# Replacement of Well No. 3 Informational Meeting

## Town of North Kingstown, Rhode Island

November 14, 2024

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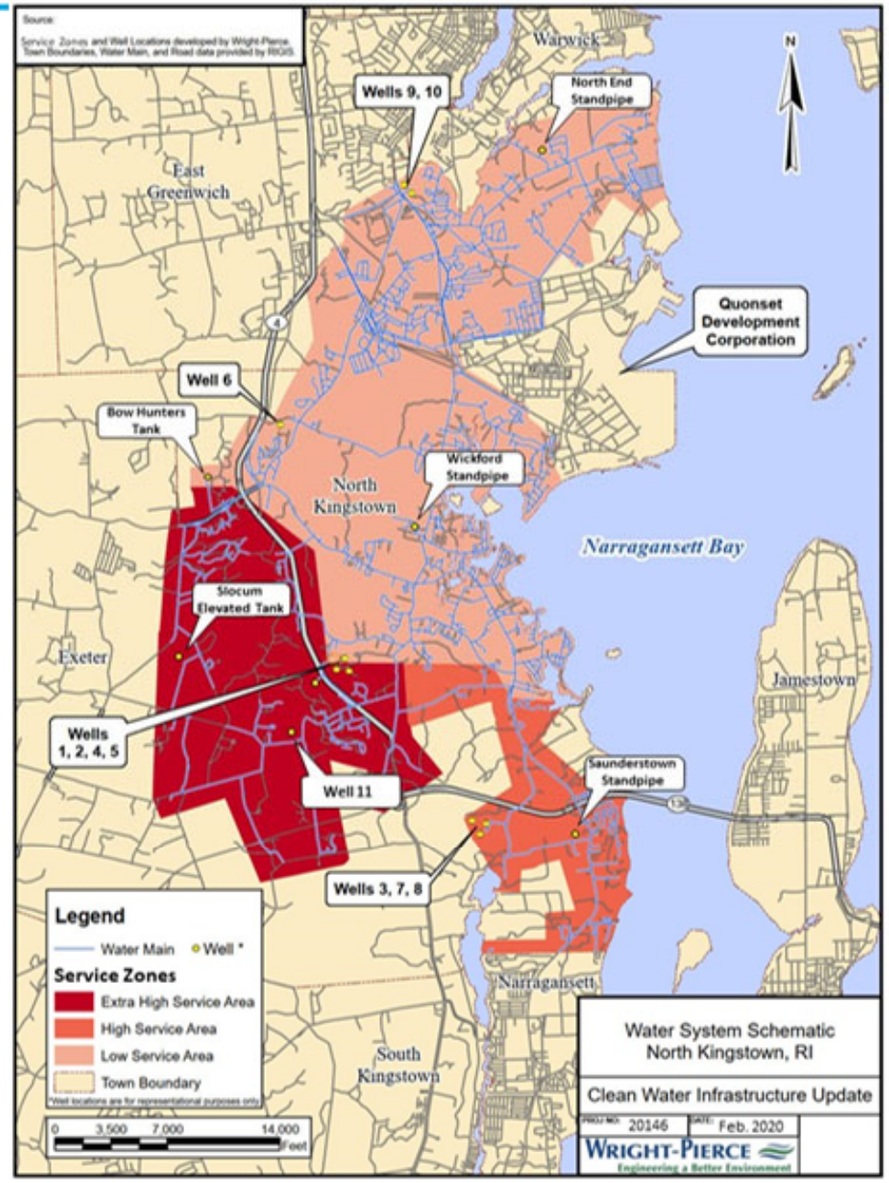
# Background

North Kingstown Water Department (NKWD)

- Serves 10,200 accounts and approx. 24,000 residents
- NKWD is committed to providing a reliable high quality potable water supply
- NKWD is regulated by the RI DOH and the Safe Drinking Water Act regulations
- The system consists of 11 wells of which 9 are active
- Well No. 6 was shutdown due to PFAS and needs to be replaced to make up for the lost 750 gallons per minute (1 MGD)
- The town investigated 18 locations around Well 6 to replace this well, unsuccessfully

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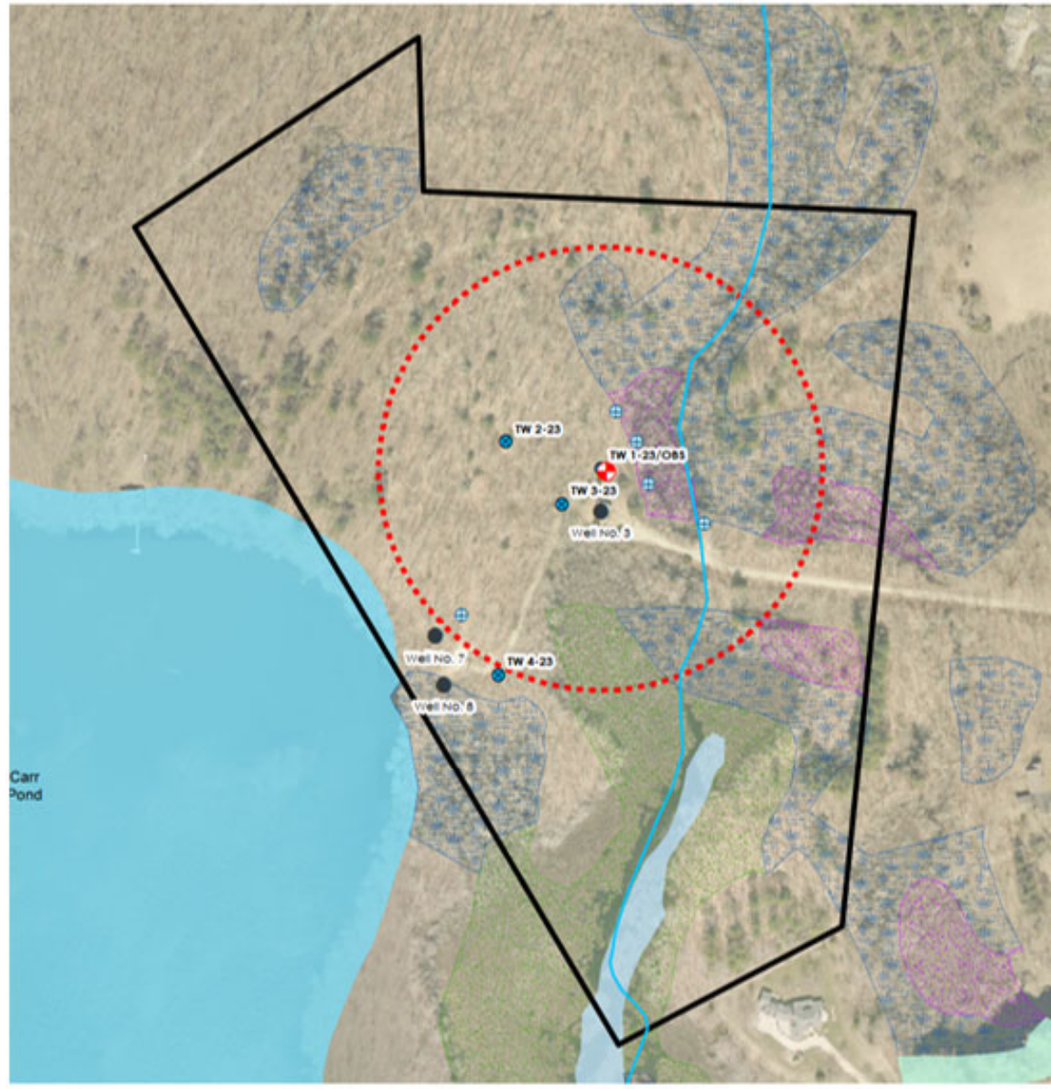
# Purpose of Project

- Well No. 3 is on 32 acres of town owned land
- Well No. 3 is permitted for 900 gpm
- Recent declined reduced capacity to 250 gpm
- Well 7 can pump at 325 gpm
- Well 8 can pump at 225 gpm
- Current pumping of Wells 3, 7, and 8 equals 800 gpm
- The new well is planned 1,200 gpm, or close to the original design capacity of Well No. 3 plus 7 & 8

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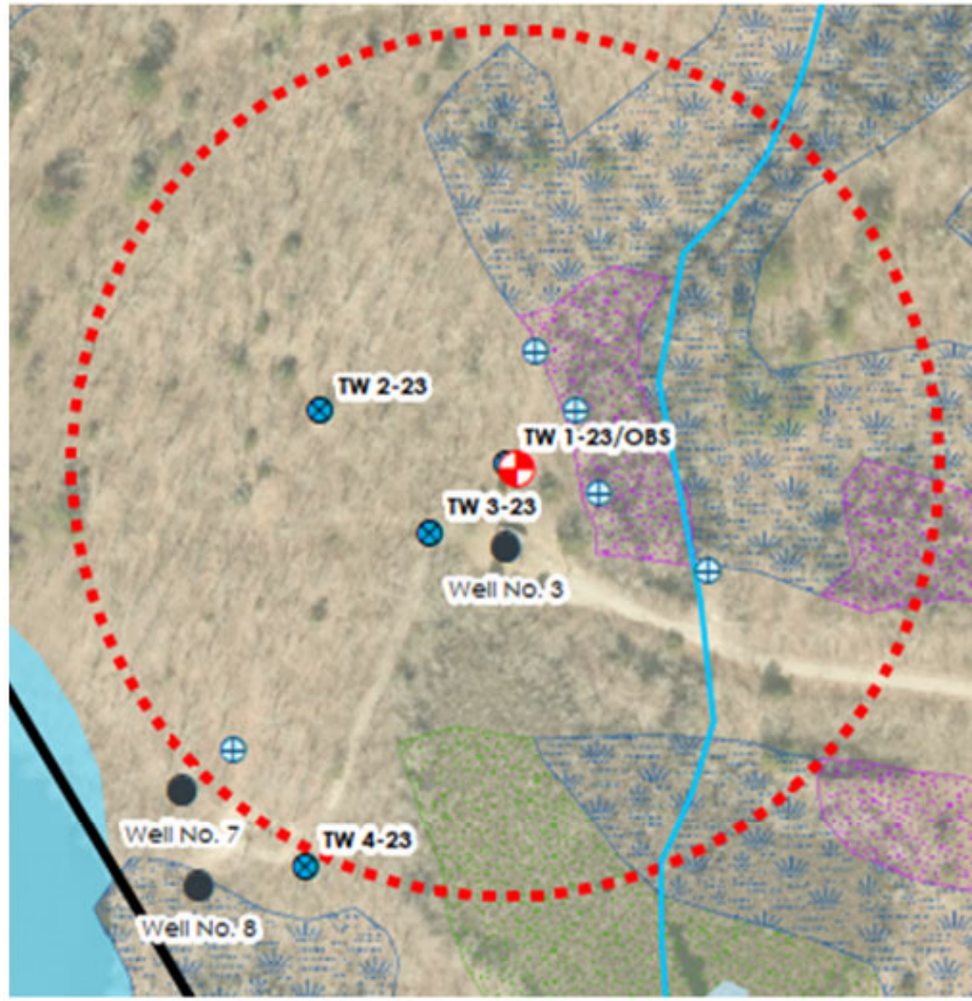
# Test Well Program

- Wright-Pierce drilled four test wells on the property in the vicinity of Well No. 3 and Wells 7 and 8
- Soil and pump testing revealed that Test Well (TW 1-23) exhibited the greatest yield
- TW 1-23 demonstrated a specific capacity of 66.7 gpm with 0.12 feet of drawdown at 75 feet below grade
- This test well program indicated that a new well could replace the capacity of Well 3, 7 and 8
- Water quality samples resulted in non-detectable PFAS in the samples analyzed

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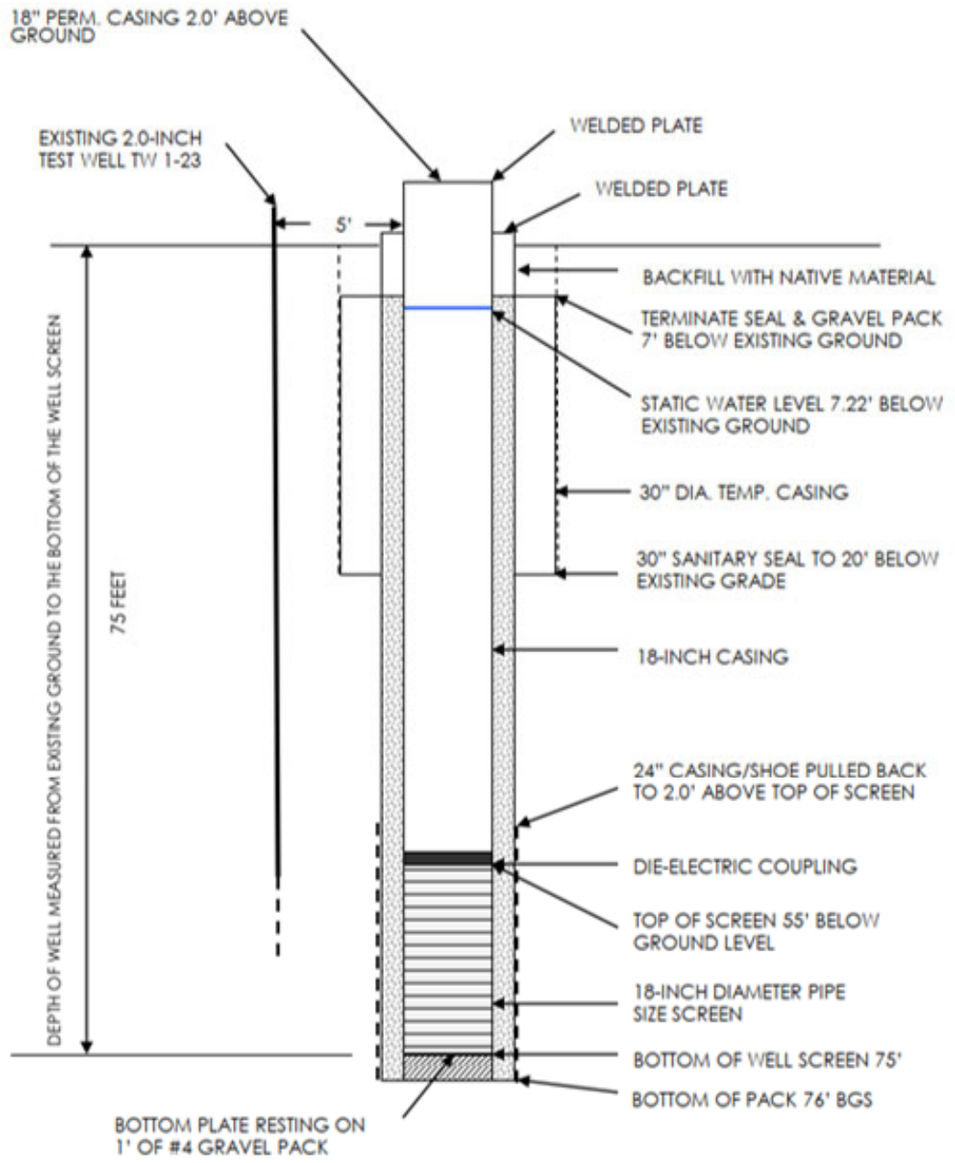
# Pump Test Program

- The proposed production well would be a 24"x18" gravel packed well set at 75 feet below grade with 20' screen
- A monitoring well network was developed to meet RIDEM criteria based on well distribution at the site, wetlands and surface waterbodies, site geometry, and drill accessibility
- A 6 to 8 hour step test will be performed to assess the pumping rate for the long term pump test
- Then a 5-day pump test will be performed at 1,200 gpm.

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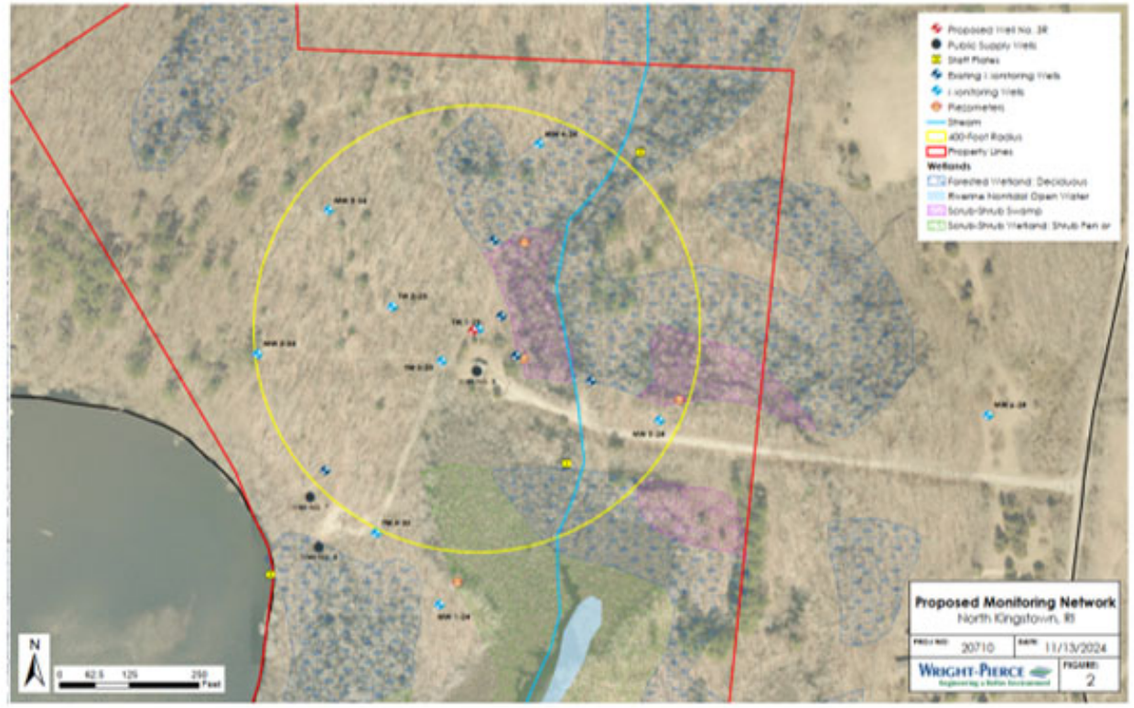
# Purpose of Project

- A monitoring well network was developed to meet RIDEM criteria based on well distribution at the site, wetlands and surface waterbodies, and site geometry
- Eleven monitoring wells will be continuously monitored during the pumping period
- Three stream gages will be monitored and measured
- Three groundwater piezometers will be monitored and measured continuously
- Water levels will be measured five days prior to the start of the pump test



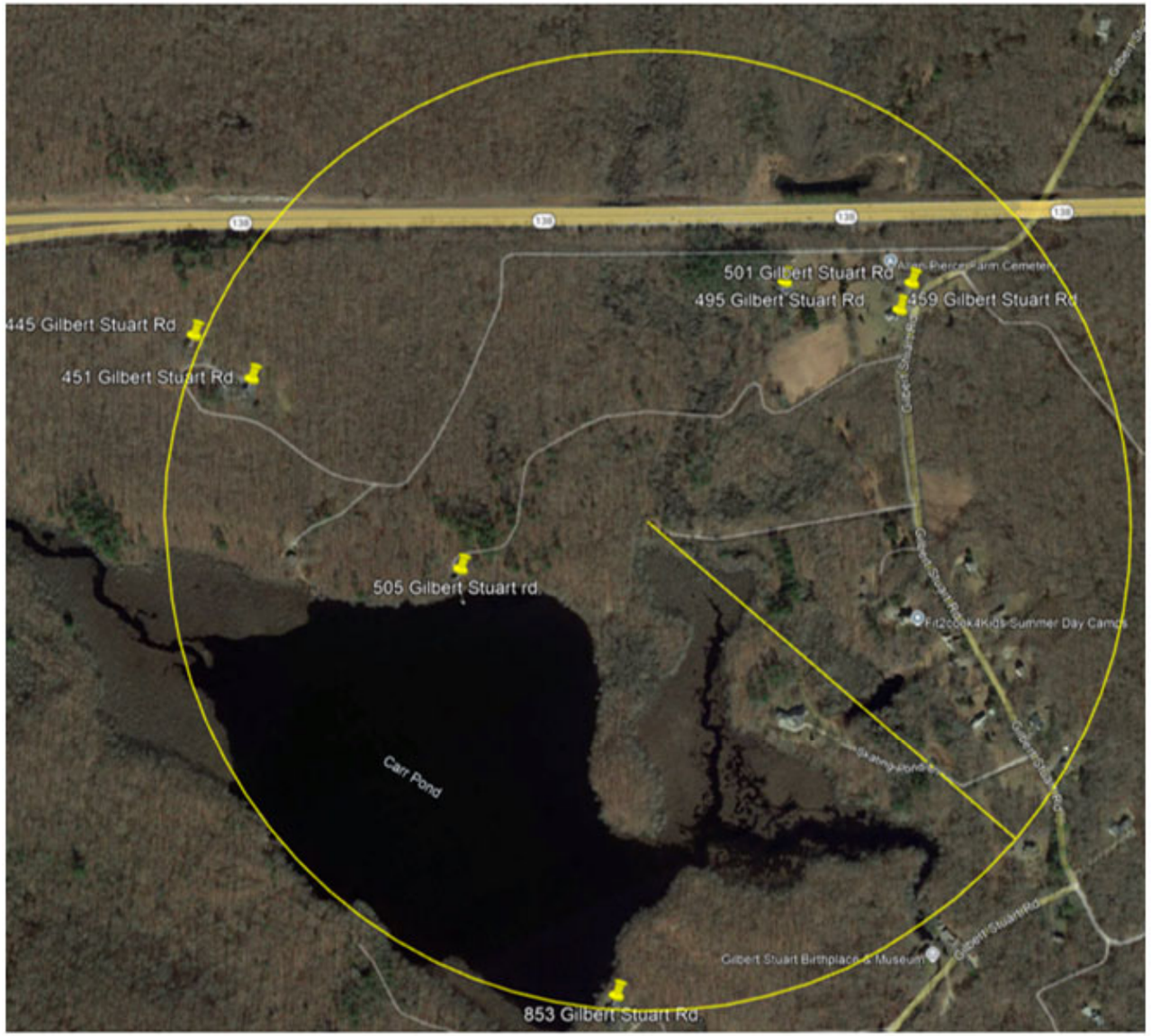

The wells will be monitored on the following cycle:

- One-minute observations for up to 10 minutes
- Two-minute observations for up to 20 minutes
- Five-minute observations for up to 60 minutes
- 30-minute observations for up to 180 minutes
- Hourly observations up to the end of the test

# Properties with Private Wells in the Area of Well No. 3

- There are seven properties within a 2,000 foot radius of the well
- 445,451,459, 495, 501, 505, and 853 Gilbert Stuart Rd.
- The closest property is 505 Gilbert Stuart Rd. and is 850 feet away
- The second closest is 501 Gilbert Stuart Rd. which is 1,100 feet from the well

Note: Additional transducers can be added to private wells, to monitor potential impacts during pumping, if permission is granted. All equipment will be disinfected prior to installation and Pre- and Post- installation sampling will be performed.

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# Influence to Groundwater Recharge

- Recharge based on mapped soil conditions can be estimated using characteristics of the upgradient available drainage area
- The upgradient area is approximately 4.57 square miles
- The upgradient drainage area receives an average annual precipitation of 51 inches, indicating the total water available to the basin based on raw precipitation is estimated to exceed 7,700 gpm
- Aquifer recharge was estimated using 50% recharge in sand and gravel areas

Photo 1: On-site stream (view facing north)

It is anticipated that during low-flow conditions additional recharge to well(s) developed at this Site would come from infiltrated surface water from Carr Pond which would act as a constant head boundary under pumping conditions.

# Well Construction

- The well construction and pump testing was bid out to reputable well drilling firms in July 2024
- Limited site clearing has occurred to allow the equipment to access the site
- Environmental controls will be put in place
- The selected from, D.L. Maher, is expected to begin drilling the well in December 2024
- The 24-inch outer casing will be drilled to 75 feet below grade and the 18-inch casing with 20 ft well screen inserted
- Gravel packing of the annular space and 20 feet of bentonite well seal will be installed

# Next Steps

- Oversight during the construction of the production well
- A long-term pump test (minimum 5-day) will be completed at the goal rate of approximately 1,200 gpm or as determined by the step-drawdown test
- Stabilization will be considered when the drawdown recorded in the pumping well has not varied by 0.04-foot during a 24-hour period
- Wright-Pierce will process all data collected during the pump test and summarize findings
- Based upon data from the pump test and monitoring wells, the increase in the groundwater withdrawal permit at the Site will require the preparation of a groundwater model
- Submission of all materials to RI DEM and RI DOH for review and approval to construct the new well

# THANK YOU

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