



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

TIMOTHY P. MURRAY
Lieutenant Governor

KENNETH L. KIMMELL
Commissioner

October 13, 2011

Donald Ouellette
Wayland Department of Public Works
41 Cochituate Road
Wayland, MA 01778

RE: City/Town: Wayland
PWS Name: Wayland Water Division
PWS- ID No.: 3315000
Program: System Modifications
Action: Requirements for Approval
Happy Hollow Replacement Wells

Dear Mr. Ouellette:

Please find attached the following information:

Requirements for approval of three replacement wells for the Town of Wayland's Happy Hollow Wells Nos. 1 and 2.

Please note that the signature on this cover letter indicates formal issuance of the attached document. If you have any questions regarding this letter, please contact James Persky at (978) 694-3227.

Sincerely,

James H. Persky
Environmental Analyst
Drinking Water Program

Sincerely,

Thomas Mahin
Drinking Water Section Chief
Northeast Regional Office

TM/jp

cc: DWP/Boston Office (no attachment)
Bruce Bouck, DEP, Drinking Water, Boston
Richard Friend, DEP, Water Management, Boston
Randal Suozzo, Tata & Howard, Inc., 67 Forest Street, Marlborough, MA 01752

File Name: Y:\DWP Archive\NERO\Wayland-3315000-System Modifications-2011-10-13

DESCRIPTION OF PROJECT

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed a July 29, 2011 report and October 4, 2011 amendment from the hydrogeologic consulting firm of Tata & Howard, Inc., that proposes installation of three replacement wells for the Town of Wayland's Happy Hollow Wells Nos. 1 and 2. MassDEP staff had previously visited the Happy Hollow well site on April 15, 2011 to discuss the Town's intention to replace the wells.

Happy Hollow Wells Nos. 1 and 2 were installed in 1948 and 1952. The wells are within the 100-year-floodplain, and the well houses are subject to seasonal flooding. The Town is therefore proposing to replace the existing wells with new wells sited on higher ground. Test drilling suggests that three replacement wells could replace the yield of the existing wells while giving the Town added operational flexibility. Chemical injection feeds for the Happy Hollow Wells are presently sited in a vault below grade. The chemical feed facility will also be relocated to higher ground.

The Denis L. Maher Company installed three 2.5-inch diameter test wells at the site in January 2011, and conducted short pumping tests on the wells. Based on the data from this testing, Tata & Howard proposes to install 18" x 12" gravel packed wells at these three locations.

The Zone I for both the existing and proposed wells is owned by the Town of Wayland, but much of it is not under the control of the Water Division. About 30% of the Zone I is part of the grounds of the Wayland High School. The replacement wells will be set back farther than the existing wells from the outfalls for stormwater from the High School grounds. The Zone I for the replacement wells includes slightly less of the parking lot, tennis courts, and soccer field than the Zone I for the existing wells, but includes slightly more of the lacrosse court and an adjacent former gravel pit. The gravel pit has been used to provide fill during the reconstruction of the High School, but will be inactive once construction is finished. The Town intends to build the new chemical feed facility at the gravel pit — the ground surface in the pit is presently very uneven, and will probably need to be graded before this can occur. The Town would like to eventually build an access road off of Stonebridge Road to the chemical feed facility, so that truck deliveries of treatment chemicals will not need to wind through the High School property.

MassDEP Guidelines allow replacement wells to be exempted from many requirements of the New Source Approval process, provided that they 1) are within 50 feet of the well being replaced, or 250 feet in certain circumstances where an environmental improvement would be achieved; and 2) will not pump more than the approved pumping rate of the well being replaced.

The proposed replacement wells are roughly 55, 85, and 125 feet from the nearest of the original Happy Hollow Wells. As the replacement wells will mitigate existing threats to the wells from pump station flooding and stormwater outfalls at the High School, MassDEP approves the proposed locations for the replacement wells.

MassDEP has never formally established approved pumping rates for Happy Hollow Wells Nos. 1 and 2. Approval rates for existing wells are generally based on the maximum month of historic pumping. MassDEP has reviewed the available pumping information for Wayland in the MassDEP records. The maximum month of pumping for which MassDEP has data was May 2001, when the Happy Hollow Wells combined for a daily average of 1.35 million gallons per day (MGD). Therefore, MassDEP hereby establishes an **approved withdrawal volume** of 1.35 MGD for Happy Hollow Wells Nos. 1 and 2, which is equivalent to an **approved pumping rate** of 935 gallons per minute (gpm). The combined pumping from the three Happy Hollow Replacement Wells cannot exceed 1.35 million gallons in any day.

Preliminary water quality analyses indicate that the iron and manganese levels in the proposed wells are low. The sodium levels in the wells ranged from 46.4 to 76.4 milligrams per liter (mg/L), in excess of the 20 mg/L drinking water guideline that the MassDEP Office of Research and Standards has established to protect persons on extremely sodium restricted diets. The water is of moderate hardness. The well water is expected to receive the same treatment as the existing wells — sodium hypochlorite for disinfection, potassium hydroxide for pH adjustment, and sodium fluoride for fluoridation.

The proposal states that the Town may wish to retain the existing Happy Hollow Wells for irrigation use. If one or both wells is converted to irrigation use, MassDEP will impose requirements to ensure that Wayland does not circumvent its Water Management Act authorized volumes through irrigation use of the wells. For example, MassDEP may reduce the approval rate for the Happy Hollow replacement wells by the amount to be pumped from the irrigation wells, require that the irrigation wells be retrofitted with low-yield pumps, and require that the Town continue to meter and report the withdrawal volumes for the wells.

REQUIREMENTS FOR APPROVAL

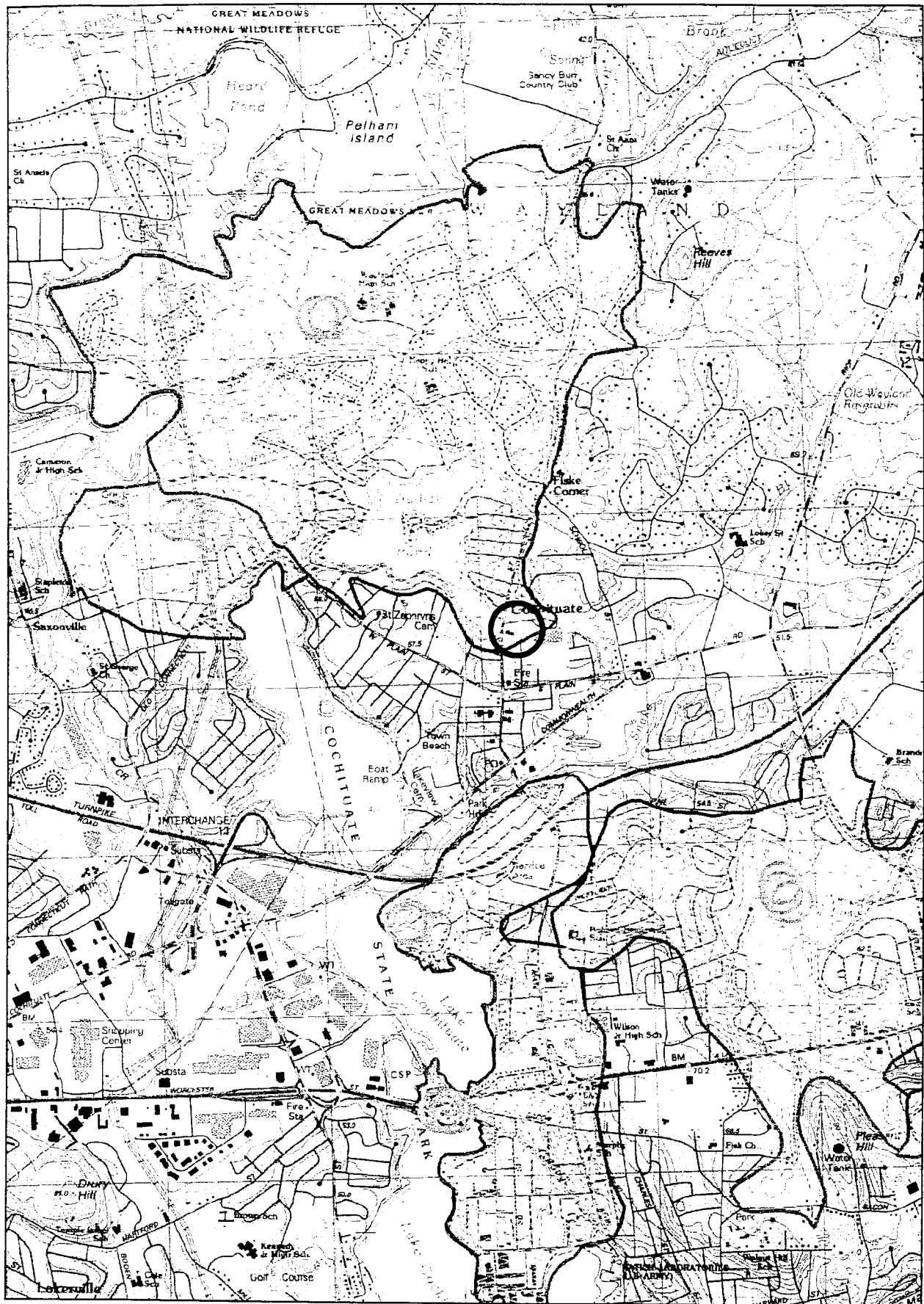
Pursuant to the Department's authority under 310 CMR 22.04(7) to require that each supplier of water operate and maintain its system in a manner that ensures the delivery of safe drinking water to consumers, the following requirements must be met for MassDEP to approve use of the Happy Hollow Replacement Wells for public water supply:

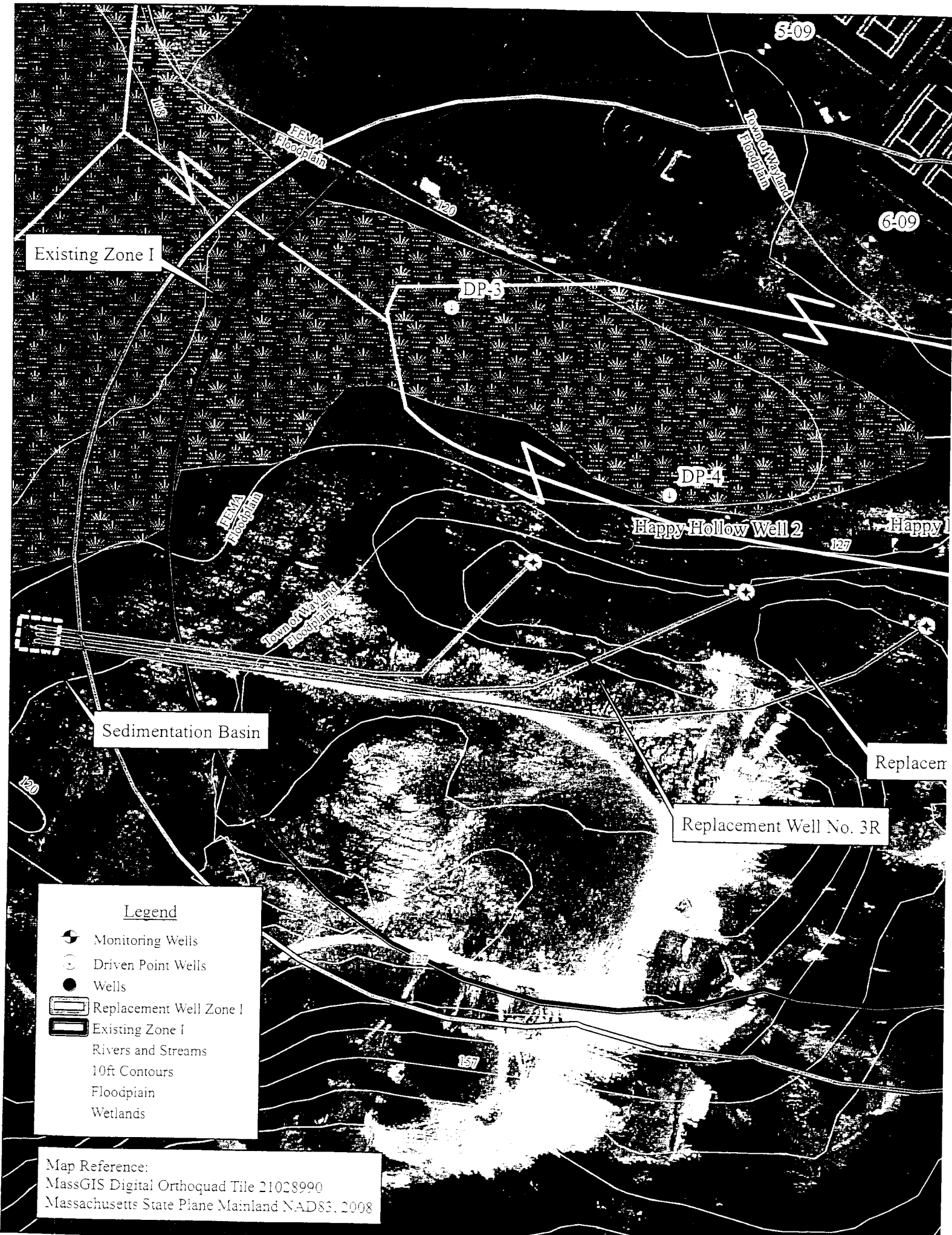
1. Plans and specifications for any new pumping equipment, facilities, or appurtenances must be submitted to this office for review and approval prior to construction, accompanied by a MassDEP transmittal form and an application for MassDEP Permit Category BRPWS20.
2. The approved daily withdrawal volume for the Happy Hollow Wells is 1.35 MGD, which is equivalent to a pumping rate of 935 gpm. The total withdrawal from the Happy Hollow Replacement Wells may not exceed 1.35 MGD during any 24-hour period. The pump capacities of the wells should reflect this.

3. Drawdown limiting devices must be installed in the replacement wells.
4. The design for the permanent pumping facilities must include sample taps so that raw water samples from the individual wells may be collected. A combined raw water tap is also recommended.
5. As-built construction diagrams of the completed replacement wells must be submitted to MassDEP.
6. The finished replacement wells must be pumped to waste for at least 48 hours. This pumping may be done in conjunction with the acceptance tests of the wells. Samples of the well water must be collected at the end of this period for analysis of coliform bacteria, secondary contaminants, nitrate, nitrite, and volatile organic compounds.

Tata & Howard proposes a 50-hour pumping test of the replacement wells, with the wells being started up an hour apart, then pumped together for 48 hours. The existing Happy Hollow Wells will remain shut down during the test. The pumped water will be discharged outside of the Zone I to the west of the wells. The wells are expected to each pump at about 312 gpm, for a combined rate of about 1.35 MGD. Step-drawdown tests will be conducted on each well prior to the combined test.

7. All water quality laboratory analyses must be done by laboratories certified by the Commonwealth of Massachusetts to perform these analyses. The laboratory should be made aware that the samples are of drinking water, and must be analyzed using drinking water analytical methods, holding times, and detection limits.
8. The replacement wells may not be placed on-line until final approval is granted by MassDEP to do so. MassDEP will review the water quality results and inspect the finished facilities before granting this approval.
9. The proposal states that a BRPWS36 permit application will be submitted for the original Happy Hollow Wells Nos. 1 and 2 at a later date. This permit category is for well abandonment, which would cause the wells to lose their status as public water supply sources. Therefore, the BRPWS36 application should not be submitted if the Town plans to retain the wells for emergency use — the wells may be disconnected from the distribution system without being formally abandoned as public water sources. If the Town decides to decommission the wells or to convert them to a non-potable use such as irrigation, then a BRPWS36 application will be appropriate.





Existing Zone I

Sedimentation Basin










Replacement Well No. 3R

Happy-Hollow Well 2

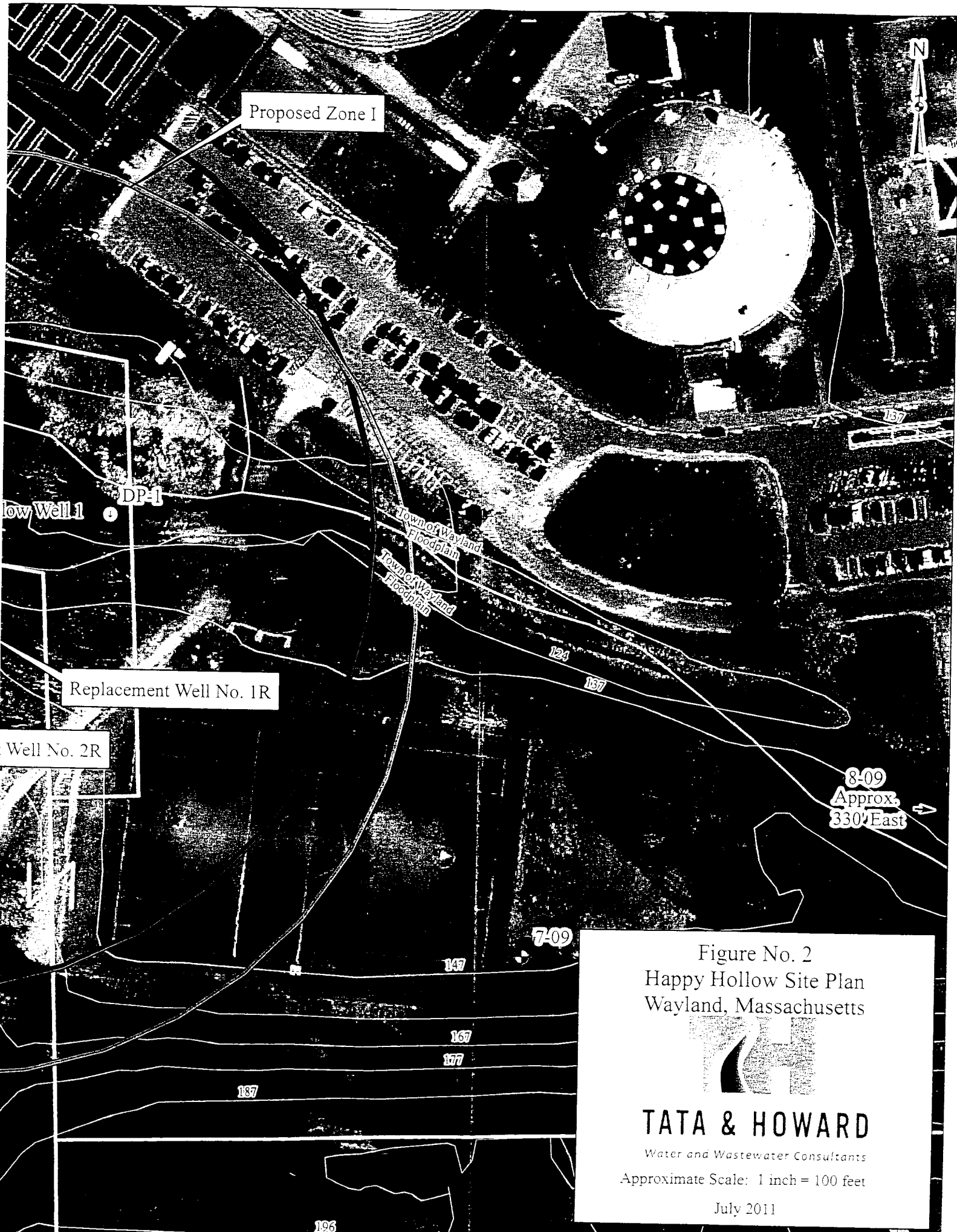
DP-3

DP-4

Legend

-  Monitoring Wells
-  Driven Point Wells
-  Wells
-  Replacement Well Zone I
-  Existing Zone I
-  Rivers and Streams
-  10ft Contours
-  Floodplain
-  Wetlands

Map Reference:
 MassGIS Digital Orthoquad Tile 21028990
 Massachusetts State Plane Mainland NAD83, 2008



Proposed Zone I

Low Well 1

DP-1


Replacement Well No. 1R

Well No. 2R

Town of Wayland
Floodplain

8-09
Approx.
330' East

Figure No. 2
Happy Hollow Site Plan
Wayland, Massachusetts



TATA & HOWARD
Water and Wastewater Consultants
Approximate Scale: 1 inch = 100 feet
July 2011