Board of Selectmen

Water Quality and Wastewater Planning

October 4, 2017

Agenda

- **Evaluation of Additional Groundwater Recharge Sites**
  - Location Map – 32 and 43 Lots Hollow Road
  - Summary of the Testing Performed and Required
  - Description of a Proposed Wick System
  - Preliminary Layout of a Proposed Wick System
- **MassDOT Intersection Project - Downtown Area Sewer Expansion**
  - ##
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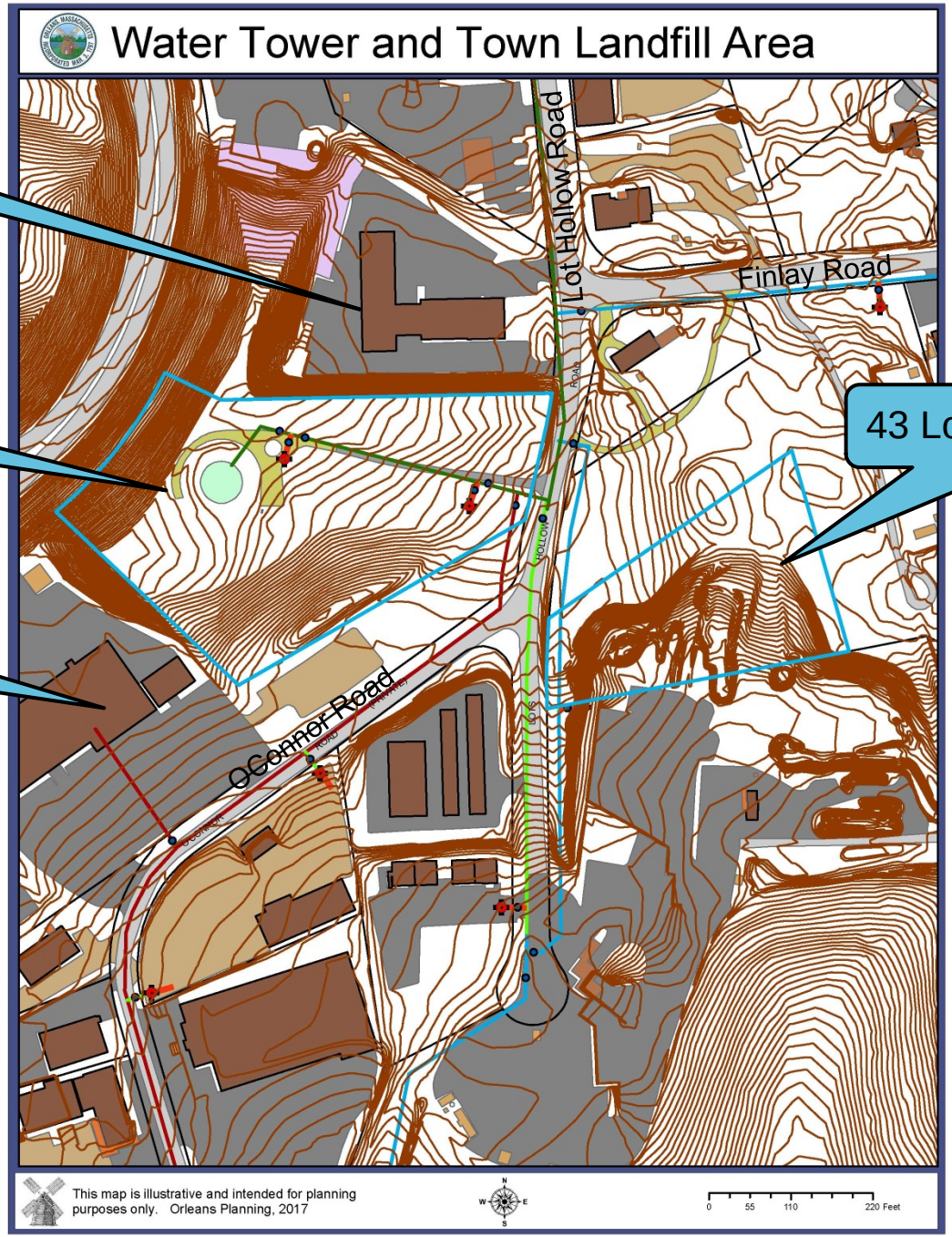
- **Questions and Answers**

Evaluation of Additional Groundwater Recharge Sites


Water Tower and Town Landfill Area
Wilkinson Ecological Design
32 Lots Hollow Road
Orleans Toyota
43 Lots Hollow Road
Lot Hollow Road
Finlay Road
OConnor Road
This map is illustrative and intended for planning purposes only. Orleans Planning, 2017
0
55
110
220 Feet

AECOM

Summary of the Testing Performed
43 Lots Hollow Road

- **Installation of Several Soil Borings and Monitoring Wells (Depths to 248 Feet Deep)**
- **Installation of Several Soil Borings and Monitoring Wells on Adjacent Properties**
- **Soils Appear to be Favorable for Wick Discharge – Fine to Coarse Sand**
- **Depth to Water Table Favorable for Wick Discharge – 40 to 85 Feet**
- **Several Pumping Tests Performed In the Area of the Potential Wick Discharge**
- **Water Quality Collected and Analyzed from Several Monitoring Wells**

Summary of the Testing Performed (cont.)
32 Lots Hollow Road

- **Installation of One Soil Borings to 45 Feet Deep**
- **Installation of Several Soil Borings and Monitoring Wells on Adjacent Properties**
- **Soils Appear to be Favorable for Wick Discharge – Fine to Coarse Sand**
- **Depth to Water Table Favorable for Wick Discharge – 90 to 105 Feet**
- **Several Pumping Tests Performed South of the Landfill – 350 Feet East**
- **Water Quality Collected and Analyzed from Nearby Monitoring Wells**

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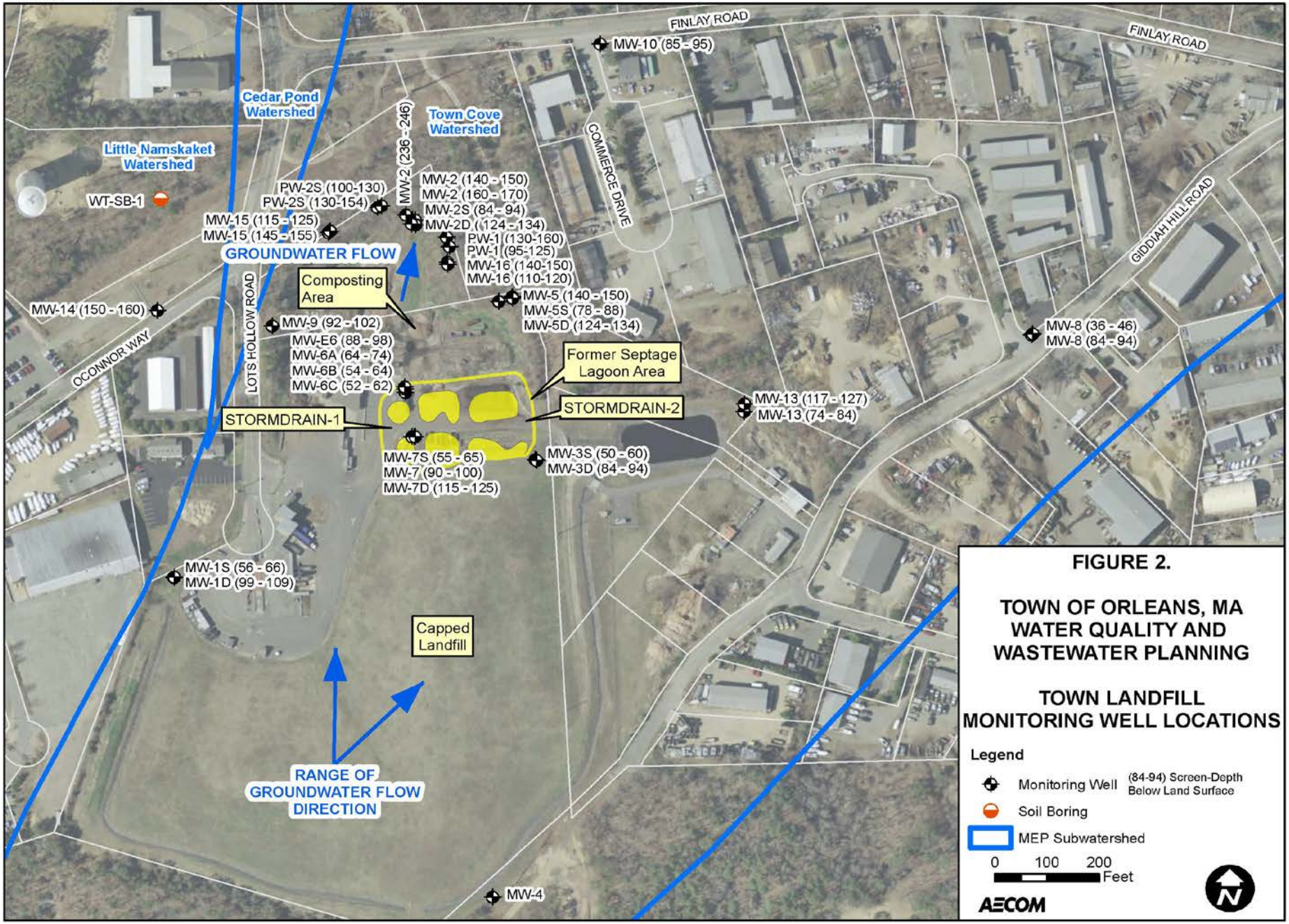


Summary of the Testing Required

- **Confirm with MassDEP the Field Investigation Requirements**
- **Prepare a Hydrogeologic Evaluation Proposal**
- **Conduct Field Investigations**
  - Oversee Drilling and Test Pit Excavation
  - Collect and Analyze Groundwater and Soil Samples
  - Perform Soils Conductivity Testing
  - Analyze and Summarize Field Data
- **Perform Wick Testing**
  - Coordinate with Board of Water and Sewer Commissioners on Placement
  - Install Test Wick
  - Install Observation Wells
  - Perform 8-hour Step Test
  - Perform 30-day Loading Test

Summary of the Testing Required (cont.)

- **Wick Testing Evaluation and Report**
  - Evaluate Discharge Capacity of site
  - Evaluate Capacity and Number of Final Wicks
- **Conduct Groundwater Modeling**
  - Modify USGS Model for Site Specific Conditions
  - Perform and Evaluate Groundwater Modeling Scenarios/Results
  - Evaluate Impacts of Discharge to Existing Groundwater Flow and Quality
- **Submit Hydrogeologic Evaluation Report to MassDEP**
  - Wick Design - Proposed Number, Location and O&M
  - Secondary Discharge Area(s)
- **Submit a Groundwater Discharge Permit Application to MassDEP**
- **Complete Field Investigations and Analysis in Preparation for May 2018 Town Meeting**

Description of an Existing Wick System

- **Considerations**
  - Depth to Groundwater
  - Soil Type
  - Topography
- **Capacity Required**
  - 360,000 gpd

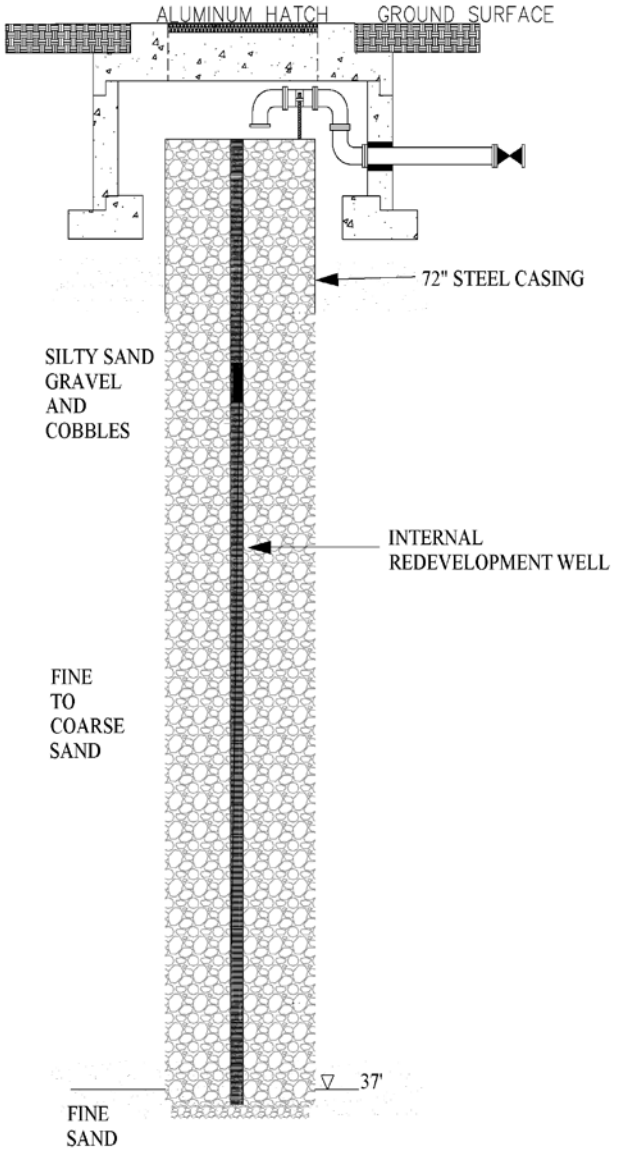
Description of an Existing Wick System (cont.)
Erickson Retirement Communities - Linden Ponds

- **Retirement Community**
  - Hingham, MA
  - 2,266 Units
  - 4,000 People

- **Restaurants, Medical Center, Pharmacy, Pools, Health Spas, Beauty Salon, Library, Game Rooms, Banks, Theater, more**

Description of an Existing Wick System (cont.)
Erickson Retirement Communities - Linden Ponds Wick Design

- Column of Stone
- 4 to 6 Feet in Diameter
- 50 to 65 Feet Deep
- No Well Screen
- Access by Vault
- Vault Less Than 10 ft. sq.



Description of an Existing Wick System (cont.)
Erickson Retirement Communities - Linden Ponds Wick Installation

Description of an Existing Wick System (cont.)
Erickson Retirement Communities - Linden Ponds Wick Completion

Preliminary Layout of a Proposed Wick System

- **Final Wick Design Based on Loading Test Results**
- **Number and Spacing of Proposed Wicks based on Loading Test Results**
- **O&M Requires Alternating Discharging to Several Wicks**
- **MassDEP Requires Conventional Secondary Discharge Area(s)**

Town of Orleans Massachusetts

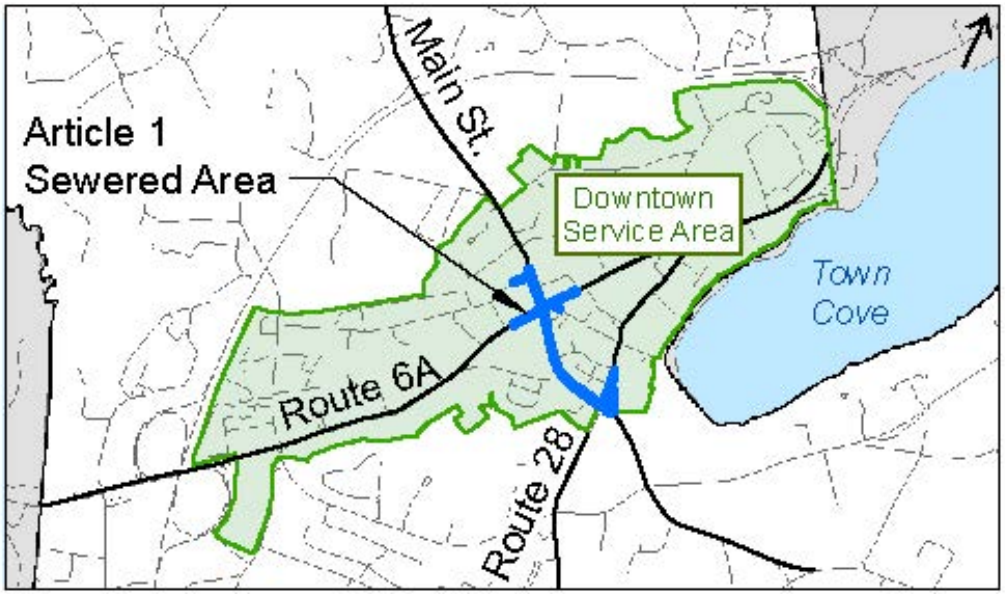
MassDOT Intersection Project - Downtown Area Sewer Expansion

MassDOT Procurement Issues

- **Previous Discussions with MassDOT OK with Procurement Process**
- **Review of Proposal from Lawrence Lynch Raised Concerns with Procurement Process**
- **MassDOT Counsel – Memo Dated September 22, 2017**
  - Substantial Effect on the Price or Scope of the Original Publicly Bid Project
  - Work is Arising Out of and Intrinsically Related to the Original Scope of Work
  - Equal Footing/Prequalification Issues
- **Conclusion - Bid Separately and Not Performed via a Change Order**

Key Facts

Description	MassDOT Project	MassDOT Project Percent of Entire Downtown Area
Gravity Sewer	3,340	11.3%
Low Pressure Sewer (l.f.)	0	0.0%
Force Main (l.f.)	1,140	15.2%
Project Cost	$3,679,700	19.2%
Number Parcels	35	10.0%



Options Discussed

- **Options No. 1**
  - MassDOT Terminates the Contract with Lawrence Lynch
  - Town Bids and Installs the Wastewater Infrastructure
  - MassDOT Rebids the Intersection Project
- **Options No. 2**
  - MassDOT Completes the Intersection Project
  - Town Waits Until After MassDOT Five Year “No Dig” Moratorium to Bid and Install the Wastewater Infrastructure
- **Options No. 3**
  - MassDOT Delays the Restart of the Intersection Project
  - Town Bids and Installs the Wastewater Infrastructure
  - MassDOT Restarts the Intersection Project
- **Option No. 3 Most Favorable to MassDOT**

Special Town Meeting - Budget Summary

Description	Current Budget	Revised Budget
Construction Cost	$2,990,030	$2,700,000
Town		
Construction Contingency at 10%	$299,000	$270,000
Police Details	$268,800	$268,800
AECOM		
Project Management/Administrative	$58,520	$58,520
Shop Drawing Review	$12,155	$12,155
Design Revisions Due to Field Conditions	$7,150	$7,150
RFI Responses	$17,160	$17,160
As-Build Plans	$9,900	$9,900
Periodic Site Visits	$16,940	$16,940
Design (Contract Documents)	$0	$69,700
Bidding Phase	$0	$29,040
Resident Engineering	$0	$240,240
Total Rounded	$3,679,700	$3,699,600

Town of Orleans Massachusetts

Thank You