Nagog Pond Water Supply
Water Treatment Plant
Town of Concord

Site Plan Special Permit &
Use Special Permit
Acton Board of Selectmen
January 26, 2016

Locus Map
Long Range Planning

- 1884 – Legislative Authority Granted
- 1909 – Land Taking and Easement Acquisition began
- 1932 – Parcel taking along supply line to construct & maintain a filtration plant
- 1955 – Palmer Family purchased land from Odell Company
- 1989 – Surface Water Treatment Rule
- 1992 – Negotiations for Land Swap
Federal Mandate
Surface Water Treatment Rule (310 CMR 22.20A)

- 1989 – Federal Promulgation of Rule
- 1991 – Consent Order issued to Concord
- 1991 - Watershed Protection Plan
- 1992 – Land Swap Negotiations Begin
- 1996 – Enhanced Disinfection (ozone)
- 2003 – Land Swap Executed
- 2002 – Pulte Realty Trust – Development
- 2006 – Long-Term 2 Enhanced SWTR
- 2011-2012 – Nagog Dam Rehabilitation
- 2013-2014 – Pilot Treatment Technologies
  - Acton Conservation Commission (RDA)
  - Mass DEP Drinking Water Program
- 2015 – Pulte Detail Design Coordination

1996 – Ozone Facility Commissioned

Concord Public Works
Nagog Pond Development  c. Early 1990's

Legend:
- Nagog Intake
- Proposed Intake
- Nagog Transmission Main Equipment
- Concord Owned Parcels
- Bresy Property
- Fisher Family/Trust Land
- Acton Park

Early 1990's
Concord Public Works
Nagog Pond Development  c. 2015

Project Site

Project Site  c. 2013
**Project Design Principles**

- Increase Reliability
- Enhance Resiliency
- Minimize Footprint
- Reuse Current Structural Assets
- Natural Lighting
- Sustainable Energy

**Board of Selectmen Hearing**

**Application for Site Plan Special Permit**

**Application for Use Special Permit**

*Other Public Use (3.4.7) – principle use as water treatment plant*

*Accessory Use/Solar (3.8.4.10) – accessory use for power needs*

**Request for Waivers**

- Traffic Study (Section 3.10 SPSP R&R)
  - Study Threshold = 30 Trip Ends/Day
  - Project = 10 Trip Ends/Day
- Outdoor Lighting Plan (Section 3.9.10 SPSP R&R)
  - Not a typical commercial building
  - Designed to prevent ‘nuisance lighting’

**Design Review Board**

- November 4, 2015 at 7:30 p.m.
Site Plan
Existing Conditions

Nagog Pond Water Treatment Plant
Existing Facility
Nagog Pond Water Treatment Plant
Existing Facility

Nagog Pond Water Treatment Plant
1995 - Chambers (construction)
Nagog Pond Water Treatment Plant
1995 - Access Road (construction)
Nagog Pond Water Treatment Plant
1995 - Access Road (construction)
Solar Array
Design/Siting Considerations

- Minimize Disturbance to Protected Resources
- Minimize Disturbance to Undeveloped Lands
- Access to Power Grid
- Proximity to Demand

Site Specific Considerations
- Screening
- Glare
- Noise and Traffic
  - Construction
  - Routine Operation
**Solar Array**

| PV Solar Array Production (Net Annual) | 390,000 kWh AC |
| Treatment Facility Demand (Net Annual) | 1,372,000 kWh AC |
| Deficit (Net Annual) | 982,000 kWh AC |

The proposed PV solar array is projected only produce approximately 25% of the power requirements of the proposed Water Treatment Plant.

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**Solar Array**

Glare Study

Location: northern & southern arrays, and four observation points.

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solar design associates Inc.
Intake Permitting

• MEPA (301 CMR 11)
  – General Project – Environmental Notification Form
  – Dewatering – Environmental Impact Report Waiver

• MADEP
  – Chapter 91 Waterways License (310 CMR 9)
  – 401 Water Quality Certification (314 CMR 9)

• US Army Corps of Engineers
  – General Permit (33 CFR 320-332)
  – Section 404 Clean Water Act (33 U.S.C. §1251 et seq)

• Acton – Conservation Commission
  – Dewatering Plan and Monitor

Intake NOI – Supplemental Layout
Intake
NOI – Supplemental Profile

Coffer Dam
Nagog Pond Water Treatment Plant
Abutter Issues

• Property Rights - Ownership & Liabilities
• State of the Water Supply Industry
  – Maintain Site Security
• Temporary Construction Impacts
• Operations and Maintenance Impacts

Nagog Pond Water Treatment Plant
Temporary Construction Impacts

• Limits of Work
  - Existing Developed Site & Clearing for PV
• Construction Duration
  - ~24 months (2016 – 2018)
• Construction Sequencing
  - Site Work → Solar PV → Demolition → WTP Building → Site Utilities → Final Site Restoration
• Traffic
  - Deliveries (Equipment & Materials),
  - Construction Personnel
• Noise
  - Will Follow Construction Sequencing
• Environmental Controls
  - Silt Sock (WTP), Turbidity Curtains (Intake/Dewatering)
• Site Security
  - Shared Between GC And Concord
Nagog Pond Water Treatment Plant
Operations and Maintenance

Operations
- Daily       1 Or More WTP Operators Visit To The Site
- Weekly      ~1 Chemical Delivery Per Week
- Monthly     ~1 Service Contractor & ~1 Guests Per Month

Besides chemical deliveries, most work associated with the WTP takes place within the building.

Intake
- Daily And Weekly Inspections Of The Gate House And Dam
- Weekly Or Monthly Inspections And Sampling Of The Pond

Security – Fencing, Electronic Gate, Exterior Cameras (PV, WTP, Dam/Intake)
Exterior Lighting – Security And Intermittent Use For Operations
Site Work – Completed Seasonally (Mowing, Trimming, Plowing)

Demonstration of Public Benefit

General
- Compliance with SDWA
- Improved Water Quality
- Increased Water Supply Reliability
- Increased Water Supply Resiliency
- Conformance with Homeland Security and Essential Service Goals
- Consistency with FEMA Emergency Mitigation & Management Planning

Acton
- 14-20 Million Gallons of Water per Year
  - 140 Residential Units
  - 38 Commercial Customers
- Fire Protection along Rt 2A
- 2 Water System Interconnections
  - Emergency Water Supply
  - Mutual Aid
Board of Selectmen Hearing

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