

**Long Island Regional Planning Board
Draft Action Memo
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Prepared by Seth Forman, Ph.D., AICP
Acting Executive Director**

Groundwater: Tapping the Lloyd Aquifer

The Situation Today

Some officials in Nassau County and around Long Island, as well as some environmental groups, are at odds with officials in Suffolk County and at the Suffolk County Water Authority (SCWA) over the efficacy of permitting new wells to tap water from the Lloyd aquifer. The Lloyd aquifer is the deepest and most pristine supply of Long Island's underground drinking water.

Nassau County relies heavily on the Lloyd aquifer, pumping about 12 million gallons of water from it per day. Suffolk county pumps around 600,000 gallons per day from the Lloyd. Several officials have expressed concern that permitting new Lloyd wells in Suffolk will set a dangerous new precedent, leading potentially to the over pumping of the Lloyd, a reduction in the supply of fresh water in Nassau, and destabilization of the water table. Suffolk county officials believe they have a right to manage groundwater resources in the county and that the current and foreseeable use by Suffolk of the Lloyd poses no threat to water supplies in Nassau.

Currently at issue is an application filed by the SCWA with the New York State Department of Environmental Conservation (NYSDEC) to allow the digging of a 300 gallon per minute Lloyd well at Middleville Rd. in Northport in the western Suffolk town of Huntington. This application is currently being adjudicated before an administrative judge. There has been a State moratorium since 1986 on new Lloyd aquifer wells, except in "coastal communities," and a specific application to waive the moratorium is required before a well can be dug. Since the 1986 moratorium NYSDEC has issued only one new permit for a Lloyd well, in Long Beach under the state's coastal communities guidelines. The current application would be the first "hardship" application approved, though SCWA is also seeking a decision on whether the Huntington area served by the well would constitute a "coastal community" under the 1986 law ECL 15-1528(3).

There are currently 5 Lloyd aquifer well heads in Suffolk County. Two (SCWA at Mill Lane and the Northport VA hospital) are used as blending wells, as the proposed new well would be.

Long Island's Groundwater System

Three water layers exist in Long Island's groundwater system – the Upper Glacial, the Magothy, and the Lloyd. The Magothy, which is the prime source of potable water,

generally underlies the Upper Glacial aquifer. The lowermost aquifer is the Lloyd, which lies directly above the bedrock and is separated from the Magothy by a thick layer of Raritan clay. Nassau and Suffolk pump about 13 million gallons per day from the Lloyd, and recharge approximately 39 million gallons per day. In all, there are currently 1,350 aquifer wells serving Long Island, pumping 390 million gallons of water per day. The entire aquifer system is estimated to contain approximately 10-70 trillion gallons of water. The Lloyd strata, the oldest and most pristine, constitutes around 9 percent of Long Island's potable water and receives about 3 percent of Nassau and Suffolk's total recharge.

The Magothy aquifer is absent in northwest Nassau county, but increases in thickness to over 1,000 feet in the southern part of Suffolk county. With roughly 300 square miles (one-third of the land area of Suffolk) and a population of 1.4 million, Nassau county has almost triple the population density as Suffolk and is at near carrying capacity for water, which is estimated to be around 1.5 million residents. By contrast Suffolk county is estimated to have a safe yield for around 3.5 million residents.

Nassau has experienced water problems in the past, including salt water intrusion on both the north and south shorelines, and the depletion of surface waters like Hempstead Lake. This problem led the City of Long Beach to sue to stop the Roosevelt Field Water District from tapping into the Lloyd in the 1980s. (The city won that case and the ensuing conflict gave rise to NYSDEC's moratorium.). Saltwater intrusion occurs mostly when the Lloyd aquifer is over pumped, making the deep ocean saltwater pressure greater than the in-land freshwater pressure. Surface water depletion occurs because Nassau is heavily sewered and discharges effluent into the Atlantic Ocean. This leaves Nassau with lower levels of surface water recharge than Suffolk, which relies mostly on septic systems recharging directly into the ground. In 1986, NYSDEC began imposing pumpage limitations on some water purveyors in Nassau County to stem stream flow decline, aquifer water level declines, and saltwater intrusion.

Suffolk's Position

The SCWA maintains that the Lloyd water is needed in small amounts to blend with other water to reduce the nitrates in the drinking water in the Northport area to a level below the 10 part per million drinking water standard. This is necessary in parts of the Town of Huntington because the Magothy aquifer has been eroded away by glacial activity in that area. SCWA officials say the well would draw an average of 100 gallons a minute compared with a production well of 1,500 gallons a minute.

SCWA officials maintain that there is a hydrogeological divide in the Lloyd aquifer near the border between Nassau and Suffolk Counties that protects Nassau County's portion of the Lloyd aquifer. This is because Lloyd water does not run east-west, but north-south. Suffolk County Health Department Officials point out that no groundwater model currently in use indicates any loss of Lloyd water to Nassau County or destabilization of the water table from proposed Lloyd wells in Suffolk. The staff of the NYSDEC concurs with this view.

Suffolk officials have been frustrated by NYSDEC's 1986 moratorium, believing that the New York State Legislature did not intend to preclude Suffolk from effectively managing its groundwater resources with this law (ECL 15-1528(3)). Instead, Suffolk officials believe that legislation requires NYSDEC to develop and implement a "workable program" based on "sound working knowledge of the details, dynamics, water volume and levels of safe withdrawal appropriate to maintain a safe quantity of Lloyd Sands water," something NYSDEC has not yet done. Suffolk water officials add that while Suffolk has spent millions of dollars to protect its water, Nassau has done less, has contaminated its shallow Magothy Aquifer, and is trying to retain exclusive control of the Lloyd aquifer. They note that Nassau already has 40 production wells in the Lloyd Aquifer drawing 12 million gallons daily, close to the 14 million gallons that recharge into the ground in Nassau.

The SCWA believes the options for nitrate filtering or piping in clean water from areas outside of Huntington are not cost-effective.

Nassau's Position

Some Nassau Legislators and officials, along with other concerned officials and environmentalists, oppose the application of the SCWA for a new Lloyd well and the idea of new Lloyd wells in general. They argue that allowing additional Lloyd wells will threaten the supply of fresh water in Nassau and that it could set a precedent for future well digging. Critics of tapping the Lloyd point out that the problem of nitrates in drinking water in the Huntington area is the result of the town's failure to implement the recommendations of the 1978 "208 Plan" (named after the section of the Federal Water Pollution Control Act Amendments of 1972 P.L. 92-500 that funded comprehensive groundwater management programs), which called for upzoning and the construction of sewers in densely populated areas. As a result, there is nitrate contamination in some of the wells in Huntington. The problem of nitrates in Huntington, say the critics, can be solved by either filtering the water currently being drawn from the Magothy aquifer or piping in cleaner water from outside the Northport area.

Critics believe that the nitrate situation in Huntington does not constitute a "hardship" that requires a waiver of the moratorium, and that Suffolk officials actually want five new Lloyd wells and is seeking a "back door" way to break the moratorium. Suffolk County Health Department officials have indicated that their groundwater model does consider that at least five other wells in Suffolk may be similarly impacted with nitrates in the future.

Critics of Lloyd wells are also concerned that SCWA is seeking designation of the Huntington area as a "coastal community," which the 1986 legislation make exempt from the Lloyd moratorium. The law defines a coastal community only as "those areas on Long Island where the Magothy aquifer is either absent or contaminated with chlorides." If SCWA gets this designation, many more communities could apply and obtain a coastal communities exemption.

Critics also maintain that Suffolk is wrong to look at the Lloyd in a proprietary way, since Lloyd water flows across municipal boundaries and ultimately mixes with saltwater in the ocean. They insist that the water under Long Island is “owned” by the people of New York State, not a single municipality. They point out that NYSDEC does not restrict drilling by water purveyors to their service area. Nassau water companies can apply for well permits located in Suffolk and Suffolk water companies can apply for well permits in Nassau.

Staff Recommendation for LIRPB Board Action

Justification for Board Action: Groundwater management is an issue that effects both Nassau and Suffolk counties and is a legitimate charge of the LIRPB set out in Resolution #1 2005 of the Nassau-Suffolk Regional Planning Board (14th Resolved Clause, section c “environmental protection”) and the LIRPB’s founding legislation of 1965 (Ordinance No. 6 of 1965 Nassau County Board of Supervisors, Section 3, part (b) “analysis of economic base land use, fiscal problems and public utilities” and Resolution No. 36 of 1965 Suffolk County Board of Directors Section 3, part (b) “Perform planning work, including but not limited to studies of . . . public utilities, pollution, and public works.”).

Nassau and Suffolk counties have been designated as having sole source aquifers. Each county has been relatively independent of one another in their respective management of groundwater, including supply, wastewater and sewage control. Both counties would benefit from joint action.

Staff Findings: From a hydrogeological standpoint it is not likely that additional Lloyd wells in Suffolk will have any effect on the Lloyd aquifer in Nassau County. Three dimensional groundwater models used by both counties and the NYSDEC, as well as research conducted by the Long Island Groundwater Research Institute, bear this out. It also appears that Suffolk County has a strong case for lifting the moratorium on Lloyd wells in Suffolk. Suffolk currently recharges 16 million gallons per day into the Lloyd, while extracting only 600,000 gallons per day. Both the staff of the NYSDEC and the Suffolk County Department of Health Services believe that the groundwater models used in both Nassau and Suffolk counties are among the best in the nation and therefore provide NYSDEC with the technical capacity to begin the Lloyd aquifer management program required by the 1986 Environmental Conservation Law amendment. This program should be put into place as soon as possible so that its development can be coordinated with Suffolk County’s upcoming Comprehensive Water Resources Management Plan. The management plan should clearly define what constitutes a “coastal community” in terms of contamination levels, and what constitutes a hardship.

Nassau County critics of tapping the Lloyd aquifer are correct to point out that over pumping the Lloyd aquifer can cause low surface water levels and saltwater intrusion in Nassau. But this appears to be mostly a problem of over pumping of the Lloyd in Nassau, and perhaps Brooklyn and Queens, not in Suffolk. The danger would be the possibility of permitting more Lloyd wells in these counties, not in Suffolk.

A greater concern for Nassau county appears to come from New York City. It is known that New York City will soon have to close some of its upstate water transmission pipes for maintenance in the coming years. The New York City Department of Environmental Protection recently proposed an Aquifer Storage and Recovery project, which would pump upstate water into the Lloyd aquifer in the vicinity of John F. Kennedy airport to see how much of this water would be recoverable. The plan has so far languished, but heavy Lloyd pumping in Brooklyn and Queens could lead to Lloyd aquifer depletion in Nassau.

Policy Option 1: Lift the Moratorium in Suffolk

Suffolk County should be permitted to manage its water resources more effectively. There does not appear to be any scientific basis for denying Suffolk this right. This means lifting the moratorium on Lloyd wells in Suffolk, to be replaced by an effective aquifer management program administered by the NYSDEC. The groundwater model used by the Suffolk County Department of Health Services, more than a decade in development and an investment of over \$1 million, constitutes a sufficient framework for NYSDEC to evaluate well permits, in the context of individual, regional and cumulative impact analysis.

Policy Option 2: Keep Moratorium in Nassau, Kings, and Queens

Although the current situation in Nassau County is not at a crisis level, there are potential shortage problems. Further permitting for drilling the Lloyd aquifer in Nassau or in neighboring Queens or Brooklyn, with the service populations in those areas, could lead to a significant water deficit. Nassau County should be able to go forward in the knowledge that the Lloyd aquifer will be available to its residents when it is needed and not threatened by unnecessary or spurious external or internal use. The moratorium on new Lloyd wells should be maintained in the counties of Nassau, Queens, and Kings and a clear, stringent definition of “coastal communities,” which are exempt from the moratorium, should be iterated.

Policy Option 3: Share Water With Nassau

One viable means to resolve Nassau’s concern with fresh water supply is to have in place the ability to transfer potable water from Suffolk to Nassau County. Suffolk has more capacity than it currently needs, while Nassau is at carrying capacity. If Suffolk wants to tap the Lloyd in specific instances it should also cooperate in a regional effort to share water. Inescapably, this approach leads to the last administrative consideration. Namely, the creation of a Nassau County Water Authority.

Policy Option 4: Create Nassau County Water Authority

The 208 Plan and subsequent studies, including Nassau County’s 1980 Master Water Plan, called for the construction of interconnections between the 48 separate water

districts throughout the county, and the development of plans to provide for inter-county water transfer. This would make possible more effective management of Nassau's groundwater, eliminating the possibility that competing water districts will vie for the right to drill into the Lloyd and reduce the amount available in those communities that need it most. It would also facilitate the use of Suffolk groundwater in Nassau by providing broader infrastructure and facilities management.

Contacts

Dr. David Ackman, Nassau County Department of Health
 Dr. Henry Bokuniewicz, Long Island Groundwater Research Institute
 Honorable Jon Cooper, Suffolk County Legislator
 Honorable David Denenberg, Nassau County Legislator
 Honorable Thomas P. DiNapoli, New York State Senate
 Honorable Steven Englebright, New York State Assembly
 Honorable Denise Ford, Nassau County Legislature
 Honorable Judith Jacobs, Nassau County Legislature
 Mr. Steven Jones, Suffolk County Water Authority
 Mr. John Laffey, City Manager, Long Beach
 Mr. Thomas Maher, Nassau County Executive's Office
 Ms. Sarah Meyland, Nassau County Planning Federation
 Mr. Vito Minei, Suffolk County Department of Health Services
 Mr. Robert Piazza, Assistant City Manager, Long Beach
 Mr. Sy Robbins, Suffolk County Department of Health Services
 Mr. William Spitz, New York State Department of Environmental Conservation

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