

# Memo

To: Russel Dean, Town Manager  
Board of Selectmen

From: Jennifer R. Perry, P.E., Public Works Director

Date: October 21, 2011

Re: Proposed Groundwater Treatment Facility  
Lary Lane Site Alternative

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As requested by the Board of Selectmen during the Public Works/Water Department CIP presentation on September 12, we have worked with Weston & Sampson to develop a preliminary site plan for the proposed Groundwater Treatment Facility at the existing Lary Lane well site.

The attached figures depict the conceptual layout of the proposed facility at the 4.67 acre Lary Lane well site. The figures include

- Proposed facility depicting conceptual plant layout (smaller scale)
- Proposed facility depicting adjacent area and layout (larger scale)
- Aerial map showing existing conditions, wetlands and floodplains (larger scale)

For the Board's reference, we have included the same figures for the Gilman Park site.

Additionally, Weston & Sampson has prepared a Preliminary Design Report that provides a brief analysis of the Lary Lane site and a comparison of the Gilman Park and Lary Lane well sites for the Board's consideration.

***Additional Lary Lane Site Analysis  
October 2011***

The Town of Exeter, New Hampshire Groundwater System - Preliminary Design Report (draft), submitted to the Town by Weston & Sampson on May 17, 2011 included conceptual design parameters for the final design and construction of a new groundwater system for the Town. Section 8 of that report detailed the site infrastructure which included the proposed facility upgrades for the Gilman Park, Stadium and Lary Lane wells, water main upgrades, and locations for a new groundwater treatment facility. The report stated that the preferred location was the Gilman Park area. The rationale for this location was;

- It was more centrally located to the new wells and the existing Town water system,
- It is closer to a future well site in the southeast corner of Town that, if constructed, might need to be treated,
- The facility could be integrated into a park theme and blend into the surroundings.

An alternative location was also identified in this report on existing Town property that houses the Lary Lane well. This property consists of 4.67 acres of land at the end of Lary Lane and adjacent to the Exeter River. Section 8 of the Preliminary Design Report noted some of the site issues that might benefit the project, such as:

- Location is more remote than the Gilman Park location.
- The site may have the ability to handle filter backwash residuals with holding tanks, sand drying beds or other process equipment.
- Blending the other well water with the Lary Lane well may be accomplished more efficiently than at the Gilman Park site.
- The treatment building orientation and site constraints may be more flexible than the Gilman Park site.

At the direction of the Town we performed additional investigations and comparison of the option of siting a groundwater treatment facility at Lary Lane. Our effort included:

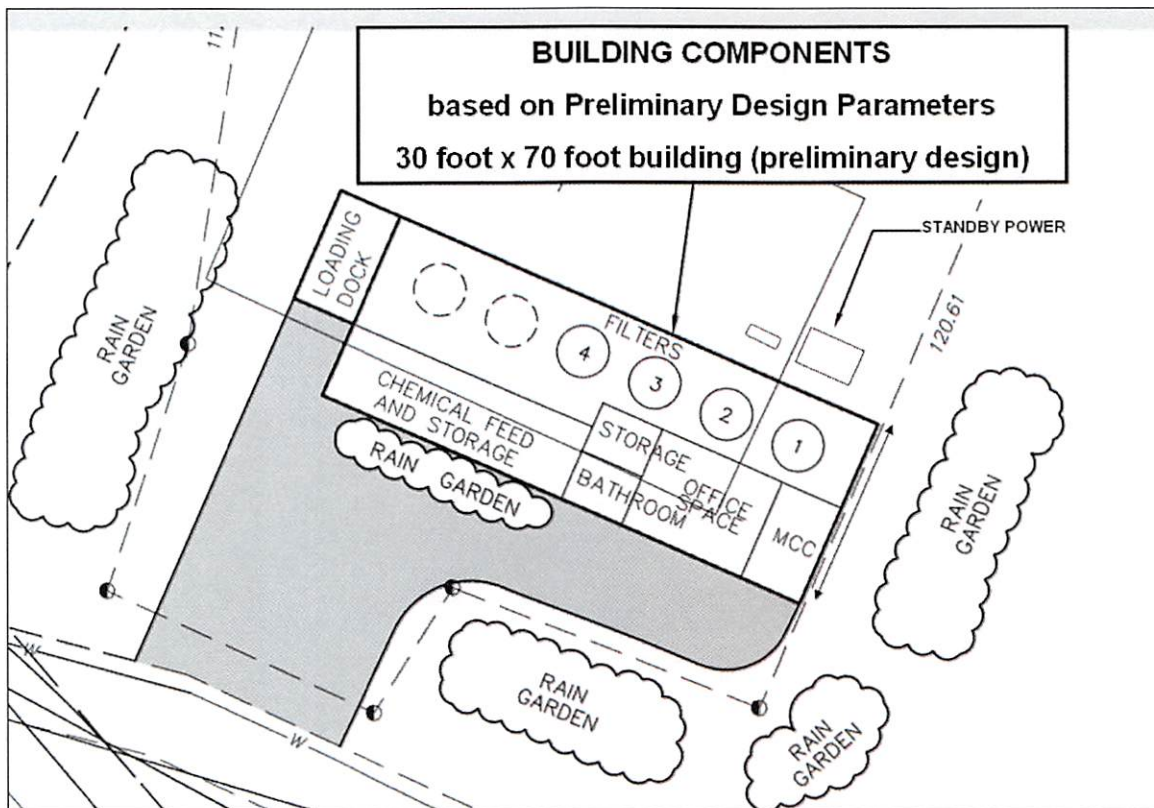
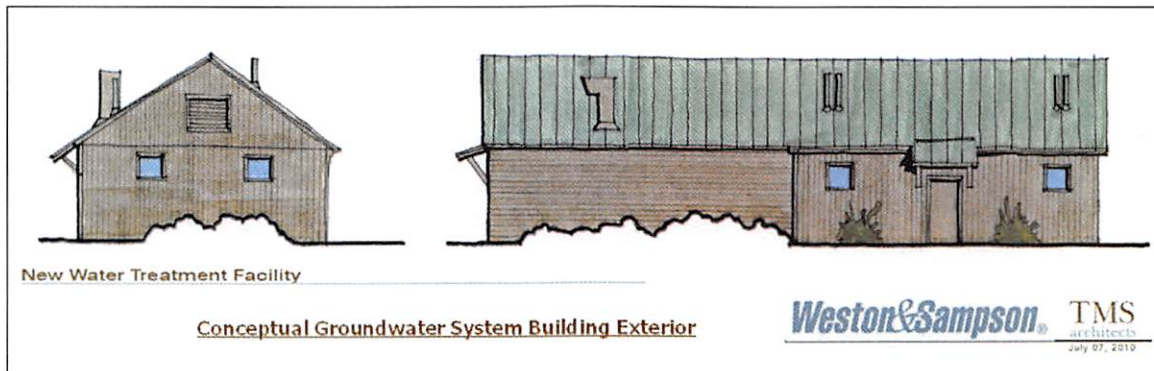
- Updating the preliminary site plans and existing conditions for both the Gilman Park and Lary Lane site. Full set plan drawings were presented to the Town and included:
  - Proposed facility layouts and surroundings on a 1-inch = 100 feet scale
  - Proposed facility layouts and surroundings on a 1-inch = 20 feet scale
  - Aerial maps showing existing conditions, wetlands and floodplains
- Providing more detail of the project components and cost estimates of the two alternatives, including the pros and cons of each site.

The following table provides a comparison of the major project components:

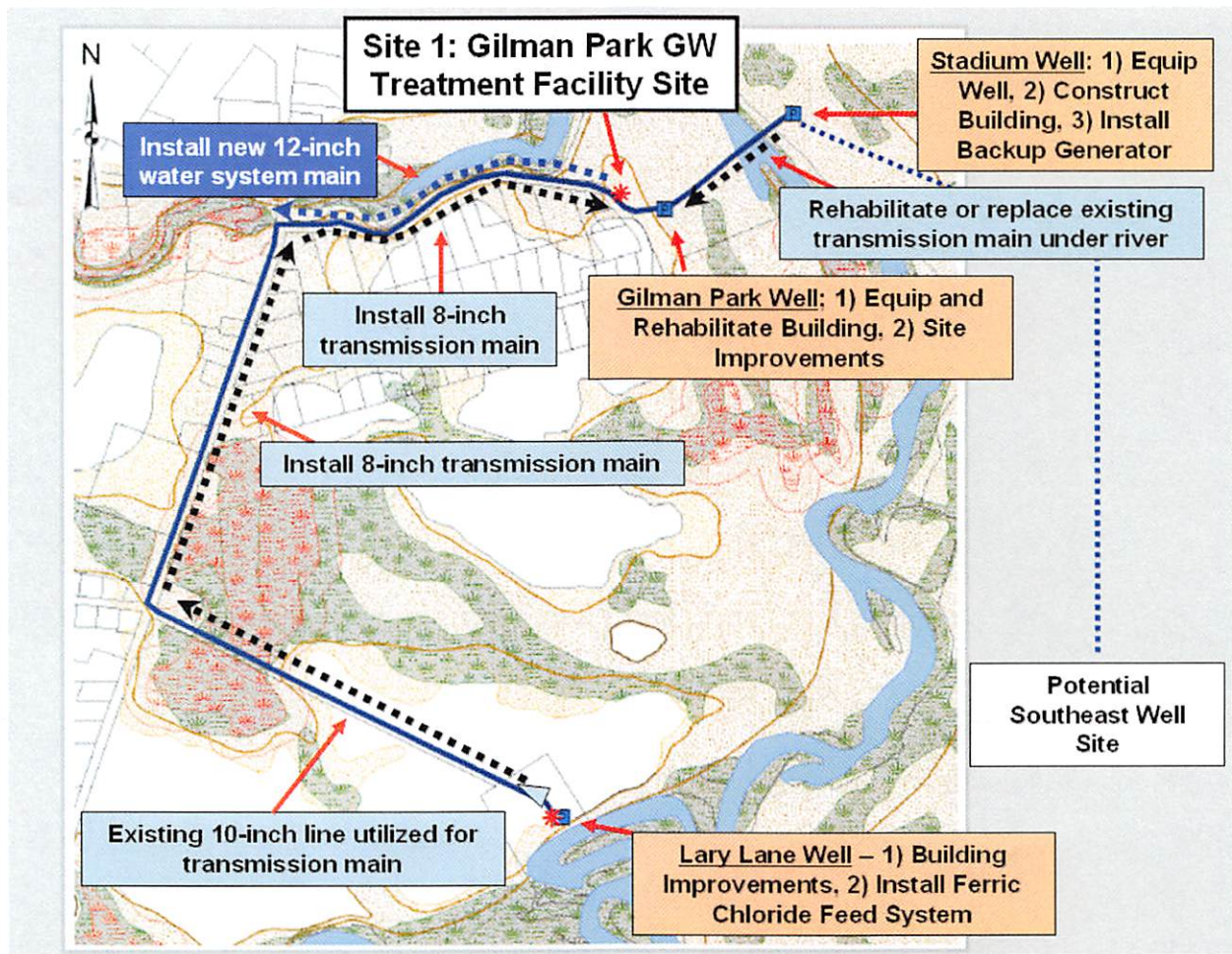
**Proposed Groundwater Treatment Facility Site Comparison Chart**

<b>Project Components</b>	<b>Gilman Park Well Site</b>	<b>Lary Lane Well Site</b>
Total Project Cost Estimate	\$6,225,000	\$6,350,000
Energy Efficiency	Less expensive pumping from this site due to proximity to wells and water system	Site will require 5% more energy to pump from wells and into system
Proximity to potential southeast well site	Closer distance if connected to groundwater treatment system	Further distance to pump if connected to groundwater treatment system
Flooding	Site is approximately two feet above the 100-year floodplain but surrounding area is subject to frequent flooding	Site area is above the 100-year floodplain but access has history of flooding
Shoreland Protection	Site is outside of the 250-foot shoreland protection district	Facility would have to be located on western portion of the lot in order to stay outside of the 250-foot shoreland protection district
Wetlands (based on existing data)	No known issues	Closest wetland is approximately 550 feet away
Abutters	Will be located in an existing Town Park and adjacent to a residential neighborhood with the closest house approximately 150 feet from the proposed facility	Adjacent to Phillips Exeter Academy woods and one residential property with a house that is located approximately 600 feet from proposed facility
Backwash Residuals Handling (anticipated to be 1 to 2% of produced water)	Settling tank below treatment facility, recycled water back through treatment and handling of concentrated residuals either by hauling or connecting to existing sewer	Settling tank below treatment facility, recycled water back through treatment and handling of concentrated residuals by hauling, constructing on-site sand drying beds or connecting to sewer system, which would require installation of sewer line on Lary Lane

**Facility Components (primarily the same for either site)**

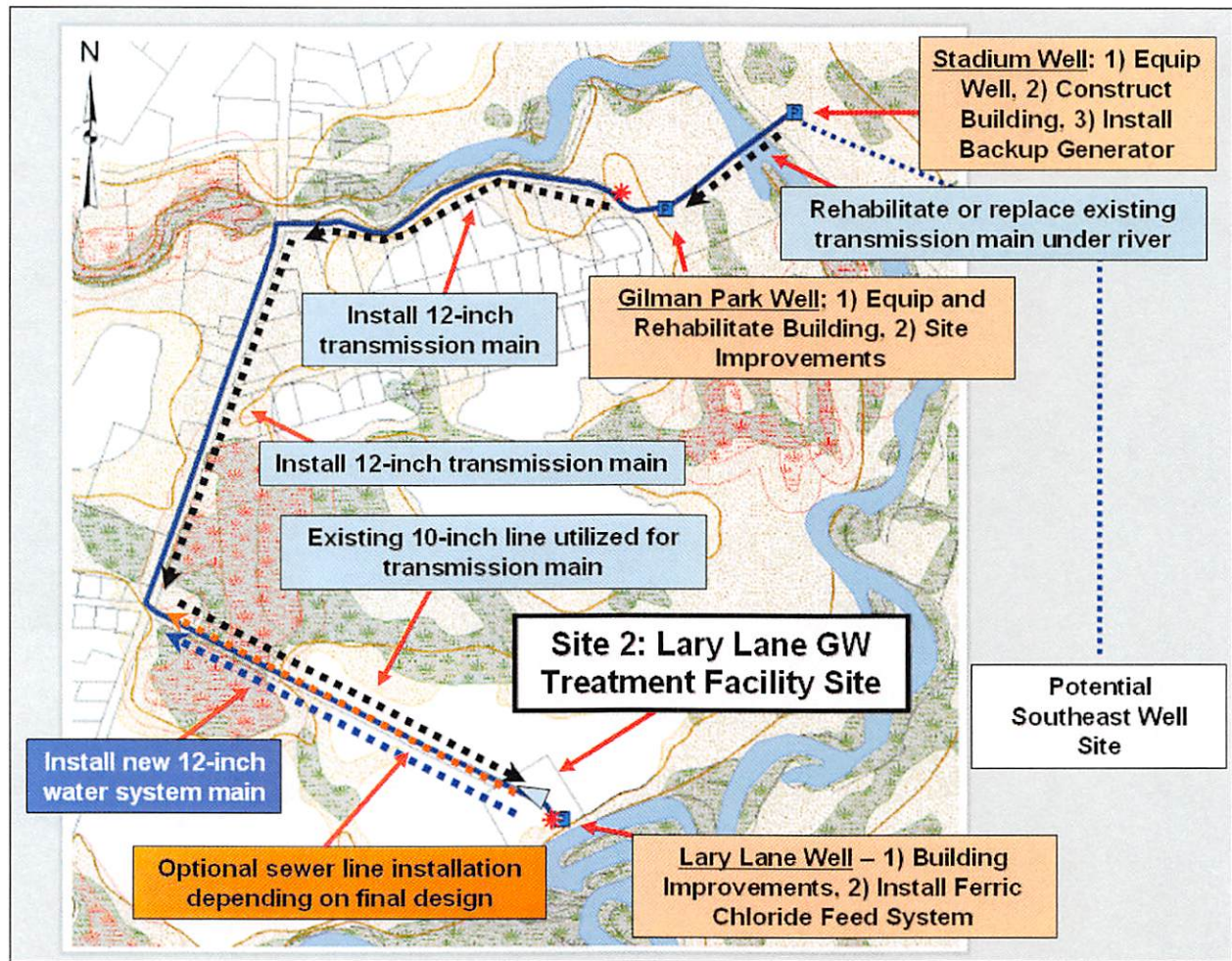


- Four pressure filters to treat for iron, manganese and arsenic removal
- Chemical feed and bulk storage systems for liquid chlorine and zinc orthophosphate
- Part-time office space and computer controls
- Standby power, water quality monitoring and security systems
- Green components such as rain gardens and other site upgrades to mesh with the environment

**Gilman Park Well Location – Infrastructure and Cost Estimates**

- **New Groundwater Treatment Facility ~ \$4,482,000**
- **Well Improvements ~ \$775,000**
  - Stadium well: construct building, equip well, standby power
  - Gilman Park well: building renovations, equip well
  - Lary Lane well: building improvements, install ferric chloride feed system
- **Water Main Installations ~ \$968,000**
  - Utilize existing 10-inch main to transmit water from Lary Lane to GW treatment
  - New 8-inch transmission main from Lary Lane to Bell Avenue and then to GW treatment system
  - Rehabilitate underground river crossing pipeline from Stadium to Gilman Park wells
  - Install new 12-inch water system line on Bell Avenue from GW treatment system
- **TOTAL COST ESTIMATE ~ \$6,225,000**

## Lary Lane Well Location – Infrastructure and Cost Estimates



- **New Groundwater Treatment Facility ~ \$4,482,000**
- **Well Improvements ~ \$775,000**
  - Stadium well: construct building, equip well, standby power
  - Gilman Park well: building renovations, equip well
  - Lary Lane well: building improvements, install ferric chloride feed system
- **Water Main Installations ~ \$1,093,000**
  - Rehabilitate underground river crossing pipeline from Stadium to Gilman Park wells
  - New 12-inch transmission main from Gilman Park Well to Court Street and then up to Lary Lane
  - Utilize existing 10-inch main in Lary Lane to transmit water from Court Street to GW treatment system
  - Install new 12-inch water line on Lary Lane from GW treatment system to existing water system lines
- **TOTAL COST ESTIMATE ~ \$6,350,000**

