



In-City Water Supply Resiliency
Final Scope of Work
Draft Environmental Impact Statement

CEQR No. 15DEP029Q

Prepared by New York City Department of Environmental Protection
Commissioner Vincent Sapienza, P.E.
Lead Agency Contact Angela Licata, Deputy Commissioner of Sustainability
Attention: Kathryn Kelly
Project Manager, Office of Water Supply
Infrastructure & Watershed Assessment
New York City Department of Environmental Protection
Bureau of Environmental Planning and Analysis
59-17 Junction Boulevard
Flushing, NY 11373



October 2017

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DEIS
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Attn: Kathryn Kelly, Project Manager
New York City Department of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373

Preparers: New York City Department of Environmental Protection
Bureau of Environmental Planning and Analysis
59-17 Junction Boulevard
Flushing, NY 11373

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List of Acronyms

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BEPA	Bureau of Environmental Planning and Analysis
CadnaA	Noise modeling software
CAL3QHCR	EPA Air Dispersion Model
CEA	Critical Environmental Areas
CEQR	City Environmental Quality Review
cfs	Cubic feet per second
DCP	Department of City Planning
DEIS	Draft Environmental Impact Statement
DEP	Department of Environmental Protection
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FEIS	Final Environmental Impact Statement
GAC	Granular Activated Carbon
GHG	Greenhouse Gas
IGWMC	International Groundwater Modeling Center
LPC	Landmarks Preservation Commission
MCL	Maximum Contaminant Level
mgd	million gallons per day
NAAQS	National Ambient Air Quality Standards
NWIS	National Water Information System
NYC	New York City
NYCDOHMH	New York City Department of Health and Mental Hygiene
NYCDOT	New York City Department of Transportation
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
PCE	Passenger Car Equivalents
RCNY	Rules of the City of New York
ROW	Right-of-Way
SEQRA	State Environmental Quality Review Act
SERP	State Environmental Review Process
SHPO	State Historic Preservation Office
SPDES	State Pollutant Discharge Elimination System

TIMS	NYCDOT Traffic Information Management System
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
VPC	Vapor Phase Carbon

PREAMBLE TO FINAL SCOPE OF WORK

The New York City Department of Environmental Protection (DEP) is conducting a voluntary environmental review for the In-City Water Supply Resiliency Project, which includes the renewal of DEP's existing Water Supply/Water Withdrawal permit and the potential future implementation of temporary treatment systems at DEP's existing well stations. In accordance with the New York State Environmental Quality Review Act (SEQRA) and City Environmental Quality Review (CEQR) processes, DEP prepared a Draft Scope of Work (DSOW) and conducted two informational poster sessions prior to two public hearings on June 21, 2017 in Mineola, Nassau County, NY, and June 28, 2017 in St. Albans, Queens County, NY. Written comments were received during the public comment period ending on July 10, 2017. DEP has reviewed the public comments and considered relevant and environmentally significant issues raised during the public hearings and comment period.

In response to the issues raised during the scoping process, the DSOW has been revised to incorporate the following into the Final Scope of Work (FSOW):

- Clarification to the project description to highlight the intent to serve potential short-term needs during water supply system outages with no change in capacity or number of wells and using conceptual design of possible temporary treatment systems, as needed;
- Revisions to groundwater modeling scenarios to capture a range of pumping rates and durations; and
- Revisions to environmental analyses to focus the analysis on the effects associated with the renewal of the existing permit, no construction of permanent facilities, evaluation of temporary water quality treatment systems as may be needed in the future, and potential future environmental analysis that may be required prior to upgrades and installation of temporary water quality treatment at well stations.

Another issue raised during public comment is basement flooding in southeast Queens. After the DSOW was issued, DEP has begun work on a Groundwater Radial Collection Feasibility Study. Results of the study are anticipated in spring 2018. The radial collection system would not entail drilling wells or affect Water Supply Permit renewal or the related Draft Environmental Impact Statement (DEIS). A separate environmental analysis would be conducted, as needed, if the concept is shown to be viable. At this time, there is not sufficient information available to incorporate the concept in this DEIS. In addition to the study, DEP is investing \$1.7 billion towards sewer improvements in southeast Queens.

Attached to this FSOW is the Response to Comments (RTC) on the DSOW. In accordance with SEQRA and CEQR environmental review processes, DEP has summarized the comments received during the public hearings and the public comment period and provided responses to all relevant and environmentally significant comments.

DEP is developing a DEIS to evaluate environmental impacts of the potential use of In-City Water Supply Resiliency. DEP expects to publish the DEIS in late 2017 and will hold public hearings and a comment period in accordance with SEQRA/CEQR.

1.0 INTRODUCTION

The vast and complex New York City (City) water supply system (**Figure 1**) was originally developed through the visionary planning of City planners and engineers who understood the importance of delivering an abundant and reliable supply of clean drinking water to the City. The system was designed in the early 1800s, and has been able to expand, adapt, and modernize to keep pace with a growing population because City leaders have continued to follow the precedent set by their predecessors. Today, the New York City Department of Environmental Protection (DEP) is responsible for supplying clean drinking water to over eight million City residents and approximately one million upstate customers in sufficient quantity to meet present water demand, as well as for maintaining the water supply system to meet future water demand. Recognizing the need to protect the long-term viability and overall resilience of the water supply system, the City continues to make systematic and sustained investments in the critical infrastructure that provides water to approximately nine million people each day. These investments include work on redundancy measures for use in the event of a water supply shortage necessary repairs and/or emergencies.

DEP is proposing the In-City Water Supply Resiliency Project to ~~meet the City's water supply needs and~~ serve as a supplement to DEP's upstate surface water supplies. The subject of this ~~Draft Final~~ Scope of Work is the proposed Queens Groundwater project, also referred to as the In-City Water Supply Resiliency Project (the "Proposed Project"), which supports the renewal of DEP's existing Water Supply/Water Withdrawal permit and the potential implementation of temporary treatment systems at DEP's existing well stations.

The Jamaica Water Supply Company operated a group of wells that served communities in southeastern Queens and portions of Nassau County from 1887 to 1996. In 1996, DEP acquired the Queens portion of this system. The Queens Groundwater system is comprised of 44 well stations, which house a total of 68 water supply wells. These wells collectively have a permitted capacity of up to a five-year running average of 22,568 million gallons per year or 62 million gallons per day (mgd) with a 24,807 million gallon maximum in any one year or 68 mgd. DEP has owned, maintained, and operated the groundwater supply system since its acquisition ~~and~~ DEP has retained the system in order to have a supplemental supply to the City's upstate surface water system in times of upstate water supply shortage due to drought and planned and/or unplanned unforeseen system infrastructure outages or emergencies.

This EIS will support DEP's application to the New York State Department of Environmental Conservation (NYSDEC) to renew ~~the~~ an existing Water Supply/Water Withdrawal permit for the groundwater system, which expires on December 31, 2017. The Proposed Project is the ~~upgrade of~~ renewal of the existing Water Supply/Water Withdrawal permit and the potential implementation of temporary treatment systems at DEP's groundwater wells to include the necessary treatment required allow for the operation of the existing groundwater supply system in the event there is an exigent need to supply the full 68 mgd permitted capacity in response to ~~emergency~~ a water supply shortage and upstate due to drought conditions or planned and/or unplanned infrastructure outages.

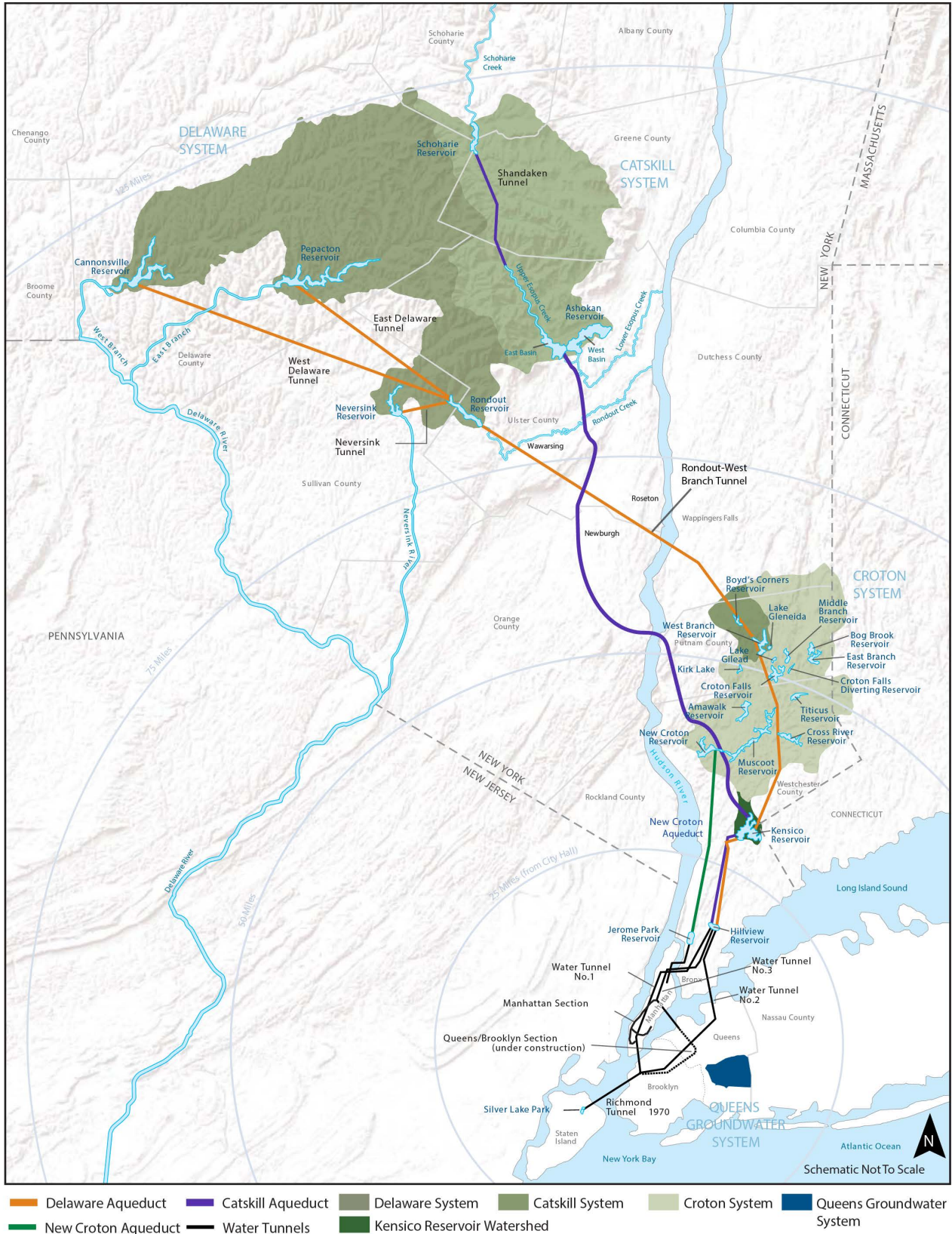


Figure 1: Water Supply System Map



While an EIS is not required for a Water Supply/Water Withdrawal permit renewal, DEP has committed to undertake this EIS. Environmental impacts evaluated in this Draft Environmental Impact Statement (DEIS) will focus on program-wide operational impacts, in particular, the impacts to the groundwater aquifers due to the resumption of groundwater pumping. A generic description of potential future temporary treatment upgrades to DEP's groundwater system will be provided in the DEIS. Further station-specific assessments at individual well stations would be conducted, if required, at the time of design of the temporary treatment upgrades. While the Draft Scope described both permanent and temporary treatment facilities under consideration at the well stations, permanent treatment facilities are not likely to be cost-effective for temporary usage. Therefore, the DEIS will evaluate Permanent or installation of mobile temporary treatment facilities will be evaluated for the existing 68 wells at 44 stations (or sites) that are addressed within the current NYSDEC Water Supply Permit (Figure 2). If, in the future, permanent treatment facilities were pursued, they would be subject to separate environmental review, as necessary.

The permit renewal will not include installation of new water supply wells; nor will the system capacity be increased. Flood control is not part of the purpose or design of the Queens Groundwater system nor will the Queens Groundwater wells be used to remediate flooding. As announced by Mayor Bill de Blasio on July 21, 2017, DEP is investigating solutions to basement flooding in southeast Queens. This project, known as the Groundwater Radial Collection Feasibility Study, includes the feasibility of a radial collection plan as a separate project. In addition to the study, DEP is investing \$1.7 billion towards sewer improvements in southeast Queens.

1.1 ORGANIZATION OF THE ~~DRAFT~~ FINAL SCOPE

This ~~Draft~~ Final Scope includes the following discussions:

- **Section 1.2, Purpose and Need for the Proposed Project** - This section describes the need for the Proposed Project.
- **Section 1.3, In-City Water Supply Resiliency Project Description** - This section describes the main components of the Proposed Project and the locations.
- **Section 1.4, Project Schedule and Phasing** - This section describes the anticipated schedule for the Proposed Project.
- **Section 1.5, Project Approvals and Coordination** - This section discusses the anticipated permits and approvals that would be required for the Proposed Project as well as necessary interagency and public outreach and coordination.
- **Section 1.6, Analytical Framework for Environmental Impact Statement** - This section outlines the analytical framework for the DEIS.
- **Section 1.7, Organization and Scope of the Environmental Impact Statement** - This section presents the organization of the DEIS and outlines the scope of the analyses to be performed, as well as their methodologies.

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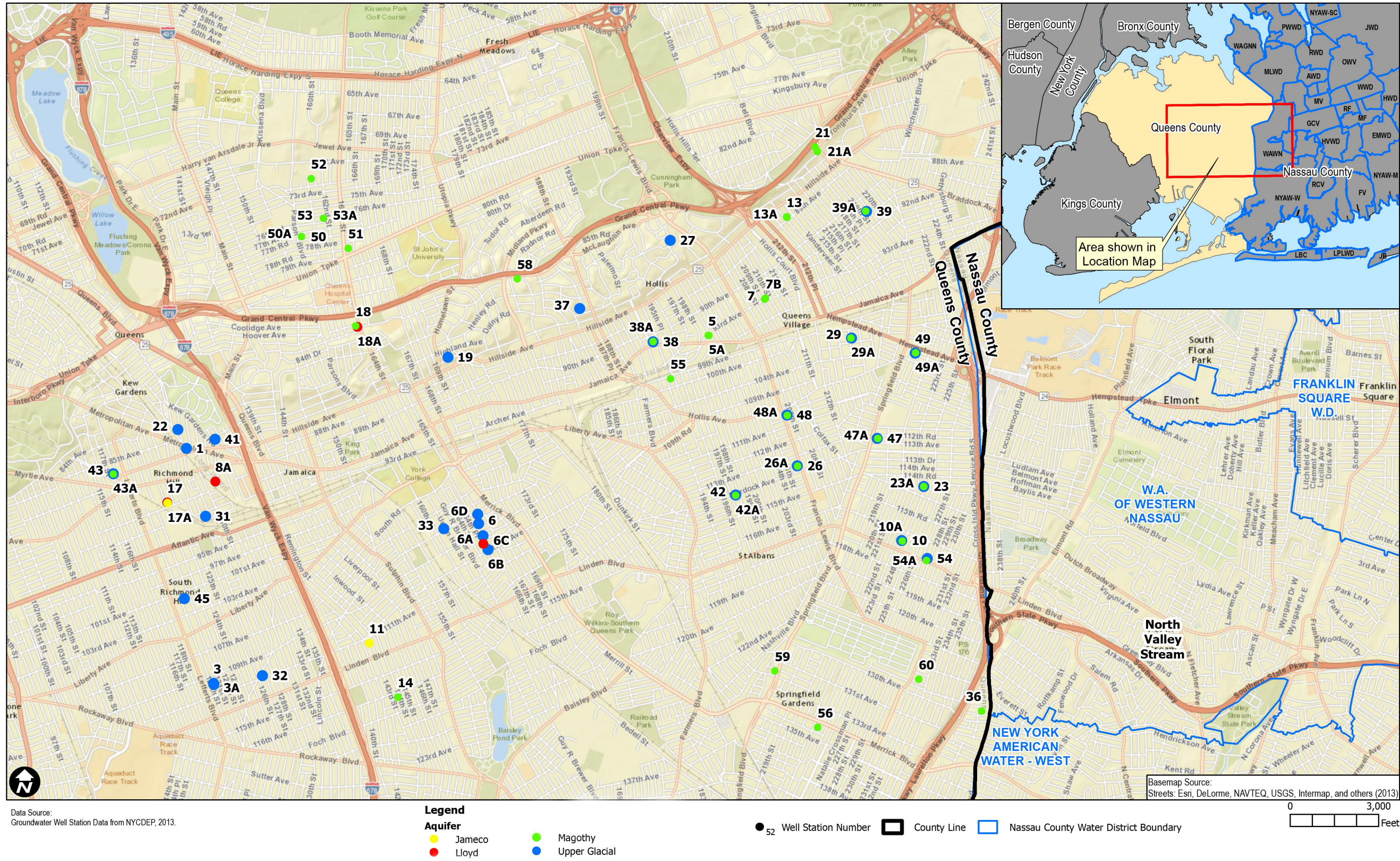


Figure 2: DEP Inventory of Groundwater Infrastructure in Southeast Queens

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1.2 PURPOSE AND NEED FOR THE PROPOSED PROJECT

DEP is responsible for ensuring the safe and reliable delivery of drinking water to consumers in sufficient quantity to meet all present and future water demands. The purpose of the In-City Water Supply Resiliency Project EIS is to support the renewal of the existing Water Supply/Water Withdrawal permit and, ultimately, to rehabilitate and modernize ~~implement~~ temporary treatment of the DEP's groundwater system to ensure its viability for meeting DEP's water supply needs as a supplement to upstate surface water supplies in the event of a water supply shortage ~~necessary repairs and/or an emergency~~. Rehabilitating the Queens Groundwater system would improve the resiliency of the City's overall water supply system by making a ~~portion of the groundwater system immediately accessible in an emergency, and the entire groundwater system available within a short period of time during a water supply shortage due to drought conditions or~~ planned and/or unplanned infrastructure outages.

DEP originally acquired the Queens Groundwater system in 1996 and has maintained and operated it as a supplemental supply to the City's upstate surface water system. DEP has maintained applicable permits to operate the system since acquiring the system in 1996 and is seeking to renew its Water Supply/Water Withdrawal Permit (DEC Permit #2-6399-00005/00001) which expires on December 31, 2017, to maintain the existing permitted capacity. No new wells or modifications to the existing Water Supply/Water Withdrawal permit would be requested and the currently permitted capacities would remain the same as provided within the existing permit. The Proposed Project, which supports the permit renewal and potential implementation of temporary treatment systems at DEP's existing wells, would enable operation of the full permitted capacity of the groundwater well system in southeastern Queens, New York. As such, the DEIS will include the evaluation of impacts due to groundwater withdrawal and the potential necessary upgrades to support ~~permanent or~~ temporary on-site treatment system improvements at the ~~all~~ well stations for potable water supply to support the use of these stations in the event of an emergency a water supply shortage.

The Proposed Project is consistent with the *One New York: the Plan for a Strong and Just City (OneNYC)* initiative to protect the City's water supply and maintain reliability and resiliency of the system.

1.3 IN-CITY WATER SUPPLY RESILIENCY PROJECT DESCRIPTION

DEP has owned, maintained, and operated a groundwater supply system in southeastern Queens since 1996 (Queens Groundwater system). This system was formerly owned and operated by the Jamaica Water Supply Company and had been in operation since before the beginning of the 20th century. At its peak, the Jamaica Water Supply Company produced a maximum of over 100 mgd of groundwater.

The currently permitted Queens Groundwater system is comprised of 44 well stations, which house a total of 68 water supply wells (some stations include a single well; others include multiple wells). DEP holds and maintains a Water Supply Permit from the NYSDEC that was effective January 1, 2007 and will require renewal by December 31, 2017. The permit allows

DEP to withdraw up to 22,568 million gallons per year (62 mgd) based upon a five-year running average, with a 24,807 million gallon per year maximum for any single year (68 mgd).¹ All stations are located within an approximately 20 square-mile area in the southeastern section of Queens, ~~which near the borders with Nassau County.~~ The stations are generally bounded by I-495 (Long Island Expressway) to the north, Route 27 (Sunrise Highway) to the south, Lefferts Boulevard to the west, and the Belt/Cross Island Parkways to the east (see **Figure 2** and **Table 1.3-1**). The production of water from any of the Queens wells in the future ~~could be blended with water from~~ would be capable of reaching the Hillview Reservoir the upstate surface water system for distribution ~~anywhere within the City Brooklyn and Queens where there would be demand.~~ Ongoing and planned upgrades for existing water mains in Queens as part of the City's continuous maintenance program and independent of the Proposed Project will make ~~this~~ New York City's drinking water infrastructure even more resilient robust.

Table 1.3-1: Well Station Sites Comprising the Proposed Project

Well Number	Station	Address (Queens, NY)	Block	Lot	Zoning	Aquifer
1	1	127-01 Metropolitan Ave.	9249	65	R6	Upper Glacial
3	3	109-31 120th St.	11601	54	R4	Upper Glacial
3A	3	109-31 120th St.	11601	54	R4	Upper Glacial
5	5	93-02 199th St.	10473	19	R4	Magothy
5A	5	93-02 199th St.	10473	19	R4	Magothy
6	6D	166-44 108th Ave.	10173	48	R4-1	Upper Glacial
6A	6	164-44 109th Ave.	10183	53	R3A	Upper Glacial
6B	6	164-27 110th Ave.	10185	125	R3A	Upper Glacial
6C	6	164-11 109th Dr.	10184	112	R3A	Lloyd
6D	6D	166-44 108th Ave.	10173	48	R4-1	Upper Glacial
7	7	91-01 209th St./91-01 91st Ave./ 209-02 91st Ave.	10560	1	R2	Magothy
7B	7	91-01 209th St./91-01 91st Ave./ 209-02 91st Ave.	10560	1	R2	Magothy
8A	8	131-02 88th Ave.	9338	45	M1-1	Lloyd
10	10	116-32 224th St.	11324	48	R3-1	Upper Glacial
10A	10	116-32 224th St.	11324	48	R3-1	Magothy
11	11	111-12 143rd St.	11958	6	R3A	Jameco
13	13	214-01 89th Ave.	10672	1	R2	Magothy
13A	13	214-01 89th Ave.	10672	1	R2	Magothy
14	14	116-16 144th St.	12002	11	R3A	Jameco/ Magothy
17	17	87-73 123rd St.	9332	47	R5	Lloyd
17A	17	87-73 123rd St.	9332	47	R5	Jameco
18	18	84-02 164th St./84-06 164th St.	9792	73	R4B	Magothy
18A	18	84-02 164th St./84-06th 164 St.	9792	73	R4B	Lloyd
19	19	Highland Ave.	9843	15	R5	Upper Glacial
21	21	85-44 Springfield Blvd.	10693	35	R3-2	Magothy

¹ All groundwater flows have been rounded to the nearest whole number mgd.

Table 1.3-1: Well Station Sites Comprising the Proposed Project

Well Number	Station	Address (Queens, NY)	Block	Lot	Zoning	Aquifer
21A	21	85-44 Springfield Blvd.	10693	35	R3-2	Magothy
22	22	84-76 127th St.	9248	42	R4-1	Upper Glacial
23	23	114-56 224th St.	11267	15	R2A	Upper Glacial
23A	23	114-56 224th St.	11267	15	R2A	Magothy
26	26	113-30 Francis Lewis Blvd.	11001	1	R4B	Upper Glacial
26A	26	113-30 Francis Lewis Blvd.	11001	1	R4B	Magothy
27	27	86-83 Dunton St.	10538	107	R1-2	Upper Glacial
29	29	216-15 102nd Ave.	11091	1	R3-2	Upper Glacial
29A	29	216-15 102nd Ave.	11091	1	R3-2	Magothy
31	31	127-15 92nd Ave.	9356	35	M1-1	Upper Glacial
32	32	109-50 127th St./126-15 111th Ave.	11607	33	R3-2	Upper Glacial
33	33	160-25 108th Ave.	10139	32	R4	Upper Glacial
36	36	Hook Creek Blvd./ <u>244-98 129th Ave.</u>	12890	2	R2	Magothy
37	37	87-74 Chevy Chase St.	9962	89	R1-2	Upper Glacial
38	38	90-35 193rd St.	10458	25	R5	Upper Glacial
38A	38	90-35 193rd St.	10458	25	R5	Magothy
39	39	90-42 Springfield Blvd.	10718	26	R2	Upper Glacial
39A	39	90-42 Springfield Blvd.	10718	26	R2	Magothy
41	41	87th Ave.	9621	42	R4-1	Upper Glacial
42	42	197-14 Murdock Ave.	11014	6	R4-1	Upper Glacial
42A	42	197-14 Murdock Ave.	11014	6	R4-1	Magothy
43	43	85-34 118th St.	9260	21	R6B	Upper Glacial
43A	43	85-34 118th St.	9260	21	R6B	Magothy
45	45	101-19 120th St.	9488	68	R4A	Upper Glacial
47	47	217-14 112th Rd.	11214	11	R3-2	Upper Glacial
47A	47	217-14 112th Rd.	11214	11	R3-2	Magothy
48	48	109-81 Francis Lewis Blvd.	10947	14	R3-2	Upper Glacial
48A	48	109-81 Francis Lewis Blvd.	10947	14	R3-2	Magothy
49	49	103-15 219th St.	11154	18	R3-2	Upper Glacial
49A	49	103-15 219th St.	11154	18	R3-2	Magothy
50	50	77-09 Parsons Blvd.	6827	30	R3-2	Magothy
50A	50	77-09 Parsons Blvd.	6827	30	R3-2	Magothy
51	51	78-23 164th St.	6972	37	R3-2	Magothy
52	52	71-52 161st St.	6799	81	R6	Magothy
53	53	160-25 76th Rd.	6836	4	R3-2	Magothy
53A	53	160-25 76th Rd.	6836	4	R3-2	Magothy
54	54	227-25 Linden Blvd.	11328	1	R2A	Upper Glacial
54A	54	227-25 Linden Blvd.	11328	1	R2A	Magothy
55	55	194-10 99th Ave.	10841	10	R3-2	Magothy
56	56	134-15 222nd St.	13102	1	R3A	Magothy
58	58	180-40 Grand Central Parkway	9949	60	R1-2	Magothy
59	59	132-06 Springfield Blvd.	12728	41	R2	Magothy
60	60	231-19 128th Dr.	12869	54	R2A	Magothy

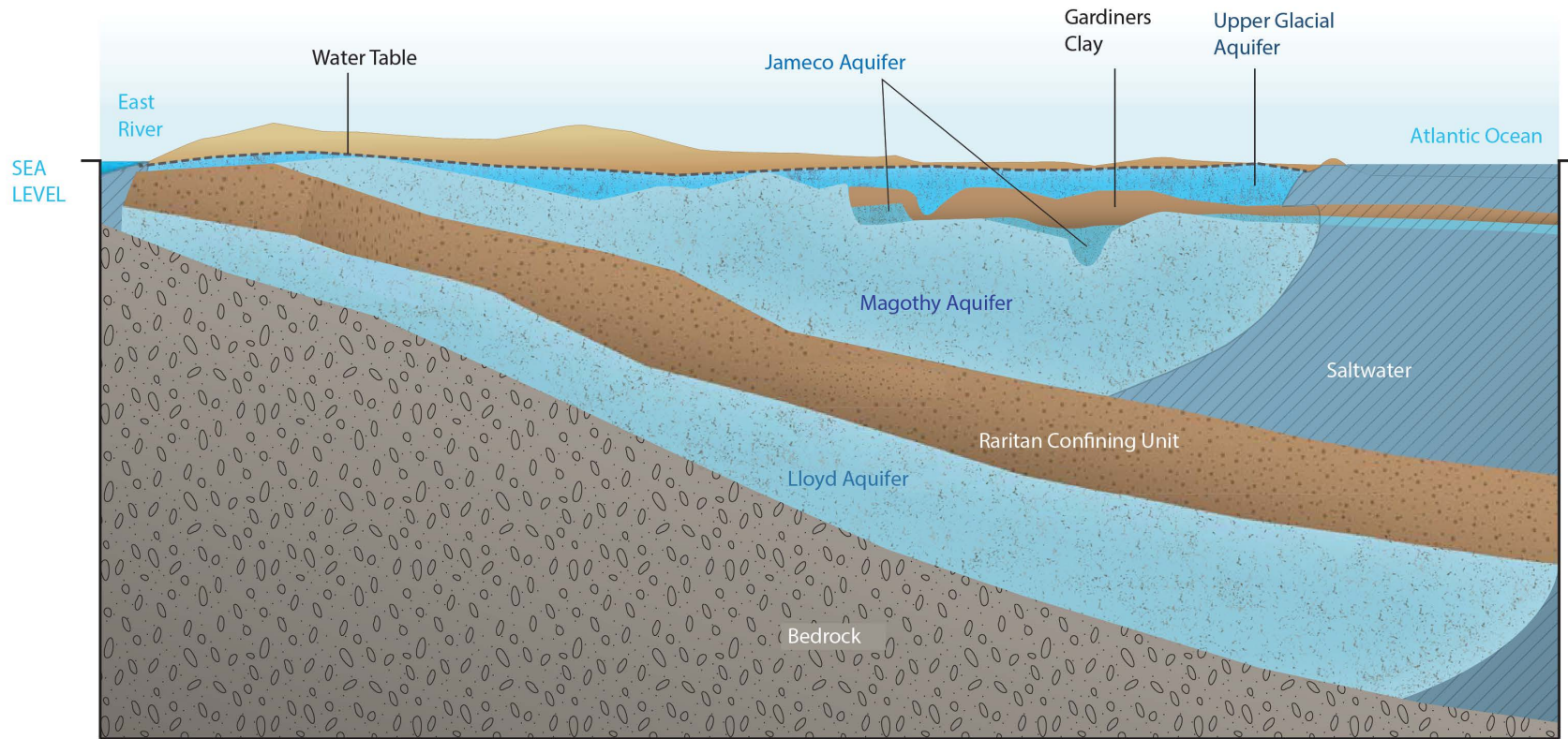
The sources of water for these wells are the aquifers beneath the Queens section of Long Island.² There are four main aquifers in the Brooklyn Queens Aquifer: the Upper Glacial and Jameco, which are the shallowest; the Magothy, which is the middle layer; and the Lloyd, which is the deepest (see **Figure 3**). Formed approximately 60 million years ago, the aquifers are generally separated by layers of clay, and groundwater moves through the aquifer systems under the influence of pressure and gravity. Water for the Queens Groundwater wells is largely extracted from the Magothy aquifer, though some wells extract from the Upper Glacial, Jameco, and Lloyd aquifers (see **Figure 3** and **Table 1.3-1**).

No new wells would be installed as part of the Proposed Project, nor would DEP seek to increase the capacity of the existing wells. The purpose of the Proposed Project is to support the renewal of DEP's existing Water Supply/Water Withdrawal permit and the future potential implementation of temporary on-site treatment system improvements at DEP's well stations to provide necessary treatment and infrastructure upgrades for the wells in order to support the withdrawal of necessary to withdraw high quality potable water during a water supply shortage, or drought emergency within the City's upstate surface water system as discussed above. Well stations will be assessed for one of two alternative scenarios. ~~The first scenario would provide for the potential construction of temporary pad or trailer-based temporary treatment facilities at all stations. The second scenario would involve the installation of permanent treatment upgrades at selected stations, including the replacement of mechanical equipment (e.g., pumps) and the construction of buildings for new treatment facilities to provide a supply of groundwater for rapid response.~~ Once the upgrades to provide permanent and/or temporary treatment are complete, the wells would provide even more robust resiliency to the water supply in the event of a water supply shortage ~~such as droughts, repairs, and/or emergencies.~~

The DEIS will identify potential impacts associated with a range of alternative operating scenarios, see Section 1.6. If significant adverse impacts are identified, the DEIS would also include mitigation measures, as described in **Section 1.7.6**.

Finished water quality at all stations would meet or exceed all applicable New York State Department of Health (NYSDOH) and New York City Department of Health and Mental Hygiene (NYCDOHMH) water quality standards and would be of a quality consistent or comparable with water from DEP's upstate surface water system. Based on the raw water quality of the groundwater system in addition to existing and expected future drinking water regulations, the following types of treatment are currently anticipated: (1) iron and manganese removal; (2) volatile organic compounds (VOC) removal; (3) perchlorate removal; (4) nitrate removal; and (5) chemical treatment (i.e., chlorine, fluoride, orthophosphate, and pH adjustment). These constituents are commonly found in urban aquifers and can be effectively treated and removed by the standard treatment methods described in greater detail below. Likewise, the chemical treatments noted are also routinely utilized in the maintenance and operation of groundwater and surface water systems throughout the United States.

² An aquifer is a natural underground layer of porous, water-bearing materials (sand, gravel) generally capable of yielding a large supply of water.



Illustrative figure, not to scale.

Figure 3: Queens Aquifers



For all water quality constituents of concern, DEP conducted a screening evaluation of possible treatment options, comparing them in terms of their capacity to achieve water quality goals, operation and maintenance needs, ease of use, cost, and other factors. The types of treatment that ~~would~~ may be used ~~be included in the designs include, but are not limited to, those~~ are described below:

- *Iron and Manganese Treatment.* Groundwater in the aquifers underlying the southeastern section of Queens generally includes naturally occurring levels of iron and/or manganese, which would require treatment. Higher levels of iron and manganese in water usually result in discolored water, leading to potential discoloration in laundry and plumbing fixtures, and can affect the taste of beverages, such as coffee or tea. Applicable technologies for iron and/or manganese treatment would include chemical sequestering for lower levels or pH adjustment (if necessary), followed by a combination of oxidation and filtration, as needed.
- *VOC Removal.* Some of the wells in the Queens Groundwater system have elevated concentrations of VOCs. The selected ~~technologies~~ technology to treat these VOCs ~~are is~~ Granular Activated Carbon (GAC) ~~and air stripping~~. GAC is effective at removing a wide range of organic contaminants, has been identified as a best available technology for VOC removal, ~~and can be used alone or in conjunction with air stripping~~. In GAC treatment, the untreated water is passed through large vessels of GAC media, usually comprised of organic materials with high carbon content (coconut shells, coal, etc.). GAC treats the water by adhering the contaminants onto the GAC media through a process called adsorption.³ As the GAC pores become filled with organic compounds, removal rates decline. Therefore, the GAC must be replaced at regular intervals depending on influent contaminant concentrations, GAC type, and contact time. DEP currently has several GAC treatment systems in place.

~~In air stripping, VOCs are transferred from the water into the air inside an air stripping tower. In these systems, water is sprayed into the top of a tower that is packed with media, as air is simultaneously blown up from the bottom of the tower. As the air makes contact with the water, the VOCs are transferred from the liquid to the gaseous phase. A sump at the bottom of the tower collects the treated water. Once in the vapor phase (off gas), the VOCs need to be captured and treated to prevent their release into the atmosphere to comply with applicable air emissions requirements. The air stripping technology referred to as vapor phase carbon (VPC) was selected for this project. A VPC unit passes the off-gas stream through vessels containing activated carbon that adsorbs the VOCs.~~

VOC treatment technology is effective at removing a wide range of organic chemicals and has been installed for wellhead treatment at several DEP groundwater stations and throughout the region for similar applications. Additionally, these units typically produce few wastes and require minimal operator attention.

³ Adsorption is a process by which molecules or particles are bound to a surface; this is different from absorption, which involves the filling of pores in a solid. Activated carbon is an effective adsorbent because it provides substantial surface area relative to its weight and volume.

- *Perchlorate Removal.* A small number of wells in the Queens Groundwater system contain levels of perchlorate that will require treatment. Perchlorate is an anion that has been introduced to the environment as a contaminant in both ground and surface water from various chemical and industrial processes. Perchlorate is persistent and long lasting, and once it is introduced into the environment, it migrates freely with water flow and does not easily reduce to a less oxidative state. Options for perchlorate treatment include ion exchange.

Ion exchange is a cost-effective solution for removing perchlorate and is the most commonly used treatment process for perchlorate removal in potable water treatment applications. The selected perchlorate removal process is a continuous process; as the water to be treated passes through the exchange material which is placed in a packed bed, perchlorate is removed from the water in exchange for chloride, ~~similar to that for nitrate removal.~~ Since the typical ion exchange media used with perchlorate is single pass through the exchange material (resin) and regenerated off-site, residual streams are limited to spent resin and sample streams. Additionally, capital costs, operation, and maintenance costs, and footprint are reasonable. In general, ion exchange is cost effective compared to other removal technologies. Single pass ion exchange is a proven technology and can be reliably operated to meet finished water quality goals.

- *Nitrate Removal.* Several wells in the Queens Groundwater system contain levels of nitrate that will require treatment. The sources of this contaminant include past on-site sewage disposal systems, application of fertilizers, and agricultural processes. Options considered for nitrate treatment include ion exchange.

Ion exchange is a cost-effective solution for removing nitrate and is the most common method used for nitrate removal in potable water treatment applications (including Long Island supply wells). The selected nitrate removal process is a continuous process, as the water to be treated passes through resin which is placed in a packed bed, similar to that for perchlorate removal. ~~Ion exchange resin is typically installed in two or more vessels.~~ Nitrate is removed as contaminated groundwater flows through the resin-filled vessels and exchanges with chloride for adsorption sites on the resin. The ion exchange resin would be single pass and regenerated off-site. ~~Resin regeneration is conducted by taking a vessel offline for regeneration with a brine solution while a second vessel is operated for nitrate adsorption. For groundwater systems such as the Queens Groundwater system, two or more stationary vessels would typically be installed.~~ Single pass ion ~~ion~~ exchange is a proven technology and can be reliably operated to meet finished water quality goals.

- *Chemical Treatment.* Finished water goals for chemical treatment would be established to meet all applicable regulatory requirements. These goals would be established for chlorine residual, fluoride, orthophosphate, and pH. Residual chlorine levels would be established to maintain adequate levels of chlorine, in order to ensure water remains safely disinfected as it travels through the distribution system. DEP would also add fluoride to the groundwater entering its distribution system for dental protection, in accordance with New York City's Health Code and guidance from NYSDOH and NYCDOHMH. Lastly, finished water goals would be based on the optimal water quality parameters established by NYSDOH for corrosion control treatment (such as the addition of orthophosphate) and compliance with the U.S. Environmental Protection Agency's (EPA) Lead and Copper Rule.

1.4 PROJECT SCHEDULE AND PHASING

For the purposes of the DEIS analyses, it will be conservatively assumed that activities for the In-City Water Supply Resiliency Project would begin in 2019, and that construction at all well station sites would take place concurrently, with peak construction periods to be identified in the DEIS. Permanent and temporary treatment improvements to the Queens Groundwater stations are anticipated to be completed in 2021. For the assessment of the potential impact of the operation of the Queens Groundwater system upon groundwater resources, the analysis period was assumed to be the 10-year duration of a renewed permit (2018-2028) based upon the current pumping limits allowed by the current permit. Further detail on the analysis of groundwater pumping scenarios are described in Section 1.6.

1.5 PROJECT APPROVALS AND COORDINATION

The Proposed Project would require permits and approvals from the following State and local agencies listed below.

- NYS Department of Environmental Conservation
- NYS Department of Transportation
- NYS Department of Health
- NYC Office of the Mayor
- NYC Department of Health and Mental Hygiene
- NYC Department of City Planning
- NYC Department of Transportation

1.6 ANALYTICAL FRAMEWORK FOR ENVIRONMENTAL IMPACT STATEMENT

As the lead agency, DEP is required to examine the environmental effects of a proposed action and, to the maximum extent practicable, avoid or mitigate potentially significant adverse environmental impacts, consistent with social, economic, and other essential considerations. This environmental review is being prepared in accordance with the New York State Environmental Quality Review Act (SEQRA) and the City of New York's CEQR process. Any proposed action funded, approved, or directly undertaken by a New York State or local agency must comply with the provisions of SEQRA and its implementing regulations (6 NYCRR Part 617). As a consequence, the In-City Water Supply Resiliency Project is subject to review under SEQRA. In addition, since the In-City Water Supply Resiliency Project is being undertaken by a New York City agency, it is also subject to review under CEQR requirements, as set forth in 62 RCNY Chapter 5 and Executive Order 91 of 1977, CEQR regulations, and CEQR amendments, as well as the State Environmental Review Process (SERP), as required by the State Revolving Loan

Fund Program. The City's *CEQR Technical Manual* provides guidelines for conducting environmental reviews performed under CEQR.

The DEIS will describe the analytical framework that will be used to assess the potential for impacts associated with all components of the Proposed Project. It will define the assessment conditions, build analysis years (~~construction and operation~~), impact assessment categories, and impact thresholds as follows:

- **Existing Conditions.** In the DEIS, existing conditions will be described in order to establish a baseline against which future conditions can be projected. In general, existing conditions will be evaluated for the study areas most likely to be affected by the Proposed Project.
- **No Build Action Conditions.** Using existing conditions as a baseline, conditions known to occur or expected to occur in the future, regardless of the Proposed Project, are then evaluated for the Proposed Project's analysis year(s). This is the "No Build Action" or "future without the Proposed Project" and is the baseline condition against which the effects of the Proposed Project are measured.
- **Analysis Year(s).** The analysis year refers to a particular future year for which a DEIS analyzes a proposed project's likely effects on its environmental setting. There could be a number of analysis years depending on the technical areas being examined. ~~For example, if the project would result in substantial construction, there could be separate interim analysis years for the traffic and air quality analyses since the peak year for traffic may differ from the peak year for potential air pollutant emissions. Construction related to the In-City Water Supply Resiliency Project is expected to start in 2019 and permanent or temporary treatment improvements to the Queens Groundwater stations are assumed to be completed in 2021. For the purposes of this DEIS, construction of temporary treatment facilities will be evaluated generically with no specific assumed build year. When DEP develops a design for rehabilitation for individual well stations, further station-specific evaluation would be undertaken, as needed.~~ For the assessment of the potential impact of the operation of the Queens Groundwater system upon groundwater resources, the analysis period was assumed to be a maximum of the 10-year duration of a renewed permit (2018-2028) based upon the current pumping limits allowed by the permit. An analysis of proposed operations will be conducted for a range of pumping for several scenarios as summarized below based upon the 10-year duration of the permit for a range of pumping rates and durations within the permit limits. The results will be presented in the DEIS.

- Scenario A – Groundwater pumping at current single year permitted maximum (68 mgd⁴) for 1 year;
- Scenario B – Groundwater pumping at current single year permitted maximum (68 mgd) for 2 years;
- Scenario C – Groundwater pumping at current single year permitted maximum (68 mgd) for 3 years;
- Scenario D – Groundwater pumping at the currently permitted 5-year running average of 62 mgd for 5 years); and
- Scenario E – Groundwater pumping at the currently permitted 5-year running average of 62 mgd for 10 years.

These scenarios have been developed to conservatively estimate the potential impact from operating the Queens Groundwater system taking into account a range of durations and pumping rates. As there are a number of uncertainties associated with predicting future conditions, a sensitivity analysis pertaining to rainfall (drought), southern Lloyd saltwater interface position, and the spatial distribution of Queens wells will be conducted.

~~In addition, as there may be the potential for noticeable changes to the closer western Nassau County wells; two additional scenarios would be evaluated. For the scenario (i.e., from Scenarios A through E above) determined to have the most significant potential effect, an assessment with similar pumping rates and durations to the identified worst case scenario would be completed for operation of all of the westernmost Queens supply wells, and then for all of the easternmost wells. The evaluation of these additional scenarios would provide a further understanding of potential impacts of the Proposed Project upon the westernmost Nassau County wells.~~

1.7 ORGANIZATION AND SCOPE OF THE ENVIRONMENTAL IMPACT STATEMENT

As discussed above, since the sponsor of the Proposed Project is DEP, a New York City agency, the Proposed Project is subject to CEQR in addition to SEQRA. The City of New York's *CEQR Technical Manual* provides suggested methodologies for conducting environmental assessments performed under CEQR.

The methodologies in the *CEQR Technical Manual* provide a structured approach to addressing the potential for significant adverse impacts, and this Draft Final Scope of Work follows its suggested analytical approaches. These methodologies are considered to be appropriate technical analysis methods and guidelines for environmental impact assessment of discretionary actions in New York City. However, since the Proposed Project has the potential to affect locations outside New York City, locally and/or State-accepted DEIS methodologies will be applied in cases where New York City methodologies are less stringent or not applicable.

⁴ All groundwater flows have been rounded to the nearest whole number mgd.

The remainder of this ~~Draft~~ Final Scope of Work describes the analysis methodologies that will be used in the DEIS to assess the potential environmental effects of the Proposed Project.

- **Sections 1.7.1 and 1.7.2** outline the Executive Summary and Project Description to be included in the DEIS.
- **Section 1.7.3** describes the methodologies that will be used to analyze the potential impacts of the Proposed Project.
- **Section 1.7.4** describes how the Proposed Project's cumulative effects will be assessed.
- **Section 1.7.5** describes how alternatives to the Proposed Project will be addressed.
- **Sections 1.7.6, 1.7.7, and 1.7.8** describe how the DEIS will identify any required mitigation measures, as well as disclose any unavoidable adverse impacts, and irreversible and irretrievable commitment of resources.
- **Section 1.7.9** describes how appendices will be included as part of the DEIS.
- **Section 1.7.10** describes how a glossary of acronyms will be included as part of the DEIS.

1.7.1 EXECUTIVE SUMMARY

The DEIS will include an Executive Summary providing the reader with a clear understanding of the information found in the main body of the DEIS. A synopsis of all potential significant adverse impacts from the ~~construction and operation of the~~ Proposed Project, along with proposed mitigation measures for such impacts, if required, will be summarized in this chapter. Specifically, the Executive Summary will include:

- A brief description of the Proposed Project, including background leading to its development and anticipated analysis year(s).
- A list of involved and interested agencies, and required approvals/permits.
- A concise list of any anticipated significant adverse impacts and proposed mitigation measures.
- A description of the alternatives to the Proposed Project considered in the DEIS.

1.7.2 CHAPTER 1: PROJECT DESCRIPTION

This chapter of the DEIS will describe the Proposed Project and provide the public and decision-makers with the context within which to evaluate the Proposed Project ~~and its alternatives~~.

The Project Description chapter will contain an overview of the In-City Water Supply Resiliency Project, including a description of the various well station locations, a list of all actions and

approvals associated with the Proposed Project, identification of the applicant, and a discussion of the regional setting for the Proposed Project. It will also incorporate a statement of purpose and need for the Proposed Project.

This section will provide charts, graphics, maps, site plans, and renderings, as well as other supporting documents, as appropriate. Tax lots, land ownership, and existing uses of all parcels of land comprising the well station sites will be identified. The Proposed Project will be described, including a discussion of DEP's existing Water Supply/Water Withdrawal Permit and a generic discussion of the temporary treatment systems and their approximate dimensions of project components that may be implemented at DEP's existing well stations. ~~An overview of the Proposed Project's construction schedule and phasing will also be provided, and locations where construction may occur (including construction staging areas) will be identified.~~

1.7.3 CHAPTER 2: PROBABLE IMPACTS OF THE PROPOSED PROJECT

1.7.3.1 Overview

As described above, DEP intends to retain the Queens Groundwater supply system. The Proposed Project involves supports the renewal of DEP's existing Water Supply/Water Withdrawal Permit and the potential implementation of temporary treatment systems in order to support the withdrawal of potable water during a water supply shortage due to drought and planned and/or unplanned infrastructure outages. ~~rehabilitation and modernization of DEP's existing groundwater system to ensure its viability for meeting DEP's water supply needs as a supplement to DEP's upstate surface water supplies in the event of necessary repairs and/or an emergency.~~ This portion of the DEIS will provide a detailed assessment of potential impacts related to the Proposed Project.

At a minimum, a screening level assessment will be provided in the DEIS for all relevant environmental impact assessment categories for which more detailed assessments are not required. Using the methodology described below, applicable environmental impact assessment categories (e.g., land use, transportation, etc.) will be evaluated ~~for each station in the Proposed Project.~~ In some cases, specific assessment categories may be evaluated cumulatively with respect to the permit renewal and the both construction and operation of proposed temporary treatment systems. The proposed analysis approach for all relevant environmental impact categories is summarized in **Table 1.7-1**.

Table 1.7-1: Summary of Analyses of Proposed Project Components to be Included in the DEIS

Assessment Categories Requiring Preliminary and/or Detailed Analysis	Generic Well Station Assessment	Program-Wide Assessment
Land Use, Zoning, and Public Policy	✓	-
Socioeconomic Conditions	-	-
Community Facilities and Services	-	-
Open Space and Recreation	-	-
Critical Environmental Areas	-	-
Shadows	-	-
Historic and Cultural Resources	✓	-
Urban Design and Visual Resources	✓	-
Natural Resources and Water Resources	✓	✓
Hazardous Materials	✓	✓
Water and Sewer Infrastructure	✓	✓
Solid Waste and Sanitation Services	✓	-
Energy	✓	✓
Transportation	-	-
Air Quality	-	-
Greenhouse Gas Emissions and Climate Change	-	-
Noise	-	-
Neighborhood Character	✓	-
Public Health	-	✓
Environmental Justice	-	✓
Growth Inducement	-	✓
Construction	-	✓

The level and type of temporary treatment at each site will vary based upon what may be required to meet applicable federal, State, and local drinking water requirements, and will be determined during implementation of the Proposed Project. ~~Therefore, a conceptual facility design(s) (“representative site or station”) will be developed to allow for an evaluation of the various treatment levels that may be required at each well site that may be part of a permanent upgrade. This design(s) will be based upon volumetric facility requirements (e.g., cubic feet of treatment facility per mgd of well capacity) with maximum building heights and floor areas established based upon this. Each station will be assessed for potential impacts associated with the largest conceptual design that may be suitable for a specific site. Where the largest facilities may result in potential impacts, the DEIS will explore limiting the facility to a smaller size as a mitigating alternative. In addition, The potential impacts associated with a trailer-mounted or pad-based facility design concept for to provide temporary treatment facilities will be developed and assessed generically for each well site. Future station-specific analyses would be conducted, as necessary.~~

It is noted that the baseline condition under CEQR must consider "the conditions relevant to a 'reasonable worst-case' analysis of the effects of the project." For example, when determining the baseline condition for water supply conditions, the reasonable worst-case analysis would be during a water supply shortage condition when the City would be drawing the maximum permitted volume of water under its permit. However, because the City has reduced the utilization of the Queens wells in recent years, the baseline condition will be developed using the New York City Groundwater Model in the following manner. The calibration period for the existing groundwater model (see **Section 1.7.3.10** for additional information on the model) of the Long Island aquifers will be extended to include pumping, streamflow, rainfall recharge, return flow, and piezometric head data through 2015. Once the model has been extended in time and the calibration verified, it will be run to represent future baseline conditions without the Queens supply well pumping. The baseline simulation will incorporate averages for recent pumping and aquifer recharge and is intended to approximate what is most likely to occur over the course of a future, 10-year period (2018-2028), coincident with the proposed duration of the permit renewal. The model will then be used to assess changes due to the Proposed Project under a range of operating scenarios and for a range of durations within the permit limits (see **Section 1.6**).

1.7.3.2 Chapter 2.1: Land Use, Zoning, and Public Policy

Activities associated with construction and operation of the Proposed Project ~~would~~ may occur at multiple stations throughout Queens. A screening level analysis ~~an assessment~~ of the potential for ~~construction and operation of~~ the Proposed Project to affect land use, zoning, or public policy ~~within an area of approximately 400 feet from the boundary of each station proposed for rehabilitation (the study area)~~ will be included in the DEIS. Future station-specific analyses would be conducted, as necessary.

~~More specifically, the land use analysis will describe existing land uses within each study area. Land use information will be compiled and mapped from published data, and supplemented with existing field surveys and aerial photography, as available. The land use analysis will also provide a baseline for other analyses such as transportation and neighborhood character. The zoning analysis will describe existing zoning regulations that apply to the study area, including information on allowed uses, building bulk, and setbacks required within the zoning districts. The potential for the Proposed Project to impact existing and planned land uses and zoning on or near the sites will be assessed. Any pending zoning actions that may affect land use patterns in the study areas will also be identified. Lastly, the public policy analysis will outline and evaluate potential compliance with public policies that may apply to each site and its study area, including any adopted or proposed neighborhood or community plans.~~

1.7.3.3 Chapter 2.2: Socioeconomic Conditions

A ~~The~~ socioeconomic assessment ~~in the DEIS~~ will provide ~~an~~ screening level analysis of the a proposed project against applicable CEQR guidelines is required to describe and document existing socioeconomic conditions and trends that could potentially be affected by ~~the~~ a proposed project and result in significant impacts due to (1) direct residential displacement; (2) direct business displacement; (3) indirect residential displacement; (4) indirect business displacement; and (5) adverse effects on a specific industry, as needed. The existing well stations are currently owned by the City. The Proposed Project therefore does not involve direct or indirect

displacement of residential or business uses or effects to a specific industry. No further socioeconomic analysis is therefore anticipated.

1.7.3.4 Chapter 2.3: Community Facilities and Services

The Proposed Project is not expected to affect community facilities and services. There may be changes to community services associated with the Proposed Project (e.g., police associated with traffic control during construction or equipment deliveries). A screening level assessment of community facilities and services will initially identify the local community facilities within the study areas and service providers that would service these study areas; and if required, The Proposed Project would not physically and permanently alter an existing facility and does not involve the addition of new populations that require changes to community facilities and services. As a result, an analysis will describe any expected uses of those of potential impacts to community facilities and services is not anticipated; and describe the potential for impacts from the Proposed Project on these.

1.7.3.5 Chapter 2.4: Open Space and Recreation

The Proposed Project is not expected to result in adverse affects to open space and recreation. A screening level assessment will be prepared to determine whether construction or operation of As the Proposed Project involves a permit renewal and potential placement of temporary treatment systems at existing well stations, no loss or limitation of public open space, change in the use of any open space, or increased noise or air emissions would occur. The Proposed Project would not add population or demand on the use of open space. No analysis of the has the potential to adversely for effects to affect open space and recreation are associated with the Proposed Project, thereby therefore warranting no further analysis is anticipated. Specifically, an inventory of existing open space and recreational resources within the study areas will be conducted utilizing existing information and data sources to determine if any resources would potentially be displaced or are located in close enough proximity to the Proposed Project to warrant an analysis of potential impacts. Results of the open space and recreation screening assessment and analysis and an assessment of conditions in the future without the Proposed Project, if required, will be presented in the DEIS.

1.7.3.6 Chapter 2.5: Critical Environmental Areas

There is one Critical Environmental Area (CEA) located in the vicinity of one station site: the Jamaica Bay CEA. This CEA is located approximately ¼-mile from Station 36. There is no potential for construction and operation of the Proposed Project to affect or be affected by the environmental characteristics of this CEA, therefore, no further analysis is required will be assessed in the DEIS.

1.7.3.7 Chapter 2.6: Shadows

An assessment of shadows from operation of the proposed facilities will be included in this section of the DEIS if it is determined that is required if a proposed project any facility would cast shadows on any sunlight-sensitive resources. The Proposed Project would not include any permanent structures over 50 feet in height or If a proposed component that could cast new shadows or substantially increase existing shadows on a publicly-accessible open space or park,

historic landscape, or resource (if the resource's significance depends on sunlight), or important natural feature. ~~No analysis is therefore required, shadow studies would be performed to illustrate the times and extent of the potential impact.~~

~~If the results of the screening assessment indicate that sunlight sensitive resources fall within an area that would be shaded by the Proposed Project, a detailed shadow analysis will be undertaken to determine the extent and duration of the incremental shadows resulting from the Proposed Project in accordance with the *CEQR Technical Manual*. If required, the detailed analysis will include three dimensional computer modeling to determine the extent and duration of new incremental shadows that would fall on a sunlight sensitive resource as a result of the Proposed Project. As applicable, a discussion and comparison of shadows anticipated in the future without the Proposed Project would be provided, if appropriate.~~

1.7.3.8 Chapter 2.7: Historic and Cultural Resources

This section of the DEIS will include a screening analysis ~~an assessment of the potential for impacts to historical and cultural resources that could occur as a direct or indirect result of the Proposed Project construction and operation of the proposed facilities. Future station-specific analyses would be conducted, as necessary. This analysis will include identification of archaeological and architectural resources that could be affected by the Proposed Project, and will include consultations with and/or a review of databases maintained by the State Historic Preservation Office (SHPO) and the New York City Landmarks Preservation Commission (LPC). The analysis will also utilize existing Phase 1A literature reviews already prepared for some of the sites, where readily available.~~

~~If any resources of potential historic and/or archaeological significance are identified, the DEIS will include a description of measures that would be incorporated into the Proposed Project, as required, to further investigate the identified sites and study areas, by way of additional documentary research and/or field surveys as needed, upon implementation of a permanent well station site. These additional investigations may include preparation of a Phase I Archaeological Survey consisting of a Phase IA Literature Review and Sensitivity Assessment, a Phase IB Archaeological Field Reconnaissance Survey, or Phase III Investigations. Impacts on any historic or cultural resources that are expected in the future without the Proposed Project actions as a result of other expected development projects will be qualitatively discussed.~~

~~For the temporary pad based facilities, the installation of concrete pads to support the location of the portable treatment facilities will also be evaluated for potential historic and/or archaeological impacts.~~

1.7.3.9 Chapter 2.8: Urban Design and Visual Resources

This section of the DEIS will assess the potential for impacts on urban design and visual resources from ~~construction and operation of the proposed facilities, as the Proposed Project's would result in construction of new structures or rehabilitation of existing structures~~ placement of temporary treatment facilities that may alter existing view corridors. A screening level analysis will be included in the DEIS to determine whether a visual assessment pursuant to CEQR criteria is warranted at ~~those sites where new permanent structures associated with the~~

~~Proposed Project would be built. If required, future station-specific analyses would be conducted. The assessment will include a characterization of existing public view corridors in the study area, and the potential for impacts to these as a result of physical alterations beyond those allowed by existing zoning or that increase the built floor area beyond what would be allowed “as-of-right.” The study area for the assessment of visual resources will be consistent with that used for land use, zoning, and public policy, but may also include view corridors that extend beyond that study area based on the locations that are publicly accessible. In addition, the incremental changes to views that are deemed to have aesthetic value will be characterized in the DEIS both in a narrative format and through the use of images depicting conditions in the future with and without the Proposed Project. This will be completed using available images depicting conditions in the future with and without the new structures, as warranted.~~

~~A qualitative assessment of the potential for impacts from nighttime lighting in connection with the Proposed Project will also be undertaken in this section. The analysis will consider local applicable codes, the most recent edition of the Illuminating Engineering Society Handbook, and the most recent edition of the American National Practice for Roadway Lighting (RP-8) approved by the American National Standards Institute (ANSI) to evaluate whether nighttime lighting has the potential to affect nearby sensitive land uses.~~

1.7.3.10 Chapter 2.9: Natural Resources and Water Resources

~~A screening level analysis will be conducted to determine whether a more detailed natural resources analysis is warranted for a specific species or habitat at a particular station associated with the Proposed Project. The screening level analysis will include a combination of desktop analyses, agency consultations, and information acquired from site surveys, where available. The desktop analyses and agency consultations will be used to identify existing natural resources within the study areas in proximity to the well and well station sites that could be affected by ~~construction and operation~~ of the Proposed Project. If required, future station-specific analyses would be conducted.~~

~~The potential for increased stormwater runoff from the proposed work at stations will also be assessed.~~

Water resources including groundwater aquifers, lakes, streams, and wetlands within the study area (Kings, Queens, Nassau, and western Suffolk counties) will be identified and generally described. The Queens supply wells pump from varying vertical horizons, spanning several different aquifers. Each of the aquifers extend through Queens, Nassau, and Suffolk counties, so extraction (i.e., groundwater pumping) from any well in one of the counties on Long Island could lower piezometric heads (i.e., groundwater elevations) or reduce groundwater-fed baseflow in a neighboring county. A description of each major aquifer in the study area will be provided and an assessment of the potential for impacts to them from operation of the Queens Groundwater system will be presented in the DEIS. The assessment will consider impacts from the operation of the Proposed Project on the aquifers and will evaluate potential effects due to groundwater withdrawals over a range of operating scenarios (see **Section 1.6**).

The New York City Groundwater Model will be the primary tool used to evaluate potential changes resulting from each operating scenario. This three-dimensional numerical groundwater

model was developed in 2005 by the City and has been calibrated to long-term transient conditions, reviewed by the U.S. Geological Survey (USGS) and utilized to evaluate the availability of groundwater in Brooklyn and Queens for supplemental public water supply. The groundwater model currently simulates historical transient groundwater flow patterns in Brooklyn, Queens, Nassau County and the western portion of Suffolk County using data for a period of more than 100 years and the hydrogeologic framework developed by USGS and others. ~~Among the datasets~~ Datasets that have been used in the development and calibration of the model include, but are not limited to, Brooklyn, Queens, Nassau and Suffolk county public supply pumping data, Metropolitan Transit Authority dewatering pumping data, piezometric head data (USGS, NWIS), streamflow data (USGS, NWIS), chloride concentration data (USGS), rainfall data, and NYSDEC contaminant source data. The model simulates the movement of fresh and saltwater, the discharge of groundwater baseflow to surface streams, and the water balance inputs (recharge) and outputs (pumping) over that time period. The model utilizes DYNSTEM, which has been applied to over 200 groundwater modeling studies in the United States, including a number of Long Island studies within Nassau and Suffolk County. DYNSTEM has been reviewed and tested by the International Groundwater Modeling Center (IGWMC) (van der Heijde 1985, 2000) and has been extensively tested and documented.

The calibrated groundwater model is an idealized representation of how the Long Island aquifers transmitted water historically in response to applied stresses. For example, as water supply withdrawals have increased, piezometric heads have dropped, and, at some locations, the saltwater interface has moved inland. The robust data records kept on Long Island over the course of the 20th ~~and 21st centuries~~ allowed for the inclusion of over 100 years of data in the calibration period. The inclusion of, and calibration to, significant instances of historical changes in piezometric head and saltwater interface positions validates the model as a tool that can be used with confidence to understand the impacts of potential future individual and cumulative stresses on the aquifer system.

Model results will be used to quantify potential changes in piezometric head and water table elevations, ~~hydraulic zones of contribution (i.e., the region that contributes the groundwater extracted for a well or series of wells)~~ to existing supply wells, groundwater-fed stream baseflows, and saltwater interface locations associated with the groundwater withdrawals under the Proposed Project scenarios. Results from each scenario will be compared to baseline conditions without Queens supply pumping, as well as pre-development conditions with no Long Island supply pumping in place.

To develop the baseline conditions, historic data will be used and the existing groundwater model calibration period will be extended through 2015. Then the model will be extended an additional two years in time through December 2017. Once the model has been extended in time and the calibration verified, the baseline simulation conditions will be determined from recent pumping and aquifer recharge with the intent to approximate future aquifer conditions. The model will then be used to simulate future conditions, both with and without the Proposed Project, compared to baseline conditions.

The model will be used to assess the net change in piezometric heads at water supply wells for baseline conditions and with the Proposed Project scenarios. Seasonal and longer-term variability in piezometric head elevations is normal and anticipated by Long Island water suppliers. As a

result, well pumps ~~intakes~~ are typically set to be a minimum of 20 feet below the water table elevation encountered during normal pumping operations. This allows temporary and anticipated variations in pumping levels to have minimal impact on the operation of a well. For the purposes of this DEIS, and in order to be conservative, water table elevation changes associated with Proposed Project scenario pumping that exceed 10 feet at Nassau and western Suffolk County supply wells will be reviewed further. Proposed Project scenario water table elevation changes of ~~less than~~ 10 feet or less will be assumed to have minimal impact on supply well operations. Simulated water table elevation changes (relative to baseline conditions) will be tabulated for all Nassau and western Suffolk County supply wells. The table will also include (based on available data) the screen elevation, pump intake elevation, and the difference in water table elevation between the modeled baseline and pre-development conditions for each supply well.

The surface expression of groundwater can be viewed as stream baseflow. Historically, these expressions are measured at stream gauging stations located in the southern portions of Long Island. These streamflow gauges act as calibration points for the groundwater model and are therefore good indicators of potential future impacts of proposed pumping. Proposed Project scenario changes in simulated groundwater-fed stream baseflow relative to baseline conditions will be quantified and tabulated for Queens, Nassau and western Suffolk County streams, creeks, and rivers. Potential impacts to streams will be further reviewed when simulated peak Proposed Project scenario baseflow changes by more than 1.0 cubic foot per second (cfs), relative to baseline conditions. This threshold for further evaluation is conservative given the seasonal variation encountered in the streams and the recording accuracy of the stream gauging stations, which is approximately 1.0 to 4.0 cfs based on the Valley Stream at Valley Stream, New York gauging station (USGS 01311500). As historical simulations have indicated that Nassau County public water supply pumping and implementation of sewerage activities have been the primary driver for streamflow reductions over the past half century, the DEIS will assess the table will include the difference in streamflow reduction between baseline and pre-development the future without and future with the Proposed Project conditions for each waterbody assessed. Where the 1.0 cfs threshold is exceeded, the DEIS will qualitatively describe the potential impacts to natural resources (e.g., wetlands, aquatic biota) and potential measures that may be implemented to limit adverse effects, as needed.

Potential changes in saltwater intrusion due to the Proposed Project will also be evaluated by comparing the locations of the modeled saltwater interfaces for each scenario to the baseline condition interface location. Areas that show accelerated inland movement will be compared to the hydraulic zones of capture for supply wells as a measure of potential impact to drinking water quality. As baseline condition pumping is not sustainable in some areas of Long Island, the simulated saltwater interface is expected to move inland over the course of the baseline conditions simulation. For this reason, these baseline results will be compared to pre-development the future without and future with the Proposed Project conditions as well.

1.7.3.11 Chapter 2.10: Hazardous Materials

There ~~would~~ may be ground disturbance associated with the Proposed Project. The evaluation of ~~current~~ environmental conditions will use the results of Phase I Environmental Site Assessments (ESAs) and Phase II ESAs previously prepared for the well station sites that were conducted in support of the acquisition of the system in 1996. Applicable information from these Phase I and

Phase II ESAs, as appropriate, will be used to provide an overall summarized summary of potential conditions that may be encountered within the Queens Groundwater system in the DEIS. The potential impacts due to the Proposed Project will be discussed generically in the DEIS. Future station-specific analyses would be conducted, as necessary. The DEIS will include a description of measures that would be incorporated into the Proposed Project—such as compliance with existing regulatory requirements (e.g., for asbestos and lead paint), implementation of subsurface testing (if warranted) prior to construction to determine the need for special handling of excavated materials, and a summary of protocols to be implemented during construction of the proposed stations to limit public and construction workers’ exposure to potential contaminants.

The stations ~~will~~ may also require use and on-site storage of water treatment chemicals. An assessment of any potential impacts associated with these will also be included in the DEIS.

In addition, the DEIS will also identify and assess the potential impacts to known groundwater contamination plumes that currently impact or have the potential to impact water supply wells within Nassau and western Suffolk County. Screening criteria utilized to identify wells that have potential head changes greater than 10 feet will also be used to screen wells that have a potential to impact known contaminant plumes. Wells that demonstrate the potential for greater than 10 feet of change will have capture zones developed, as 10 feet represents 50 percent of the conservative factor built into well designs and as greater than 10 feet of change would create differential gradients that could move contaminant plumes. These capture zones would be representative of these gradient changes. Capture zones for the baseline and proposed scenarios will be reviewed and qualitatively described to determine if the change in capture zone has the potential to change local groundwater flow. If a potential exists to move local groundwater flow a review of known contamination plumes within the baseline or Proposed Project scenario will be performed. Known and significant contaminant plumes that have been delineated by federal, State, and/or county agencies, and provided by NYSDEC, would be evaluated. From this review, a qualitative assessment will be made on potential changes to known contaminant plumes.

1.7.3.12 Chapter 2.11: Water and Sewer Infrastructure

A water and sewer infrastructure assessment will be conducted to determine if construction and operation of the Proposed Project has the potential to cause any significant adverse impacts to water supply and sewer infrastructure in New York City or surrounding communities in Nassau County and western Suffolk County.

Discharges during construction and operational activities associated with the Proposed Project would be directed to a stormwater and/or sewer system, or trucked and hauled for permitted discharge off-site, as applicable. The potential effects of these wastewater discharges to existing or proposed City infrastructure (e.g., sewer and/or wastewater treatment plant capacity) will be evaluated as part of the DEIS. In addition, analyses required to support potential modification of existing or acquisition of new SPDES permits, if required, to support the ongoing operation of the Queens Groundwater system would also be completed, as necessary. An assessment and review of anticipated significant projects, including anticipated future capital programs by the City related to water and sewer infrastructure, in the future without the Proposed Project will be completed as necessary.

In addition, an assessment of the potential impacts of the Proposed Project upon water supply will also be conducted including an evaluation of potential impacts to existing Nassau and western Suffolk County water suppliers as well as New York City customers. This assessment will use groundwater modeling to assess potential changes that may affect the availability of water supply resources. The DEIS will evaluate the net change in heads (i.e., groundwater pumping elevation) at water supply wells measured as the difference between the Proposed Project minus the baseline condition. As a general design rule in the Long Island region, pump settings are typically set to be a minimum of 20 feet below the pumping water level. This is to accommodate temporary variations in pumping levels to have minimal impact on well operation. In order to conservatively assess potential impacts due to the Proposed Project, head changes greater than 10 feet at supply wells within Nassau and western Suffolk counties will be identified and these will be reviewed further to more fully quantify potential impacts.

1.7.3.13 Chapter 2.12: Solid Waste and Sanitation Services

Operation of the Proposed Project is not expected to materially increase solid waste production or change the way solid waste is currently handled. ~~Construction of the Proposed Project would necessitate the disposal of construction debris and excavated materials. This section of the DEIS will include an estimate of the amount of construction debris and excavated material, and describe the disposal methods for these materials.~~ Solid wastes from the temporary treatment processes would consist of spent GAC and ion selective resin ~~both for liquid and vapor phase treatments.~~ Spent GAC and resin is typically removed from site to be tested and reactivated and reused or permanently disposed of through incineration or disposal at a landfill. This section of the DEIS will describe potential impacts for the overall project.

1.7.3.14 Chapter 2.13: Energy, Greenhouse Gas Emissions, and Climate Change

The total amount of energy use for the Proposed Project will be estimated to determine whether operation of the proposed placement of temporary facilities has the potential to adversely affect energy supply in the project area (i.e., Queens), thereby warranting further analysis. Specifically, a review of existing energy supply sources will be conducted within the project area, and the need for any additional infrastructure in the form of electric or gas utilities will be evaluated.

The projected ~~annual~~ energy consumption for the Proposed Project will be calculated and presented in the DEIS, along with an assessment of the potential for the Proposed Project to significantly impact energy supply.

The DEIS will also evaluate the potential for neighboring water suppliers in Nassau County and western Suffolk County to experience an increase in energy usage as a result of the Proposed Project. Pumping of the Queens Groundwater system may result in a lowering of the water table in the vicinity of the Nassau and western Suffolk County supply wells. Impacts to the water table will be evaluated under a range of pumping scenarios using the New York City a Groundwater Model and compared with the existing pump depth settings for Nassau and western Suffolk County wells to quantify any significant changes in energy demand. Supply wells that may experience a head change greater than 10 feet will be evaluated in more detail to assess the potential for a significant change in energy usage.

Given the importance of global climate change impacts and SEQRA and CEQR's mandate to address adverse environmental impacts, the DEIS will include a discussion of greenhouse gas (GHG) emissions. A qualitative assessment of the minimal expected operational GHG emissions and the program's consistency with City policy to reduce GHG emissions is appropriate. The qualitative GHG assessment will explain that there will be no on-site equipment using fossil fuels and operation of the proposed temporary treatment systems would be temporary. In addition, delivery/material vehicles that would be traveling to/from the sites during operations would be minimal resulting in minimal GHG emissions from fossil fuels used for the delivery/material vehicles.

1.7.3.15 Chapter 2.14: Transportation

Operation of proposed temporary treatment systems at well ~~Well stations operations after the rehabilitation is complete~~ would require an average of less than one employee vehicle per day (i.e., less than one vehicle trip each direction per day) and on many days there would be no employees traveling to or from the site. There may be additional vehicles accessing a site to deliver supplies (e.g., chemical delivery vehicles) or for routine maintenance, but these trips would also be relatively infrequent. Therefore, in accordance with the *CEQR Technical Manual*, a detailed traffic study would not be warranted for the well station operations because the trip generation would be well below the 50 peak hour passenger car equivalent (PCE) threshold for analysis.

Analysis of potential construction-related transportation impacts is discussed in **Section 1.7.3.23** below.

1.7.3.16 Chapter 2.15: Air Quality

Finished water at all stations would be treated to meet or exceed all applicable NYSDOH and NYCDOHMH water quality standards. Based on the raw water quality of the groundwater system and existing and expected future drinking water regulations, the following types of treatment are currently anticipated: (1) iron and manganese removal; (2) VOC removal; (3) perchlorate removal; (4) nitrate removal; and (5) chemical treatment (i.e., chlorine, fluoride, orthophosphate and pH adjustment). The selected technologies to address VOC removal would be GAC and air stripping. ~~It is expected that several of the wells may be equipped with air stripping technology.~~

~~An operational stationary air discussion will be included within the DEIS specific to the treatment technologies that are proposed and the potential for air emissions from these. The majority of these treatment technologies would not result in air emissions. For the removal of VOCs from groundwater, the Proposed Project will incorporate applicable and appropriate control measures to address potential air emissions that would meet all federal, State, and local air emissions requirements. As an example, treatment for VOC removal will involve the use of GAC which will not generate air emissions or air stripping which will use VPC to remove VOCs prior to any air emissions release. The proposed treatment technologies for the removal of VOCs, perchlorate, and nitrates would not result in the release of any significant air emissions.~~ As a result, a detailed stationary air quality analysis for operations is not anticipated.

Likewise, the Proposed Project would not involve the addition of any new emission sources related to heat and hot water systems and would not have any ~~permanent~~ on-site emergency generators; rather, ~~the sites would be equipped with hook-ups for temporary emergency generators to be brought on-site as necessary.~~

In addition, operation of the Proposed Project is not expected to significantly alter traffic conditions; the maximum hourly incremental traffic generated by the project is not expected to exceed the *CEQR Technical Manual* carbon monoxide (CO) screening threshold of 170 peak hour trips at nearby intersections in the study area, or the particulate matter (PM_{2.5}) emission screening threshold discussed in Chapter 17, Sections 210 and 311 of the *CEQR Technical Manual*. As such, an assessment of operational mobile source air quality emissions is not anticipated to be warranted.

~~1.7.3.17~~ — ~~Chapter 2.16: Greenhouse Gas Emissions and Climate Change~~

~~Given the importance of global climate change impacts and SEQRA and CEQR's mandate to address adverse environmental impacts, the DEIS will include a discussion of energy use or greenhouse gas (GHG) emissions. A qualitative assessment of the minimal expected operational GHG emissions and the program's consistency with City policy to reduce GHG emissions is appropriate. The qualitative GHG assessment will explain that there will be no on-site equipment using fossil fuels at permanent well sites and that temporary well sites will have generators that would be brought to these sites and operated solely in an emergency condition. In addition, delivery/material vehicles that would be traveling to/from the sites during operations would be minimal resulting in minimal GHG emissions from fossil fuels used for the delivery/material vehicles.~~

1.7.3.18 Chapter 2.16: Noise

Operation of temporary treatment systems as part of the Proposed Project ~~would~~ may result in additional sources of stationary noise emissions from pumps or other equipment operating at the sites. ~~For the stationary source noise analysis, a~~ A screening assessment will be performed based on a representative generic facility well station design to assess the potential for noise impacts. For this DEIS, the potential impacts associated with noise due to the Proposed Project will be discussed generically for the overall project. Future station-specific analyses would be conducted, if necessary, prior to implementation. ~~The maximum emissions for the most noise-intensive conceptual treatment scenario that would be considered at the closest site boundaries and at the nearest noise-sensitive receptors will be utilized in the screening of each station to determine if more site-specific assessment is required. If there is the potential for impacts from the screening level analysis, a detailed stationary source analysis will be performed. The detailed stationary noise operational noise analysis would be performed using a spreadsheet model or CadnaA, an acoustical three-dimensional noise modeling software, to determine the total noise level that would be emitted at the property boundary and nearest noise-sensitive receptors due to on-site operation activities. If predicted noise levels are not in compliance with the *CEQR Technical Manual* impact thresholds:~~

- ~~• Maximum allowable cumulative noise levels for new or replacement equipment would be established for incorporation into the project design and specifications; and~~

- ~~Measures that could be implemented as part of the Proposed Project to reduce noise levels and achieve compliance with requirements will be evaluated.~~

~~In addition, operation of the Proposed Project is not expected to significantly alter traffic conditions. The maximum hourly incremental traffic generated by the project is not expected to exceed the *CEQR Technical Manual* screening threshold of doubling of the noise PCEs in the future without the Proposed Project condition. As such, an assessment of operational mobile source noise emissions is not warranted.~~

1.7.3.19 Chapter 2.17: Neighborhood Character

A screening level analysis of the potential for ~~construction and operation of the Proposed Project~~ to affect neighborhood character will be included in the DEIS. The neighborhood character assessment will be conducted as follows:

- Based on planned development projects in the vicinity of the ~~proposed well stations sites~~, public policy initiatives, and planned public improvements, anticipated changes in the character of the area in the future without the Proposed Project will be summarized.
- The predominant factors that contribute to defining the character of the neighborhood surrounding the well stations will be described. The Proposed Project's effect on neighborhood character will be assessed using the analyses of potential impacts for various technical areas—i.e., urban design and visual resources, historic resources, socioeconomic conditions, traffic, and noise.

1.7.3.20 Chapter 2.18: Public Health

According to the guidelines included in the *CEQR Technical Manual*, a public health assessment may be warranted if an unmitigated significant adverse impact is identified in other CEQR analysis areas, such as air quality, drinking water quantity and quality, hazardous materials, or noise. Although such an impact is not expected for the Proposed Project, if one is identified, a public health assessment will be prepared and presented in the DEIS.

1.7.3.21 Chapter 2.19: Environmental Justice

An assessment of the potential for the Proposed Project to disproportionately affect minority or low-income populations will be included in the DEIS for the water supply distribution network that could be used as part of the Proposed Project (Brooklyn and Queens). Following NYSDEC guidance CP-29, the environmental justice analysis will consist of the following steps:

- Define a study area to include all census block groups substantially within ¼ mile of each site, or the area where any potential significant adverse impacts resulting from the Proposed Project could occur—including locations outside of New York City—should they be identified in the DEIS;
- Determine whether low-income or minority communities (potential environmental justice areas) are present in the study area. Following NYSDEC's methodology, to identify significant minority and low-income populations within the study area, demographic

information will be obtained from the U.S. Census Bureau's Census 2010. Demographic data such as total population, race, and ethnicity, and poverty status will be compiled at the census block group level for each census block group in the environmental justice study area. In addition, data will be compiled for Queens and for New York City as a whole to allow for a comparison of study area characteristics to a larger reference area;

- If low-income or minority communities are present, in accordance with the environmental justice policy, identify potential environmental justice minority or low-income areas (environmental study area) that include: (1) minority, having a minority population equal to or greater than 51.1 percent in an urban area and 33.8 percent in a rural area of the total population; or (2) low-income, having a low-income population equal to or greater than 23.59 percent of the total population; and
- Identify any potential significant adverse environmental impacts that could occur within the above-identified study area as a result of the Proposed Project.

1.7.3.22 Chapter 2.20: Growth Inducement

This chapter will discuss whether there is the potential for growth inducing impacts to occur as a result of the Proposed Project. The analysis will focus on whether the Proposed Project would introduce or greatly expand infrastructure capacity and whether that would, in turn, trigger additional development. In addition, this chapter will assess whether the potential impacts to water quantity or quality at surrounding water supply systems would have the potential to impede growth in adjacent municipalities.

1.7.3.23 Chapter 2.21: Construction

This chapter of the DEIS will include a general description of the construction activities and equipment associated with the placement of temporary treatment facilities as part of the Proposed Project. The construction build year for the Proposed Project would be 2019, with all improvements to the well stations (permanent and temporary) completed by 2021. The general description of construction activities and equipment will include mobilization, site preparation, construction, and demobilization, as appropriate, as well as the types of equipment that may be anticipated to ~~will~~ be present on-site to carry out these activities. After planning and design of the temporary treatment systems are complete, additional station-specific analyses for potential construction-related impacts to traffic, air quality, and noise would be conducted, if necessary.

Traffic and Transportation

~~The construction transportation assessment presented in the DEIS will consider the increase in vehicle trips from construction workers and construction vehicles and equipment to and from each station, in addition to the potential for temporary sidewalk, lane, or street closures that could temporarily affect parking or pedestrians movement near a site. New York City Department of Transportation (NYCDOT) requires trucks to travel on designated truck routes. It is assumed that construction vehicles would proceed to the sites from the closest truck route. In addition, the construction transportation assessment will consider the extent and duration of any street, roadway, or sidewalk closure; any potential for impacts on the availability of parking; and any loss in other transportation services during construction of the Proposed Project.~~

The DEIS will include a screening level assessment that will consider any losses in lanes, sidewalks, and off-street parking near the well stations, as well as effects on other transportation services (i.e., transit and pedestrian circulation) during the construction periods, if applicable; and identify the project related construction worker and truck trips at each well station.

Construction worker parking and truck delivery staging will also be addressed. Based on the trip generation projections for activities associated with peak construction periods for the Proposed Project, an assessment of potential transportation impacts during construction on a project-wide or cumulative basis will be provided. The construction transportation assessment will take into account several factors, including: trip distribution; departure/arrival patterns; and anticipated vehicular trips during construction for the proposed action and/or treatment alternatives that are proposed for the well stations. Representative facilities based upon volumetric treatment requirements (e.g., cubic feet of treatment facility per mgd of well capacity) will be used to estimate the construction trip generation rates for the permanent upgrade to wells as part of the Proposed Project. Construction duration at any specific station is anticipated to be less than two years.

Level 1 (Trip Generation) and Level 2 (Trip Assignment) screening assessments will be conducted as described above to determine if the analysis thresholds in the *CEQR Technical Manual* would be exceeded. If the screening level analysis identifies an exceedance of the *CEQR Technical Manual* quantified transportation analyses thresholds (50 or more vehicle trips and/or 200 or more transit/pedestrian trips during a given peak hour at an intersection), a detailed transportation analysis will be conducted. In addition, construction is expected to occur in a similar time frame for the majority of the sites; therefore, the aggregation of trips from different sites could exceed the screening threshold at major intersections along the route to multiple sites. Furthermore, if substantive road closures/traffic detours are required during construction, a detailed construction transportation analysis would also be conducted. In the detailed construction transportation analysis, existing traffic data will be utilized, where available (NYCDOT Traffic Information Management System [TIMS] database and past studies), to establish existing traffic service levels at key intersections where the routes to/from multiple sites may overlap or cross (i.e., inbound divergence points and outbound convergence points). The estimated peak hour trips associated with construction of the Proposed Project during peak construction will then be overlaid onto the future baseline traffic network and compared to the impact criteria outlined in the *CEQR Technical Manual*, in order to determine the potential for significant adverse traffic impacts. If any significant adverse impacts are predicted, mitigation measures will be developed.

Air Quality

A screening level assessment of emissions from construction equipment, worker and delivery vehicles, as well as fugitive dust emissions will be performed. For on-site construction sources, the screening assessment will review the projected activity and equipment at the well stations in the context of construction intensity, duration, and location of emissions relative to nearby sensitive locations; and will identify any project-specific control measures that could be implemented to reduce the effects of construction on air emissions. Potential cumulative effects from on-site construction at well stations in immediate proximity to each other will also be qualitatively discussed. For off-site construction sources, a site-wide mobile screening

~~assessment will be performed to confirm that the *CEQR Technical Manual* mobile source screening thresholds would not be exceeded.~~

~~If the screening level analysis identifies the potential for significant adverse impacts from on-site construction activities and/or exceeds the mobile source screening thresholds based on anticipated equipment, duration, and proximity to receptors, a detailed analysis of air quality during construction will be performed, where required. For on-site construction sources, where required, an air dispersion modeling analysis of on-site construction activities will be conducted using the EPA NONROAD Emission Model and EPA AERMOD dispersion model to determine the potential for significant adverse air quality impacts. In addition, if required, a mobile source analysis at representative intersection(s) would be conducted using the EPA mobile source emissions model MOVES, and the dispersion model CAL3QHC/CAL3QHCR.~~

~~The potential for significant adverse impacts will be determined by comparing model-predicted total concentrations to the National Ambient Air Quality Standards (NAAQS), or by comparing the predicted increase in concentrations to applicable *CEQR de minimis* criteria, as appropriate. The air quality analysis will also include a discussion of strategies that could be employed to reduce project-related air pollutant emissions associated with construction activities.~~

Noise

~~A screening level assessment of noise emissions that would be generated by the Proposed Project's construction activity will be performed. The assessment will review the projected activity and equipment at well stations in the context of construction intensity, duration, and location of emissions relative to nearby sensitive receptors; and will identify any project-specific control measures that could be implemented to reduce construction-related noise. Potential cumulative effects from on-site construction at well stations in immediate proximity to each other will also be qualitatively discussed. Measures for compliance with DEP Rules for Citywide Construction Noise Mitigation and the New York City Noise Control Code will be qualitatively discussed. For off-site construction sources, a mobile source screening assessment will be performed to confirm that the construction of the Proposed Project would not result in a doubling of existing noise PCEs, and therefore the *CEQR Technical Manual* mobile source screening threshold would not be exceeded.~~

~~If any locations are predicted to experience more than a doubling of noise PCEs, which would translate to a 3 dB(A) increase in noise levels, a detailed noise analysis will be conducted.~~

~~If the screening level assessment identifies the potential for significant adverse impacts from on-site construction activities and/or exceedance of the mobile source screening thresholds, a detailed analysis of noise during construction will be performed, where required. Potential noise impacts due to construction-related stationary and mobile sources will be examined and existing noise levels will be determined. One representative reasonable worst-case time period (i.e., day) during the construction peak period will be selected for analysis. During the representative reasonable worst-case time period, noise levels due to construction activities at the selected station will be predicted for representative nearby sensitive receptors. For on-site construction sources, where required, an analysis of on-site construction activities will be conducted using a spreadsheet model or CadnaA, an acoustical three-dimensional noise modeling software, to~~

~~determine the potential for significant adverse noise impacts. In addition, if required, a mobile source analysis at representative major convergence roadways adjacent to noise sensitive receptors would be conducted using the Federal Highway Administration Traffic Noise Model (TNM). Based on the results of the construction noise analysis, if necessary, the feasibility, practicability, and effectiveness of implementing measures to mitigate significant construction noise impacts will be examined.~~

1.7.4 CHAPTER 3: CUMULATIVE EFFECTS

Cumulative impacts are two or more individual effects on the environment that, when taken together, compound or increase each other. The DEIS will evaluate the potential cumulative impacts from the renewal of the Water Supply/Withdrawal Permit and construction and operation of the potential temporary treatment systems that are part of the Proposed Project.

1.7.5 CHAPTER 4: ALTERNATIVES

The purpose of an alternatives analysis is to identify and examine reasonable and practicable options to a proposed project that avoid or reduce project-related significant adverse impacts and still achieve the stated goals and objectives of the project. In addition to the scenarios to be analyzed as part of the Proposed Project, the DEIS alternatives analysis will ~~only~~ also include an assessment of a No Action Alternative, in which the Proposed Project is not undertaken, ~~as well as the following:~~

- ~~• Alternate layouts of permanent facilities~~
- ~~• Alternate sites for permanent facilities~~
- ~~• Alternative treatment technologies~~

1.7.6 CHAPTER 5: MITIGATION

If any potential for significant adverse impacts resulting from the Proposed Project are identified in the analysis areas discussed above, practicable measures that could avoid or mitigate those impacts will be identified in this chapter of the DEIS.

1.7.7 CHAPTER 6: UNAVOIDABLE ADVERSE IMPACTS

If any unavoidable adverse impacts are expected to result from the Proposed Project, they will be disclosed and discussed in this section of the DEIS.

1.7.8 CHAPTER 7: IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

This section of the DEIS will disclose any irretrievable commitment of resources that the Proposed Project may require.

1.7.9 APPENDICES

Appendices to the DEIS will be provided, as needed.

1.7.10 GLOSSARY OF ACRONYMS

The DEIS will include a glossary of acronyms.

APPENDIX A

RESPONSE TO COMMENTS

In-City Water Supply Resiliency DEIS Final Scope of Work
Appendix A: Response to Comments

A. INTRODUCTION

This document summarizes and responds to all substantive oral and written comments received during the public review period on the Draft Scope of Work (Draft Scope or DSOW) for the In-City Water Supply Resiliency Environmental Impact Statement (EIS). Public review of the Draft Scope began on May 12, 2017; with the issuance by the New York City (NYC) Department of Environmental Protection (DEP) of the Notice of Intent to Prepare a Draft EIS (DEIS) on the proposed program, in accordance with New York State Environmental Quality Review Act (SEQRA) and New York City Environmental Quality Review (CEQR) procedures. A Draft Scope, prepared in accordance with SEQRA and CEQR regulations and the guidance of New York City's *CEQR Technical Manual*, was also distributed on May 12, 2017, for public review and comment. Copies of the Draft Scope were made available for public review at the Manhasset Public Library and DEP offices in Queens, NY. The document was also made available for public review on DEP's website.

Public meetings on the Draft Scope were held on June 21, 2017, at the Theodore Roosevelt Legislative Building, 1550 Franklin Avenue, Mineola, NY; and on June 28, 2017, at the Robert Ross Johnson Family Life Center, 174-17 Linden Boulevard, St. Albans, NY, to solicit public comments on the proposed program and, specifically, on the scope of the environmental analysis. Written comments were also accepted through the public comment period, which closed on July 10, 2017.

The Final Scope of Work (Final Scope or FSOW) was issued on October 11, 2017. The Final Scope addresses substantive comments received during the public review and finalizes changes to assessment methodologies that were made after the Draft Scope was published.

Section B below identifies the organizations and individuals that commented on the proposed program.

Section C summarizes and responds to each substantive comment. The comments are organized by subject area. Following each comment is the name of the organization or individual that made the comment, as listed in Section B. To consolidate the Response to Comments, where multiple comments were made on the same subject matter, these have been grouped together by theme, and where appropriate, a representative comment or combination of comments was used as the illustrative comment for response. Individual commenters were then listed together as authors of the illustrative comment. Responses to each comment follow.

B. ORGANIZATIONS AND INDIVIDUALS THAT COMMENTED ON THE DRAFT SCOPE OF WORK

The following organizations and individuals commented on the In-City Water Supply Resiliency DEIS Draft Scope during the comment period:

1. Amir Abbady, oral comments dated June 28, 2017. (Abbady)
2. Adrienne Adams, oral comments dated June 28, 2017. (Adams)
3. Raymond Baynard, oral comments dated June 28, 2017. (Baynard)
4. Sibest Beatty, oral comments dated June 28, 2017. (Beatty)
5. Robert Bernstein, oral comment dated June 21, 2017. (Bernstein)
6. Scott Bochner, oral comment dated June 21, 2017. (Bochner)
7. Claudia Borecky, Director Clean Air Water & Soil (CAWS), written/oral comments dated June 21, 2017. (CAWS)
8. Judi Bosworth, Supervisor, Town of North Hempstead, written/oral comments dated June 21, 2017. (Bosworth)
9. Paula Blum, oral comments dated June 21, 2017. (Blum)
10. John Budnick, oral comments dated June 21, 2017. (Budnick)
11. Stan Carey, Chairman Long Island Water Conference written/oral comments dated June 21, 2017. (Carey)
12. Manuel Caughman, oral comments dated June 28, 2017. (Caughman)
13. Leroy Comrie, Senator Queens District 14, written comments dated June 28, 2017. (Comrie)
14. Morris Cramer, oral comments dated June 21, 2017 (Cramer)
15. Anthony D'Urso, Assemblyman, written/oral comments dated June 21, 2017. (D'Urso)
16. Mrs. DeRiggi-Whitton, oral comments dated June 21, 2017. (DeRiggi-Whitton)
17. Joseph Edwards, oral comments dated June 28, 2017. (Edwards)
18. Adrienne Esposito, Executive Director, Citizens Campaign for the Environment written/oral comments dated June 21, 2017. (Esposito)
19. Glen Cove resident, written comments dated June 15, 2017. (Email-Glen Cove)
20. Paul J. Granger, P.E., Superintendent, Port Washington Water District, written/oral comments dated June 21, 2017. (Granger)
21. Gregory C. Graziano, Superintendent, Water Authority of Great Neck, written comments dated June 5, 2017. (Graziano)

22. Alicia Hyndman, NYS Assemblywoman, 29th Assembly District written/oral comments dated June 28, 2017. (Hyndman)
23. Valerie Jordan-Garvin, oral comments dated June 28, 2017. (Jordan)
24. Jack Martins, oral comments dated June 21, 2017. (Martins)
25. Sarah Meyland, MS, JD, Director, Center for Water Resources Management at NYIT, written/oral comments dated June 21, 2017 (Meyland)
26. Daneek Miller, oral comments dated June 28, 2017. (Miller)
27. Kangela Moore, oral comments dated June 28, 2017. (Moore)
28. Joseph Naham, oral comment dated June 21, 2017. (Naham)
29. Bishop Charles Norris, Sr., oral comments dated June 28, 2017. (Norris)
30. Gerald Ottavino, oral comments dated June 21, 2017. (Ottavino)
31. Arnold Palleschi, Chairman, Nassau County Water Resources Board, written/oral comments dated June 21, 2017. (Palleschi)
32. George Povall, oral comments dated June 21, 2017. (Povall)
33. Ms. Richards, oral comments dated June 28, 2017. (Richards)
34. Earl Roberts, oral comments dated June 28, 2017. (Roberts)
35. Jacquelyne Ruhams, oral comments dated June 28, 2017. (Ruhams)
36. Anthony J. Santino, Supervisor, Town of Hempstead, NY, written comments dated June 20, 2017. (Santino)
37. Andrea Scarborough, oral comments dated June 28, 2017. (A Scarborough)
38. William Scarborough, oral comments dated June 28, 2017. (W Scarborough)
39. Brian Schneider, Assistant to the Deputy Commissioner, Department of Public Works of Nassau County, Long Island Commission on Aquifer Protection, Nassau County Water Resources Board, written/oral comments dated June 21, 2017. (Schneider)
40. Jack Schnirman, oral comments dated June 21, 2017. (Schnirman)
41. Ruth Shuler, oral comments dated June 28, 2017. (Shuler)
42. Archie Signer, oral comments dated June 28, 2017. (Signer)
43. Patricia Singletary, oral comments dated June 28, 2017. (Singletary)
44. Samara Swanston, oral comments dated June 28, 2017. (Swanston)
45. Dr. Len Torres, oral comments dated June 21, 2017. (Torres)
46. Nanette Turner, oral comments dated June 28, 2017. (Turner)

47. Edward H. Ward, Deputy County Executive, Nassau County, written comments dated July 10, 2017. (Ward)
48. Stephen A. Watts III, Regional Permit Administrator, New York State Department of Environmental Conservation, written comments dated July 10, 2017. (Watts)
49. Marvin Weiss, oral comments dated June 21, 2017. (Weiss)
50. Western Nassau County Aquifer Committee written/oral comments dated June 21, 2017. (WNCAC-1)
51. Western Nassau County Aquifer Committee written comments June 21, 2017. (WNCAC-2)
52. Western Nassau County Aquifer Committee Addendum written comments dated July 6, 2017. (WNCAC-A)
53. Multiple, duplicate emails “Don’t Steal Our Water.” (Multiple Emails)

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C. COMMENTS AND RESPONSES

GENERAL COMMENTS

Comment 1 When you say resiliency, where is the resiliency? (Edwards)

Response 1 As noted in the Draft Scope, rehabilitating the Queens Groundwater system would improve the resiliency of the City's overall water supply system by making the groundwater system accessible during a water supply shortage due to drought conditions or planned and/or unplanned infrastructure outages. The resiliency is achieved by DEP's ability to continue to supply water during these water shortages.

Comment 2 Several comments were received concerning past proposals to rehabilitate the Queens Groundwater system.

- Back in 2015, we found the City planned over a decade ago, their goal to repair the pipeline from upstate to Queens. And in order to do that they had a few options, and one of them being the New York City – opening up the Queens wells. So it's not that they're all of a sudden doing because of a drought or because of an emergency. It's a plan. It's going to happen. (CAWS)
- But here we are two years later and now there's another rationale for reopening these wells. I'll go back to 2012 when we met with DEP and we got them to reconsider opening the wells then. They came back in 2015, we stopped them then, they're back in 2017. And so the question is why? (Martins)

Response 2 During the scoping process for the Upstate Water Supply Resiliency (UWSR) EIS, DEP had determined that the Queens Groundwater Rehabilitation project was not needed to augment water supplies during the Rondout-West Branch Tunnel (RWBT) shutdown and therefore at that point in time DEP did not pursue the Queens Groundwater Rehabilitation project as part of UWSR. However, in the Final Scope for the UWSR EIS (published September 16, 2015), DEP noted that the Queens Groundwater Rehabilitation project (known as In-City Water Supply Resiliency) may be advanced with a separate independent EIS to evaluate the future use of the Queens Groundwater system in conjunction with other water supply resiliency measures to address long-term water supply needs including water supply shortages due to drought or planned and/or unplanned infrastructure outages.

Comment 3

Several comments were received in support of the Proposed Project.

- I support the In-City Water Supply Resiliency project to rehabilitate and modernize the DEP groundwater system to ensure its viability to meet DEP's water supply need as a supplement to DEP's upstate surface water supply. (A Scarborough)
- We are in support of DEP having the option of opening the wells, as in the past. (Baynard, Edwards, Miller, W Scarborough)
- We are in support of DEP having the option of opening the wells, as in the past. As our area is about to experience huge growth with the Downtown Revitalization of Jamaica we do not want to turn away the potential growth nor cause elevated construction costs with having to deal with the ground water problem. The residents of the 29th Assembly District cannot wait any longer for relief, which is why I fully support techniques such as directional drilling, [radial conveyance] for the community. Getting funding for this study, DEP has given \$100,000 towards the study, but more funding is required. Together we can address this historic inequality and help ensure that homeowners have the quality of life they deserve. (Caughman, Hyndman)
- They are not going to open the wells to pump water just for the sake of it. It's just in case of emergency. But we'd like to keep this option open so we can get some relief from the water table. (Caughman)

Response 3

Noted. No changes are proposed to the Draft Scope.

Comment 4

Several comments were received in opposition to the Proposed Project.

- I go on the record for saying that I'm completely against this. (DeRiggi-Whitton)
- I urge you to consider abandoning this study and urge you to stay away from the wells for the sake of generations of families in America's largest township and across our region. (Santino, Ottavino)
- Long Island Clean Air Water & Soil, Ltd. ("CAWS") respectfully requests that New York City rescind its application to renew its permit. CAWS reiterates the requests made that the wells in Queens be forever shuttered and abandoned and forever prohibit the issuance of permits to reopen these wells. (CAWS)
- Any infrastructure, maintenance, and improvements can be implemented and completed without reactivating these wells and the risks associated therewith. (Multiple Emails)

- I am opposed to the opening of wells in Queens which were shuttered years ago because of concerns of contamination and saltwater intrusion into the Lloyd and Magothy Aquifers. (Multiple Emails)
- I really don't know what will happen to the rest of Nassau County. I feel that this so faultily thought out to do this because it's sacrificing an entire part of Long Island. We in Long Beach in the City Council will fight this legally. We did it in the past and we will do this again. We must stop this from happening. (Torres)
- If New York City has done such a great job with reducing the water usage, then we shouldn't even be talking about this. This is something that should not be on the table to be taken away from Nassau County and other residents on Long Island. You have another source. (Povall)
- Not having even the beginning of a handle on that makes it absolutely imperative that there be no action taken at all until we have the additional data. (Budnick)

Response 4

Noted. No changes are proposed to the Draft Scope.

Comment 5

Several comments were received concerning the renewal of the Water Supply Permit.

- These permits should be allowed to expire and treat this like a new application and require DEP to go through every stop that every one of our communities and every one of our water producers has to go through for opening a single well. (Martins)
- I urge the New York State Department of Environmental Conservation (NYSDEC) to immediately deny DEP's permit request to activate drinking water wells in Long Island's aquifers. These wells could pump 62 to 68 million gallons of precious Long Island water per day, putting our drinking water at risk. (Email-Glen Cove)
- Published reports indicate your agency's intention to renew a permit through the NYSDEC that authorizes use of the wells, which have not been used since 2007, since they were operated by Jamaica Water Service. We are vehemently opposed to the renewal of this permit, and hope that all plans to reopen the wells are abandoned for good. (Santino)
- I do not believe that there should be a just-granted extension. I think that we should all be asking that that process start anew. (Povall)
- Citizens Campaign for the Environment (CCE) objects to the process and the premise of the permits. CCE is requesting NYSDEC deny these permits and not allow aquifer water that is essential to Long

Island’s sustainability be given to NYC. NYC has ample water in their vast upstate reservoir systems and can find alternatives in emergency situations. Long Island cannot find alternatives in an “emergency situation” or in times of drought. (Esposito)

- CAWS requests that the NYSDEC reject these permits that allows New York City to reopen the shuttered wells in Jamaica, Queens and rule that wells that are shuttered and abandoned be forever prohibited from reopening. (CAWS)
- It was indicated that there be revaluation and that before the permits be renewed you actually have to go through all of the studies that are necessary as if they were new wells because they haven’t been used in a very long time. (Blum)

Response 5 The proposed renewal of DEP’s existing water supply permit for the Queens Groundwater system and the potential impacts of this will be addressed within the DEIS. DEP is preparing a Water Supply/Water Withdrawal Permit renewal application to be submitted to NYSDEC.

Comment 6 Page 8 of the Draft Scope uses the phrase “...withdrawal of high quality water” without explanation. (Ward)

Response 6 The raw water extracted by the groundwater wells will receive all necessary treatment to produce drinking water that meets or exceeds all current federal, State, and local standards. The phrase “high quality” refers to the finished water to be supplied within the system.

Comment 7 Folks from Long Island and those other places benefit from what happens here in the City of New York, right? Commuter taxes just got up and walked away. But they come in every day and they don't have to pay those commuter fees, but we have to bear that burden. And it happens time and time again for services that get delivered, that the majority of the revenue and the majority of the resources are generated right here in the City but the benefits of that revenue and the resources goes somewhere else. We should not be prohibited from protecting resources and community because of our neighbors to the East. (Miller)

Response 7 Noted. No changes are proposed to the Draft Scope.

Comment 8 If I don't have the time to read water quality and what you guys are doing, can you imagine the average person, we don't have time. The report is not concise enough for us to just look at it and just read it like that to know what is happening. So that's another thing also. You know, all that reading and all of that, we just need for you guys to get to the point. (Ruham)

- Response 8** The DEIS will be prepared consistent with the requirements of the City’s *CEQR Technical Manual* and will be prepared in a manner to allow the public to understand the purpose, need and nature of the proposed action and the potential impacts that may be associated with this.
- Comment 9** We ought to be teaching our children about the value of the aquifer. What it means to live on groundwater. We ought to be benefiting ourselves from the value of the aquifer. Water is never a burden. Water is never a pestilence. There’s only so much water in the whole planet that’s available for drinking. One percent of the water on the whole planet is available for drinking for us and for all subsequent generations and for all forms of life. We have to honor that. And one of the ways we can honor that is to have programs in our school, get funding to teach people about aquifers. Protect the aquifer. Make sure nobody dumps in it. Make sure we assure groundwater recharge takes place. Don’t pave over. Use permeable stones. (Swanston)
- Response 9** Noted. No changes are proposed to the Draft Scope.
- Comment 10** There was a reference made to the fact that they have not used those wells since 2007. We ask for clarification on when those wells were actually used because in my research those wells haven’t been used since the 1990s. Now they may have turned a well on in 2007. But active distribution of water for these wells has not been in place since the 1990s. It’s an entirely different system that’s out there right now. (Martins)
- Response 10** The City purchased the groundwater system in 1996 and continued to use it at varying capacities for potable use through 2007. Since 2007, wells have been exercised and used for groundwater testing in accordance with DEP’s Wellhead Protection Plan.
- Comment 11** Why was the pumping ceased and the wells capped in the first place when it seems to be what kept that water at bay. (Turner)
- Response 11** See Response 10. All of the groundwater wells are covered and protected for safety and water quality protection. The wells have not been plugged or “capped,” and the City wishes to renew its water supply permit to keep its groundwater withdrawal rights active and available to address future potential water supply shortages. Future pumping of these wells would be primarily for drinking water supply which would be treated to meet applicable standards. A separate feasibility study to address basement flooding was announced on July 21, 2017 by Mayor Bill de Blasio, and is anticipated to be completed by spring 2018 (see Response 14).

USGS Water Supply Sustainability Study

Comment 12

Several comments were received regarding DEP's groundwater model and the U. S. Geological Survey (USGS) Delineation of the Hydrogeologic Framework and Saltwater-Freshwater Interface and Determination of Water-Supply Sustainability Study of Long Island, New York (Groundwater Sustainability Study).

- NYSDEC stresses the importance of continued collaboration between NYSDEC, DEP, USGS, and CDM through the recently formed technical work group. This work group is needed to ensure that the modeling efforts of USGS for the Long Island Groundwater Sustainability Study and CDM for the DEIS are coordinated, incorporate the best available science, and yield a comprehensive tool to enhance current and future water resource management. (Watts)
- Currently we're working to study our groundwater systems in partnership with the USGS thanks to support of Governor Cuomo and legislators. By no means are we where we should be and our regional approach to protecting and managing our water, but we're on the right path. The potential reopening of these Queen Wells for any purpose, emergencies or otherwise, warrants our concerns as it could make our aquifers unusable for residents of Long Beach and our Barrier Island, and other Long Island communities in the future rendering our regional planning efforts futile. (Schnirman)
- This long-awaited Sustainability Study should not be taken lightly. Governor Andrew Cuomo has spearheaded this effort holding a heralded press conference a year ago to announce his support for the Sustainability Study. He appointed the NYSDEC to oversee the Groundwater Sustainability Study with a steering committee of esteemed stakeholders. Today the study is well underway as well drilling has begun, and stakeholders meet regularly with the NYSDEC and USGS to discuss progress. (WNCAC-2)
- Without a comprehensive scientific study with a technologically advanced groundwater flow model using a network of existing and new deep aquifer observation wells throughout Queens, Nassau, and Suffolk County, which includes current data, the DEIS cannot adequately analyze the potential impacts from the Proposed Project. (WNCAC-2)
- We are encouraged that DEP, USGS, and NYSDEC have formed a technical working group to assess the reactivation of the Queens wells. It is essential that the USGS, an independent and objective, science

based entity, must be used to validate the data collected and technical approach needed for assessing the reactivation of the Queens wells. USGS must play a prominent role in reviewing this vital information and providing an unbiased analysis of the collected data to ensure a level of quality control is upheld. (Granger)

Response 12

The City values the continued collaboration between all interested stakeholders concerned with the groundwater modeling efforts. The Governor's Sustainability Study is underway and is currently scheduled to be completed in 2021. While DEP looks forward to the findings of this study, in order to conduct the analysis outlined in the Draft Scope for this project, DEP intends to utilize the current best available data and tool. The New York City Groundwater Model, initially developed by CDM in 2005, updated in 2014 and 2015 and using historical data, projected through 2017, is the best available tool for assessing any potential impacts due to pumping of the Queens Groundwater system. The data within the New York City Groundwater Model is the result of extensive data sharing and cooperation between DEP, USGS, NYSDEC, and others. The model (and its predecessor) has been peer reviewed by USGS and used for multiple applications throughout its existence.

Comment 13

Several comments were received regarding the completion of the USGS Groundwater Sustainability Study.

- We are requesting that the NYSDEC allow the USGS to complete the Groundwater Sustainability Study before making any decision on allowing DEP's application to renew the Water Supply/Water Withdrawal permit. (D'Urso)
- USGS will evaluate the sustainability of Long Island's groundwater resources, now and for the future, by geologic mapping, water-quality and water-level monitoring, and groundwater flow modeling of this critical aquifer system. This information is critical in determining how 62 to 68 million gallons a day of new water being pumped out will affect the viability of Nassau and Suffolk's water source. Yet, NYC is asking NYSDEC to move forward in approving their plan before the study is completed! Good planning can only happen with good science. Decisions on water protection and viability cannot occur in the absence of this important study. (Esposito)
- We ask DEP incorporate the data and findings from the Groundwater Sustainability Study into the analysis of the proposed In-City Water Supply Resiliency Project's DEIS. In addition, we respectfully request that the NYSDEC allow the USGS to complete the

Groundwater Sustainability Study before making a decision on DEP's application to renew the Water Supply/Water Withdrawal permit for the Queens Groundwater system. (Bosworth, Schneider, WNCAC-1, WNCAC-2, WNCAC-A, Email-Glen Cove, Schnirman, CAWS, Blum)

- So we know that the Lloyd is already in peril. We just don't know how bad and we need to wait for the USGS study because I don't think that it's going to be good. And, we should know before we make any changes or any unnecessary damage. To me, we were waiting for this USGS study to know how much we have to turn down what we're doing now in Nassau County and express that to the public, and that will be impossible if we have a giant sucking sound from the West. (Povall)
- Without a scientifically sound sustainability study and a robust groundwater flow model with a network of deep aquifer observation wells throughout Queens, Nassau, and Suffolk County, we will continue our ground water management approach of flying blind. When making decisions about maximum pumping and "guestimating" the location of the freshwater/saltwater interfaces, we need a more accurate understanding of these details, especially in Nassau County and Queens. In 2017, we must change the false paradigm of an endless drinking water supply and instead realize that our groundwater is not an unlimited resource. We need to replace the strategy that "business as usual" will be OK for the foreseeable future for our groundwater resources – when everything seems to point to the contrary. (WNCAC-1)
- We are requesting that the NYSDEC defer their action on the renewal of these permits until further scientific data is collected and evaluated by the USGS through the recently authorized State funded Long Island Water Sustainability Study. (Schneider)
- Reiterating our request for the NYSDEC to withhold action on the renewal until the Long Island Water Sustainability Study is complete providing a well-defined representation of the effects of the withdrawal of 68 mgd on Long Island's sole source of potable water. (Palleschi)
- We must require a comprehensive gathering and review of real data to determine impact on water quality, especially with regard to saltwater intrusion currently being done by the USGS with funding and guidance from the exact entity that will approve or deny this project, the NYSDEC. Until we have real data gathered from the field by

USGS through the Long Island Groundwater Sustainability Study, there is simply no way we will ever know of this project's true impact. (Schnirman)

- We were able to get a commitment of resources to do a full study of our water system from tip to tip, from Queens all the way out to Montauk. They're going to determine saltwater intrusion. They're going to determine water tables. They're going to measure plumes and where they are, and the flow of our groundwater, because as we all know, it flows. Sticking this straw into the ground in Queens and drawing water is going to affect all of that. We deserve a proper environmental review. We deserve to know that it is not going to impact our communities. And if it does impact our communities in a negative way, we also deserve to know that the law protects us and is not going to put our communities and our families at risk. (Martins)
- The Sustainability Study's goal to use an open source USGS model announces a definite improvement over proprietary models used in the previous studies of Kings and Queens counties. It is essential that planners and water managers have the ability to run the model to understand the effects of well pumpage, flow paths, and migrating contaminant plumes. (WNCAC-1)
- DEP must be a part of the current efforts underway in Nassau and Suffolk Counties. It will allow the potential impacts of the Queens wells to be evaluated in a holistic, integrated manner, with updated data that provides us with an accurate understanding of our water source. (Granger)
- Absolutely no to New York until the USGS Study is completed. (Cramer)
- Without the Long Island Groundwater Sustainability Study, we will have no way of productively responding to DEP's assertions about the potential impacts to Long Island's water supply, and we will have no way of predicting the impacts of such large, sustained withdrawals. Irreversible saltwater contamination of our coastal wells, alterations in the course of existing groundwater contamination plumes, and new chemical contamination from sources in Queens could cost hundreds of millions of taxpayer dollars to address this, and could irreparably damage our supply system. (Bosworth)

Response 13

The Water Supply/Water Withdrawal permit for the Queens Groundwater system will expire at the end of 2017. It is in the best interest of the DEP to renew this permit to maintain the water withdrawal rights for these wells and to have these wells available to address future water supply

shortages. The existing New York City Groundwater Model is a proven and trusted tool, capable of predicting any potential impacts to the groundwater as a result of the pumping of these wells. In addition, NYSDEC is providing data on contaminant sources of concern in Western Nassau County for use in the analyses completed for the DEIS. The DEIS will detail the data sources utilized in the New York City Groundwater Model. To delay or deny the permit renewal to await the findings of the USGS study that is years from completion is an unnecessary hardship to the City and would not allow the City to have access to these wells in the event of a water supply shortage due to drought or planned and/or unplanned infrastructure outage.

The New York City Groundwater Model is based on the most up-to-date representation of the hydrostratigraphy (underground geologic layering); uses monthly pumping and rainfall/recharge data received from NYSDEC, Nassau and Suffolk Counties, New York City, and the USGS; accurately predicts groundwater elevations, stream baseflows, and the saltwater interface position. These are the same data sources and hydrologic representations that will serve as the basis for the USGS groundwater model currently under development. The City began development of its model in 2005. The data inputs to the model were updated in 2014 and 2015, with the historical data projected through 2017. The objective was to build a comprehensive understanding of the sustainability of future withdrawals from within Brooklyn and Queens. It was peer reviewed by the USGS in 2007 and has been applied by the City since then in multiple projects and has also been used for a project in Nassau County. DEP has shared historical data in the New York City Groundwater Model with USGS, at their request. The model includes the following:

1. The most up-to-date hydrostratigraphy (underground layering) developed by USGS in Brooklyn, Queens, Nassau County, and western Suffolk County.
2. A simulation period of 1905 through 2015, using monthly time steps (simulation periods) to incorporate seasonal variability in pumping and rainfall data.
3. Inclusion of over 1,000 wells pumped during the simulation period.
4. Incorporation of nearly 40,000 groundwater elevation data points from 162 monitoring wells located within Brooklyn, Queens, Nassau County, and western Suffolk County.

5. Incorporation of stream baseflow data from 16 USGS stream gauges including Valley Stream, Pines Brook, and East Meadow Brook.
6. Simulation of the historical saltwater interface movements between 1905 and 2015, using chloride concentration data collected by USGS to validate.
7. Representation of saltwater interfaces at each of the major aquifers.
8. The capability to simulate contaminant movement anywhere within the model.

Flooding in Southeast Queens

Comment 14

Several comments were received regarding flooding issues in southeast Queens.

- In 1996, DEP took over the operation of the Jamaica Water Supply Company, which operated several wells that removed almost 30 million gallons of water per day. In an effort to improve the quality of water and unify the City's water system, the wells were shutdown. On the surface, this plan may have appeared effective. However, that is far from the case as the repercussions of closing the wells caused the water table to rise exponentially and now is one of the main factors creating the constant groundwater flooding. (Hyndman)
- Now since the high water table has increased exponentially, when DEP took over the Jamaica Water Supply and stopped pumping the wells many of us had advocated over the years that DEP resume pumping from those wells to lower the groundwater levels. This has run into opposition from DEP, and recently certain elected officials in Nassau County sought to prevent DEP from even examining those wells because they feel that New York City's pumping of the well water will impact their use of the well water. (W Scarborough)
- Solutions for flooding in southeast Queens are imperative. But we must reiterate that groundwater pumping operations for drinking water purposes has been and always must be a separate issue from the need to dewater. If these starkly contrasting groundwater level problems between Queens County and Nassau County aren't addressed holistically, we will be introducing new problems regionally. (WNCAC-A)

- It is all the more imperative that DEP, our elected officials, and our community actively pursue another initiative that offers real promise removing water from the ground and assisting us in our flooding problems. This initiative is called radial collection or directional drilling. If we use technology to recreate the water streams that existed prior to the development in this community, which also contributes to the rising water table. (W Scarborough)
- What is ultimately needed and called for in the southeast Queens area is a comprehensive plan, a proposed solution to address groundwater. Without addressing groundwater flooding those very same sewers that you have been put in will have [by that] time [need more capacity], we will never have a high functioning sewer system. And we remain at risk of a continual chronic flooding condition. I call on New York City as well as NYSDEC to seek a resolution to this long standing issue. (A Scarborough)
- So if you know that you have something that you can do to keep the water out of people's homes and you're doing it, why would you stop doing it and let the water back come into people's homes. I can't get that question answered here, but that's a question that I have. (Turner)
- I hope that something will be done to alleviate the water problem in Jamaica. It's costly and the people of Jamaica just can't afford that. It's an ongoing expense. I just hope that a plan will be effective, the plan that DEP has will be effective in order to alleviate the water problem. (Shuler)
- We need to focus on the high rising water that is happening here in southeast Queens. (Moore)
- What is the immediate solution that you can offer now? I know that the proposal stated that you were doing the assessment to 2028. That is way too long for this community to wait for any of the results. (Roberts)
- Yes, I'm glad that there's a resiliency, I see it put to Long Island. But at the same time what about southeast Queens? What about Rosedale? What about my home? What about the homes of other people that have been affected? (Moore)
- I hope that by being vigilant the community stays on top of the people who are responsible, that we can find some solutions to live with this situation and that for two or three reasons, we know we need clean quality dependable water. (Signer)
- DEP has owned, maintained, and operated a groundwater supply system of 68 water supply wells in southeastern Queens since 1996.

As a result of the pumps not operating, my constituents have seen the groundwater rise to the point where it now permeates into their homes and deteriorates the infrastructure of their subway station and their local college. This pumping is 24 hours a day, seven days a week and cannot be pumped into the sewer system. (Abbadly, Comrie)

- In the ironic alternative, speakers of St. Albans looked to the reopening of the Jamaica Wells as a de facto dewatering operation that would lower the high water table of southeast Queens. This concern is not referenced as a purpose of the Proposed Project in the DEIS for In-City Water Supply Resiliency Project. (WNCAC-A)
- We would hope that DEP would take into consideration, that in southeastern Queens, the homeowners experienced extensive flooding. We ask that, because you say resiliency, look at what happened in Superstorm Sandy, the Rockaways in particular. When you say mitigation and resiliency, the same thing is needed in southeast Queens as well. (Edwards)
- It is imperative that DEP be allowed to use their oversight authority, renew its permit regarding the Jamaica Water Supply Company, and proceed with directional drilling to resolve the problem of groundwater flooding in southeastern Queens once and for all. (Adams)
- For over 30 years we've had a problem in our basement with the water flooding. Whatever we can do to at least look at it, have a positive study just to see how we can resolve this issue. It would be beneficial for us as a whole. (Baynard)
- This has been going on for a long time. And everyone in here knew the advocates, knew the environmental and justice advocates that have been fighting this fight, flooding, the water table. (Miller)
- Have you visited York College? Have you visited senior citizens home on Linden Boulevard and 166th Street? Have you visited PS40 in south Jamaica? They have pumps in their basements pumping 24-7 because of the water condition in this community. Have you visited a home of any of these people who live here, whose driveway floods or their basement floods? Have you seen the pumps in their homes that pump 24-7? Have you seen the waterline around their wall that leaves the height of how high the water came when it flooded? Now if you haven't seen it, I don't know how you're going to solve the problem. (Norris)

- I hope that when we leave we might be able to get some idea of when something definitively will be done for the people who are suffering and spending their money trying to save their homes. (Norris, Miller)
- We still have organizations, institutions and our community that are pumping 20, 30, 40, 50 thousand gallons of water daily. People are constantly pumping, residential homes that have four or five sump pumps in the basement (Miller)
- There is evidence of flooding. You can see that quality of the water when it runs down the road. It is brown. That is telling you something about the water down there. Whether it is manganese or whatever, the quality of the water, you can see the stained ground, stained pipes. Pumping alone won't be good enough. (Beatty)
- In 1996, we achieved the goal of getting off the Jamaica water. Fifty to 60 million gallons of water had to go somewhere, you can't just stop drinking that much water. And low and behold, it went into people's basements. (Signer)
- Flooding cannot be solved by sewer construction. It requires initiative to actually remove water from the ground and lower the water levels that exist just below the surface. (W Scarborough)
- The value of their real estate will diminished if you have floods in your basement and you are showing your home with 24-7 pumps. (Singletary)
- I have a border around all of the walls and a pump, in case the water level gets high. Then after that, the water starting coming in in the middle of floor. When we have big rains, it comes in the middle of the floor. So there's nothing I can do, but hire someone to get this water out. (Shuler)
- If the electricity goes out, we worry that the sump pump won't pump. We don't go down in the basement unless there is a problem with the pump. (Jordan)
- Radial collection would create underground pipes, or lines, calibrated to direct groundwater to existing large bodies of water which already have outlets to Jamaica Bay. This system, in theory, would lower the water level through this process and have an added benefit of bringing a new source of freshwater into the Bay, which is supported by environmental advocates involved with Jamaica Bay. Commissioner Greeley has presented his proposal to DEP, elected officials and community groups, and many of us believe this is the best practical hope for relief of the groundwater flooding. By not engaging the Jamaica Water Supply wells, it also avoids this growing controversy

between Queens and Long Island. The radial collection system theory must be studied for feasibility, and DEP and our elected officials have pledged to find the funds from the \$300,000 to \$400,000 needed to conduct this study. I urge DEP and our elected officials to secure these funds expeditiously, and to move this study along as quickly as can be done without sacrificing accuracy. If the study confirms the feasibility of directional drilling, DEP, the NYSDEC, our elected officials, and all interested parties must unite in finding the funding and political will necessary to implement this system. This may be our best chance to bring flood relief from groundwater to the residents of southeast Queens. Thank you very much for your consideration.
(W Scarborough)

Response 14

On July 21, 2017, Mayor Bill de Blasio announced a new feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens. The Groundwater Radial Collection Feasibility Study (“Drainage Project”) will measure how high the groundwater table has risen, how much it must be lowered in order to mitigate the basement flooding, and the feasibility of a radial collection plan. It is anticipated that this study will be completed by spring 2018. This study will be completed independently of the In-City Water Supply Resiliency project. If the radial collection plan is determined to be effective, a separate environmental assessment will be conducted, as necessary. The In-City Water Supply Resiliency DEIS is focused on assessing the potential impacts associated with the renewal of the City’s existing water supply permit/water withdrawal permit for the Queens Groundwater system and the potential use of this system as a supplemental water supply during a water shortage due to drought and planned and/or unplanned infrastructure outages.

CEQR/SEQR PROCESS

Comment 15

Several comments were received regarding the need for a full environmental impact study.

- There would have to be a full environmental impact study to determine the impact of opening up that well in relation to every other well and every other community surrounding that well. They’re proposing opening up 60-plus wells and they don’t want to have to do a full-state environmental review. The potential to drawdown an aquifer, that, when it was pumping, anecdotally we were told the water table was lowered by up to 30 feet. (Martins)

- But it's not too much to ask to do a proper and full environmental review, and until that review is completed, until they're able to prove that they can open these wells safely, then these permits shouldn't be renewed. The fact that we have a NYSDEC that merely allows these wells to be re-permitted without requiring this kind of review, and these permits never go stale, should be troubling to all of us because this is not the same island that was here 20 years ago. (Martins)
- The DEIS must discuss and evaluate all material changes in environmental conditions, specifically the quantity and quality of the Long Island Aquifer System since these wells have last been used for water supply in the City's distribution system (issues such as withdrawal capacity, quantity stress, quality concerns/contamination plumes, saltwater intrusion, etc.). (Ward)
- Let's understand the type of drawdown that is possible that all we really want is that they perform the necessarily environmental review so that those communities who have no other source for their water can be protected. (Martins)

Response 15

DEP will be preparing a DEIS for the proposed action. The DEIS Scoping document (i.e., DSOW and FSOW) describes the purpose, need and nature of the Proposed Project and to outline the analyses to be undertaken as part of the environmental review of the Proposed Project. The analysis will be prepared in accordance with the requirements of SEQRA and CEQR and the results of these will be presented in the DEIS. While an EIS is not required for a Water Supply/Water Withdrawal permit renewal, DEP has committed to complete a DEIS for the Proposed Project.

Comment 16

The DEIS should provide a copy of all SEQRA notices and process documentation such as, assumptions of Lead Agency status, determination of significance/positive declarations, etc. (Ward)

Response 16

Applicable and appropriate notices have been prepared and issued.

Comment 17

Several comments were received regarding mitigation measures and the significant adverse impacts.

- The DEIS notes that it will propose actions that can avoid or mitigate potentially significantly adverse impacts (pg. 13). However, given the likelihood that significant impacts will be identified, the DEIS does not discuss the possibility that mitigation may not be possible. (Meyland)

- Any and all Mitigation Measures to be evaluated in the DEIS also need to be identified in the Draft Scope. (Ward)

Response 17 As noted in the Final Scope, DEP will conduct an environmental review of the Proposed Project. If significant adverse impacts due to the Proposed Project are identified in the DEIS, DEP will identify potential mitigation measures, as applicable and appropriate. If mitigation of potential significant adverse impacts is not possible, this will be disclosed in the DEIS.

Comment 18 The Cumulative Effects to be evaluated in the DEIS need to be identified in the Draft Scope. (Ward)

Response 18 As noted in the Final Scope, DEP will evaluate the cumulative effects, if any, that may result from the Proposed Project in the DEIS.

Comment 19 The Draft Scope uses the term “pre-development conditions” in terms of comparison for modeling, but fails to define that term. (Ward)

Response 19 Groundwater elevation changes over time result from changes to the amount of water added to the aquifer (e.g., recharge) or removed from the aquifer (e.g., groundwater extraction). If more water is removed from the aquifer than added, water level elevations will drop and vice versa. Over the course of the last 100 years, there have been significant changes to the amount of water removed from the aquifer via pumping wells for water supply in Brooklyn, Queens, and Long Island. Significant increases in groundwater withdrawals from the City lowered groundwater elevations during the middle portion of the 20th Century, but as pumping from Brooklyn and Queens ceased, groundwater elevations have risen. Groundwater elevations in Nassau County have been lowered significantly since the middle of the 20th Century and pumping continues presently. In this context, “pre-development conditions” refers to the condition where no water supply pumping is applied on Long Island and changes in groundwater elevation are caused solely by changes in rainfall. This will be described within the DEIS and no changes to the Draft Scope are proposed.

Comment 20 There appears to be an inconsistency in the use of the designated “study area.” For certain purposes in the analysis it is 400 feet from the boundary of each well station. For broader water issues there is a suggestion the “study area” is Kings, Queens, Nassau, and western Suffolk Counties. (Ward)

Response 20 As noted in the *CEQR Technical Manual*, different impact categories require different study area boundaries based upon the nature of a proposed action, the specific impact category and the anticipated extent of potential effects. As water supplies have the potential to affect those connected to the same water supply or aquifer, a larger study area is proposed and this is reflected within the Draft Scope for specific impact categories as applicable.

Comment 21 I have submitted letters to DEP, I have submitted letters to NYSDEC, those letters are on record and I would ask that they be included as part of this record as well. (Martins)

Response 21 DEP has received the previous letters and has committed to conducting an EIS.

Comment 22 When I come to an event like this expecting to get information and expecting to be able to ask questions and have questions answered, but I found out that this not a forum to ask questions or to have questioned answered. And that troubles me because what I've learned on my journey is that if I have a question, other people have questions. They probably have the same questions that I have. Sometimes you don't even know that you have a question until somebody else asked the question and you get an answer to that question. (Turner)

Response 22 The requirements of the public comment and hearing process are established under SEQRA/CEQR. During the public comment period, DEP held two public hearings which provided an opportunity for the public to ask questions during informal poster sessions held immediately before the public scoping hearings and make comments on the Draft Scope during the public scoping hearings. In addition, written comments were also solicited as part the overall public comment period that ended in July 10, 2017. Questions and comments received by DEP in writing or orally at the public hearings are addressed in this Appendix.

PROJECT DESCRIPTION, SCHEDULE, AND PHASING

Comment 23 While the DEIS addresses the short-term questions of impacts related to the use of the Jamaica-Queens wells for specific reasons (emergency or infrastructure failure), it does not discuss or anticipate the issue of longer-term use of the wells as a routinely used water supply source. This issue should also be addressed in the DEIS. (Meyland)

- Response 23** As noted in the Final Scope, DEP is not proposing to use the Queens Groundwater system for routine water supply purposes. The Proposed Project is the renewal of DEP's Water Supply/Water Withdrawal permit in order to retain existing groundwater withdrawal rights and the potential use of this system as a supplemental water supply during water supply shortages due to drought or planned and/or unplanned infrastructure outages within the City's upstate surface water system. While DEP anticipates that the groundwater system would be in use only during water shortages, a series of operational scenarios were provided within the Draft Scope and revised scenarios have been identified within the Final Scope that would assess the impact of an extended use of the groundwater system in order to assess a reasonable worst-case scenario for the analysis of potential impacts.
- Comment 24** There is no mention of improved site security measures at well stations. (Schneider)
- Response 24** The Proposed Project would involve the potential use of existing wells identified within DEP Water Supply/Water Withdrawal Permit. The well stations are currently secured. No additional security measures are proposed as part of the Proposed Project.
- Comment 25** Locations where new wells and treatment facilities would have to be placed should be identified. (Graziano)
- Response 25** DEP is not proposing to construct any new water supply wells or increase the capacity of existing wells as part of the Proposed Project. Any temporary treatment facilities proposed would only occur for the existing wells and this would be assessed as part of the DEIS.
- Comment 26** NYSDEC recommends not restricting the analysis period to 10 years, as operation of the project will continue beyond that time frame. (Watts)
- Response 26** The term of the proposed renewal of DEP's Water Supply/Water Withdrawal permit would be for 10 years. As a result, the DEIS analyses related to operation of the Queens Groundwater system as part of the Proposed Project have been based upon this 10 year duration. The DEIS will evaluate 1, 2, 3, 5, and 10 year pumping durations for the program, which is anticipated to be operated on a temporary basis. This has been updated in the Final Scope.
- Comment 27** The DEIS must provide details about the operation of these wells during the last permit period. Have they been maintained or decommissioned and should they have been decommissioned pursuant to applicable regulations.

The DEIS should also present a copy of all regulatory permits and approvals related to these wells. (Ward)

Response 27

For the current permit period (January 1, 2007 through December 31, 2017), the City has relied on its surface water system to meet the water supply demands of the southeast Queens region. The City has continued to operate some wells on a limited basis for water quality monitoring purposes and no wells currently identified within the current permit or proposed renewal have been decommissioned.

Comment 28

There needs to be a consistent and distinctly defined purpose and intended use of the wells. The Draft Scope varies on this point from stating a use in exigent conditions, emergency conditions (both undefined), repairs of other elements of the City supply system, “upstate drought,” obvious inconsistencies. (Ward)

Response 28

The Final Scope provides a refined purpose and need for the Proposed Project. The Proposed Project, supporting the permit renewal and the implementation of temporary treatment systems, would enable operation of the full permitted capacity of the groundwater well system in a water supply shortage due to a drought or planned and/or unplanned infrastructure outages.

Comment 29

We are talking about are the groundwater wells and the reservoirs and the watersheds and the tunnel system, what is the connection between those things, and more importantly how does that connection impact this community, which we've heard time and time again, and for those of us who live here we know time and time again, about the flooding and the water that's always with us. I wish I understood that better but I don't. (Turner)

Response 29

DEP's water supply system is a vast system that includes three upstate reservoir systems, including 19 reservoirs and three controlled lakes, and the 68 wells in southeast Queens. The system was designed and built with various interconnections to increase flexibility and redundancy by allowing the exchange of water from one system to another, including Queens. The three upstate reservoir systems are all connected to Hillview Reservoir where it is connected to the City through tunnels. Descriptions and maps of the system are available on DEP's website.

Drought/Emergency

- Comment 30** Several comments were received regarding the definition of emergency.
- So we need to define that an emergency is and not make matters worse for existing water suppliers. (Granger)
 - The NYSDEC should clearly define what would constitute an “emergency” to permit the wells to operate. (Palleschi)
 - What and who defines when the “emergency” is over – or when it begins? (Esposito)
 - There is no discussion or consideration over what is considered an “emergency.” Will the NYSDEC be the entity which declares a State of Emergency and authorizes the use of these wells? What is the trigger which will permit the operation of these wells? If the State of Emergency is lifted, will the wells be turned off? From an operational viewpoint, running the wells to waste at a lower pumping rate may make more sense economically to the City instead of turning the wells off and potentially not have them run for extended periods of time. (Schneider)
 - The 68 wells in Queens are identified to serve as a “supplement” to NYC’s upstate surface water supply for drinking water in times of “emergency” or “drought.” Yet, nowhere in the Scoping document does NYC note what actually defines an “emergency.” Additionally, if NYC is experiencing drought conditions, it is extremely likely that Long Island will be experiencing drought conditions. This would be the worst time to put additional strain on the aquifer system. No provisions are identified to provide Nassau County with protections from NYC pumping needed water from the aquifer system in times of drought for Nassau County. (Esposito)
 - It is not yet clear if the Queens wells will be deemed a water source of last resort, and what that really means. But, if it is due to environmental crisis, such as drought, Nassau and Suffolk will probably be going through the same crisis as well. So where would that leave Long Island’s water supply during this time of shared stress. (Ottavino)
- Response 30** DEP has a Drought Management and Contingency Plan¹, dated October 1, 2012 that serves as guidance for addressing various levels of drought

¹ The Drought Management and Contingency Plan is available here: <http://www.nyc.gov/html/dep/pdf/drought.pdf>

emergencies. The DEIS will provide details of drought and planned and/or unplanned outages that would trigger temporary use of the Queens Groundwater system. This plan is coordinated with other agencies, such as the State Drought Management Task Force, State Disaster Preparedness Commission, and any other State authorities responsible for coordinating preparations for an imminent drought period.

Comment 31 What protocols will be in place to ensure that NYC is not overly reliant on the 68 Queens wells? (Esposito)

Response 31 As noted in Response 30, DEP’s Drought Management and Contingency Plan provides guidance for addressing drought emergencies. As stated in the Draft Scope, DEP is not proposing to use the Queens Groundwater system for routine water supply purposes. The Queens Groundwater system would be utilized in the event of a water supply shortage due to drought or planned and/or unplanned infrastructure outages.

Comment 32 All of this treatment adds up to a significant capital cost for these wells to supply potable drinking water. CCE is highly concerned that this necessary expense will incentivize NYC’s desire to utilize the wells and to abuse the definition of an “emergency” situation. (Esposito)

Response 32 The Queens Groundwater system would only be utilized in the event of a water supply shortage. As discussed in the Final Scope, DEP is now proposing the implementation of only temporary treatment, as opposed to permanent upgrades, which would be less costly.

Comment 33 Regarding the dewatering operations that pump many millions of gallons of groundwater each day from the Brooklyn/Queens aquifer system and discharges it to waste, the DEIS does not consider how this water could be repurposed during a drought or other water emergency. This aspect of groundwater extraction should be examined. Would dewatering be stopped during an emergency? How would this be enforced? (Meyland)

Response 33 The DEIS for the Proposed Project would assess the potential impacts associated with the renewal of the Water Supply/Water Withdrawal permit and implementation of temporary treatment systems to allow DEP to utilize up to 68 mgd of groundwater from existing permitted wells during a water supply shortage. Use or repurposing of groundwater by DEP or other entities and for other purposes is beyond the scope of this Proposed Project. See Response 14 regarding timing and separate Drainage Project. Operational requirements will be determined during the design and planning of the Drainage Project, if it is determined to be feasible.

Comment 34

Several comments were received regarding the correlation between a drought on Long Island and a drought within DEP's upstate water supply system.

- The DEIS must provide historic data and evaluation of the relationship of an upstate drought versus a Long Island drought. Do they occur at the same time or not, how often is it anticipated they would occur at the same time or at different times. Indeed using the Queens wells during a drought occurring upstate and on Long Island at the same time would clearly be detrimental to the residents in Nassau and Suffolk who, as previously stated, have only the sole-source aquifer for their drinking water supply. (Ward)
- DEP states that only in the event of an urgent need, such as an emergency water supply shortage or an upstate drought condition, would the full permitted capacity of 68 mgd of water be needed. Since droughts tend to be regional events, drought conditions upstate will impact the sole-source aquifer that we rely on for our customers. The reactivation of these wells will only exacerbate the problem in these situations. (Granger)
- The Scoping document is silent on how NYC will address conflicting conditions where Long Island may be in a more severe drought or an earlier one than NYC's conditions in the upstate Catskill system. How this will affect groundwater conditions should NYC begin major groundwater withdrawals in Jamaica Queens? (Meyland)
- If there was an emergency and there was a drought, who gets the water first? (DeRiggi-Whitton)
- You might be helping New York City in times of drought but you'll be exacerbating the problem in Nassau County during times of drought. (Esposito, Carey)

Response 34

The scenarios have been developed to conservatively estimate the potential impact of Queens well pumping based on the most likely conditions to occur in the future. As there are a number of uncertainties associated with predicting future conditions, a sensitivity analysis pertaining to rainfall (drought), southern Lloyd saltwater interface position, and the spatial distribution of Queens wells will be conducted and presented in the DEIS.

SOCIOECONOMICS

Comment 35 The City must provide a study of the impact upon the taxes and water rates of the consumers that would have to bear any of the costs of the entity that provides them with potable water. (Graziano)

Response 35 The DEIS will assess the potential impacts from use of the Queens Groundwater system upon water suppliers in Nassau County. As part of this analysis, potential impacts to groundwater elevations at existing water suppliers would be evaluated, assessed for significance, and where applicable an estimate of increased pumping needs and the electrical costs associated with this would be provided. The New York City Water Board is responsible for setting water and sewer rates to meet the cost of service. The annual rate setting process includes public meetings, which present the agency's future expenditures. DEP is not proposing to use the Queens Groundwater system for routine water supply purposes.

Comment 36 How much will New York City provide to each of the water authorities, districts, and private water companies in Nassau and Suffolk counties adversely affected by the project to offset their short-term and long-term costs for acquisition, construction, maintenance, and operation? (Graziano)

Response 36 The DEIS will analyze the potential impact of the Proposed Project on groundwater water supply and water quality in Nassau County and western Suffolk County. This will include a qualitative and/or quantitative assessment of the need for increased pumping, if any, due to the Proposed Project and an estimate of the increase in electrical needs if significant impacts are identified. Likewise, the DEIS will assess the potential impact of the Proposed Project on groundwater quality related to saltwater intrusion and hazardous materials. If significant adverse impacts are identified, the DEIS will also identify potential mitigation opportunities to address these specific impacts.

Comment 37 Several comments were received regarding economic impacts of the flooding in southeast Queens.

- There ought to be a way to compensate the people who feel they have lost their value of their home as well as reward the people who stayed and stayed for the improvements. (Swanston)
- And if they did a study of the effects of these people who were given 24-7 pumps over a period of 30 years. (Singletary)

- The water level in my house is not that high, but it's costly. Because I've had water abatement done several years ago, which cost \$7,000. But they had to break up my walls where I had my tiles that I had already spent \$4,000 on, and it cost me \$2,000 to replace that. (Shuler)
- At the Bridge Home, the water abatement there has cost more than \$40,000. We run five pumps every day, 24-7, to keep the water out of that building. It's costly because the electricity is high, because of the pump. And approximately every six months we have to replace them. They cost \$550 per pump once we replace them. And it is a burden because we have a \$9,000 mortgage so we have to rent those homes in order to make enough money to run this organization and keep that building alive. (Shuler)
- My mother runs two pumps 24-7. The expense of replacing these pumps twice a year, her electricity bill, the basement, we cannot use. It's stripped down to the concrete. (Jordan)
- I have three pumps continuously running in my home in the basement. The damage that has happened over and over and over again is simply horrible. (Moore)
- We've done our basement over four times already. And this is just to keep it livable. And the amount of money that we've spent is astronomical. (Moore)
- Floods every year. My basement is affected, just like everyone, their basement. I wasn't going to talk about the basement because what everybody says. Because what they say, I'm going through it. So I don't even want to say anything about the mold. Right now, I'm going to get someone to redo my basement again. (Richards)

Response 37

On July 21, 2017, Mayor Bill de Blasio announced that DEP is performing a new feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens, see Response 14. If proven feasible and the radial collection system project moves forward, it would be subject to a separate approvals process. An assessment of the economic impact due to flooding is beyond the scope of the Proposed Project since the focus of this review to support the renewal of the Water Supply/Water Withdrawal permit and the future temporary use of existing wells for potable water supply in times of drought or unplanned/planned outages. Therefore, this will not be assessed as part of In-City Water Supply Resiliency.

HAZARDOUS MATERIALS

Comment 38 With the heightened incidence of contamination and the continued threat of saltwater intrusion due to various causes including the potential reactivation of Queens wells, our committee has worked for more than two years with the USGS to shape a comprehensive sustainability study to accurately predict impacts of various scenarios to our Long Island groundwater supply. In addition to the reactivation of the Queens wells, these scenarios include development, drought, climate change, conservation and more. The Groundwater Sustainability Study finally affords a technologically advanced groundwater flow model, which will include current data from a network of new deep aquifer observation wells to fill in existing data gaps throughout Queens, Nassau, and Suffolk County. We need data collection that includes streamflow measurements throughout Long Island as well as estimates of future Queens and Nassau County groundwater withdrawals especially during peak season, which is not currently addressed in the Draft Scope. (WNCAC1, WNCAC-2)

Response 38 See Response 13.

Saltwater Intrusion

Comment 39 Need for the USGS to identify with scientific data the saltwater interface as well as the complex issues relating to the hydrogeological character or the aquifer supplying Queens and Nassau. (Palleschi)

Response 39 See Response 13. The New York City Groundwater Model is calibrated to the position of the saltwater interfaces where chloride data are available, including the Upper Glacial and Magothy aquifers and the Lloyd Aquifer north of Long Island. Because the saltwater interface in the Lloyd Aquifer south of Long Island is offshore, it is not well understood and very little data are available to delineate it. Sensitivity simulations will be run in the DEIS to address the uncertainty in the offshore position of the Lloyd Aquifer southern interface while evaluating potential effects related to the movement of the saltwater interface. No changes are proposed to the Draft Scope.

Comment 40 For communities along Long Island's shores, saltwater intrusion is already a concern at current pumping levels. The impact this additional pumping will have on the movement of the saltwater interface closer inland needs to be considered. We must clearly understand how the operation of these wells will affect the sustainability and viability of Long Island's water supply. (Carey)

Response 40 The analysis included in the DEIS will estimate the impact of Queens pumping on the movement of the saltwater interfaces in the Upper Glacial, Magothy, and Lloyd aquifers. See also Response 39. No changes are proposed to the Draft Scope.

Comment 41 We question the confidence given in the DEIS Draft Scope to the "so-called" robust data records kept on Long Island as a basis for the validity of the proposed model to be used for analyzing the different pumping scenarios. The use of historical data only to validate baseline saltwater condition interface positions is unacceptable. It has been 30 years since the position of the saltwater-freshwater interface in the Magothy Aquifer was delineated using water quality sampling in southeastern Queens and Southern Nassau counties. Today, no one knows where the saltwater interface is actually located. The DEP model will be incapable of answering this fundamental question. That is why we urge the USGS be allowed to complete The Groundwater Sustainability Study with its updated technologically advanced modeling system and new wells so that this new data can enhance the existing hydrologic data that is referred to in the DEP DEIS. (WNCAC-2)

Response 41 See Response 13 and Response 39. The New York City Groundwater Model simulates the historical saltwater interface movements between 1905 and 2015, using chloride concentration data collected by USGS to validate. It accurately represents these interface changes that occurred in the past when pumping was increased on Long Island. For example, between 1905 and 1945, pumping in Brooklyn was very high and saltwater moved inland in the Upper Glacial and Magothy aquifers. The groundwater model includes this pumping data and accurately shows the correct amount of saltwater interface movement in these aquifers in Brooklyn due to that period of pumping. It does the same in Queens and Nassau counties. The use of a robust historical data validates the model and reduces uncertainty in future pumping scenarios and potential saltwater interfaces.

Comment 42 Several comments were received regarding saltwater intrusion.

- We hope you can understand that as residents of the western part of Nassau, we acknowledge the threat of saltwater intrusion in public supply wells and the risk of water quality contamination from known sources through migration, not to even mention unknown sources. (WNCAC-1)
- It is most notable that the Draft Scope does not mention that in 2007 the Jamaica Water Supply Company discontinued operating the

water supply wells to the communities in southeastern Queens and portions of Nassau County because of poor groundwater quality caused by saltwater contamination. It is imperative that our water supply is not further put at risk. We cannot afford further saltwater contamination at a time when Long Island's drinking water supply is at a tipping point. (WNCAC-2)

- How will the City pumping affect saltwater intrusion in the Lloyd & Magothy Aquifers? (Graziano)
- The 2016 project proposal document rightfully announces that a study of the groundwater flow paths and movement of the freshwater-saltwater interface is essential for informed planning decisions about public supply strategies for most areas of Long Island. (WNCAC-1)
- We have saltwater advancing toward both the north and south shores of Nassau County, putting a number of drinking water wells at risk of irreversible chloride contamination. Nassau is experiencing significant saltwater intrusion into all three of its aquifers, even the Lloyd Aquifer. It has been decades since a fresh look at this regional problem has been undertaken, and with the rapid rise in sea level due to climate change, we must seriously address the potential that saltwater intrusion may be much closer to essential public water supply wells than we know. (WNCAC-2)
- We don't have the position of saltwater-freshwater interface in the Magothy Aquifer delineated. Even if the City can tell us through their New York City Groundwater Model, as cited, how many feet the interface will advance each year with their pumping, we have no confidence in the baseline condition interface location. A wrong baseline interface location can pose major and irreversible risks. (WNCAC-2)
- New York City has other options. It is simply not enough water to supply the New York City systems, but it may be enough to advance saltwater intrusion here leading for a need for desalinization or other expensive solutions. Based on the Draft Scoping documents' reliance on outdated groundwater data, this deeply concerns us. It has been decades since the exact position of the saltwater interface as located using water quality sampling in Queens and Nassau. Use of this outdated data for an environmental impact statement would be unimaginable. And, if it is used, the NYSDEC should reject it. (Schnirman)
- I need to remind all involved that the saltwater intrusion that incurred in western Nassau and in particular at the west end of Long Beach

Barrier Island in the late 70s and early 80s. It was at this time that New York City was directed to abandon their Queens wells and get their drinking water from upstate reservoirs. This was to protect the sole-source aquifer system on Long Island, and in particular on Long Beach Barrier Island. (Ottavino)

- The USGS recently reported that the freshwater-saltwater interface is at or landward of the shoreline of approximately half of Long Beach Barrier Island, which gets all of its potable water from the Lloyd Aquifer, hence being labeled a sole-source aquifer. So if not capped, certainly the Lloyd Aquifer wells must not be re-permitted at all. And if not capped, the Magothy wells, those limitations should be reduced, by at least 50 percent. (Ottavino)
- Then when New York City was drawing water from the Queens wells a tremendous amount of saltwater intrusion occurred both on the southwest and the northwest of the Nassau County. (Blum)
- I am concerned that it will be used up if the water that is there has to be sent to western Nassau because of increases in the saltwater intrusion, not only in the south shore, Five Towns area, but based upon the studies that I've read of the federal agency, there are increasing problems in the Great Neck Kings Point peninsula area and along the south shore of groundwater intrusion of saltwater. (Budnick)
- Historically saltwater intrusion in Brooklyn and Queens has led to compromised groundwater beneath Brooklyn and Queens and has contributed to saltwater intrusion beneath the southwest and western corners of Nassau County. In Nassau County, we have no reservoir or surface water alternatives to fall back on. Our aquifers are our destiny. (WNCAC-1, WNCAC-2)
- It is well established that Nassau County has exceeded the point of sustainable groundwater pumpage. Saltwater intrusion is a serious concern in many parts of Nassau, most certainly in the western and southern portions. We freely admit that we in Nassau County have a lot of work to do by way of policy changes and public education to stop wasting water and its inevitable consequences. We know we all are a part of this problem. And it is our hope that the new USGS/ NYSDEC Sustainability Study will hasten these conservation and management policy changes. (WNCAC-1)
- If the aquifer is over-pumped it could cause water mining and will cause saltwater intrusion of some of our coastal water supply wells. Once the local water becomes salinized it cannot be used. (D'Urso)

Response 42 Noted. See Response 40 and Response 41 with regard to saltwater intrusion and Response 13 on the nature of existing data utilized within the New York City Groundwater Model.

Groundwater Plumes

Comment 43 Chapter 2.10: Hazardous Materials: What is the rationale for limiting this assessment of potential impacts to known groundwater plumes to those that currently impact or have the potential to impact water supply wells within Nassau and western Suffolk County, rather than assessing the overall potential impacts to groundwater plumes in the entire geographic area which operation of the wells will impact? (Watts)

Response 43 The New York City Groundwater Model covers all of Brooklyn, Queens, and Nassau County, as well as a portion of western Suffolk County. This is consistent with the area most likely to be potentially influenced by groundwater pumping associated with the Proposed Project. In addition, the model also takes into account the most significant and known sources of groundwater contamination that may have the highest likelihood of potentially affecting groundwater supply wells based upon their size, location, and other factors. NYSDEC has provided data that they deemed relevant to the Proposed Project. The Final Scope states that this analysis will be done for the portion the model covering Nassau and western Suffolk County. If the model shows that the groundwater direction changes around an active supply well in either of these areas due to City pumping and if those changes are in the vicinity of a groundwater contamination plume, the supply well will be identified and assessed in the DEIS.

Comment 44 Several comments were received regarding groundwater contamination plumes.

- The DEIS must include a description of each contamination plume in the “study area” that may be effected in terms of plume movement; speed and direction. (Ward)
- How will the City pumping affect the direction of contamination plumes? The speed of movement of contamination plumes? The level of contamination within the plumes? If the saltwater intrusion and/or the direction, speed, and/or level of contamination of the plumes will adversely affect existing wells of the water authorities, districts, and private water companies in Nassau and Suffolk Counties: (a) what additional treatment will be required at each site; (b) what will be the cost of that additional treatment (construction, including both the hard

and soft costs, such as but not limited to engineering, bonding, and attorneys fees; and annual maintenance, power, chemicals?); (c) is there sufficient space at each such site for the additional treatment? If not, where can such treatment be located? What will be cost of acquiring the site? What are the environmental impacts of constructing and maintaining the treatment facilities at that site? Will the NYSDEC grant a permit for a new well at that site? (Graziano)

- I'm concerned because I live right here in the Grumman Plume, which is now heading towards the great South Bay. If those wells start pumping a lot, the pollution in the Grumman Plume is just liable to go a little bit further west and end up in my water supply, which is rather scary. So I would hope that before anything is done, that all the data that is going to be developed be really understood and analyzed. (Blum)
- Restarting the dormant wells could harm our drinking water. As a water provider, we take pride that, through strict standards and methods, we provide clean and safe drinking water to hundreds of thousands of residents, along with local water districts and private providers. Among the concerns I share with local officials about reopening the wells include the possible intrusion of saltwater into freshwater supplies, the redirection of harmful plumes to other parts of the groundwater system and other disruptions of Long Island's groundwater supply. (Santino)
- The directionality of groundwater plumes is known to be affected by even modest water withdrawal from the aquifer system. Nassau County has 150 superfund sites, the largest concentration of superfund sites in NYS. Large-scale additional pumping can change the directionality of the existing plumes and could disrupt existing containment or remediation efforts for these plumes. Plans to remediate pollution plumes are not drawn up in a day. They are developed with science, technical experts, community groups, and other stakeholders. They are the result of a long process that hopefully produces a comprehensive cleanup of contaminants. If changes in directionality were to render a plan ineffective, it would delay cleanup for years. Prolonging the cleanup process will cost Long Islanders more money, and put our resources, environment, and public health at risk. We are already overburdened with toxic plumes in Nassau. Exacerbating the remediation challenge is simply not an acceptable plan. (Esposito)

- What is this contamination that's going to be pulled out of Nassau County and it's going to be moving into these wells if they are started. So whatever they're trying to do in Queens, it isn't going to last long because there's plume contamination; it's going to take over these wells. (Bernstein)
- In order for these wells to be reactivated, there must be a complete understanding, using more recent data, of how it will impact the hydraulics of our aquifer. We must also know, with a great deal of certainty, how this affects the existing contamination plumes and current remediation efforts. We must know if existing contaminants will get drawn deeper into the aquifer and if increased pumpage will induce the migration of these contaminants into other areas. (Carey)
- Increased pumping from the aquifer means an increased likelihood of saltwater intrusion, or more accurately put saltwater contamination. Additional pumping will also induce the migration of contaminants deeper into the aquifer. The Draft Environmental Impact Study does not address UCMR 3 contaminants such as 1,4-dioxane and hex chrome and, to the best of our knowledge, we are unaware if New York City has disclosed testing these wells for such contaminants. More testing must be done. If done, then this information must be disclosed. (Granger)
- Because the contamination that is coming from the Sperry Gyroscope building on the corner of Lakeville Road and Marcus Avenue, it is already in Queens. It is already taken over North Shore Towers. It has already gone into the Western Nassau water supply. It has already gone into the New Hyde Park systems well as moving up north to past Northern Boulevard. (Bernstein)
- I am terribly afraid about the problem at not only Sperry but where I live in the Massapequa area we're having the Grumman Navy Plume come to visit us and perhaps make our drinking water totally unusable. A large part of the problem is Sperry. And all of these problems at the Navy Grumman site belong to the Federal Government. (Budnick)

Response 44

Based on the New York City Groundwater Model, (see Response 13 and Response 39) a general description will be provided in the DEIS of known contamination plume(s) that have the potential to impact water supply wells, as determined by the screening criteria discussed in the Final Scope. NYSDEC has provided data that they deemed relevant to the Proposed Project. A more detailed discussion of the nature of each individual plume or source of same is not currently anticipated as part of the DEIS. No changes are proposed to the Draft Scope. Potential impacts of the

Proposed Project from known contamination plumes and saltwater intrusion was described in the Draft Scope and will be evaluated in the DEIS. If potential significant adverse impacts due to the Proposed Project are identified, potential mitigation alternatives would be identified in the DEIS.

Comment 45

We have heightened threats of contamination from over 150 superfund sites. Most public water supply wells in Nassau County have some form of mitigation treatment. Nassau County is struggling with the largest concentration of superfund sites in New York State including the Navy/Grumman in Bethpage on the east side of the county to the Lockheed Martin plume in Western Nassau. The Groundwater Sustainability Study will investigate how these sites are affected by withdrawal demands on the regional groundwater system. However, the DEIS Draft Scope of Work is silent on how potential shifts to this complex set of plumes will be successfully addressed within its own scope and modeling approach. A qualitative analysis based only on information included in publically available databases is not sufficient. (WNCAC-2)

Response 45

The Draft Scope presented the proposed approach for the assessment of potential impacts related to hazardous materials, including contamination from known and significant sources or plumes. The New York City Groundwater Model will be used to assess potential changes in groundwater flow direction if the City resumes groundwater pumping. Plume pathway deviations are only possible where groundwater flow directions change. Contamination plumes and/or hazardous spills are carried throughout the aquifers with groundwater flow. Should the groundwater flow directions change due to the introduction of new pumping sources or elimination of existing pumping sources, there is the potential to alter the movement of the plume. The DEIS will identify potentially sensitive areas where flow direction changes may be anticipated and could lead to deviations to known contaminant plumes. Potential impacts due to hazardous materials, if identified, would be disclosed within the DEIS. No changes are proposed to the Draft Scope.

Comment 46

You probably remember that one of the reasons you stopped using those wells is they were contaminated. Well, they haven't gotten any better. In fact they may have gotten worse. So I think it's the public's right to know what is in each and every well. (Esposito)

Response 46

The raw water extracted from the wells will receive all necessary treatment to produce drinking water that meets or exceeds all applicable federal, State, and local standards at the time of use. Based on currently

available water quality data for these wells, typical treatment options would meet these standards and will be discussed in the DEIS.

Comment 47 When considering groundwater treatment, it is possible that there are many contamination plumes within the Jamaica-Queens area that are currently unknown since the aquifers have not been actively used for nearly 20 years. The DEIS Draft Scope does not address how significant pumping may capture new plumes and how this will affect the use of the wells. The DEIS will need to consider how the City will meet future water treatment needs beyond what is required for well water quality as it is known today. (Meyland)

Response 47 The analysis included in the DEIS will estimate the impact of Queens Groundwater system pumping on known contamination plumes. Prior to the use of raw water extracted from these wells, DEP will analyze water quality and will implement all necessary treatment to produce drinking water that meets or exceeds applicable federal, State, and local standards at the time of use.

Comment 48 Once upon time, going back to the 1900s, no the 1800s, Long Island for example Massapequa preserve, was originally set up as a watershed for the City of Brooklyn. That whole plan went down the tubes because of what happened with pollution in World War I. The Liberty Indian site destroyed the viability of the Massapequa preserve and that whole watershed area. We're still trying to fix here in Nassau County, and we're not getting any cooperation we needed from the Federal Government over the last 10 or 15 years, to fix the aquifers that we do have here and to try and, pardon my language, suck the life water from Western Nassau will mean there will be additional problems going west from eastern Nassau that there's been a water degradation zone that goes back, it's definition, to when the Special Ground Water Protection Area, basically all of southeastern Nassau County, was included in that. And once again, you're looking at pollution that originated primarily in World War II or the immediate aftermath of that. (Budnick)

Response 48 Noted. No changes are proposed to the Draft Scope.

Emergent Contaminants

Comment 49 Several comments were received regarding emergent contaminants.

- When the wells are opened who is going to make sure that those contaminants don't hit our aquifer? (DeRiggi-Whitton)

- There is no mention in the Draft Scope of emergent contaminants... (1,4 Dioxane & PFO/PFOA's). Have the wells been analyzed for these contaminants? Traditional well head treatment will not remove 1,4 Dioxane. (Schneider)
- Substantial analysis and evaluation of the effects of emerging contaminants, 1,4 Dioxane & PFO/PFOA's as we are aware that conventional well head treatment is ineffective for removal of 1,4 Dioxane. (Palleschi)
- The opening of these wells risks saltwater intrusion, contaminants, overuse, and the inability to contain current contaminants within the Lloyd and Magothy Aquifers. (Multiple Emails)
- We have new, very troubling threats of unregulated contaminants. Television and print news cycles have been dominated by threats of 1,4 Dioxane, Chromium 6 and Perfluorinated chemicals (PFCs), known carcinogens, to Long Island's water supply. These plumes are encroaching on water supply wells in many Western Nassau communities. (WNCAC-2)
- The Draft Scope does not address 1,4-dioxane, an emerging contaminant that is being found throughout Nassau and Suffolk County drinking water supplies. NYS is moving aggressively to set a health based standard for drinking water for this chemical of concern. Suffolk County Water Quality is piloting advanced oxidation treatment to remove this contaminant from drinking water. 1,4-dioxane cannot be removed through conventional carbon-based filtration systems. It is very likely that NYC will have to include 1,4-dioxane removal in the near future for these wells, resulting in additional capital cost. It also does not address other key emerging contaminants now being detected in Long Island's aquifer system, including PFCs and pharmaceutical drugs. (Esposito)
- Regarding treatment of groundwater at all the wells in the Jamaica system, there should be planning specifically for 1,4 Dioxane in the DEIS. It is only a matter of time until drinking water standards or guidelines are established. The treatment for 1,4 Dioxane will require a different system design from those standard technologies used for groundwater treatment identified in the DEIS. A similar consideration of PFOA/PFOS contamination may also be warranted. (Meyland)
- The Draft Scoping document provides a brief overview of the contamination detected in the 68 wells including VOCs, perchlorate, iron and manganese, nitrates, chlorine, fluoride, and orthophosphate. However, the Scoping document should provide a more

comprehensive analysis for each individual well, including a list of contaminants, levels of each contaminant for each well, and a date associated with the most recent testing data. The public has a right to know contamination levels before and after treatment. The Draft also indicates that NYC will “meet or excel all applicable New York State Department of Health and NY City Department of Health and Mental Hygiene water quality standards...” More precise definition is needed to assuage the concerns that New York City residents may, in fact, be provided drinking water with a notable variety of chemicals that meet state standards, but yet may still not meet the public acceptance. NYC has one of the cleanest drinking water sources in our nation. The NYC public has an expectation that clean water will continue to be provided to them. However, the Queens wells, particularly in the Upper Glacial are contaminated. More information is needed to provide a more robust measure of transparency. (Esposito)

Response 49 Prior to the use of raw water extracted from these wells, DEP will analyze current water quality and will use this information in order to implement all necessary treatment to produce drinking water that meets or exceeds applicable federal, State, and local standards at the time of use.

NATURAL RESOURCES – SURFACE WATER

Comment 50 It is unknown how increased pumping will affect the salinity of our estuaries and embayments. CCE and many other regional organizations have worked tirelessly over the last two decades to restore the water quality in embayments of the Long Island Sound and the Western Bays in the South Shore Estuary Reserve. The Scope needs to include the impacts that withdrawing 24.8 billion gallons in one year will have on these critical systems and their ecosystems. (Esposito)

Response 50 Saltwater Intrusion was addressed in Response 39 through Response 42. Also, see Response 13. As noted in the Final Scope, the potential impacts to streams and surface waters due to the Proposed Project will be assessed in the DEIS. No changes are proposed to the Draft Scope.

Comment 51 The City is thinking about instituting a storm water charge to your water bill, but if you use permeable stone and let your groundwater recharge through, let your water seep through, and there's too much water, we ought to be finding a beneficial use for it. (Swanston)

Response 51 Noted. No changes are proposed to the Draft Scope.

Comment 52 There ought to be a way to use the water. (Swantson)

Response 52 The function of these wells is for public water supply. On July 21, 2017, Mayor de Blasio announced a separate and new feasibility study to address flooding in southeast Queens independent of the use of the Queens Groundwater wells that will be discussed within the DEIS. See also Response 14.

Surface Water Drainage

Comment 53 Several comments were received regarding standing surface water drainage.

- It would be nice to have damage control or to let us know what we can do for water in front of your driveway that settles there. (Ruhams)
- Right now there is stagnant water on my street for a month now and it hasn't gone. I am tired of buying ammonia to throw in the water. And the water is there for months and months before it goes away. It's there right now and there's nothing I can do. (Richards)
- The water is sitting at my gate for over a month. The trees sink and water is there. And to go out with the rainfall because the trees uplift the sidewalk, what should I do? (Richards)
- You heard that these trees, a lot of the roots are coming up. The trees are one of the things. (Beatty)

Response 53 DEP has committed \$1.7 billion to address roadway flooding in southeast Queens. The bulk of the funding will go towards the construction of large trunk sewer spines along 150th Street, Guy Brewer Boulevard, Farmers Boulevard, and Springfield Boulevard. This work will take place through at least 18 separate projects, the first breaking ground as early as later this year. Dozens of smaller local sewer projects will connect neighborhoods to the trunk sewer spines. DEP is actively implementing this program.

NATURAL RESOURCES - GROUNDWATER

Comment 54 I have a concern about the magnitude of building that's occurring in southeast Queens. I have a concern because if there is a problem with groundwater, in southeast Queens you have real estate corporations building hotels and apartment buildings. (Singletary)

Response 54 This is beyond the scope of the current DEIS. Within DEP's infrastructure upgrades and sewer build out programs, future growth is taken in account

based on the maximum development potential based on current zoning designations.

Groundwater Model

Comment 55 The Draft Scope is unclear as to the presentation of any and all modeling results in the DEIS. (Ward)

Response 55 Modeling results will be presented in the DEIS. A combination of text, graphs, and tables will be used to illustrate the results, as needed.

Comment 56 Even though the DEP model will evaluate changes in groundwater conditions, the usefulness of the results may be limited because the baseline for comparison may be incorrect or insufficiently precise. This includes such important aspects as the location of the saltwater interface for all the aquifers as well as the groundwater elevations and piezometric surfaces of the various aquifers. (Meyland)

Response 56 The New York City Groundwater Model will use the best available data to determine potential impacts to groundwater, including saltwater intrusion. See Response 13, Response 39, and Response 41.

Comment 57 Several comments were received regarding DEP's groundwater model.

- Although the DEIS Draft Scope indicates that it will model impacts from Queens pumping, it is unclear how NYC pumping will be assessed in combination with simultaneous pumping occurring in Nassau County. While NYC may have the option of not using the Queens wells, it is not be an option for Nassau County. This task may be beyond the capability of the NYC modeling. It will be evaluated by the USGS Sustainability Study which is one reason for delaying a final permit approval until the Sustainability Study is completed. In the various scenarios described in the DEIS Draft Scope on page 14 (Scenarios A-E), pumping by Nassau wells is not specifically mentioned or included. Also missing from the scenarios is a consideration of time or seasonality. Pumping in summer will have a different impact than pumping in winter. This should be addressed. (Meyland)
- The primary tool to evaluate the potential changes resulting from each proposed operating scenario is the New York City Groundwater Model. While this management tool has been calibrated to long-term transient conditions, it has been well over a decade since any new hydrogeological framework information has been incorporated into the

skeleton of the model. Among the most basic information needed to assess the impact of the various pumping scenarios, is the current position of the saltwater interface in the various aquifer layers. This information does not exist... therefore it would be imprudent to make assumptions on where the saltwater interface would move if you do not know an accurate starting point. (Schneider)

- The wells in question have not been used for more than two decades. We have learned a lot more about our groundwater supply since then and have been presented with some major challenges regarding the sustainability of its quantity and quality. The landscape of the water industry is far different than it was 20 years ago; these wells should not be reactivated until all the necessary data has been collected and the impact to our aquifer has been thoroughly studied. (Granger)
- NYC's Water Model is Inaccurate. CCE is gravely concerned with the statements in the Draft Scope of Work, "The New York City Groundwater Model will be the primary tool used to evaluate potential changes resulting from each operating scenario." This model was developed in 2005 and lacks all the current efforts by the USGS to assess groundwater sustainability for Long Island. USGS right now is drilling new monitoring wells and conducting state of the art science to better understand our aquifer system. This data is needed to accurately access all the scenarios being proposed by NYC. CCE disputes NYC's claim that the model relies on "the robust data records kept on Long Island over the course of the 20th century." In times of economic hardship, Nassau County cancelled many of their monitoring programs. The claim there is "robust data" is clearly flawed and simply not accurate. (Esposito)
- In the Scope it also says New York City said that the model relies on the robust data records kept in Long Island over the course of the 20th Century. First, I think you meant 21st Century. But also, there are no robust data records. In fact in times of hard economic times Nassau County stopped taking data altogether. So we dispute the claim that that database even exists. (Esposito)

Response 57

See Response 13. The New York City Groundwater Model includes all wells pumped (and associated pumping data) in Brooklyn, Queens, Nassau County, and western Suffolk County between 1905 and 2015. The model uses monthly time steps in order to capture seasonal variability associated with pumping and rainfall/recharge data. Between 2011 and 2015 (5 years) 346 Nassau County public supply wells were pumped. These 346 wells will be projected in the model using average monthly rates

between 2011 and 2015 in all DEIS simulations (still using monthly time steps). City pumping will be applied in addition to the future baseline condition and the results will be presented in the DEIS.

Comment 58 I respectfully ask DEP immediately recalibrate the study to expand its focus beyond water supply services, and embrace and advocate the major issue of groundwater flooding that is affecting the southeast Queens community. (Abbadly, Comrie)

Response 58 On July 21, 2017, Mayor de Blasio announced a new and separate feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens, see Response 14.

Comment 59 As reported by the USGS in 2014, Nassau, having a population of over 1.3 million, is over-pumping our aquifers as it is. The aquifer system in Nassau cannot sustain pumping to an additional 2.3 million people in Queens. In fact, the wells in Queens were initially shuttered because pumping them was causing saltwater intrusion in western and southwestern Nassau in the late '70s, early '80s; and to reopen them would undoubtedly produce the same result again today. (CAWS)

Response 59 The DEIS will assess the potential impacts of the Proposed Project including possible effects related to saltwater intrusion, hazardous materials, and other elements. No changes are proposed to the Draft Scope.

Comment 60 The DEIS Scoping document does not discuss how NYC will adequately evaluate current conditions of the groundwater system for either the Brooklyn-Queens or for Nassau/Suffolk Counties. Historical data and current data are not the same thing. Without current data, the modeling results will be open to question. In other words, is the baseline used in the model the baseline of today or a baseline from 5 or 10 years ago? (Meyland)

Response 60 The New York City Groundwater Model includes all data through 2015 and simulates the historic period of 1905 through 2015 using monthly data inputs. While the model was developed in 2005, the City has maintained and updated it by periodically incorporating newly available data and extending the simulation period forward in time. The most recent updates were completed in 2014 and 2015, with the historical data projected through 2017. It takes time to collect, validate, and publish new and complete data sets. The most recent data is “current” and all older data is “historic.” Simulations representing future baseline conditions are based

on assessments of the last 5, 10, and 20 years of the available data record. This will be described in the DEIS. See also Response 13.

Comment 61 A modeling of the aquifers should include: existing flows; existing wells and maximum pumpage; maximum projected pumpage for the short and long-term, 5, 10, 15, 20, 25, and 50 years without the City’s usage; and maximum projected pumpage for the short and long-term, 5, 10, 15, 20, 25, and 50 years with the City’s usage. (Graziano)

Response 61 In consideration of comments received, the Final Scope presents that the DEIS will evaluate effects from use of groundwater for 1, 2, 3, 5, and 10 year periods (2018 through 2028), to coincide with the duration of a renewed Water Supply/Water Withdrawal permit.

Comment 62 The groundwater model will extend baseline conditions through 2015, but does not account for reduced recharge during a prolonged drought condition, which will more than likely be the trigger for Queens Groundwater system well activation. The prolonged drought condition will impact Nassau County’s water supply as well thereby exacerbating declining groundwater and streamflow levels, and saltwater interface movement. (Schneider)

Response 62 See Response 34.

Comment 63 The Draft Scope indicates that DEP plans to evaluate the possibility of pumping water from Long Island’s aquifers for 10 years, up to an average of 68 mgd. By comparison, the 15 water suppliers that serve the entire Town of North Hempstead pump an average of 42 mgd. DEP appears to have abandoned the idea of using the Queens wells as a backup supply, and instead appear to be seeking a permanent water resource; and, most concerning, DEP is commencing the process before the completion of the Long Island Groundwater Sustainability Study. (Bosworth)

Response 63 As noted in the Draft Scope, rehabilitating the Queens Groundwater system would improve the resiliency of the City’s overall water supply system by making a portion of the Queens Groundwater system available to address a water supply shortage due drought and planned and/or unplanned infrastructure outages. DEP is not proposing to use the Queens Groundwater system as a permanent element of day to day water supply needs except under the conditions previously noted. The DEIS will describe potential impacts under several pumping scenarios within the current permit limits in order to provide vigorous analysis including the reasonable worst-case scenario.

Comment 64 Since then we've been a victim of Hurricane Irene, we've been a victim of Hurricane Sandy. Because of the extra water, Build it Back, we've applied for and we were told we had it. And somewhere or another we can't get our house raised because of their financial dysfunction. (Moore)

Response 64 Noted. No changes are proposed to the Draft Scope.

Rising Groundwater Levels in Southeast Queens

Comment 65 Several comments were received regarding rising groundwater levels in southeast Queens.

- Southeast Queens continues to battle uprising groundwater seepage flowing into residential areas and homes across the area. The purchase of the Jamaica Water Supply Company by the City, DEP in 1996 resulted in worsening flooding conditions and health hazards due the cessation of pumping and the capping of 69 wells. These actions have caused groundwater table levels to rise at a dangerous pace for decades. (Adams)
- Prior to this interruption, the Jamaica Water Supply Company pumped 60 million gallons of water per day out of the ground for distribution throughout southeastern Queens. This kept the groundwater level low and supplied drinking water to the community. In 2007, DEP acknowledged the fact that the water had risen 35 feet since the wells have been capped and admitted that flooding would be a major problem in our area. (Adams)
- It has been confirmed by the amount of commitment DEP has put into the infrastructure of southeast Queens. When we've been saying nearly two-thirds of the capital budget is being sent here in southeast Queens, that is a big deal, but it is half of a big deal. We want to make sure that we are solving this holistically and entirely so that we don't have to revisit this and now half the community is now suffering. And that is the water tables, right? And that is whether or not the wells are going to be opened and whether or not we're going to be at the mercy of those outside of New York City. (Miller)
- Since they shut the wells down in 1996, and we have homeowners present that can attest to this, the water table has risen approximately 30 feet. Homes are being flooded. Now we want to be good partners with Nassau County. We recognize their problems. And maybe together we can work together and come to a solution. But for legislation to be introduced, for us not to have, DEP not to have the

opportunity to pump water from wells I think is a death sentence to southeast Queens. (Caughman, Beatty)

- After rains, 3 and 4 days later, you see piles of clothing and mattresses, and people have been flooded again. People were paving over those driveways. (Signer)
- The issue of the neighboring water supplies is mentioned, but the issue of the rising water supplies is not. So they're talking about the Nassau County and Suffolk County supply wells, and the Draft Scope of Work seems to be silent on what's happening right here in southeast Queens where the water levels are rising. (Swanston)
- The USGS surveyed this area and they were able to document that the water levels have been going up ever since they stopped pumping. (Swanston)
- Queens Groundwater system comprising of 44 well stations and 68 water supply wells, since being shutdown and all pumping turned offline beginning in 1996, is responsible for the standing groundwater level to rise 35 feet in our community of southeast Queens. This has ruined homes and businesses throughout our district. My hope is that with the rehabilitation and modernizing of our groundwater system it will now be utilized to reduce our community's high water table. (A Scarborough)
- I am one of the residents that have been affected by this rising water. (Moore)

Response 65

On July 21, 2017, Mayor de Blasio announced a new feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens, see Response 14. Groundwater drainage and other flood reduction improvements will be evaluated to determine whether they are feasible to implement to address these issues in a separate project.

Comment 66

Several comments were received regarding temporary pumping at Well Station 24.

- Some relief was gained in August of 2012 when pumping in Station 24 in Jamaica began and many affected residents felt relief from the growth of mold and water damage to their property. Once DEP got the old Jamaica water supply well up and running the organization turned the daily operations over to NYSDEC. But in December 2012, NYSDEC pulled the plug on pumping the water at Station 24. This action sent residents into a backward spiral yet again drying out their homes and businesses at much expense and dismay. The results of

excessive flooding to homeowners, businesses and institutions of learning have been detrimental at a best, catastrophic at worst. (Adams)

- The closing of Station 24 well, which resides in my neighborhood, has resulted in some of my neighbors pumping water out of their basements 24 hours a day, seven days a week. Some neighbors have lost the use of their basement. Their functional basement has been replaced with mold and spores. There are residents who cannot sell their homes because their homes have lost its retail value. In the fall of 2012 your agency, DEP, began pumping water on a test basis from Well Station 24. During the two to three months that the well was being used residents saw a significant reduction in flooding. One neighbor, who in the past was pumping 24-7 in her basement, had begun to see relief. Another neighbor indicated that his basement has been dry, and, as a result, is not utilizing his pumps in the basement thereby reducing his monthly electric bill. So there clearly is a correlation. However, three months later all pumping and the use of Station 24 ceased and the flooding problem persists. In conclusion, I support renewing of DEP's Water Supply Permit with the NYSDEC at the end of this year, 2017. (A Scarborough)
- The correlation between that pump 24 and the water in the residents' basement and homes, there's a direct connection there, but it does seem that water needs to be pumped out to keep it out of people's basement. (Turner)

Response 66

Well Station 24 is not part of the current Proposed Project, as it is not contained within DEP's existing water supply permit. On July 21, 2017, Mayor de Blasio announced a new feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens, see Response 14.

WATER AND SEWER INFRASTRUCTURE

Sewer/Storm Sewer Infrastructure

Comment 67

The City must provide appraisals for the cost of acquiring any locations not presently owned by the entity that would have to acquire them for both new sites and new mains. (Graziano)

Response 67

The Proposed Project involves the renewal of DEP's existing Water Supply/Water Withdrawal permit and the implementation of temporary treatment systems at the existing wells identified in this permit for use in

the event of a water supply shortage within the City's water supply system. The Proposed Project does not include the acquisition of any new locations for implementation of the Proposed Project.

Comment 68

NYC should explore options of re-using their sewage effluent as part of this Scoping document. They are currently mandated by NYS under the Long Island Sound Total Maximum Daily Load (TMDL) limits to significantly reduce nitrogen from their sewage treatment plants discharging into the Sound. They are not meeting this mandate and are under a NYSDEC consent order to do so. NYC should explore the possibility of water reuse options. These options could protect Long Island Sound, provide additional water resources for the City, and protect Nassau and Suffolk County's drinking water supply. (Esposito)

Response 68

Noted. The reuse of sewage effluent is not within the scope of the Proposed Project and will not be evaluated as part of the DEIS.

Comment 69

Several comments were received regarding the sewer system in southeast Queens.

- We have built a lot of sewers in southeast Queens since 1994. A lot of sewers. I think that's helped a lot. And those have been scattered around throughout the community. But that doesn't mean we're far from where we need to be. All the rain that we've had in the last few years and this rain; it has been a rainy spring. (Signer)
- DEP has allocated a billion dollars for sewer construction in southeast Queens over the next decade in an effort to resolve our flooding problems. However, we know and DEP knows that there are two contributors to the terrible flooding that impacts our community. One is the lack of infrastructure, which DEP is addressing with this \$1 billion allocation. (W Scarborough)
- I applaud and acknowledge the \$1.5 billion awarded to our community to deal with improving our infrastructure which will and has provided storm sewers in areas where they are sorely needed. However, finding a solution to groundwater flooding and a high water table is of equal importance. Let me repeat. However, finding a solution to groundwater flooding and a high water table is of equal importance. (A Scarborough)

Response 69

Noted. No changes are proposed to the Draft Scope.

Comment 70

Single family homes being developed into mini-hotels is a concern about the sewage system when people are converting their homes. (Singletary)

Response 70 Noted. No changes are proposed to the Draft Scope.

Water Supply

Comment 71 Whether it is the Water Authority of Great Neck North, Manhasset Lakeville, or Water Authority of Western Nassau, the water systems along the Queens/Nassau border, if one of them wanted to open up a well today, what would they need to do? One single well, let alone tapping into the Lloyd Aquifer, what would they need to do in order to open up a single well? (Martins)

Response 71 No new wells would be installed as part of the Proposed Project. DEP is seeking to renew an existing Water Supply/Water Withdrawal permit that covers 68 existing wells.

Comment 72 The DEIS must provide a discussion and rationale for the NYSDEC to grant renewal of a permit to use any of these wells as drinking water supply wells when there is no evidence that the raw water or even treated water from these wells meets or even can meet applicable standards. If the City is relying on treatment, details must be provided on specific treatment scenarios for each well and the time frame for NYSDEC approval of completed water works. (Ward)

Response 72 Prior to the use of raw water extracted from these wells, DEP will analyze the water quality and will use this information in order to implement all necessary treatment to produce drinking water that meets or exceeds applicable federal, State, and local standards at the time of use. Based upon currently available water quality data, typical treatment options will be discussed in the DEIS.

Comment 73 Several comments were received regarding water supply.

- How will the increased pumping affect the aquifers providing water to the water authorities, districts, and private water companies in Nassau and Suffolk Counties? (Graziano)
- What safety measures will be in place to protect Long Islanders who do not have an “emergency” supply of drinking water? Will there be public input into this process? (Esposito)
- In 2016, New York City, on average, used more than one billion gallons of water per day. Reactivation of the Queens wells at full capacity would account for seven percent of the total average daily usage. New York City is fortunate that it has multiple sources of water from which to draw. Nassau and Suffolk water providers have only

one option. The relatively small percentage of water the Queens wells would produce with respect to the overall usage in New York City is insignificant when you take into consideration the adverse – and potentially catastrophic – impact reactivating these wells could have on Long Island’s sole-source aquifer. The City has other ways to supplement its water demand from other sources – such as the Hudson River, for example, while Long Island water suppliers do not have this luxury. (Granger)

- New York City needs to look for alternative plans if you need water. We’re not sharing our drinking water with you. We, on Long Island, have worked so hard for decades. Right? We’re worked with elected officials. We’ve worked with community leaders; we’re worked with environmental groups. We’ve worked with everyone nonpartisan to protect our aquifer. (Esposito)
- Look for other water sources. We need this water for our sustainability and also for our livability. It is not a luxury item to be given away. It’s an essential need. We have one choice. You have other choices. You need to look at those other choices. It’s not that we’re not willing to share. We can’t share it. We can’t give it up. And frankly, we’re not. So the quicker you look for other sources the better off we’re all going to be. (Esposito)
- NYC withdrawing from the aquifers to alleviate drought conditions will essentially be “robbing Peter to pay Paul.” It is not unlikely that if NYC water reservoirs are low, then Long Island aquifers will also be low. Increasing pumping in Queens may alleviate NYC’s water shortage but will only exacerbate Long Island’s low water table, especially in Nassau County. (Esposito)
- Some indicators are already being identified in areas across Nassau County, pointing toward the very real possibility that parts of Nassau are exceeding their ‘water budgets’. Without the additional stress of NYC withdrawing from the system as well. (Esposito)
- New York City has to look at other options, and also it has to get data on all of those wells in New York City, particularly those on Long Island, to determine what their situation is. We here in Nassau County, particularly in Nassau County, where I’m from, have a place called the Special Groundwater Protection Area. (Budnick)
- The effect of turning on these wells and pumping a maximum of 68 mgd must be thoroughly reviewed, and the decision must be based on sound science. Not enough research has been done to accurately

measure the impact of withdrawing this much additional water will have on Long Island's aquifer system. (Carey)

- Response 73** The City is seeking to renew its existing Water Supply/Water Withdrawal permit for the Queens wells in the event these resources are needed on a temporary basis to address a water supply shortage due to drought emergency or planned and/or unplanned outage. The DEIS will assess potential impacts to groundwater quantity and quality, and how it may affect the operations of neighboring water suppliers. The City's upstate surface water system will continue to be the primary supply for the City. No changes are proposed to the Draft Scope.
- Comment 74** We suggest that DEP add an additional scenario into their modeling as part of the DEIS on their view of dewatering solutions for South Queens. They have identified various scenarios they will be running their model to investigate. They should add one on dewatering. (WNCAC-A)
- Response 74** See Response 14.
- Comment 75** If new wells or treatment facilities will have to be constructed, will new mains be required? If yes, where will the mains be located? What will be the cost of acquiring the property or easements within property where the mains are to be located? What will be the construction costs of those mains? How will the construction of those mains affect traffic? What will be the short-term and long-term adverse environmental impacts from the construction of those mains? (Graziano)
- Response 75** The Proposed Project involves the renewal of DEP's existing Water Supply/Water Withdrawal permit and the implementation of temporary treatment systems at the existing wells identified in this permit for use in the event of a water supply shortage within the City's water supply system. No new wells would be installed as part of the Proposed Project. Ongoing and planned upgrades for the existing distribution system in Queens as part of the City's continuous maintenance program will meet any future needs of the well stations. These ongoing and planned upgrades are independent of the Proposed Project, and subject to an independent environmental review. It is not anticipated that the Proposed Project will result in the need for acquisition of any new locations for implementation of the Proposed Project or the needs for new distribution infrastructure.
- Comment 76** Will the level of the groundwater in the Lloyd & Magothy change? If it will change: will that change impact existing wells? If it will, in what manner, i.e., as to location and depth from which the water may be taken?

What will be the cost to the water authorities, districts, and private water companies in Nassau and Suffolk Counties if they have to relocate or change the depth of their wells? If the wells will have to be relocated, is there an opportunity to relocate them and if so: where can they be located? What will be cost of acquiring the site? What are the environmental impacts of constructing and maintaining the wells at that site? Will the NYSDEC grant a permit for anew well at that site? (Graziano)

Response 76 Potential impacts to the groundwater will be analyzed and discussed in the DEIS. This will include an assessment of potential changes in ground water levels that may affect the operations of neighboring water suppliers. It is not anticipated that the use of the Queens wells will result in the need for other water suppliers to acquire new well sites.

Comment 77 Nassau and Suffolk Counties experience high pumpage rates in the summer months due to irrigation. The Scoping document does not address seasonal impacts. There are several Nassau communities that practice odd/even watering days to reduce peak demand. The Long Island Commission on Aquifer Protection is exploring the idea of irrigation audits and Nassau County has considered requiring rain sensors on irrigation systems. How will the additional pumping of 62 to 68 mgd in summer months strain the water supplies for Nassau residents? NYC must account for the high usage in the summer and not base their modeling efforts on a yearlong average. (Esposito)

Response 77 The New York City Groundwater Model that will be used to evaluate impacts to the ground and surface waters is calibrated with 110 years of data (1905 through 2015). Such a long calibration period has resulted in a model that can simulate future conditions with a high degree of confidence. Historical seasonal variations in pumping from the aquifers are represented in the model. Also, see Response 34.

Comment 78 What is the rush to get these wells back online at this moment in time? If it's true that the reactivation of these wells is to supply residents of New York City with water in emergency situations, wouldn't it be most responsible to learn the impacts of those who rely on this water each and every day? It's hard to conceive of a situation in which allowing the reactivation of these wells now, without collecting the data and doing the needed comprehensive study of its impact, is more important than ensuring the protection of a single water source for millions of Long Islanders. Let's take our time to collect the data needed to make the right decision and let's avoid being put in a predicament where a resiliency plan

for an emergency situation leads to an actual emergency situation.
(Granger)

Response 78 The existing Water Supply/Water Withdrawal permit for the Queens Groundwater wells will expire at the end of 2017. It is in the best interest of the DEP to renew this permit to maintain the water withdrawal rights for these wells and to have these wells available to address water supply shortage(s). As noted in the Final Scope, rehabilitating the Queens Groundwater system would improve the resiliency of the City's overall water supply system by making the groundwater system available during a water supply shortage due to droughts and planned and/or unplanned outages. No changes are proposed to the Draft Scope.

Comment 79 NYS passed a moratorium on drilling new wells into the Lloyd Aquifer in 1989. This moratorium protects Nassau and Suffolk County's last potable source of water for future generations. In fact, recently NYSDEC denied Suffolk County Water Authority's (SCWA) request to drill one new well into the Lloyd in Northport to replace wells that are very high in nitrate contamination. It seems contradictory to rely on the legislative mandate of a moratorium to deny SCWA, who was requesting to drill a well to supply Suffolk residents with clean water, while the NYSDEC would grant NYC a permit to reactivate four wells in the Lloyd to use for NYC for an undefined scenario. (Esposito)

Response 79 No new wells, tapped from the Lloyd Aquifer or any other aquifer, would be installed as part of the Proposed Project. No changes are proposed to the Draft Scope.

Comment 80 Conduct a full comprehensive study by all three levels of government to develop a plan to protect the Lloyd Aquifer while also mitigating groundwater flooding in our community. Without this comprehensive study, we cannot know the effects of possible solutions like diverting groundwater and reactivating the stations will have on the Lloyd Aquifer, and the fears of our neighbors in Long Island will not be addressed. (Abbady, Comrie)

Response 80 See Response 12 and Response 14.

Comment 81 Recent corroborative studies show that NYC's surficial water systems are well protected and sustainable. If the issue is delivery to outlying boroughs that is not a reason to threaten sole-source aquifers. (CAWS)

Response 81 The DEP seeks to maintain the Queens Groundwater system as a means to supplement upstate surface water supplies in the event of a water supply

shortage due to an emergency, drought, or planned and/or unplanned outages. While the upstate surface water system may be well protected and sustainable today, planned and unplanned events may justify the need to temporarily supplement the City's water supply with the Queens Groundwater system. No changes are proposed to the Draft Scope.

Comment 82 Please insist that the NYSDEC finally develop a plan to allow the groundwater be pumped into the sewer system. (Abbady, Comrie)

Response 82 See Response 14.

Comment 83 Several comments were received regarding Long Island's primary water supply.

- If DEP is going to pump water out of our aquifer, they need to be cognizant of the effect that it will have on Long Island residents and our drinking water. The residents and businesses on Long Island depend on the water from the aquifers, it is our main source of drinking water, and we are very determined to preserve the quality and quantity of our water. (D'Urso)
- We understand the need to make water systems resilient and put safeguards in place for emergency situations. However, we cannot support a resiliency plan that has the potential to negatively impact the water source for Long Islanders without the proper science and modeling to support it. (Carey)

Response 83 See Response 76. No changes are proposed to the Draft Scope. DEP is open to discussions with other water suppliers for the option to connect to the New York City water supply system as a water source.

Comment 84 With nothing being more important than ensuring Long Island's water supply is safe, clean and sustainable, the residents served by the water providers joined here today are owed the guarantee of due diligence to this very important matter. These wells have been inactive for more than two decades. Before allowing these wells to go on line for the sake of expediency, let's first ensure we fully understand the implications it will have on Long Island's sole-source aquifer and the millions of people who depend on it. (Carey)

Response 84 See Response 39, Response 41, and Response 76. No changes are proposed to the Draft Scope.

Comment 85 How will the increased pumping affect the New York City wells? The answer to that question should include, but not be limited to: what new or additional treatment will be required at each site to treat the water from the aquifers? What will be the cost of that additional treatment (Construction cost and annual maintenance, power, and chemicals?); is there sufficient space at each such site for the additional treatment? If not, where can such treatment be located? What will be cost of acquiring the site? What are the environmental impacts of constructing and maintaining the treatment facilities at that site? (Graziano)

Response 85 Potential impacts to groundwater within Queens and Nassau and western Suffolk counties due to the Proposed Project will be analyzed and discussed in the DEIS. This will include an assessment of potential changes in groundwater levels as well as potential impacts to quality. The Final Scope has also been amended to include the evaluation of only temporary treatment facilities. Prior to the use of raw water extracted from these wells, DEP will analyze current water quality and will use this information in order to implement necessary treatment to produce drinking water that meets or exceeds applicable federal, State, and local standards at the time of use. Based upon currently available water quality data, typical treatment options will be discussed in the DEIS. The Proposed Project involves the renewal of an existing Water Supply/Water Withdrawal permit which covers 44 existing well stations and a total of 68 wells. No new sites would be acquired as part of the Proposed Project. In addition, it is currently anticipated that any temporary treatment required for the operation of these wells would be accommodated within the limits of the existing well station sites.

Comment 86 I know from over the years that there's more work to be done than just simply pumping. Someone mentioned about quality, quality control. That needs to be addressed too. Because way back, there's a lot of history on here on these wells, you know. Before 1996, before then with the whole Jamaica water and the City acquiring these wells, some of these the wells quality-wise, there was no good. So a lot of them have been capped. (Beatty)

Response 86 Prior to the use of raw water extracted from these wells, DEP will analyze current water quality and will use this information in order to implement all necessary treatment to produce drinking water that meets or exceeds applicable federal, State, and local standards at the time of use. Based upon currently available water quality data, typical treatment options will be discussed in the DEIS. It is noted that none of the 68 wells that are part

of the Proposed Project and current Water Supply/Water Withdrawal permit have been capped or decommissioned.

Comment 87 If aquifers below the wells are covered a great deal and we are still using the same sewer system, wastewater system, so when these wells are started to pump water, the waste to these sewer lines, and with a lot of buildings we even have more runoff. When we have more buildings, the ground is concreted. So when we have rain, all that extra water, it goes into these sewer lines, these waste lines that go out in Jamaica Bay or where ever. (Beatty)

Response 87 See Response 14.

Comment 88 Queens is a place where people who grew up on groundwater, a place where the groundwater is still considered for use into the future, a legacy for the future that didn't get polluted like it did in all the other, there were lots of other drinking water wells back before the turn of the century, in New York City. They were even drinking from Brooklyn, from groundwater wells. But all that ended because of pollutants. We were the last ones. And I believe that the groundwater wells in Jamaica can be restored and made available for subsequent generations so your children can move here where the taxes are low and they can drink water that comes locally. (Swanston)

Response 88 Noted. No changes are proposed to the Draft Scope.

Comment 89 Water is worth money. It's valuable. People that moved out on Long Island and know they can't afford to live there because the taxes are so high, because they don't have infrastructure. When they moved out they had to build the infrastructure. And now our taxes are low. My mother's taxes are still around \$4,000 a year because the infrastructure is there. So why move away when we can invest in our own community. (Swanston)

Response 89 Noted. No changes are proposed to the Draft Scope.

Comment 90 So things like these charts that are over here with a lot of information, but they were not mentioned at all. One of them in particular, the demand comparison charts which seems to show that the water demand in Queens has dropped, yet the population has increased. And I had a question about that because you would think that as the population increases that the water consumption would increase as well, but that doesn't look like that's what it shows, so I had a question about that. But I can't get that question answered. But I still want to put that out there because it's a question. (Turner)

- Response 90** DEP has a robust demand management program for the conservation of water usage in the City. The City’s Demand Management Plan² includes five strategies aimed at reducing City water consumption. These strategies include: a municipal water efficiency program; residential water efficiency; non-residential water efficiency program; water distribution system optimization; and a water supply shortage management strategy. Successful water conservation measures and the installation of individual water meters have resulted in an ongoing decrease trend in water demand for many years despite an increase in population.
- Comment 91** This is talking about certain New York City wells in the southeast section of Queens County. Well, why aren’t we looking at the rest of Queens County, Brooklyn, Manhattan, the Bronx and other places? (Budnick)
- Response 91** DEP is seeking to renew an existing permit for use of specific wells in the southeast portion of Queens. The DEIS will be evaluating the effects associated with use of these specific wells.
- Comment 92** New York City used to take water from Long Island reservoirs through that big aqueduct under Sunrise Highway and use it for New York City until it became polluted. (Blum)
- Response 92** Noted. No changes are proposed to the Draft Scope.
- Comment 93** Give people practical applications. Create that within the City. If Queens County is only 7 percent for their overall water usage that means that everybody else in New York City is wasting a lot of water for using billions a year. So maybe we try to look and educate the public, and then you’ll have all the water you need. (Weiss)
- Response 93** To clarify, the Queens wells are capable of meeting 7 percent of the total average daily water demand of the City. Also, see Response 108.
- Comment 94** Several comments were received regarding wells located in the Lloyd Aquifer.
- So we oppose any efforts to tap into our sole source of water, especially the Lloyd Aquifer. The four Lloyd wells are taken off the table. (Povall)

² The Demand Management Plan is available here:
http://www.nyc.gov/html/dep/html/ways_to_save_water/index.shtml

- Eliminate reactivation of the Lloyd Aquifer wells from this plan. (Martins, Schnirman, Palleschi)
- Of the 68 wells which comprise the Queens Groundwater system, 4 are screened in the Lloyd Aquifer. Due to the lack of current reliable information of the sustainability of this aquifer and the reliance of Nassau County's barrier beach communities on this aquifer for public water supply, we request that these 4 wells be permanently removed from consideration for renewal. (Schneider)
- The DEIS must provide an express and specific analysis of the impact of the use of the Lloyd Queens wells on the Lloyd Aquifer, which is the sole source of water supply for the City of Long Beach. (Ward)
- USGS reports suggest that portions of the Lloyd Aquifer may be experiencing active saltwater intrusion in Queens and Nassau County. CCE is extremely concerned that the existing four wells in the Lloyd Aquifer could exacerbate saltwater intrusion. These wells have not been operational and should be treated as new wells. An emergency plan should not rely on wells drilled into the Lloyd Aquifer. NYSDEC needs to simply refuse these 4 wells as part of the application. (Esposito)
- Lloyd Aquifer is threatened. USGS reports suggest that portions of the Lloyd Aquifer may be experiencing active saltwater intrusion in Queens and Nassau County. There are four Lloyd wells within the Queens Groundwater system that may aggravate this problem. The NYC Groundwater Model will not be able to confirm or refute this risk. (WNCAC-2)
- If we lose or salinate the Lloyd Aquifer, that is our only drinking source in the Barrier Island. And I stand here today representing 37,000 people that live on the Barrier Island. We have no other water source but the Lloyd Aquifer. Once that goes, once that's contaminated, we would all have to leave the Barrier Island. (Torres)
- The NYSDEC established a moratorium on the drilling of new wells in the Lloyd. The purpose was to save the Lloyd for coastal communities with either no access to the Magothy or in areas where the Magothy is contaminated. The moratorium prohibits any non-coastal community from drilling unless they can demonstrate extreme hardship. It is critical for the moratorium and, in this case, its spirit to be upheld. Relief for New York City during hardship does not justify the dangers of reopening these wells, especially the four wells that would impact the Lloyd Aquifer. (Schnirman)

- What level of pumping from the Lloyd Aquifers is proposed for each of these scenarios? Due to the importance of the Lloyd resource, this should be further defined. (Watts)

Response 94

No new wells, tapped from the Lloyd Aquifer or any other aquifer, would be installed as part of the Proposed Project. The Proposed Project would involve the renewal of DEP's existing Water Supply/Water Withdrawal permit and the temporary use of these wells during periods of water shortage such as droughts and planned and/or unplanned infrastructure outages. The current permit includes several wells that were previously established within the Lloyd Aquifer. The effects of pumping the Queens wells upon the aquifers in Queens and Nassau Counties will be evaluated and presented in the DEIS, see Response 76.

Comment 95

Several comments were received regarding sole-source aquifers.

- Long Beach City Council and our residents urge DEP and NYSDEC to support the protection of these aquifers. (Schnirman)
- The DEIS must discuss and evaluate the contemplated use of these wells while assuring an available safe yield/sustainable water supply in the Nassau-Suffolk Sole-Source Aquifer. (Ward)
- The DEIS must provide an analysis and evaluation that the use of these wells will be just and equitable when considering the health and welfare of other municipalities, such as Nassau and Suffolk County's sole-source aquifer. (Ward)
- Identifying potential impacts and alternatives is the chief focus of the Draft Scope; however the Nassau County Water Resources Board is concerned that the project as described will cause a significant negative effect on the potable water supply of Nassau County. (Palleschi)
- DEP's intention to renew permits required to reopen dormant groundwater wells in southeastern Queens could put the health and safety of more than 3 million Long Islanders at stake. It has been more than a decade since these wells have been active, and putting them back into action could pose negative impacts to our aquifers in the Town of Hempstead, and throughout Nassau and Suffolk Counties. (Santino)
- Notably the Draft Scope fails to mention Nassau and Suffolk Counties complete reliance on their sole-source aquifer, which is one system, and therefore it would be an impossibility to study only a portion of Nassau or a portion of Suffolk. (Ward)

- We all support New York City’s right to invest in its infrastructure and to provide clean drinking water to its residents. But we must all be cognizant that Long Island has much more to lose in the event that DEP’s operations impact our sole source of drinking water and the operations of our water suppliers. (Bosworth)
- I am here today to speak on behalf of the 30,000 customers we serve that could be negatively impacted by reactivating the Queens wells. I am also here as a protector of our most precious natural resource, and to insist that the wells in question are NOT activated until we know more about the impacts such a decision will have on Long Island's sole-source aquifer. (Granger)
- CCE has worked for over 30 years to protect these irreplaceable aquifers, preserving open space, crafting and supporting proactive policies banning new wells into the Lloyd, fighting to cleanup toxic plumes and banning water contaminants such as MTBE. Nassau County residents have voted twice to pass environmental bond acts totaling \$150 million in order to preserve land that will recharge groundwater supplies. The goal is simple: protect our drinking water quality and quantity now and for future generations. There is no “Plan B” for a Long Island water source. NYC’s ill-conceived plan to reopen 68 wells to pump 62 to 68 million gallons of water a day in times of “emergency” will severely put Nassau and Suffolk’s water at risk. We refuse to be NYC’s Plan B. We are calling up on NYSDEC to deny NYC’s application to reopen these wells and for NYC to abandon their ill-conceived plan. (Esposito)
- Our community is here in Nassau County, because there is no plan B here. We don’t have the opportunity to tap into an aqueduct or a watershed, or a surface watershed in upstate New York. That’s not who we are. Is that too much to ask? (Martins)
- These long idle wells draw water from underground aquifers that are the sole source of water for Nassau and Suffolk Counties. (Multiple Emails)
- Nassau County is extremely concerned about the significant adverse impact the use of the subject Queens wells will have on the Nassau-Suffolk sole-source aquifer, our only drinking water supply. Put succinctly the Draft Scope as presented is inadequate, vague and deficient in the manner in which this impact is contemplated to be addressed in the DEIS. Given the fact that the City is over a year and a half past the schedule it set for itself to present the Draft Scope, it is

inexplicable for the City to allow such an abbreviated period for public comment. (Ward)

- I'm going to ask the NYSDEC to be more aggressive and protecting in meeting its responsibilities to protect the sole-source aquifer and Lloyd because New York State has a role in this and frankly DEP responds to the NYSDEC. But together we stopped this before, we'll stop it again. Thank you. (Martins)
- There is no plan B because you can't tell someone sorry, we contaminated your aquifers because at that point there will be nothing we can do. (DeRiggi-Whitton)
- We remind you that Long Island does not have an alternative freshwater source other than our aquifers. Experts with the USGS have indicated that saltwater intrusion is moving further into the South and North shore lines that have been previously predicted. This makes a potential loss of access to freshwater from the Lloyd and other aquifers even more critical. (Schnirman)
- There have been no studies in Queens and Kings counties on the aquifers for decades. So I just want to make that note. (CAWS)
- We pay a higher rate of sales tax in Suffolk to preserve land to protect the aquifer. And we didn't do that so that New York City can come and steal it in the middle of the night like a thief. We're not sharing it. Sorry. (Esposito)

Response 95

No new wells, tapped from the Lloyd Aquifer or any other aquifer, would be installed as part of the Proposed Project. The effects of pumping the Queens wells to the groundwater aquifers in Queens and Nassau Counties will be evaluated and presented in the DEIS, see Response 76.

ENERGY

Comment 96

The Scoping document discusses the plan to provide temporary treatment and temporary backup power as one of the considerations of the DEIS. It should be noted that water suppliers on Long Island are generally required to install permanent backup for their well systems. After Hurricane Sandy, it was discovered that having limited reserves (1 to 2 day reserves) for such items as diesel fuel for backup generators was insufficient. The prolonged power outages caused as inability to obtain additional fuel from fuel suppliers. As an emergency water supply, a broader look at what emergencies are being planned for is needed in the DEIS. This should include the chemicals needed for treatment and the power to operate the treatment technology as well as power to operate the wells. (Meyland)

Response 96 The Final Scope has been amended to include the evaluation of only temporary facilities, which would be served by temporary emergency generators, if necessary. Fuel, chemicals, and equipment would be stored in compliance with applicable regulations at the well station(s) or other DEP facilities. An analysis of the potential impact of thus temporary treatment will be conducted and presented in the DEIS.

Comment 97 In northern Queens and other places they're using water for heating and cooling. Geothermal it's called. Why use fossil fuels that we have to stop when we can use water. So geothermal is an alternative. And since we are sitting on water that has to be used or disposed of anyway, it's worth the study to see if we can use this water for heating and cooling our home instead of just sending it out to Jamaica Bay where it can never be used again without using it. (Swanston)

Response 97 An assessment of the use of the Queens Groundwater system as a geothermal resource is beyond the scope of the Proposed Project. The Proposed Project would involve the renewal of DEP's existing Water Supply/Water Withdrawal permit and the potential temporary use of this system to supplement the City's water supply system during a water shortage due to drought or planned and/or unplanned infrastructure outages. Geothermal heating and cooling are not an element of the Proposed Project, and will not be assessed.

AIR QUALITY

Comment 98 The treatment programs for the pollution in the water will cause an air quality. Air-stripping causes an air quality problem. (Swantson)

Response 98 An analysis of any potential impacts on air quality due to any processes involved in the typical temporary treatment facilities that may be required at individual well stations will be conducted and presented in the DEIS.

TRANSPORTATION

Comment 99 Traffic studies of the impact from all new construction. (Graziano)

Response 99 As noted in the Final Scope, an analysis of the potential impacts associated with the Proposed Project will be presented in the DEIS.

PUBLIC HEALTH

Comment 100 Several comments were received regarding public health concerns due to persistent flooding in southeast Queens.

- Mold mitigation that comes with flooded basements. (Miller)
- So we need to know what will be immediate. What are the hazard conditions, and the contaminations that are affecting this community? There is nothing in that proposal that mentions any of that. What specific information do you have available to provide to the community? When you have mold and mildew, flooding, that also provides a lot of health conditions. (Roberts)
- I know when we had an advisory committee 10, 15 years ago people were discussing different types of cancers due to this water in the community. So please provide us some details. (Roberts)
- I have concerns about the health of the people who've been exposed 20-30 years to the toxins and were given a 24-7 pump. And I have concerns of who's going to pay for the illnesses and the diseases that will occur. I have concerns because of the cost to your health. And when insurance will have to be paid, and who will have it, who will pay it, how will the City pay it. (Singletary)
- You can't live in mold. You can't live in filth. (Moore)
- People have been grossly impacted by mold, mildew. (Turner)

Response 100 On July 21, 2017, the de Blasio administration announced a new feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens. See Response 14.

Comment 101 Our communities have changed. The conditions affecting those wells have changed and we deserve to know that in 2017 they had the opportunity to actually review the impacts today, not 20 or 30 years ago, today, to make sure that we're safe. And that's all we're asking. (Martins)

Response 101 Noted. Impacts related to public health are not anticipated. If unmitigated impacts are noted that have an impact on public health, DEP will evaluate potential impacts and present the results of this in the DEIS.

ENVIRONMENTAL JUSTICE

Comment 102 1.7.3.21 Chapter 2.20: Environmental Justice: DEP should consider adding a step for enhanced public participation or additional public outreach in any identified Environmental Justice (EJ) communities. Doing

this now may possibly satisfy the requirements of CP-29 for any future State Pollutant Discharge Elimination System (SPDES) permit modifications, depending on timing. (Watts)

Response 102

The Proposed Project would involve the renewal of an existing Water Supply/Water Withdrawal Permit with no changes. Under CP-29, Section V.A, a formal EJ process is not required for this permit renewal. To address one of the primary concerns of the EJ communities, a new feasibility study for a groundwater drainage project aimed to address basement flooding in southeast Queens will be undertaken (see Response 14). Separate from public outreach being conducted by the In-City Water Supply Resiliency project, this study will provide additional opportunities for public outreach to the EJ communities, as well.

Public outreach related to the Proposed Project has, however, been conducted for the In-City Water Supply Resiliency project. In addition, two public scoping meetings were held in Nassau County and Queens to solicit oral and written comment on the Proposed Project and its Draft Scope. Public hearings will be held to solicit oral and written comments on the DEIS, at a time in the future when the DEIS published, as required.

Comment 103

The City passed an environmental justice law. And in the analysis, they talk about how they are going to look at the NYSDEC guidance on environmental justice for their analysis. Well, we have already mapped environmental justice communities at the City level. The Department of Health has already done it. They know where they are and they know it's going to impact this community, and they know this community isn't in an environmental justice community. This community is better than 80 percent African-American? (Swanston)

Response 103

In April 2017, Mayor de Blasio signed the Environmental Justice Act (Bills 886 and 359), which initiated a study of EJ areas, the establishment of an EJ portal, and the development of a City-wide EJ Plan. Mapped EJ communities are present within the Proposed Project area. As described in the Final Scope, DEP is no longer evaluating construction impacts based on permanent facilities, but will assess a generic project for temporary treatment facilities for use during water supply shortages due to drought and planned and/or unplanned infrastructure outages. An Environmental Justice assessment of the potential for the Proposed Project to disproportionately affect minority or low-income populations will be included in the DEIS.

CONSERVATION

Comment 104

Several comments were received regarding water conservation.

- Knowing that our water wells are located in closer proximity to the saltwater interface due to our geographical location, we take water conservation very seriously. We started our conservation efforts a year prior to a mandate from NYSDEC, which requires all Suffolk and Nassau water purveyors to reduce peak water consumption by 15 percent as they suggest Long Island is collectively surpassing permissible yields by 15 percent. Pumping 68 million more gallons of water from the aquifer each day, specifically in drought scenarios, works against the goal of this mandate and gives the perception that our current conservation efforts are hypocritical and not necessary. (Carey, Granger)
- A comprehensive water efficiency and water conservation plan should be established for NYC residents that would be implemented prior to using the Queens wells. This plan should be the first step in the event of an “emergency” or drought scenario. The Draft does not mention any effort or intent to create and implement this critical water use component. (Esposito)
- Lastly, irrespective of whether New York City is granted its permit renewals or not, drinking water conservation and more stringent pumping limitations all around is sorely needed both on Long Island and off the island as well. (Ottavino)
- I mentioned implementing a Falcon waterless toilet. It’s used around the world. It could be used in Madison Square Garden, the Barclay Center, Belmont, the racetracks, the resorts. It can be saving millions and millions of gallons. (Cramer)
- 25 percent of Barcelona’s watering of parks has been reduced because they use an iPad. Central Park. Prospect Park, every park in the City, saving water. We can get the Port Authority, that every time they wash a plane they reuse the water, because that’s a tremendous millions of gallons of water used every time you fly. (Cramer)
- So when I hear that DEP is here, I’m thinking they’re going to come up with a plan for conservation. I’m hopeful. And I’m now scared out of my life because I’m trying – I have a family and this has nothing to do with conservation. (Naham)

Response 104 DEP has a robust demand management program for the conservation of water usage in the City and overall water demand has steadily declined since the early 1990s. See Response 90.

Comment 105 The public needs to be educated more and more about water conservation. It's already been stated; in Long Island here we're already using too much water. I look at the golf courses. I think that's one of the huge areas of freshwater that's being wasted. And maybe we can find a way to gray water that and utilize that. Let's take it, let's refine it, let's filter it, let's pump it onto the golf courses. In Nassau County alone I think the number is 30 million gallons alone that they use in golf courses, and maybe we can change that. (Weiss)

Response 105 DEP has no jurisdiction over the water usage outside the City of New York and has and continues to implement a Water Demand Management program in the City, see Response 90.

ALTERNATIVES

Comment 106 The No Action alternative, meaning the wells are not turned on is defined as the "no build" option. The DEIS describes the "no build" possibility as the baseline for all other comparisons. The baseline "no build" scenario will need to be sufficiently described so that this option can be reasonably evaluated for its accuracy and thoroughness. (Meyland)

Response 106 The DEIS will describe the no build or future without the Proposed Project in accordance with SEQRA and the *CEQR Technical Manual* requirements. The no build provides the future baseline condition upon which the potential for environmental impacts due to the Proposed Project (i.e., the future build condition or future with the Proposed Project) is compared. The No Action alternative presents the potential impacts or changes that would occur if the Proposed Project were not advanced as anticipated.

Comment 107 The Alternatives section must not only address the conservation option, but each of the "Scenarios" presented in Section i.6 of the Draft Scope should be assessed as separate alternatives. (Ward)

Response 107 The Final Scope has been modified to include "No Action" as the only alternative. As noted in Response 90, the City has a robust water conservation program. However, conservation alone is not relevant to the proposed need for the use of the Queens Groundwater system, and therefore is not discussed as a project alternative. The scenarios presented

in the Final Scope represent a range of potential operational programs that will be modeled, within the limits of the existing permit (i.e., 62 or 68 mgd) and as part of the assessment of potential impacts under differing operating conditions due to the Proposed Project. These scenarios have not been proposed as separate alternatives to the Proposed Project.

Comment 108

The DEIS must discuss, as an alternative, further conservation of water use measures the City could implement in the distribution system, rather than having to reopen/rehabilitate these wells. As an example, recent media reports reveal that the City uses water from the water supply system to maintain and supplement flow of certain surface water features in City parks. (Ward)

Response 108

DEP has a robust demand management program for the conservation of water usage in the City (see Response 90 and Response 104) that has been ongoing since the 1990s and has successfully reduced water use over this period. The implementation of additional water demand measures would not be sufficient to offset the benefit that the City would derive from the ability to access the Queens Groundwater system during water shortages such as droughts and planned and/or unplanned infrastructure outages. No changes are proposed to the Draft Scope.

Comment 109

Several comments were received regarding alternative water supplies.

- The Scope should evaluate other potential water sources, including the Hudson River. In fact, there is a reasonable expectation that the Hudson River is less contaminated than the Upper Glacial and the Magothy Aquifers and, therefore, would be more cost-effective as a long-term drinking water supply option. (Esposito)
- New York City needs to evaluate and determine what the other optionality, including other sources that New York City has inside the City of New York. (Budnick)

Response 109

Other potential water sources will not be evaluated as part of the DEIS. DEP currently has an existing Water Supply/Water Withdrawal permit that it intends to renew in order to have this asset available for use on a temporary basis during water supply shortages. It would represent one of several alternative sources of water that would be available to the City water supply shortages due to drought or planned and/or unplanned infrastructure outage of the City's primary upstate water supply or its distribution system. No changes are proposed to the Draft Scope.

Comment 110 One additional option needs to be considered by New York City and that is the creation of an 800-foot deep slurry wall along the Nassau County Queens border, from Great Neck to the Five Towns, to Atlantic Beach. It must be evaluated as an option in the DEIS. (Budnick)

Response 110 A slurry wall will not be evaluated as part of the DEIS. Implementation of a program of this scale would be cost prohibitive and would represent a significant challenge in accessing locations within this area to allow for the construction of this slurry wall. In addition, implementation of this slurry wall would also serve as a permanent barrier that would prevent access by communities east of the Queens border to those portions of the various aquifers that exist beneath Kings and Queens counties, but are currently connected to Nassau and Suffolk counties.