selected through Pilot
- Results
 - Numerous Ideas Worthy of Further Consideration
 - Design Modified and Updated
 - Reduced Scope of Work and Optimized Layout
 - Construction Methods to Reduce Traffic



Regulatory Driven Upgrades – Approximately \$65M

- Consent Decree to Meet Secondary Treatment Standards
- Upgrade Items (includes Nitrogen removal)
 - Biological Aerated Filter
 - Sludge Improvements
 - Headworks (to Protect BAF)
 - Operations/Lab Building (Maintenance of Operation)

All the new work will be constructed while the existing facility is in operation



Maintenance Upgrades – Approximately \$15M

- Replacement of Aging Equipment (25 to 50 yrs old)
- Prevent Emergency Replacement of Failed Equipment
- Maintenance Items
 - Primary Clarifiers
 - Sludge Thickener
 - Grit Building and Tanks (Grit Handling)
 - Existing Sludge Facilities (Storage and Pumps)
 - Disinfection



Maintenance Upgrades

Primary Clarifiers and Sludge Thickener Project


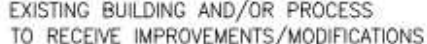

- **Schedule**
 - Bid Awarded to Methuen Construction
 - Equipment Delivery - Winter 2014/2015
 - Construction Complete - Summer/Fall 2015
- **Cost - \$1.375M**

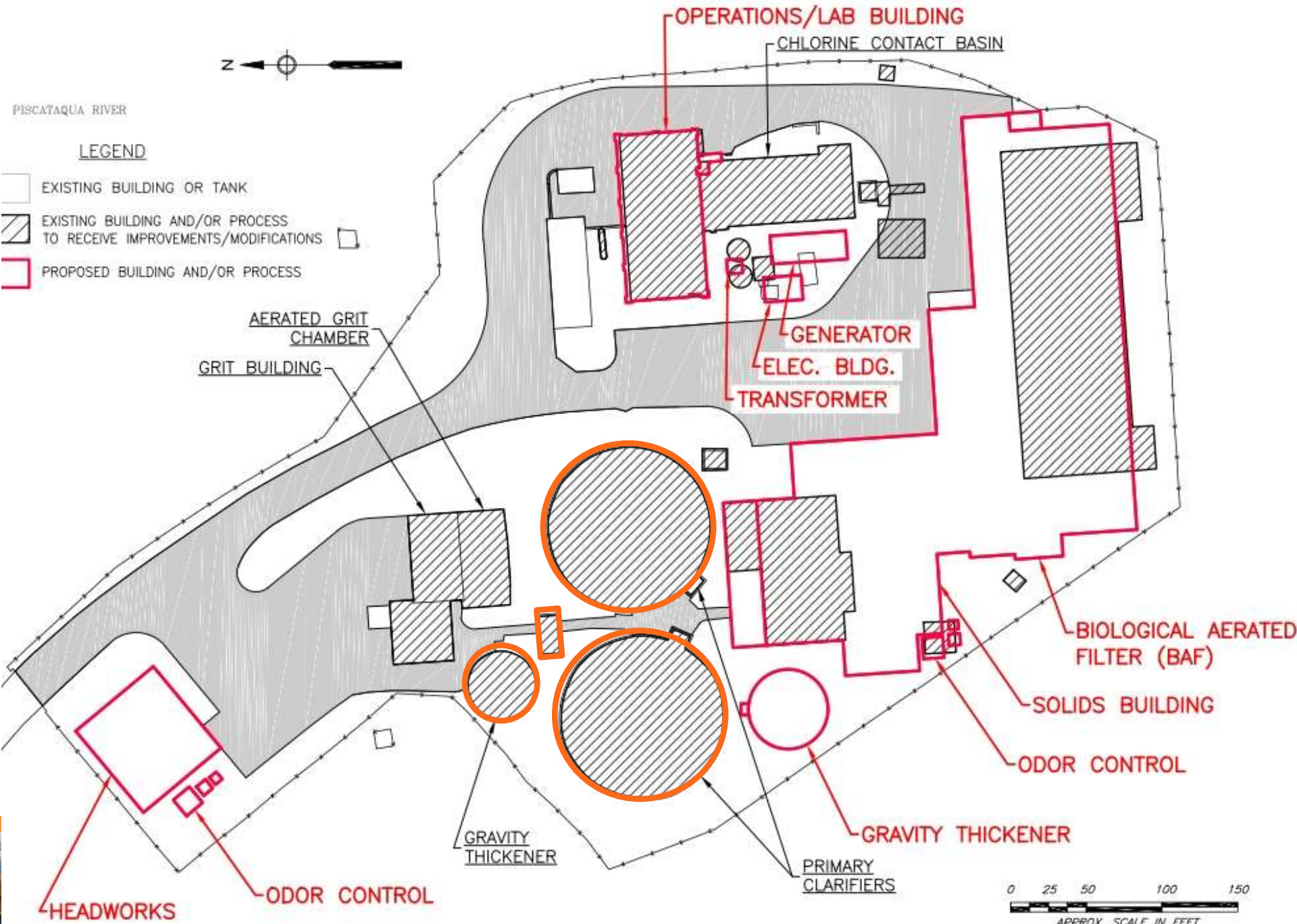




PISCATAQUA RIVER

LEGEND

-  EXISTING BUILDING OR TANK
-  EXISTING BUILDING AND/OR PROCESS TO RECEIVE IMPROVEMENTS/MODIFICATIONS
-  PROPOSED BUILDING AND/OR PROCESS



0 25 50 100 150
APPROX. SCALE IN FEET

Project Cost Estimate

Item	Opinion of Cost (\$M)
Construction	\$65
Engineering	\$11
Project Contingency	\$4
Total Project Cost	\$80



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Construction Impacts - Onsite and Offsite

CAUTION
AREA UNDER
CONSTRUCTION

DANGER
HARD HAT
AREA



Madbury Water Treatment Facility
Under Construction



PEIRCE ISLAND WASTEWATER TREATMENT
FACILITY PROJECT

Construction Impacts – Onsite

- Three years of construction
- Demolition of three large buildings
- Rock Excavation
- Multiple Concrete Pours
- Complex phasing of pipeline, electrical and process upgrades
- Facility will have to remain in service the entire time



Construction Site and Staging

- All construction inside fence
- Staging, construction trailers, parking and storage of equipment will be around the perimeter and off-site
- 1.5 acres of temporary staging is necessary
- Barging was evaluated - not practical or economically feasible



Workforce

- Contractor Workforce Estimate
 - Average day personnel – 50
 - Peak day personnel – 75
 - Does not include delivery personnel, City staff or support personnel



Construction Traffic

- Vehicle Traffic
 - Contractor will be required to adhere to detailed plan for minimizing traffic (busing, carpool, etc.)
 - Typical Work day anticipated to be 7:00 to 3:30
 - Some weekend and night work necessary
 - Estimated truck traffic
 - Average day – up to 55 trucks (5 to 10/hour)
 - Peak day – up to 80 trucks (especially during concrete pours)



Proposed Traffic and Safety Plan

- Close Peirce Island Rd at snow storage area year round
- Close Peirce Island Rd at pool from September to May
- Temporary fencing from Marcy Street to construction site with defined crosswalks
- Utilize traffic flaggers and police officers as needed

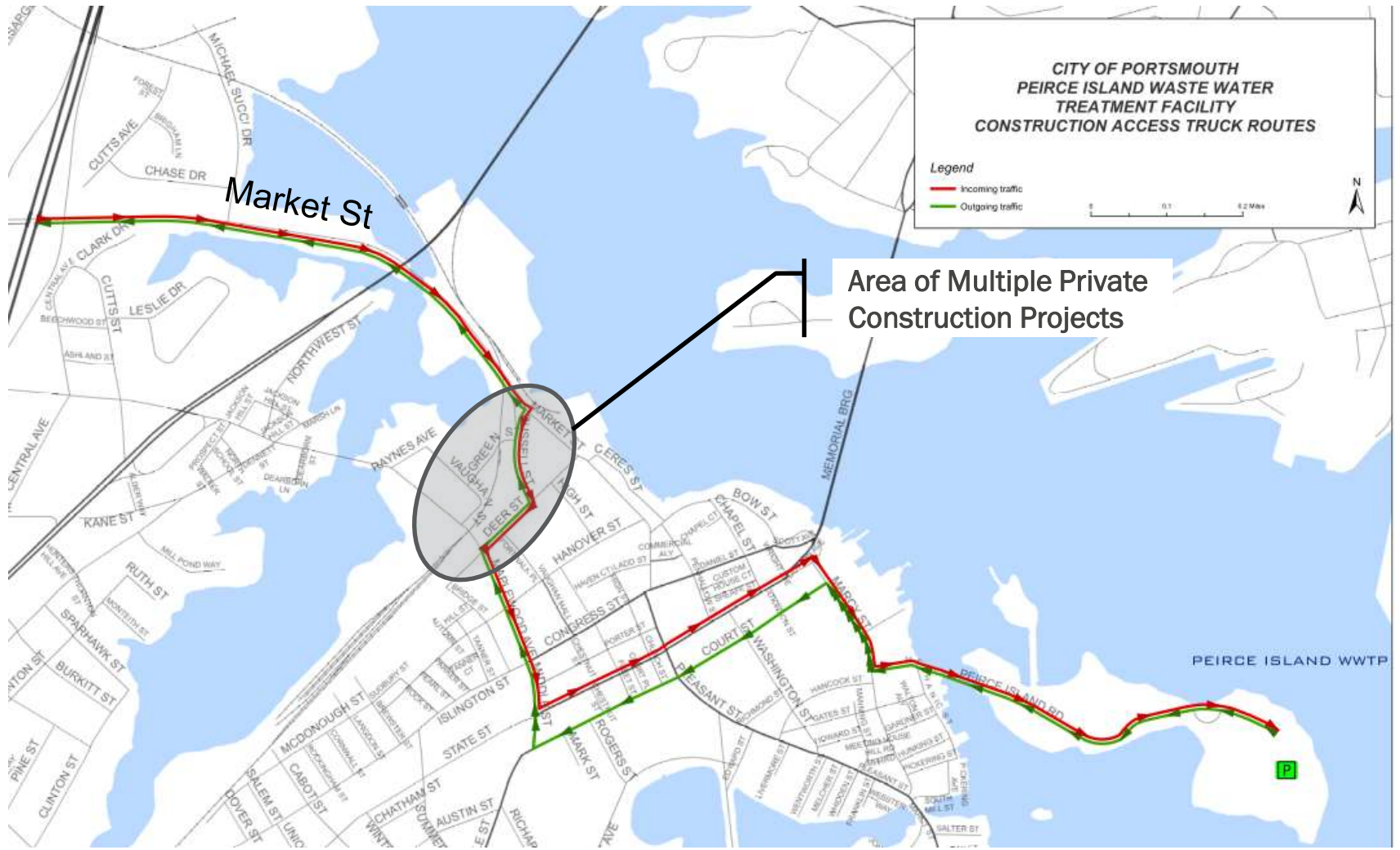
Will Bring Recommendations to
Parking, Traffic and Safety Committee



Staging Areas and Safety Plan

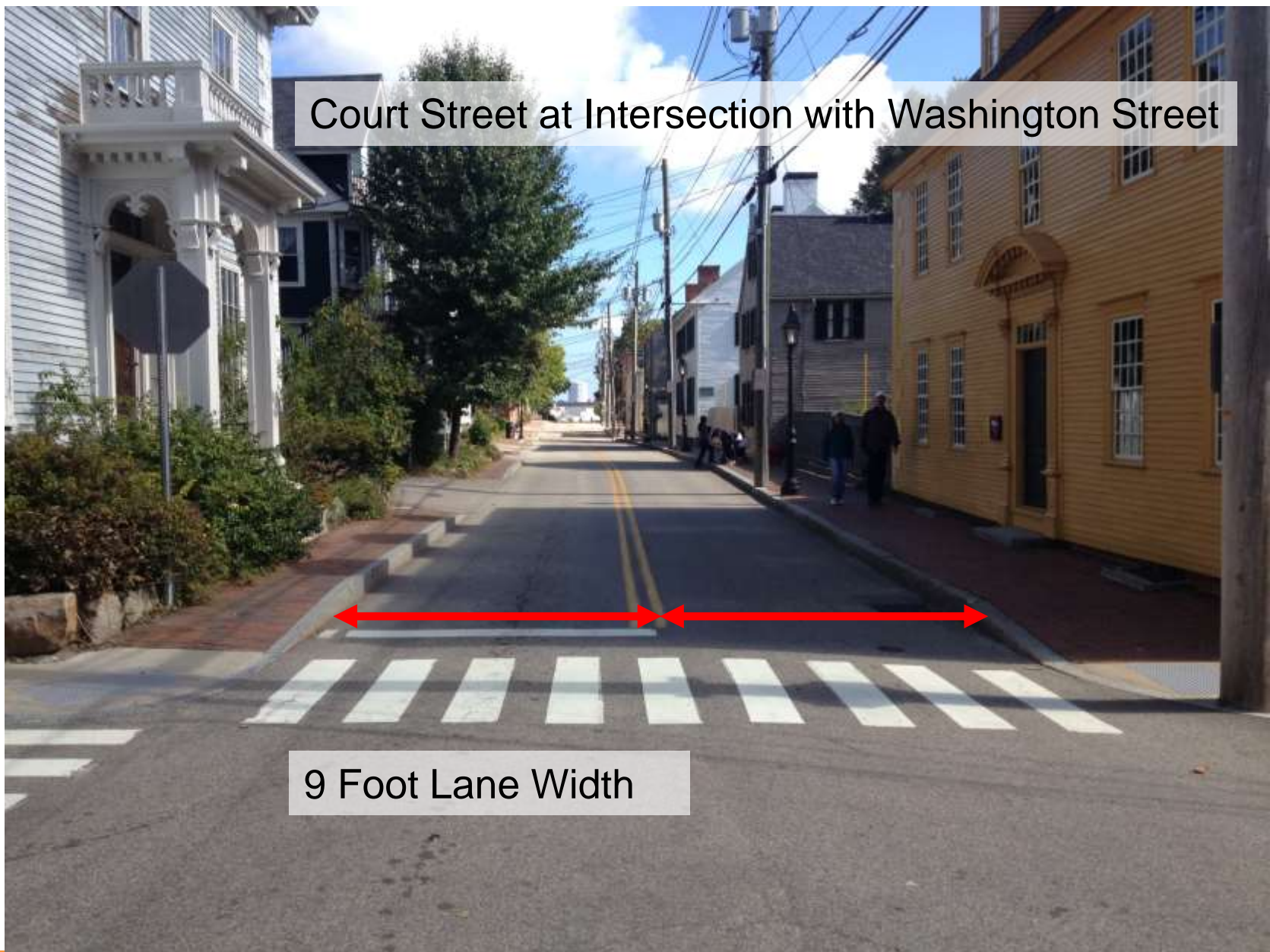


Truck Routes



PEIRCE ISLAND WASTEWATER TREATMENT
FACILITY PROJECT

Court Street at Intersection with Washington Street

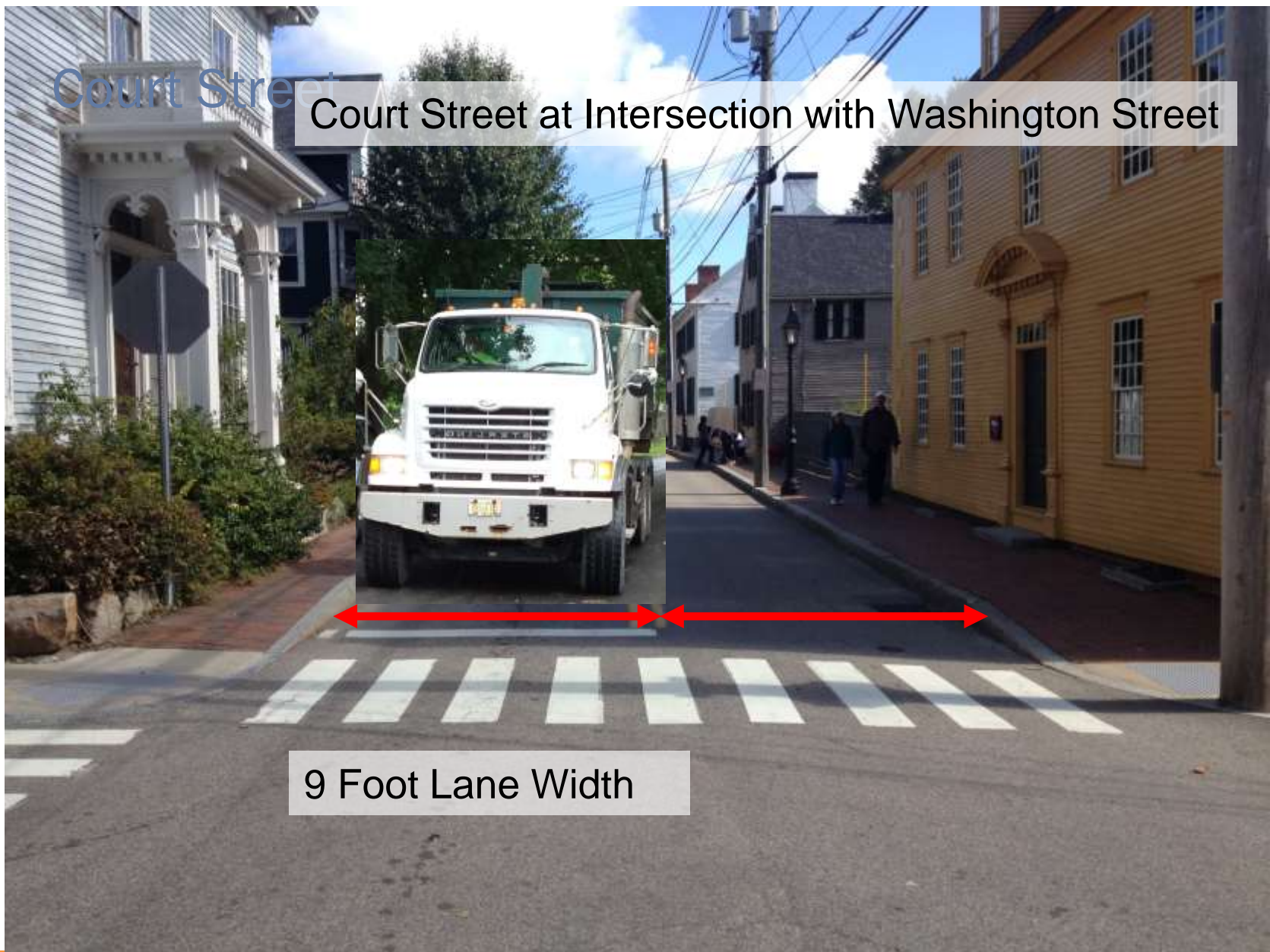


9 Foot Lane Width



Court Street

Court Street at Intersection with Washington Street



9 Foot Lane Width



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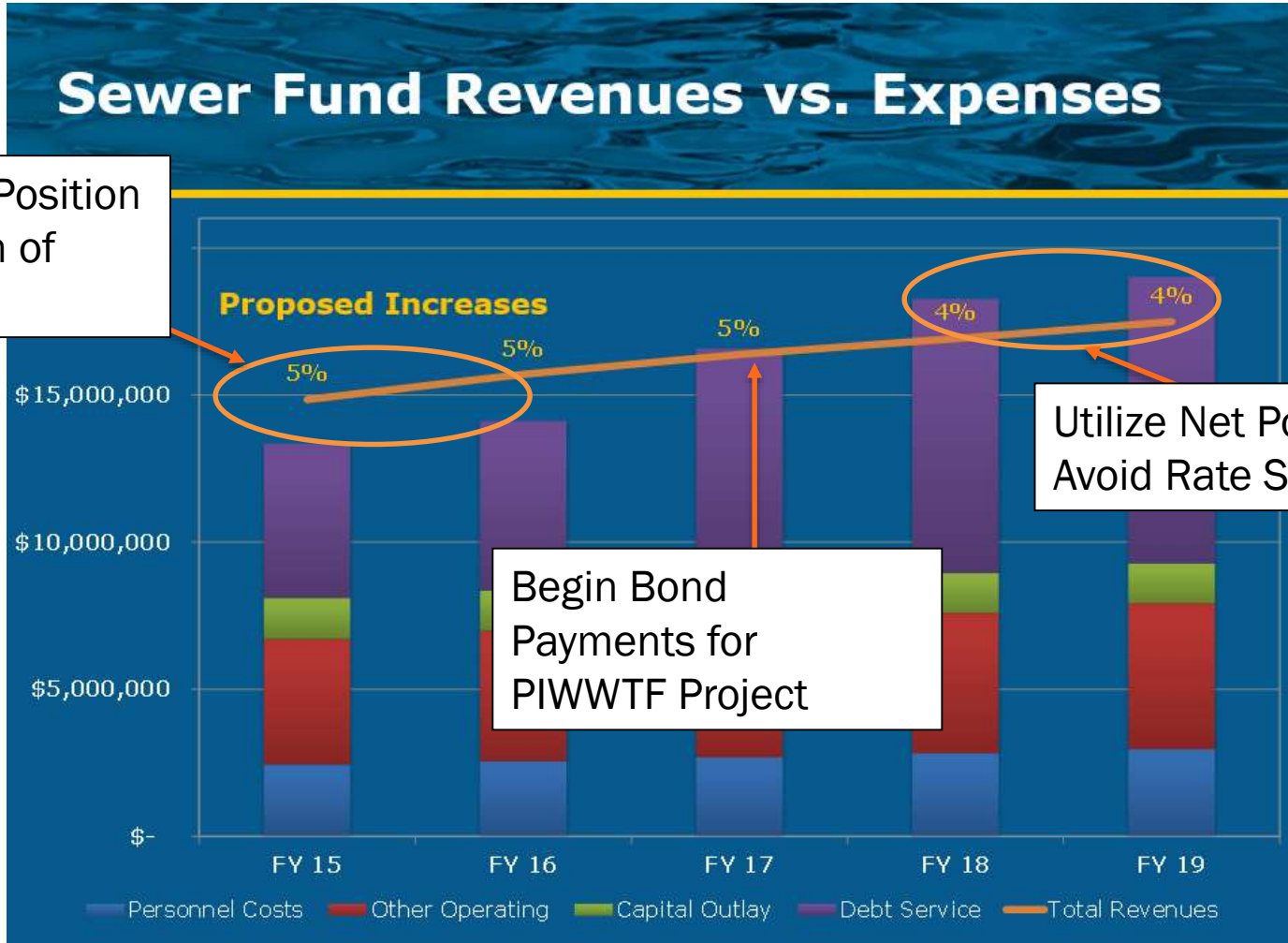
Projected Wastewater Improvements and Rates

Projects Totaling \$98.4 Million

- Wastewater Treatment Upgrades
 - Peirce Island - \$80.0M (Engineer's Estimate)
 - Pease - \$8.65M (FY15 CIP)
- Pump Station Upgrades - \$6.0M (FY15 CIP)
- Sewer Line Upgrades - \$3.75M (FY15 CIP)

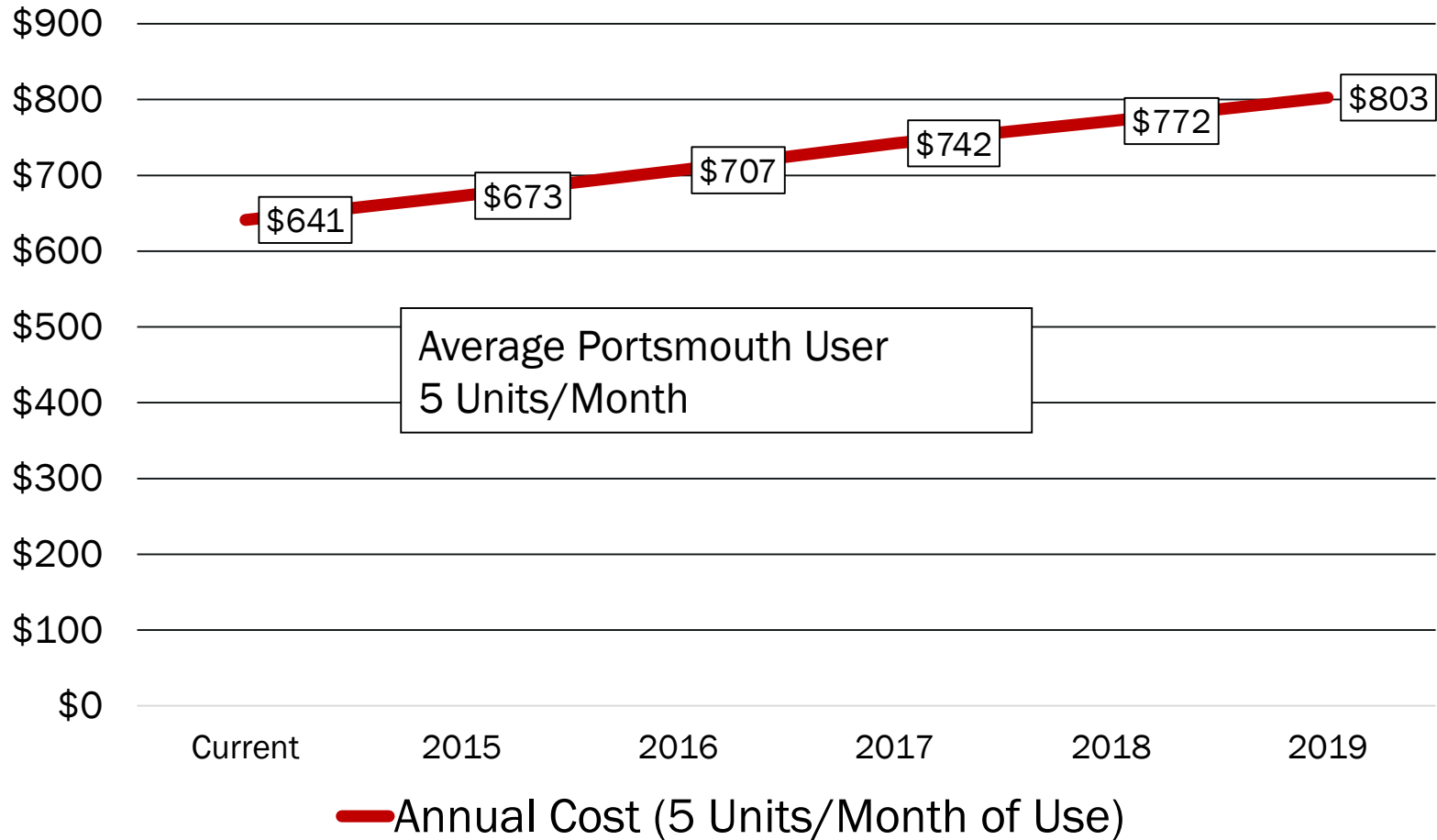


Rate Model Projections - \$62.5M Upgrade

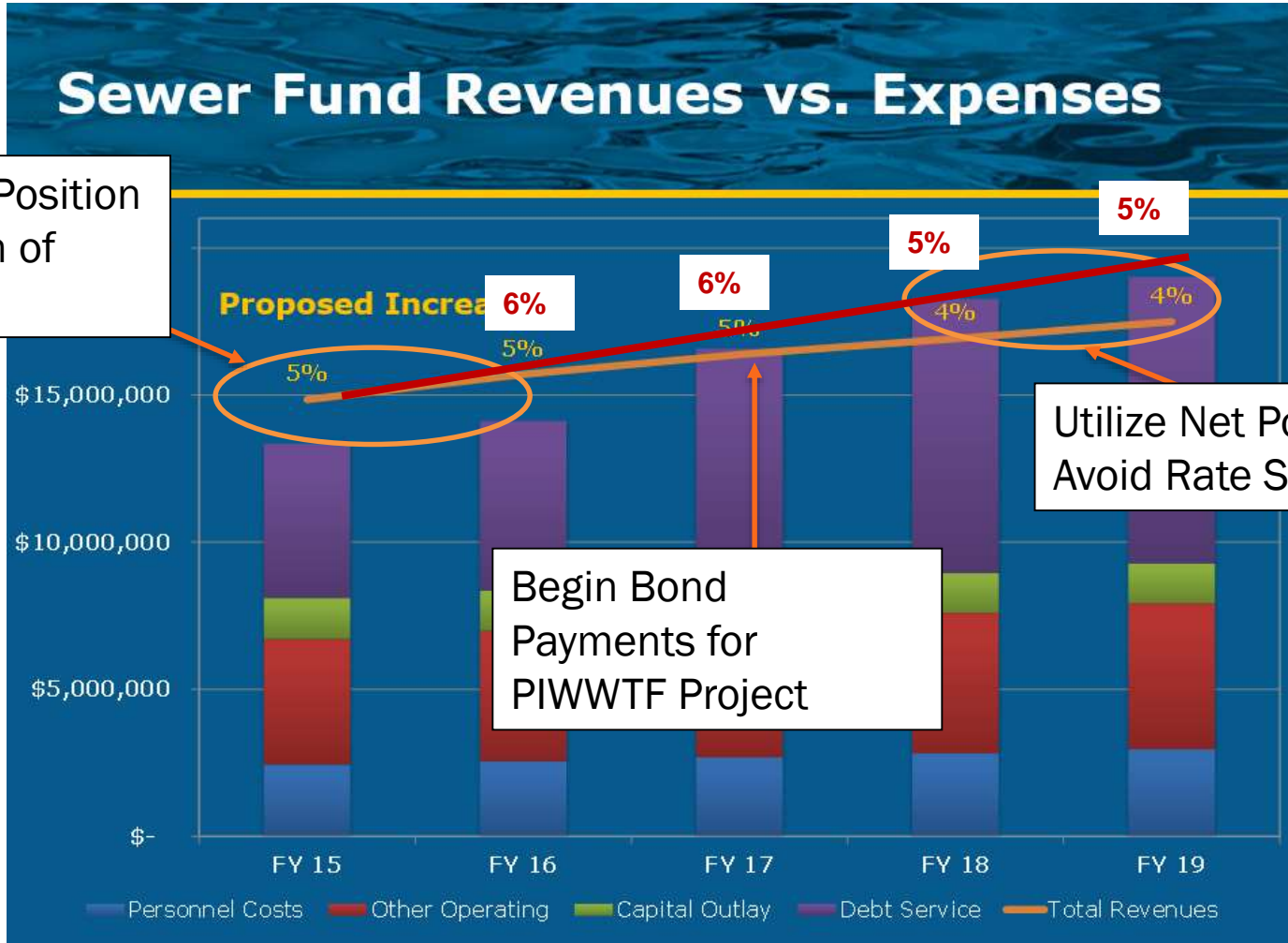


Rate Model Projections - \$62.5M Upgrade

Projected Annual Sewer Bills



Five Year Rate Projections - \$80.0M Upgrade



Increase Net Position in Anticipation of Future Bonds

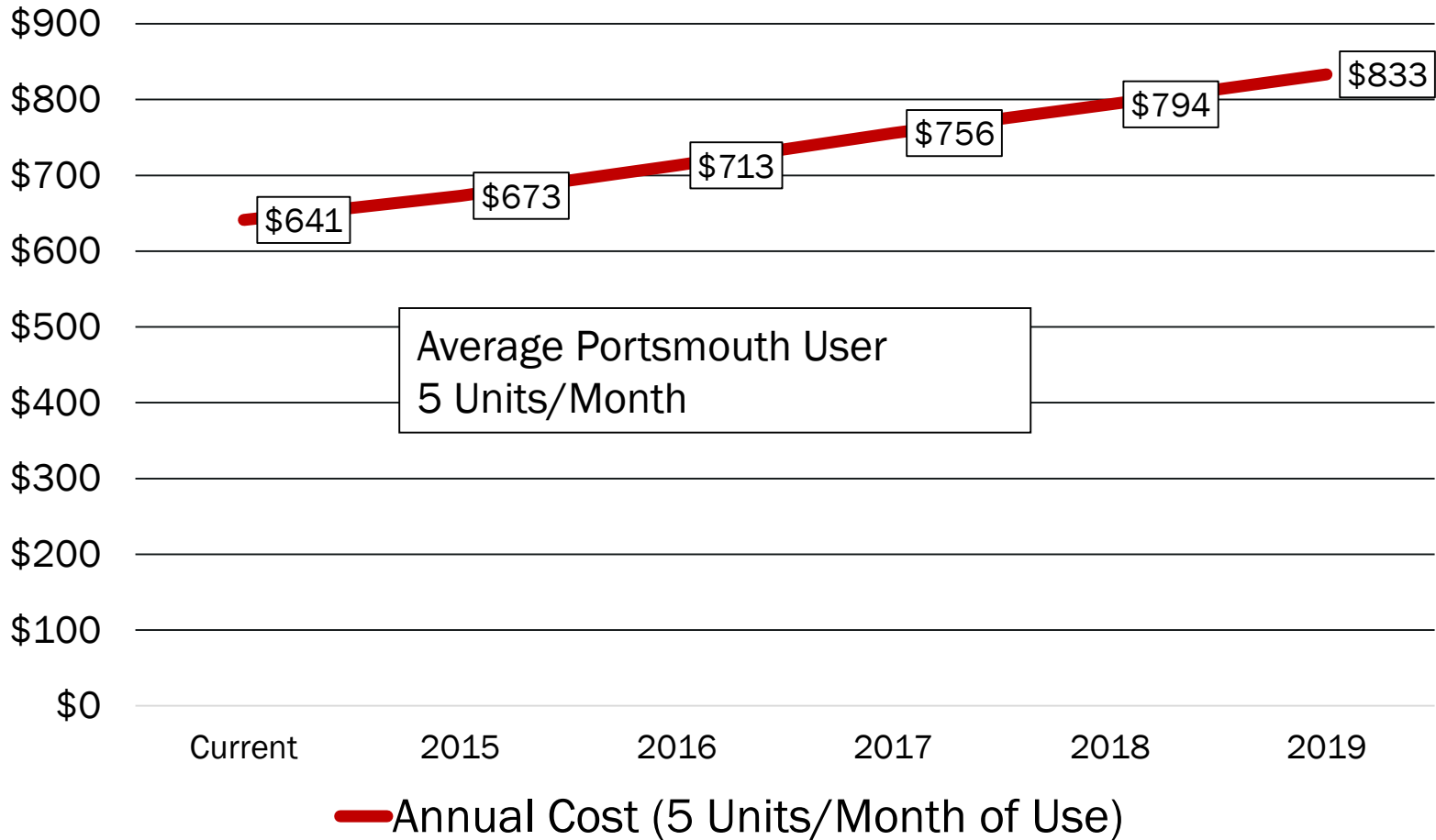
Utilize Net Position to Avoid Rate Spikes

Begin Bond Payments for PIWWTF Project



Five Year Rate Model Projections - \$80.0M Upgrade

Projected Annual Sewer Bills



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Exeter and Stratham Request for Service at Pease



- Exeter and Stratham Request to Investigate Pease WWTF Regional Treatment Option (per Exeter letter on January 22, 2014 and subsequent City Council approval to allow City Manager to proceed and report back)



Exeter and Stratham Request for Service at Pease

- Exeter/Stratham would build infrastructure and pipeline to pump wastewater to Pease
- Exeter/Stratham/Portsmouth would share cost of Pease treatment upgrades based on flow allocations
- Preliminary Assessments:
 - Wright-Pierce - April 2014
 - Underwood Engineers - August 2014
- Water/Sewer Rate Model utilized to assess various scenarios

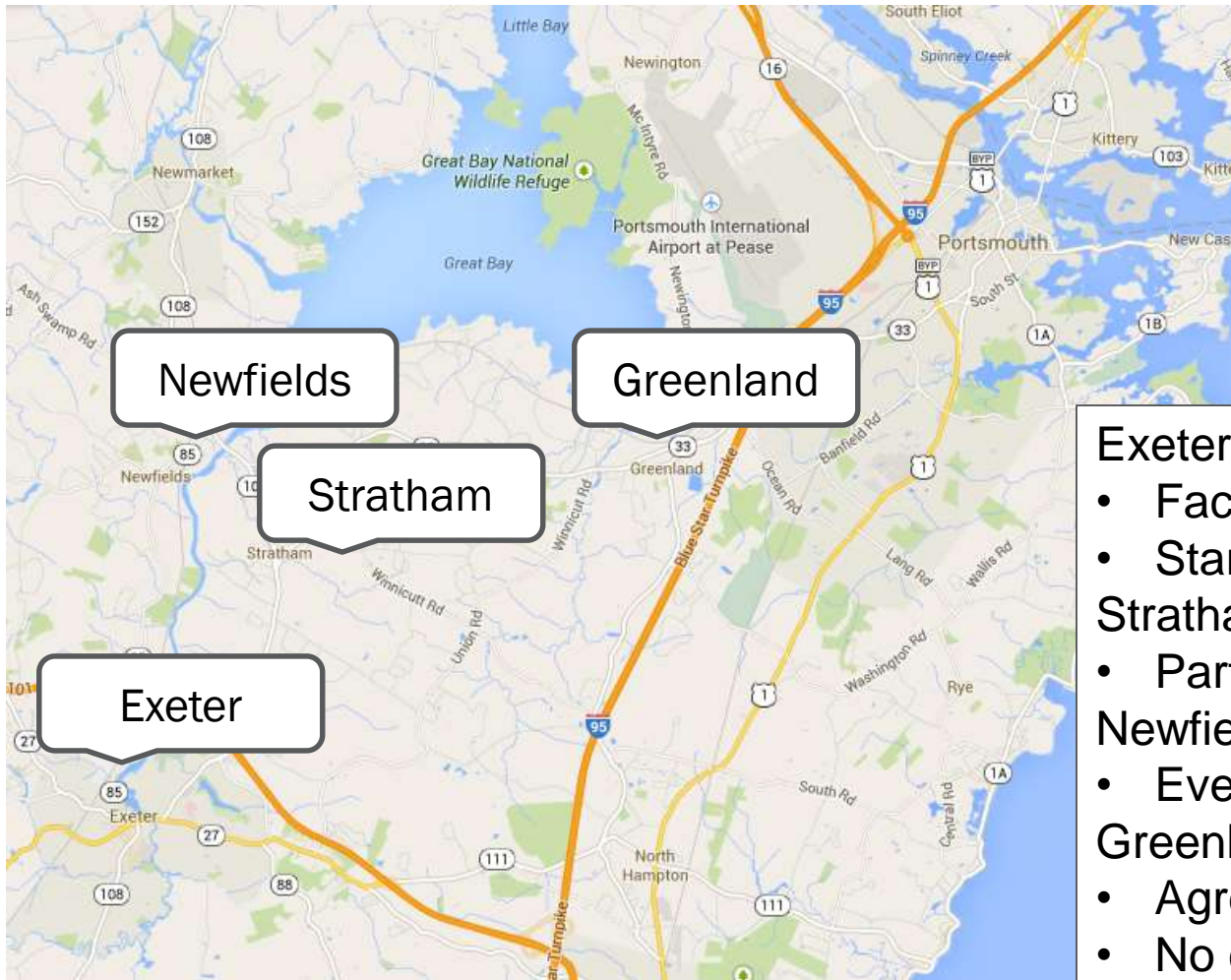


Exeter and Stratham Request for Service at Pease

- Regional approach would cost the same for Exeter/Stratham but cost less for them in the long run than owning and operating their own treatment facility
- Neutral with respect to Rates for Portsmouth due to existing CIP project costs planned for Pease WWTF totaling \$8.65M
- Permitting issues are major hurdle – Anti-degradation (DES), shellfish bed impacts (FDA/DES), outfall upgrades to Pease (multiple agencies)



Area Communities – Wastewater Status



- Exeter:**
- Facilities Plan Ongoing
 - Start Construction June 2016
- Stratham:**
- Partner with Exeter
- Newfields:**
- Eventual facility upgrades
- Greenland:**
- Agreement with Portsmouth
 - No clear funding source yet



PORTSMOUTH/EXETER/STRATHAM REGIONAL PEASE OPTION

- All Wastewater Flow From Portsmouth and Exeter/Stratham to Pease WWTF
- Portsmouth Regional WWTF at Pease Recommended by Wastewater Master Plan
- Pros and Cons to This Option



BENEFITS OF REGIONAL PEASE OPTION

- Less Restricted Site
- One Biological Treatment Facility Instead of Two
- Sustainable Component Potential (Biosolids, better chance to build to LEED Standard)
- Ability to Modify if EPA Requirements Change



COMPLIANCE PATH RISKS FOR PEASE WWTF

- Non-compliance with CD
- Regulatory Hurdles
 - Many – Will Require Full Support
- Not Clearly Defined Costs
- Staff Resources



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COMPLIANCE PATH AND COMMITMENTS

- Compliance Path
 - Stay Course with Peirce Island WWTF Project
 - Pursue Aggressively Regional WWTF Solution at Pease
- Commitments
 - Ongoing Investments in Good Science (sampling and modeling), Technical and Engineering Support and Legal Services



NEXT STEPS

- Immediate needs
 - Water Quality Modeling funding
 - Direction from City Council regarding Pease Regional Option
 - Continuing with Bypass/Blending legal challenge
 - Additional Design Input



QUESTIONS



PEIRCE ISLAND WASTEWATER TREATMENT
FACILITY PROJECT