



Presentation to

Old Lyme Shores Beach Association

Wastewater Facilities Plan Public
Hearing

December 6, 2011

<http://OLDLYMESHORES.ORG>

Agenda

- Review of DEEP Facilities Planning Program
- Individual On-site Wastewater Management
- Decentralized Wastewater Management
- Small Community System Solutions
- Public Sewer Extension Alternatives
- Recommended Alternative
- Opinion of Capital Cost
- Environmental Impact of Recommended Plan
- Summary and Next Steps

NOTE: NO VOTES WILL BE TAKEN TODAY!

DEEP Facilities Planning Program

- OLSBA has been coordinating with Department of Energy and Environmental Protection on this Wastewater Management Plan
- Obtained Clean Water Funding 55% grant approval for study
- DEEP approved engineering agreement
- Project has been underway since March 2011
- Facilities Plan focus on 4 wastewater disposal alternatives



Study Area

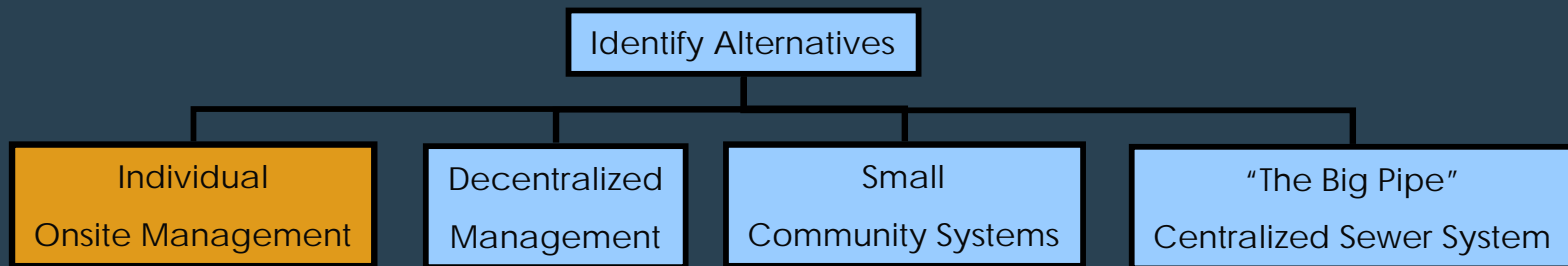


**Old Lyme Shores
Beach Association**

- 192 developed lots
- 4 undeveloped lots
- Approx. 56.8 total acres
- Approx. 2.1 miles of north-south roadways (2.2 miles total)
- 149 Septic Tanks
- 15 Cesspools
- 28 Unknown
- 59 Wells
- 750 ft of shoreline
- 86% of Lots <1/4 acre

Takeaway: OLSBA is proactive

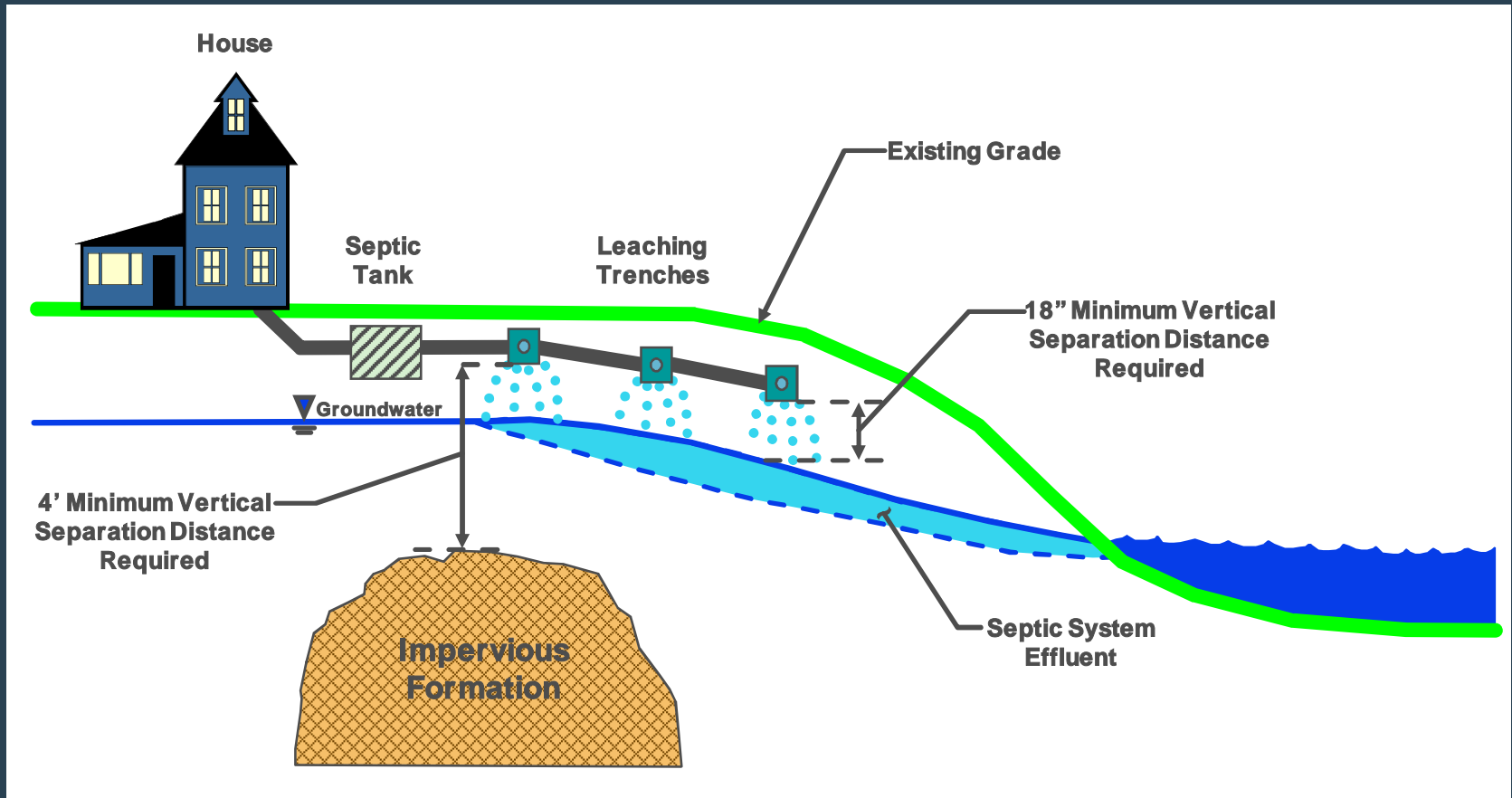
Individual Onsite Management (Septic Systems)



Septic System Evaluation - Data Research

- Questionnaires to OLSBA Residents
 - Followup Phone conversations
- Town Hall Septic Systems review
- Desktop analysis for N dilution and pathogens
- Installation of 6 microwells
 - Identified 2 sampling points for surface water sampling

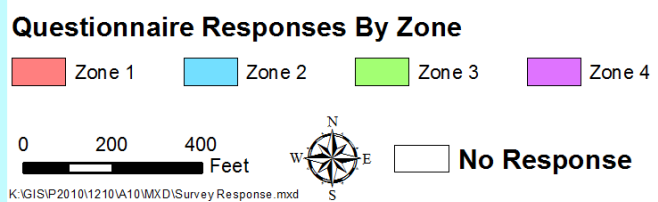
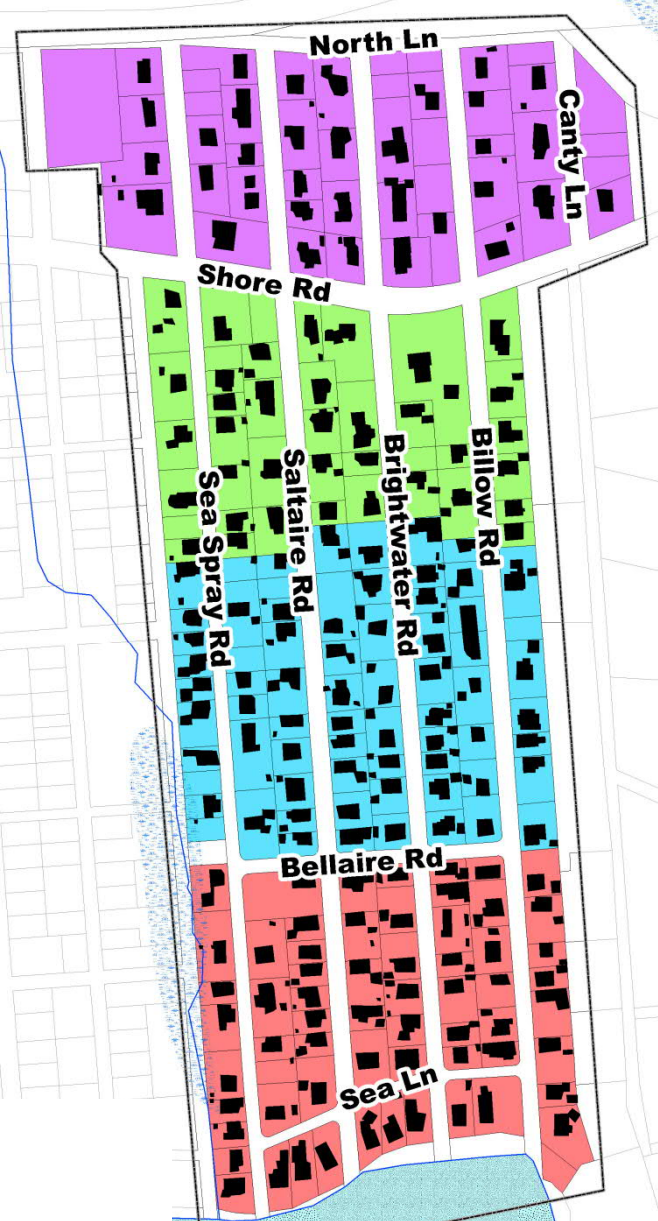
Public Health Code – Conventional Septic System



18-inch separation distance to groundwater is an important Health Code requirement for wastewater treatment

Community Response

- Sent Questionnaires to 192 Owners
- 131 Responses – 66.2% Response
- Grouped Responses into 4 Zones
- Aggregated Results to Keep Individual Responses Confidential



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Questionnaire Results Summary

- 6% frequent pump-outs suggests failing septic systems
 - (1% of failures can indicate community pollution problem per regulations)
- 59% of septic systems at the end of their design lifespan
- 12%+ experiencing [septic system] self-reported problems
- Multiple disposal system problem indicators suggest more serious community wastewater issues
- Poor surface drainage is a sign of poor wastewater treatment

Small Lot Size

Lot Size (Acres)	# of Lots	% of Lots
< 0.10	73	33%
0.10 to 0.25	119	53%
0.25 to 0.50	30	13%
0.50 to 0.75	0	0%
> 0.75	2	1%



86%

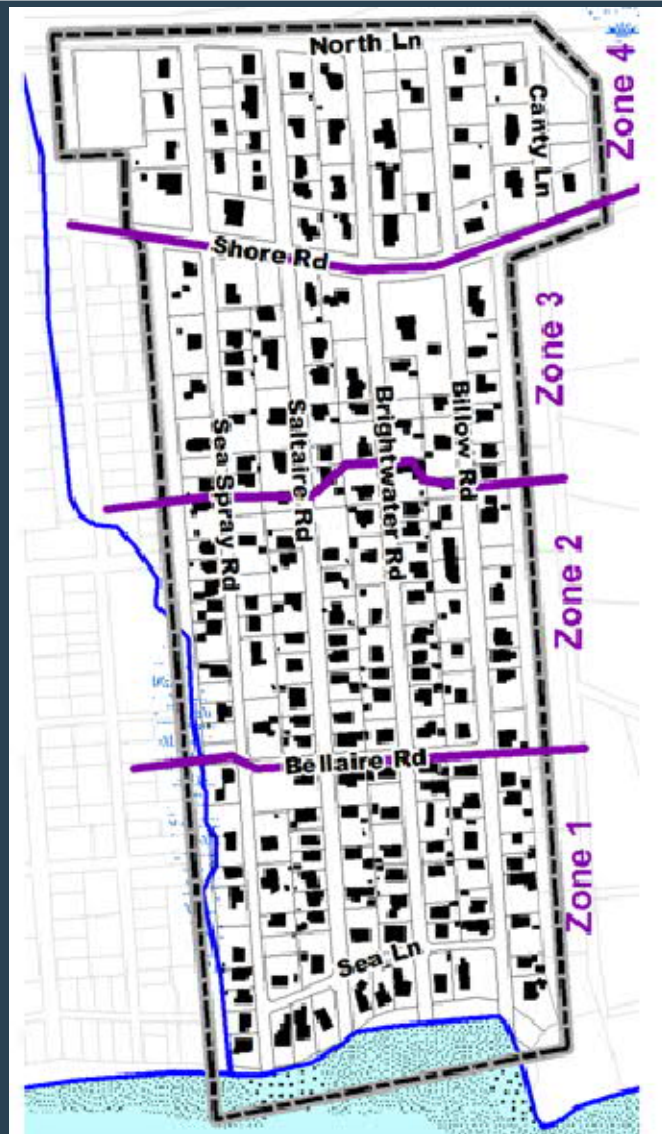
Desktop Spatial Analysis

- 10 ft Property Buffer
- 15 ft Building Buffer
- 50 ft Watercourse Buffer
- 75 ft Well Buffer
- Well Locations Based on Town Sanitarian Records
- Lots of Wells (38+) for an Area with a Seasonal Water System
- Need $\frac{1}{4}$ acre for nitrogen dilution



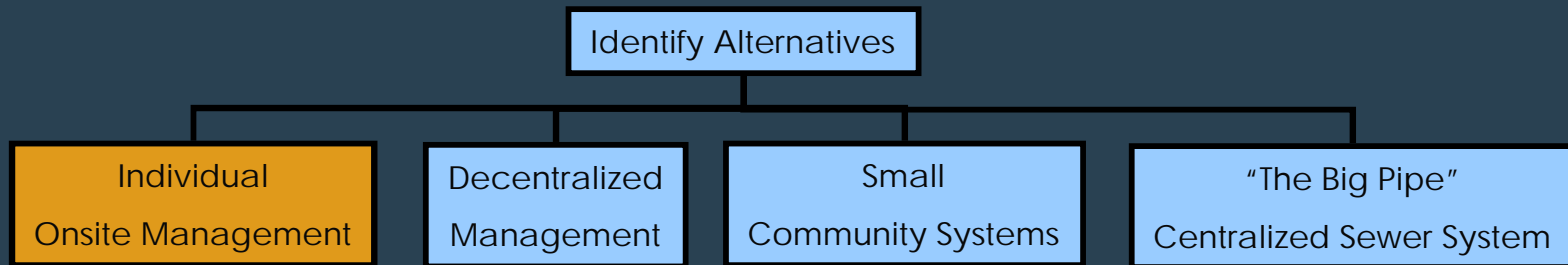
or septic repairs after buffers are applied

On-site Ground & Surface Water Sampling Results



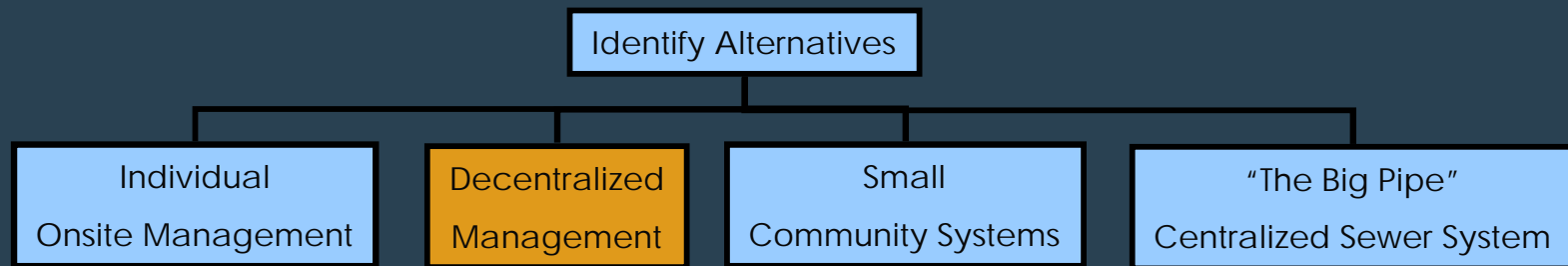
- Elevated levels of bacteria
 - E. coli, Enterococci, Fecal Coliforms, and Total Coliform
- Signs of incomplete wastewater treatment
 - Elevated levels of ammonia and carbonaceous oxygen demand
 - Hypoxia concern in Long Island Sound
- Surface water more polluted than the groundwater
- Poor water quality equally affects all zones
- Groundwater depth
 - Zone 1 = 1.5 to 2.5 ft
 - Zone 4 = 6.6 to 9.5 ft
- Well users should test wells regularly

Summary of Individual Onsite Management (Septic Systems)



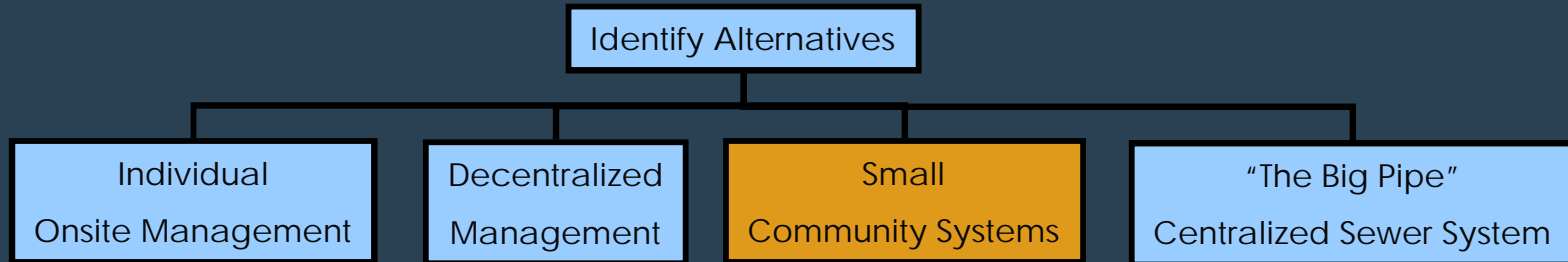
- Shallow depth to restrictive layers (Groundwater & Bedrock)
- Visible and non-visible problems exist
- Rapid water movement through upper soil strata too fast
- Wells too near leaching systems
- Sampling results indicate pollution
- Backyard drainage trenches are conduits for potentially polluted water to reach the shoreline
- 35%+ lots cannot meet PHC separation requirements
- Many lots have inadequate area for adequate treatment, N dilution or pathogen die-off

Summary of Decentralized Management (On-site Mini Treatment Plants)



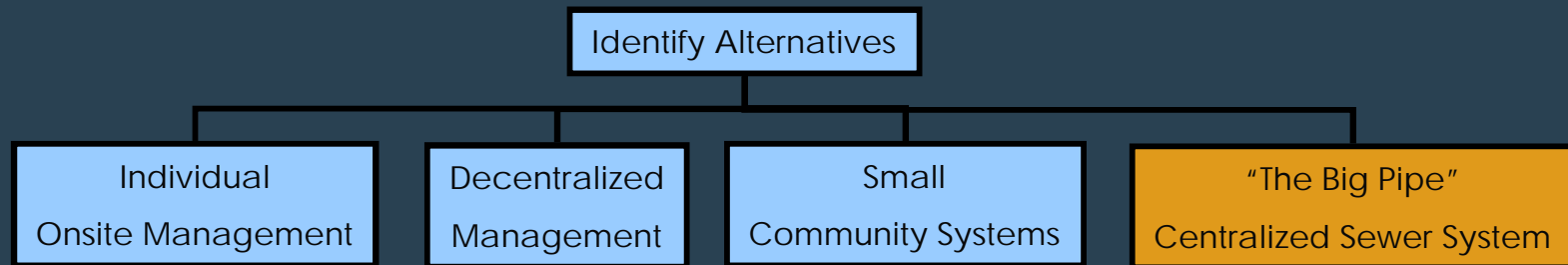
- Advanced treatment systems are complex treatment systems
- EACH lot would have its own mini-treatment plant
- Spring start-up needed a few weeks before seasonal houses are occupied
- Requires operations & maintenance contract
- Must be an engineered septic system design
- Very expensive (approx. 2x sewers)
- Still may NOT comply with all Public Health Code requirements
- Dispersal issues with flooding and shallow groundwater

Summary of Small Community Systems



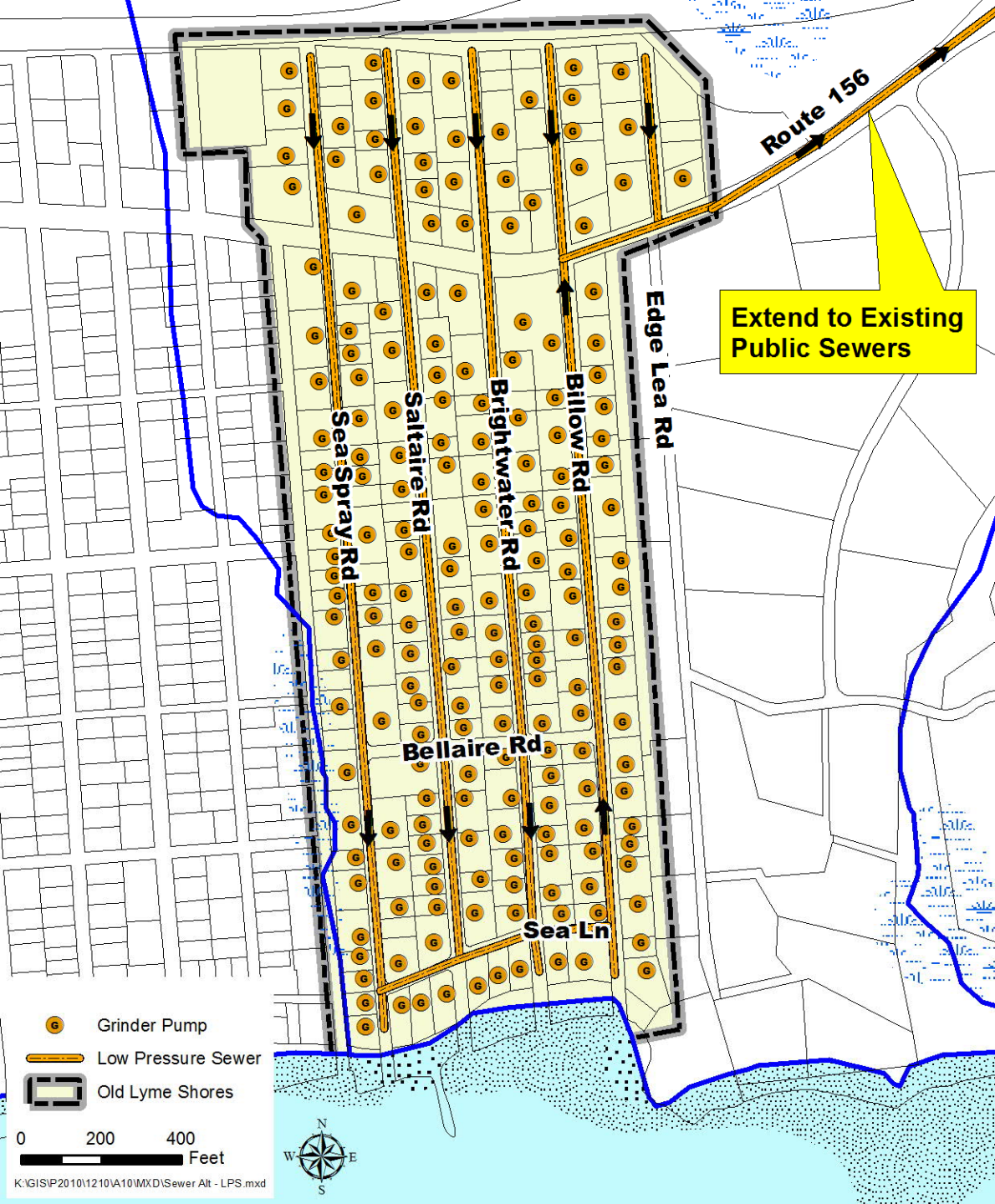
- Suitable nearby accessible land is not available for a small community system
 - Need a very large lot, site acquisition, and Medium or High soil suitability
- Need 60+ sites of “Ball field” size for summer sewage flows
- Large O&M requirement - staff to operate plant
- Need to meet 10 mg/l Nitrogen at area of environmental concern (wetlands, parcel lines)
- DEEP permitting much more stringent than the Public Health Code (Exceptions Not Allowed)
- 21 Day travel time requirement

Public Sewer Extension



- Two Types of Public Sewers
 - Low Pressure Sewers – Uses individual grinder pumps
 - Gravity Sewers – Uses central pump station

Low Pressure Sewers



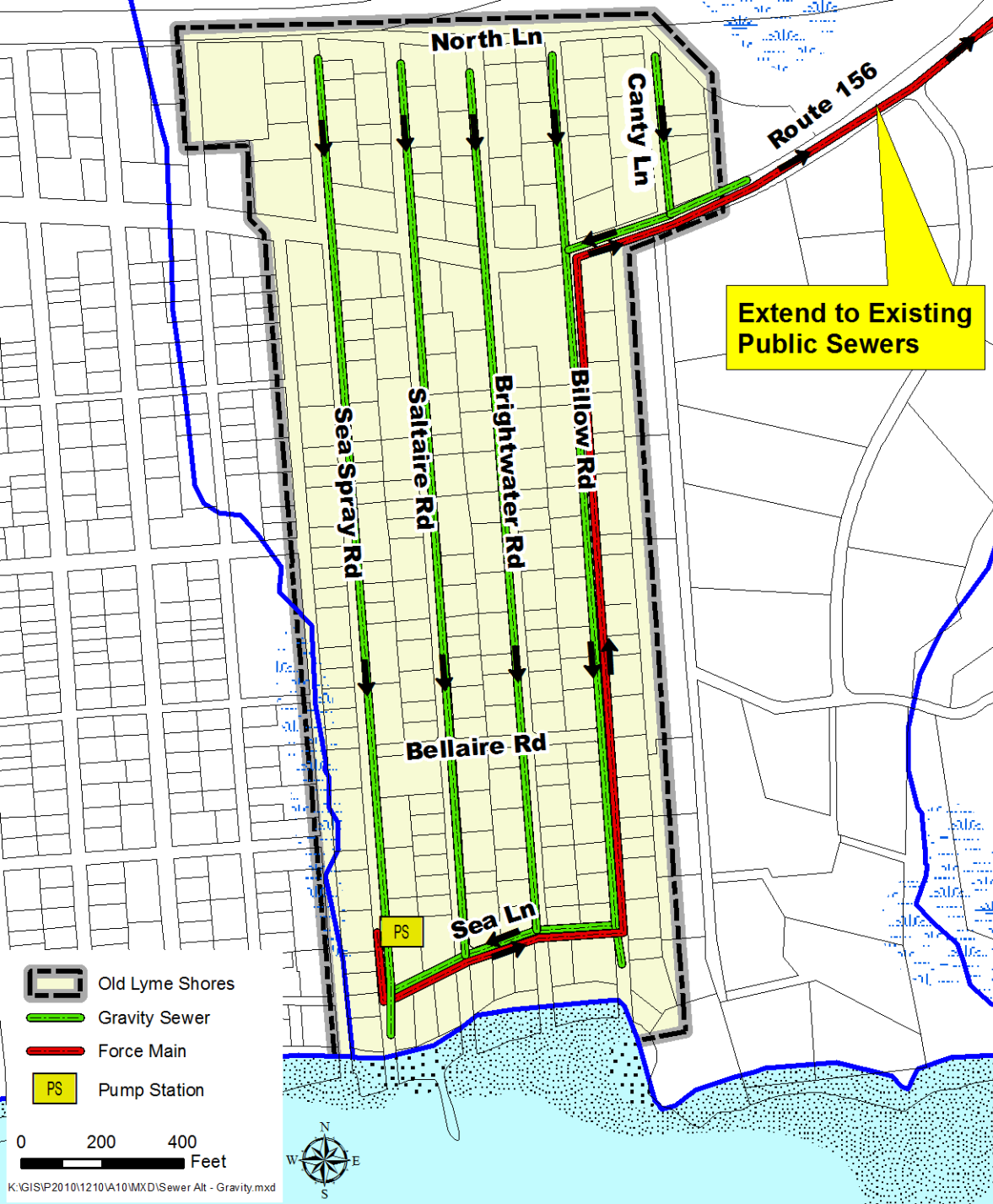
- 10,800 ft low pressure sewer main
- 192 grinder pumps
- 4-5 ft deep pipe construction
- Grinder pump O&M costs
- Potential for utility system upgrades
- Impacted by power loss

Takeaway: Slightly Less expensive but more site disturbance

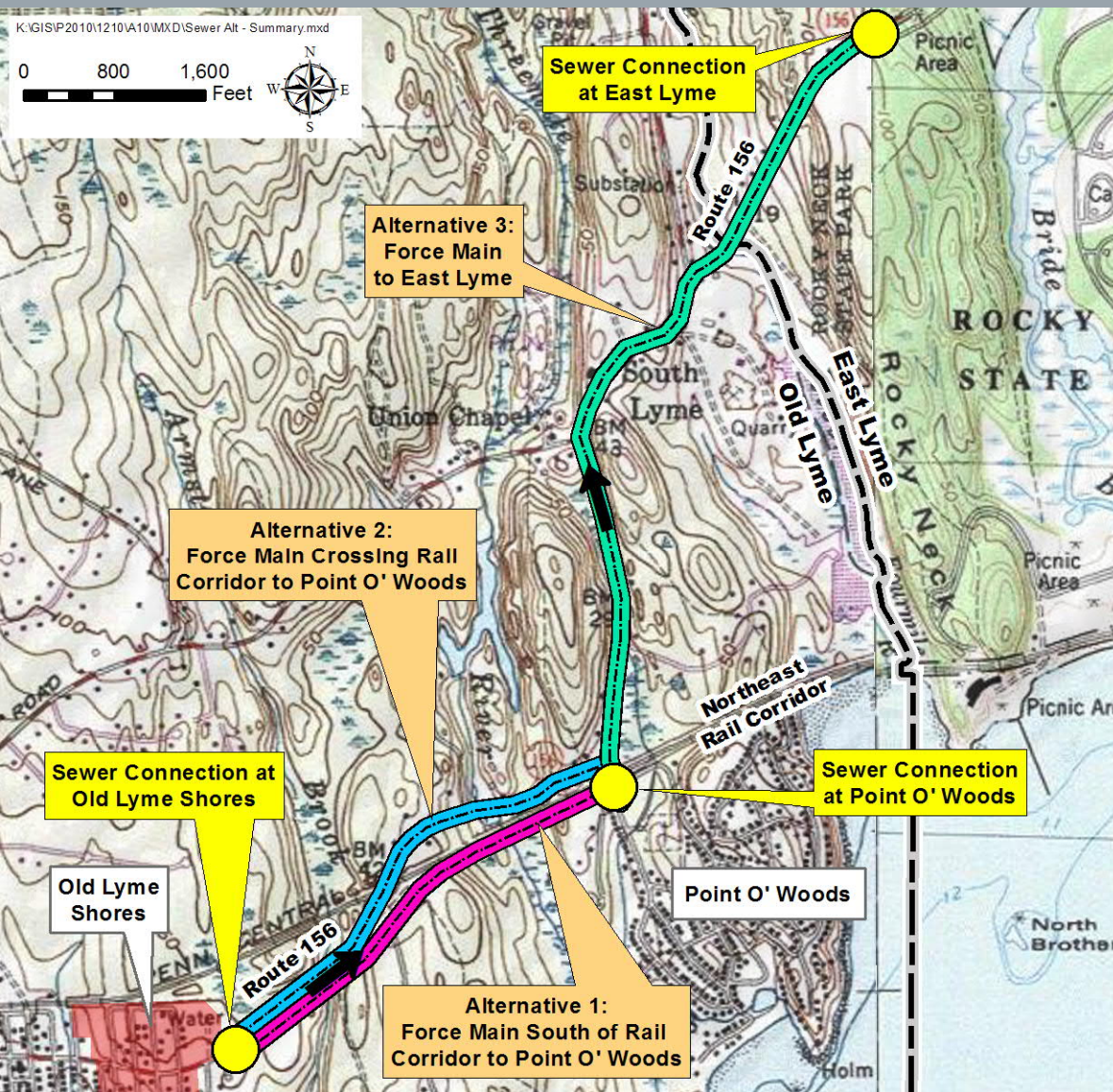
Gravity Sewers

- 10,800 ft gravity sewer pipe
- 3,500 ft force main
- 1 pump station
- 6-8 ft deep pipe construction
- 1 Land easement
- Potential for utility systems and roadway upgrades
- Reliable

Takeaway: More expensive but less mechanical parts to maintain



Alternative Routes for Sewer Extensions



- Alternative 1
 - +4,500 ft force main tidal wetland crossing
- Alternative 2
 - +4,900 ft force main railroad crossing
- Alternative 3
 - Add an additional 5,300 ft of force main pipe to Alternative 1 or 2
 - Parallel to Point O' Woods pipe

Recommended Alternative

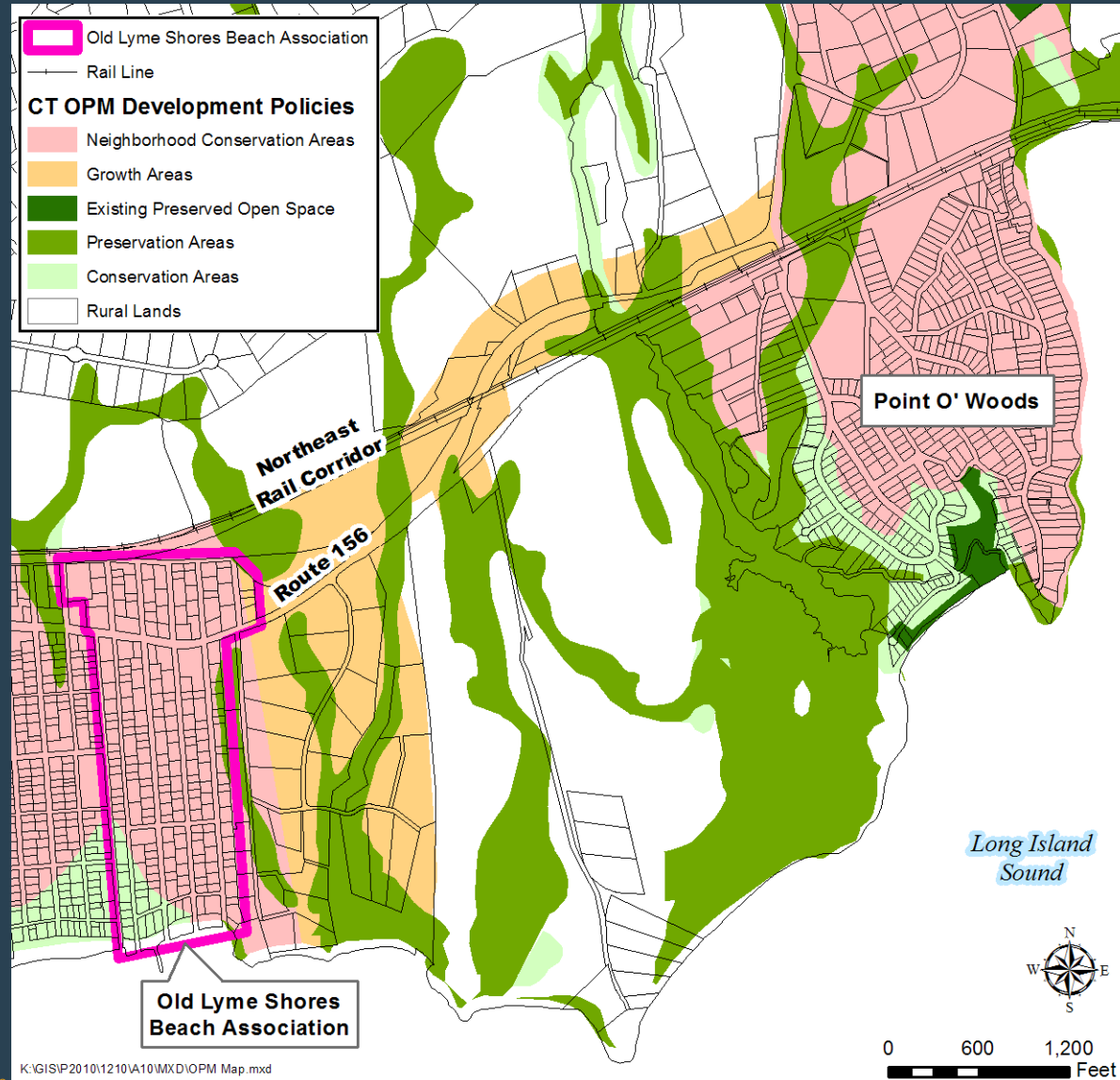
- Recommendation: Centralized Sewers discharging into East Lyme is the most feasible and cost effective solution.
- Allows the possibility of utility improvements
 - Water main replacement
 - Storm drainage improvements
 - Bury overhead power and communication cables
- Includes roadway improvements
- Explore cost sharing with Old Colony and Miami Beach
- Discuss buy-in to connect with Point O' Woods sewer infrastructure

Connecticut Environmental Policy Act (CEPA) Consistency

CEPA Consistency

- CT OPM Conservation and Development Plan Review
- Natural Diversity Database Review
- Coastal Area Management Review
- State Historical Preservation Office Review

CT OPM Conservation and Development Plan Review

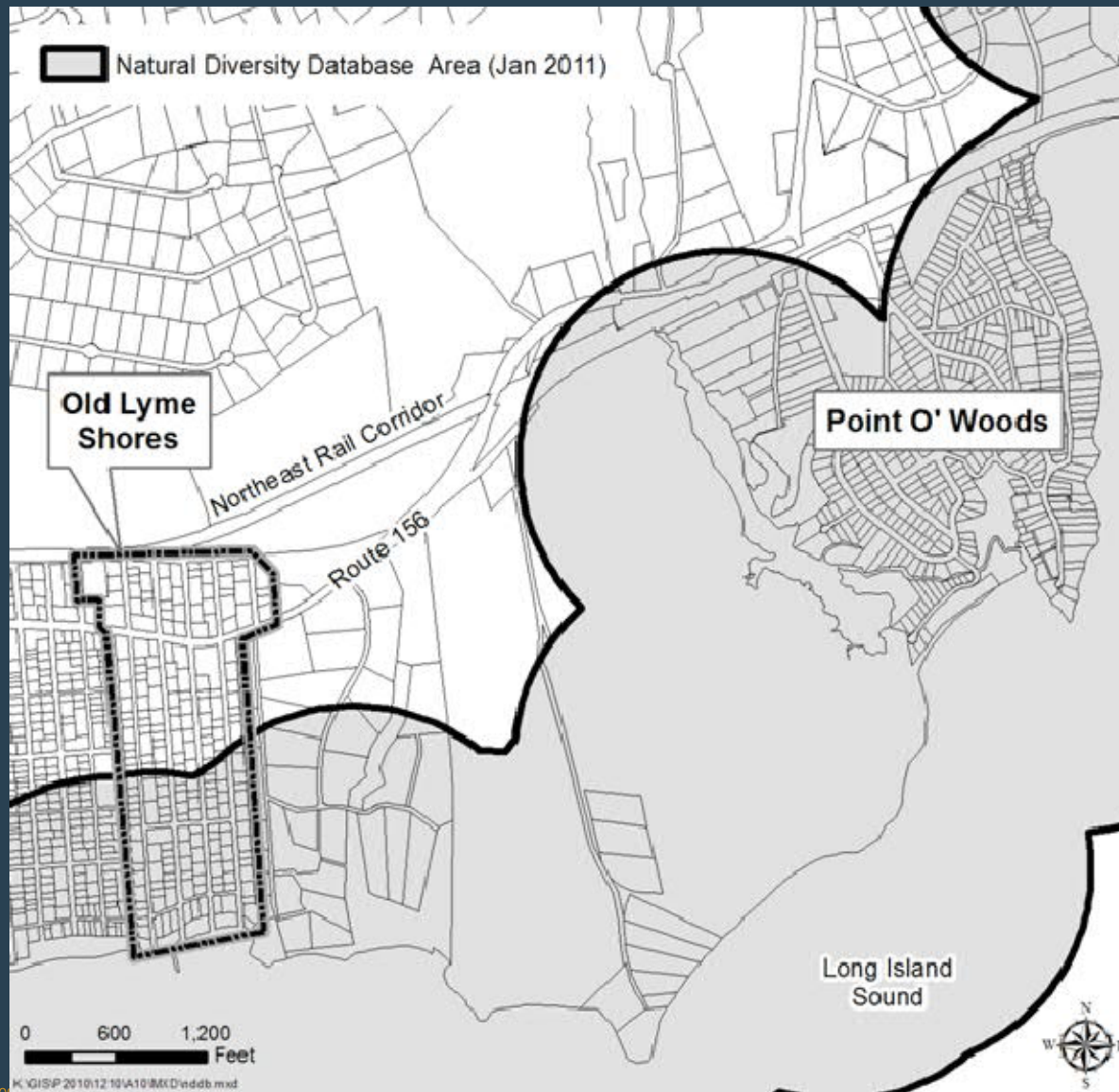


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Takeaway: The C&D map for Old Lyme Shores area largely supports public sewers

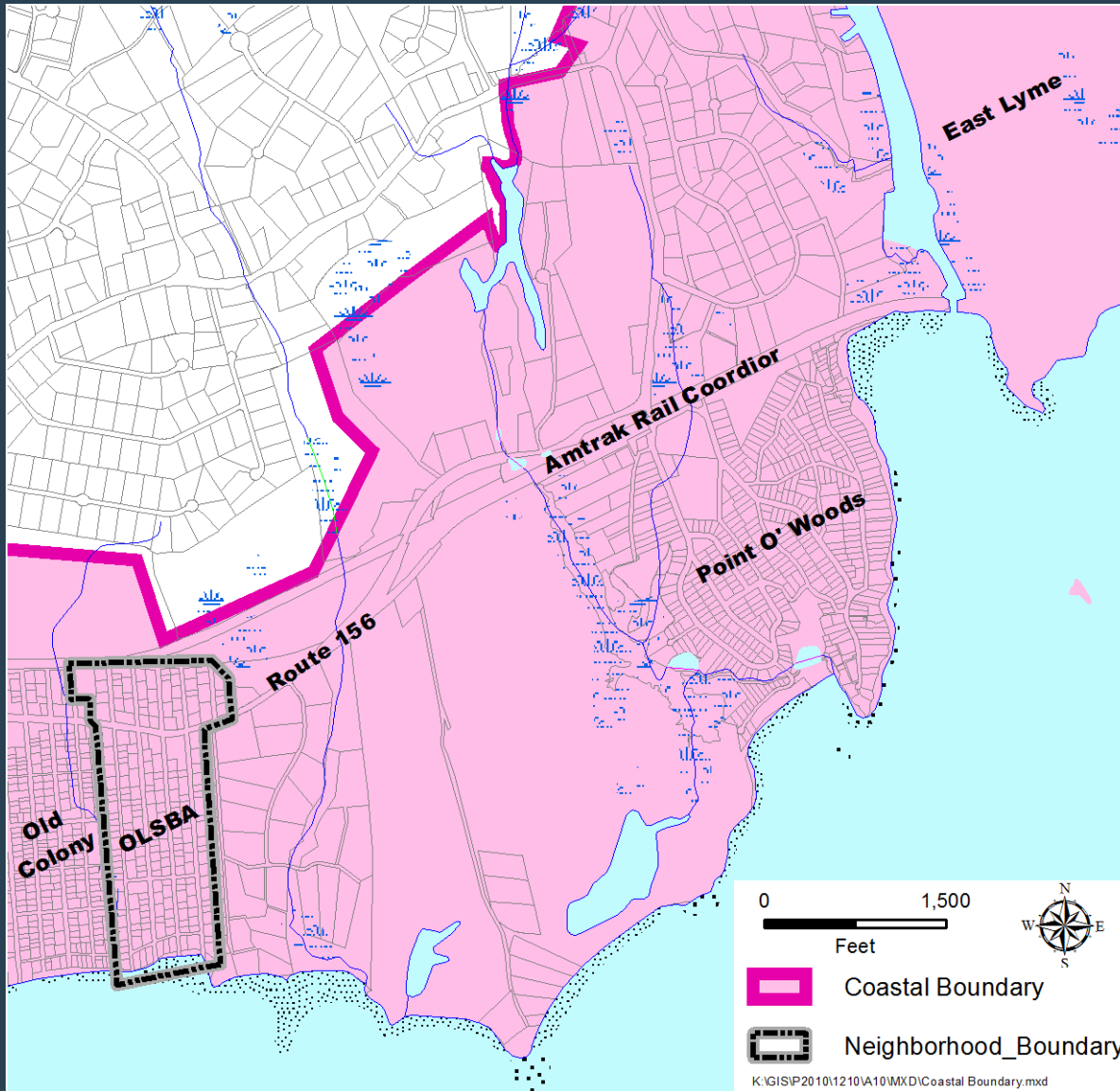
Natural Diversity Database Review



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Takeaway: NDDB review indicates sewers will not adversely impact threatened species

Coastal Area Management Review



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Takeaway: The project is subject to a Coastal Area Management consistency review

What About Groundwater Recharge?

- Town has created Water Resources Committee
 - Proposes permitting process for flow discharge from OL >5,000 gpd
 - Need to submit application to Committee
 - Application Fee determined by Select Board
 - Applicant to prove no significant impact from water diversion
 - Currently in draft form, Townwide Ordinance needed to adopt
- Groundwater currently discharges southward to Long Island Sound
- Collection wells are north of Route 156
- OLSBA not located within an aquifer protection area
- DEEP permits water diversion

Sewer Extension – Opinion of Project Cost

- What will the sewer project cost to construct?
 - \$6.3 M to \$9.6M
 - Not including Cost Sharing of Force Main with Old Colony
 - Assumes obtaining connection to Point O' Woods sewer infrastructure
 - Order of Magnitude Opinion of Cost in FY11 dollars
- What will the project cost the Association?
 - \$4.7M - \$7.2M (in 2011 dollars)
 - Assumes 25% DEEP Clean Water Fund (CWF) Grant and low interest loan reduces local community costs
- What will the sewer project cost me?
 - \$24,700 - \$37,700 per parcel approx. in 2011 dollars
 - Cost split among 192 Association parcels

Other Improvements – Opinion of Project Cost

- What about Construction of Connection to stub? –
 - Assume average additional \$2,000 - \$2,500 (varies for each property)
- What is the annual usage fee – Estimate \$411/yr
- What will the other improvements cost to construct?
 - Roadway reconstruction - \$765,000 (included)
 - Storm Drain Improvements – Say \$250,000 (need to be designed first)
 - Water Main Replacement *(including hydrants) - up to \$500,000
- Utility improvements are not DEEP Clean Water Fund Grant Eligible
- What will the total project with other improvements cost me?
 - \$31,000 - \$48,000 per parcel approx. in 2011 dollars

* Assumes CWC provides water supply system piping

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Summary / Next Steps

- Summary

- Fuss & O'Neill recommends Centralized Sewers because it is the most feasible and cost effective solution.
- Solution will meet DEEP long term wastewater management guidelines.
- 4 to 6 years to complete project (Completing Year 1 Now)

- Next Steps

- December 2011 – Submit Wastewater Facilities Planning Report For DEEP review, comment, and approval.
- January 2012 – Continue discussions with key stakeholders (OLSBA, OCBA, POW, DEEP, East Lyme, New London, etc.)
- June 2012 – Vote to proceed with Recommended Alternative and secure bonds for project

Recommended Alternative - Permitting

- Old Lyme Planning and Zoning
 - Approval of Pump Station or zoning changes
- Old Lyme Inland Wetlands
 - Work within 100 feet of tidal and inland wetlands
- Amtrak
 - Crossing the rail corridor as required
- DOT State Road Encroachment
 - Work on Route 156 as required
- DEEP Office of Long Island Sound Programs
 - Work near the coastline
- East Lyme Sewer Department
 - Connection to public sewer
- DEEP Municipal Facilities
 - Approval of sewer extension

Recommended Alternative - Agreements

- Department of Corrections
 - Allotment of unused Gates prison sewer capacity
- Point O' Woods
 - Intermunicipal Agreement to discharge wastewater flows
- Bird Sanctuary
 - Easement through protected areas (as required)

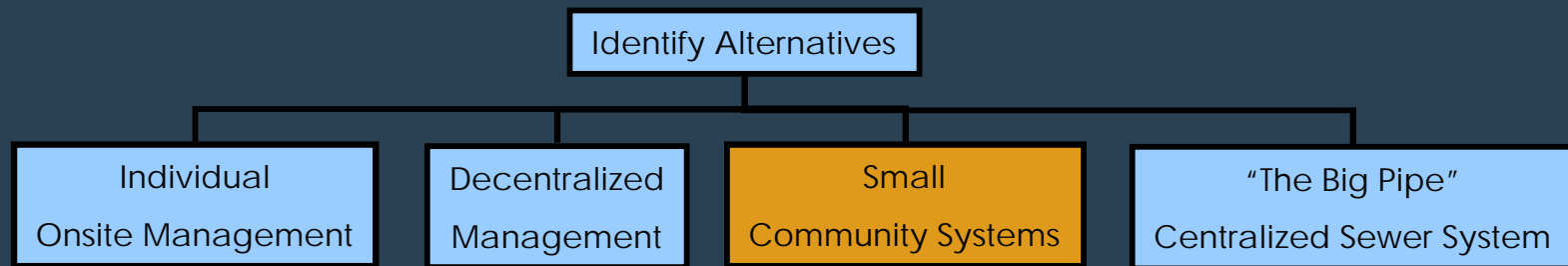
Questions

<http://OLDLYMESHORES.COM/WPCA.html>

Appendix

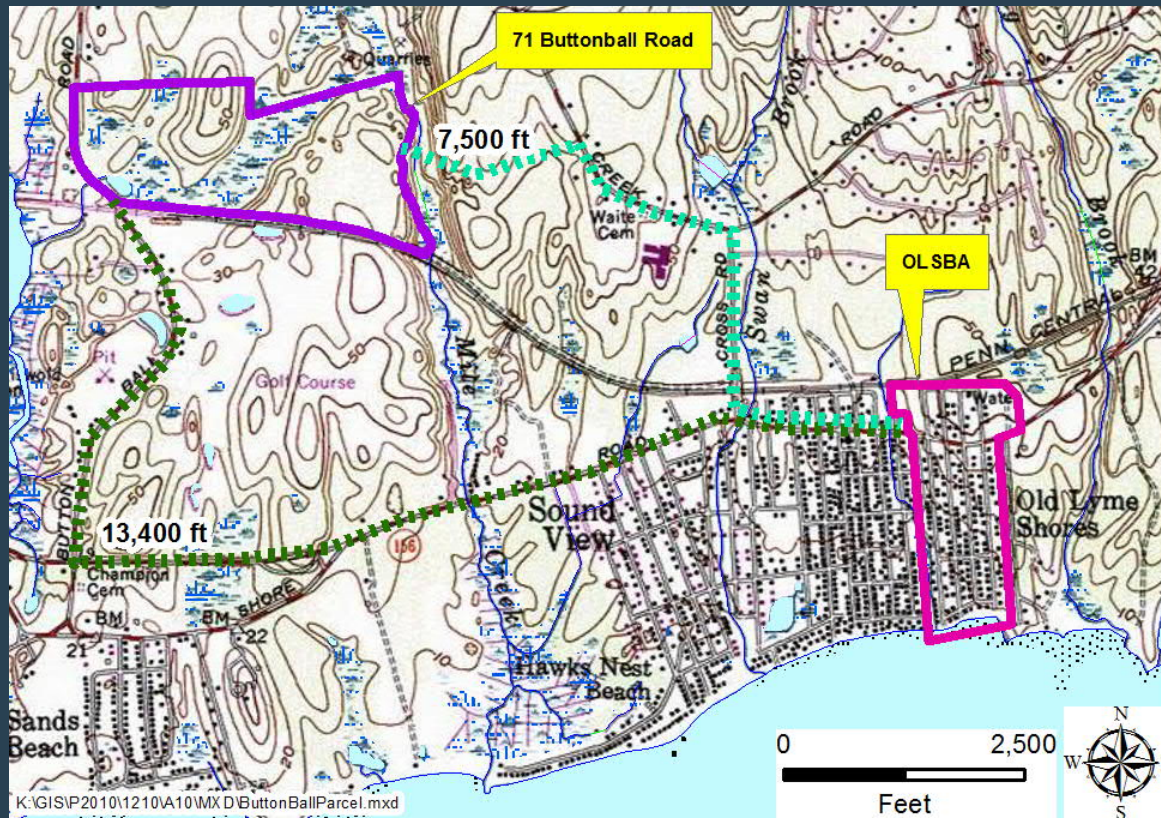
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Town-Owned Community Dispersal Site



- 102 Acre Parcel off Buttonball Road north of golf course
 - Approximately 1/3 of parcel area usable
- Two pipeline routes (both require Amtrak crossings)
- Still need to treat raw wastewater – UV, N reduction
- Uncertain if it can support all beach areas
- Construction and Maintenance Cost is expensive

Town-Owned Community Dispersal Site



- 2 Alternatives
- Long force main
- Railroad crossing
- Land easements
- Cooperation with the Town is key