



Town of

Orleans
Massachusetts

Town of Orleans

Water Quality and Wastewater Planning

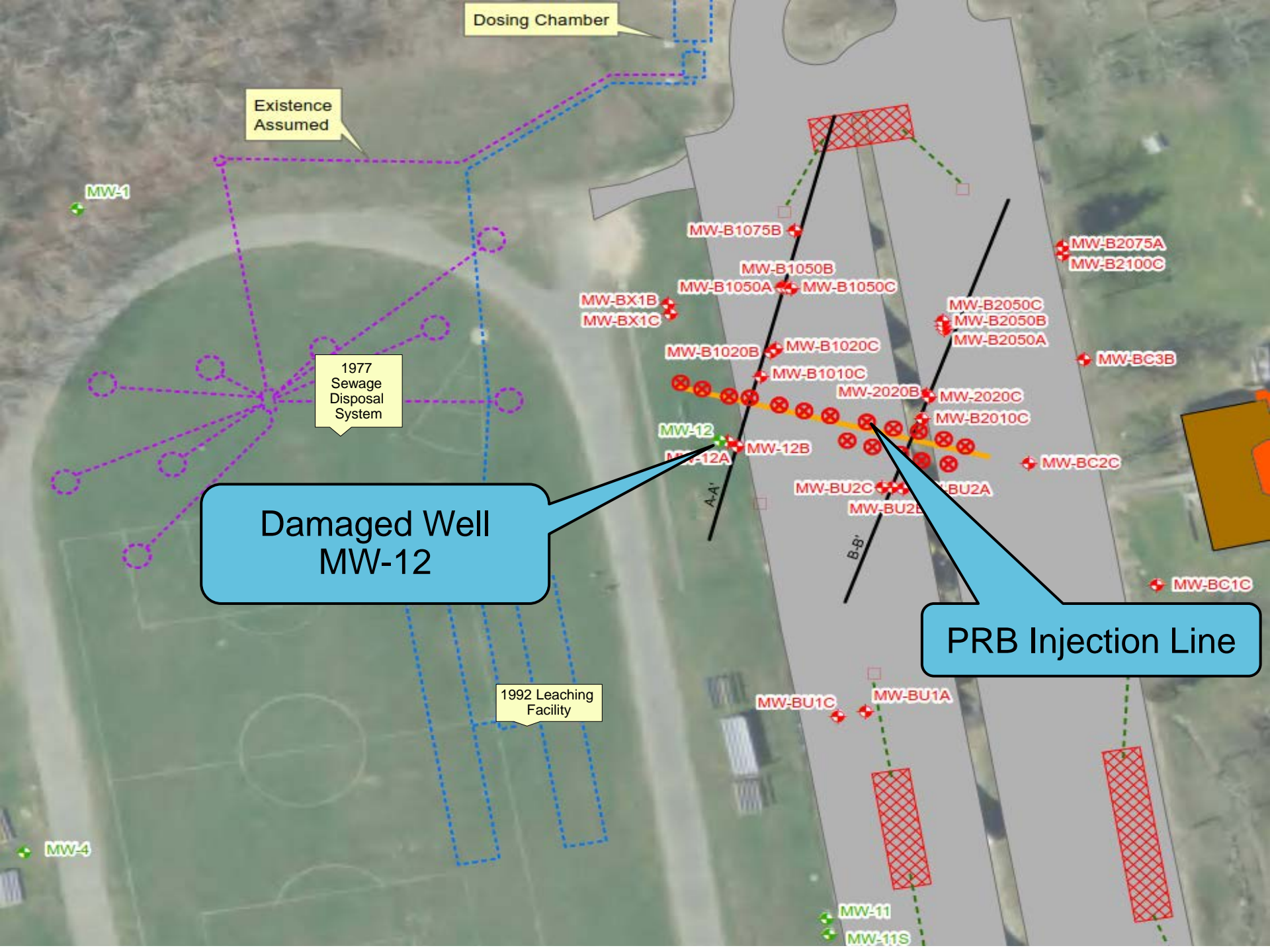
Eldredge Park Permeable Reactive Barrier

December 1, 2017

Eldredge Park PRB Status

- ❖ **2nd Quarterly Sampling June 2017 (Seven Months Post Injection)**
- ❖ **24 Wells Sampled and Analyzed for Nitrate and Other Key Parameters**
- ❖ **2nd Quarterly Draft Report**
 - Reviewed by SMAST
 - Additional Information Regarding Nauset Regional Middle School's On-site Wastewater Disposal System Collected and Reviewed





Dosing Chamber

Existence Assumed

1977 Sewage Disposal System

Damaged Well MW-12

PRB Injection Line

1992 Leaching Facility

MW-1

MW-12

MW-4

MW-11

MW-11S

MW-B1075B

MW-B1050B

MW-B1050A

MW-B1050C

MW-BX1B

MW-BX1C

MW-B1020B

MW-B1020C

MW-B1010C

MW-2020B

MW-2020C

MW-B2050C

MW-B2050B

MW-B2050A

MW-B2075A

MW-B2100C

MW-BC3B

MW-BC2C

MW-BC1C

MW-BU1C

MW-BU1A

MW-BU2C

MW-BU2B

MW-BU2A

A-A'

B-B'

AECOM and SMAST Findings

- ❖ **Groundwater Flow in the Vicinity of the PRB is Complex Due to the Low Gradient of the Water Table**
- ❖ **Local Conditions Such as Variable Discharge to the Middle School Leachfields May be Periodically Altering Flow Around the PRB**
- ❖ **Based on Available Data, it is Difficult to Clearly Define Average Flow and Flowpaths for Water Through the PRB**



AECOM and SMAST Findings (cont.)

- ❖ **Localized high nitrate concentrations are present in the PRB monitoring field that are likely not passing through the PRB**
- ❖ **High nitrate concentrations potentially associated with 1977 Middle School septic leachfield or other local source**



Recommendations

- ❖ **Repair Damaged MW-12**
- ❖ **Install Additional Wells to Monitor and Resolve Uncertainties**
- ❖ **Confirm Current Status of Middle School Leachfields (Record Plan, Performance Reports and Operations)**
- ❖ **Based on Findings, An Extension of the PRB to the North May Be Warranted to Intercept High Nitrate Concentrations**





Thank You