

A. INTRODUCTION**PURPOSE OF ALTERNATIVES ANALYSIS**

As described in Chapter 1, “Project Description,” the purpose of the proposed action is to upgrade the Hunts Point WPCP to improve the solids handling facilities and to provide additional nitrogen removal.

State Environmental Quality Review (SEQR) regulations require that alternatives to the proposed action be identified and evaluated as part of the Environmental Impact Statement (EIS) process. New York’s City Environmental Quality Review (CEQR) procedures, established pursuant to SEQR, therefore also require that EISs include a discussion of alternatives to the proposed action and the comparable impacts and effects of such alternatives. According to CEQR, EISs must include a description and evaluation of the range of reasonable alternatives that are feasible, considering the objectives and capabilities of the project sponsor. The alternatives analysis should present reasonable options for reducing or eliminating project impacts, while substantively meeting project goals and objectives; demonstrating a reasonable range of options to the proposed action; and comparing potential impacts under alternative approaches for meeting project objectives. The range of alternatives to be considered is determined by the nature, goals, and objectives of the specific action and its potential impacts, as disclosed by the technical impact assessments (see Chapters 2 through 23).

Since the alternatives analysis compares each alternative’s impacts to those of the proposed action, the level of detail in the analysis depends on the alternative and the project’s impacts. When limited impacts of the proposed action (and four-digester scenario) are disclosed, a qualitative assessment is appropriate. Where a significant impact of the proposed action has been identified, or where the alternative may disclose a significant impact in an area where the proposed action had none, it is appropriate to provide additional detail on impacts under the alternative. As discussed throughout the EIS, neither the proposed action nor the four-digester scenario would result in potential significant adverse impacts in any environmental category except for a potential significant adverse traffic impact at one location during the construction period for the proposed action and a potential significant adverse visual impact. The potential construction-period traffic impact could be mitigated with signal timing adjustments (see Chapter 21, “Mitigation”). The potential visual impact could not be mitigated and is unavoidable (see Chapter 22, “Unavoidable Significant Adverse Impacts”).

ALTERNATIVES TO BE ANALYZED

This chapter considers several alternatives to the proposed action:

- The No Action Alternative. The No Action Alternative presents environmental conditions that would exist if the proposed action were not implemented. The assessment of the No Action Alternative is required for all EISs.
- Site Plan Alternatives. The Site Plan Alternatives consist of two separate alternatives in which the egg-shaped digesters proposed under the proposed action and four-digester scenario are constructed on the western boundary of the plant site (Scenario 1) or within the area of the existing conventional digesters (Scenario 2).
- Technological Alternatives. The Technological Alternatives include the following: the construction of conventional digesters; digester mixing alternatives; and sludge heating alternatives.
- Carbon Addition Alternative. The Carbon Addition Alternative provides a discussion of two alternative chemicals that could be used in the carbon addition facility.

SUMMARY COMPARISON OF ALTERNATIVES

A summary table comparing the alternatives with respect to potential significant or temporary adverse impacts is provided in Table 24-1. In addition, issues that may not be significant or temporary adverse impacts but would be notable for a particular alternative are also identified. The “—” in an analysis area in the table indicates that there would be no potential significant or temporary adverse impact and that there is no notable issue warranting further discussion.

B. NO ACTION ALTERNATIVE

INTRODUCTION

The No Action Alternative is described in the EIS analyses as the future without the proposed action. It is used as a basis for comparison with the environmental conditions under the proposed action, and conservatively assumes that the proposed action does not move forward. Under the No Action Alternative, the Hunts Point WPCP would operate as upgraded under the Phase I and II Upgrades, which addressed the plant’s wet weather capacity and nitrogen removal capacity, respectively. The No Action Alternative would not address the solids handling facilities that are at or nearing the end of their useful life. Without changes to the WPCP’s existing digesters, they would reach the end of their useful life. Therefore, the No Action Alternative is not feasible. In addition, the No Action Alternative would not provide enhanced nitrogen removal to meet 2006 Consent Judgment requirements.

The purpose of the Phase I Upgrade is to increase the plant’s capacity to treat wet weather flows (i.e., 400 million gallons per day [mgd]). The Phase I Upgrade, which also included elements to bring the plant into compliance with the plant’s State Pollutant Discharge Elimination System (SPDES) permit, addressed these requirements and included installation of facilities to improve the overall wastewater treatment process reliability and operation. The Phase II Upgrade consists of Full Step Feed Biological Nutrient Reduction (BNR) facilities.

The No Action Alternative would not meet the goal of providing improved solids facilities and enhanced nitrogen removal as would the proposed action. At the same time, none of the changes expected as a result of the proposed action would occur, as described below.

Table 24-1
Most Notable Significant or Temporary Adverse Impacts

Issue	Proposed Action	No Action Alternative	Site Plan Alternative		Technological Alternatives		Carbon Addition Alternative
			Scenario 1	Scenario 2	Conventional Digester Alternative	Digester Mixing and Sludge Heating Alternatives	
Land Use, Zoning, Neighborhood Character, Open Space	—	—	—	—	Requires construction on 1.2 acre staging area which NYCDEP has committed to transfer to NYCDPR	—	—
Socioeconomic Conditions	—	—	—	—	—	—	—
Visual Character/Shadows	Significant visual impact-east view from Barretto Point Park	—	Significant visual impact-southeast view from Barretto Point Park	—	Significant visual impact-east and southeast view from Barretto Point Park —	—	—
Historic Resources	—	—	—	—	—	—	—
Waterfront Revitalization	—	—	—	—	—	—	—
Transportation	—	—	—	—	—	—	—
Criteria Air Pollutants	—	—	—	—	—	—	—
Non-criteria Air Pollutants	—	—	—	—	—	—	—
Odors	—	—	—	—	—	—	Possible additional odor control requirements
Noise	—	—	—	—	—	—	—
Infrastructure and Solid Waste	—	Existing digesters will reach the end of their useful life. Even if rehab'd, would not satisfy EPA's PSRP regulations under all operating conditions of the Full Step Feed BNR process with the projected 2045 flow.	—	Would limit flexibility of plant configuration for potential future plant needs. <u>Two digester scenario would not meet PSRP requirements under certain conditions.</u>	—	—	—
Energy	—	—	—	—	—	—	—
Hazardous Materials	—	—	—	—	—	—	Additional storage and handling requirements.

Table 24-1 (cont'd)
Most Notable Significant or Temporary Adverse Impacts

Issue	Proposed Action	No Action Alternative	Site Plan Alternative		Technological Alternatives		Carbon Addition Alternative
			Scenario 1	Scenario 2	Conventional Digester Alternative	Digester Mixing and Sludge Heating Alternatives	
Water Quality	—	Would not result in the improvements to wastewater effluent quality that would occur under the proposed action	—	—	—	—	—
Natural Resources	—	Would not result in the improvements to wastewater effluent quality that would occur under the proposed action	Filling of open water area would be required	—	Filling of open water area would be required	—	—
Construction	Construction-period traffic impact (mitigable); Temporary adverse noise impacts during construction.	—	Construction-period traffic impact (mitigable).	Construction-period traffic impact (mitigable); Considerably longer and more difficult construction period; Increased safety hazards and gas monitoring requirements.	Construction-period traffic impact (mitigable).	—	—
Public Health	—	—	—	—	—	—	—
Other	—	—	Utility relocation would be required. <u>Could result in potential flooding issues.</u>	—	Utility relocation would be required	—	—

Note: “—” indicates that there would be no potential significant or temporary impact in this analysis category and that there are no other notable issues warranting further discussion.
 PSRP – Processes to Significantly Reduce Pathogens

LAND USE, ZONING, NEIGHBORHOOD CHARACTER, AND OPEN SPACE

Under the No Action Alternative, the Hunts Point WPCP would continue to occupy the existing 39-acre site. The additional 4.3-acre parcel would remain vacant, and the 1.2-acre construction staging area would continue to be used for construction staging in connection with the Phase I and II Upgrades and would be transferred to Barretto Point Park after completion of construction. Egg-shaped digesters would not be constructed on the additional parcel, as they would be under the proposed action. While the proposed action would increase the visibility of the plant's facilities from the area immediately surrounding the project site, this would be consistent with the existing industrial character of the study area as well as zoning and public policy mentioned above. Neither the No Action Alternative nor the proposed action would result in any potential significant adverse open space impacts to the Barretto Point Park, Tiffany Street Pier, and the proposed South Bronx Greenway projects, or the waterfront access that these resources provide. The potential significant adverse visual impact under the proposed action (described below under "Visual Character and Shadows") would not occur under this alternative.

SOCIOECONOMIC CONDITIONS

Like the proposed action, the No Action Alternative would not result in either direct or indirect commercial and residential displacement, and would not have any adverse effects on specific industries. As with the No Action Alternative, the increase in water and sewer rates under the proposed action is expected to be a very small percentage of rents and homeowner expenses.

VISUAL RESOURCES AND SHADOWS

In the No Action Alternative, the additional parcel would remain vacant, and the visual presence of the WPCP would be that of the plant as upgraded under the Phase I and II Upgrades. The potential significant adverse visual impact resulting from views of the egg-shaped digesters east from Barretto Point Park that would occur under the proposed action would not occur under this alternative. However, the significant visual impact under the proposed action is very limited.

Without the new egg-shaped digesters on the additional parcel, no new shadows would be cast on Barretto Point Park. However, shadows from the egg-shaped digesters constructed under the proposed action would not result in significant adverse shadows impacts on the park. Therefore, neither the No Action Alternative nor the proposed action would result in potential significant adverse shadows impacts.

HISTORIC RESOURCES

In letters dated May 12, 2000 and July 20, 2000, the New York City Landmarks Preservation Commission determined that the project site (both the existing plant site and the additional parcel) has no archaeological or architectural significance. In a letter dated November 17, 2006, the New York State Office of Parks, Recreation and Historic Preservation determined that the proposed action will have no impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places. Therefore, neither the No Action Alternative nor the proposed action would result in potential significant adverse impacts on either archaeological or architectural resources.

WATERFRONT REVITALIZATION PROGRAM

The Hunts Point WPCP site lies within the City’s coastal zone management area; thus, the City’s waterfront revitalization program policies apply. Both the No Action Alternative and the proposed action would be consistent with these policies.

TRANSPORTATION

Under the No Action Alternative, the additional 2 trucks per day for the removal of sludge cake and 6 trucks per day for delivery of chemicals for plant operations (for the carbon addition facility) would not occur. The number of trips generated by the proposed action is below the 50-vehicle threshold that would trigger a detailed traffic analysis according to the 2001 *CEQR Technical Manual* and, therefore, potential significant impacts would not occur with the proposed action (see also “Construction,” below).

CRITERIA AIR POLLUTANTS

Neither the No Action Alternative nor the proposed action would result in any predicted potential significant adverse air quality impacts from either criteria pollutants or PM_{2.5} emissions.

NON-CRITERIA AIR POLLUTANTS

Under the No Action Alternative, the Hunts Point WPCP would operate as upgraded under the Phase II Upgrade. Neither the No Action Alternative nor the proposed action would result in any significant adverse impacts from volatile organic compounds (VOCs).

ODORS

Both the No Action Alternative and the proposed action (the Hunts Point WPCP as upgraded under the Phase I and II Upgrades and the proposed action) would meet the New York State Ambient Air Quality Standards (NYSAAQS) of 10 parts per billion (ppb) at the fenceline and CEQR guidance threshold of 1 ppb at the nearest residence. There would still be transient nuisance odors along the greenway under the No Action Alternative, but these impacts would not disrupt the activities that would occur in this area.

NOISE

Under the No Action Alternative, noise levels at the nearest residence (on Manida Street between East Bay and Viele Avenues) would be in the “acceptable range” according to CEQR guideline levels. Noise levels at the Barretto Point Park fenceline (at Viele Avenue between Tiffany and Casanova Streets) would be in the “marginally acceptable” range, and within Barretto Point Park (at 50 feet from the New York City Department of Environmental Protection’s (NYCDEP) additional parcel property line within the park), noise levels would range from “acceptable” to “marginally acceptable.” These are the same guideline levels as would occur with the proposed action. The proposed action would not exceed CEQR impact thresholds for significant adverse noise impacts. Further, the octave band levels at the property line would not exceed the maximum permitted decibel limits under the performance standards contained in the City of New York’s Zoning Resolution Section 42-213, and the octave band levels at the nearest residents would not exceed the maximum permitted decibel limits under the New

York City Noise Code. Overall, noise levels under the No Action Alternative would be similar to those of the proposed action.

INFRASTRUCTURE AND SOLID WASTE

Under the No Action Alternative, the existing digesters would reach the end of their useful life and therefore the No Action Alternative is not feasible. Even if the existing digesters were rehabilitated to extend their useful life, those digesters would not be capable of satisfying the U.S. Environmental Protection Agency's (EPA) Processes to Significantly Reduce Pathogens (PSRP) regulations under all operating conditions of the Full Step Feed BNR process. With the additional sludge produced by carbon addition starting in 2014, per mandates of the Nitrogen Consent Order, PSRP would not be met during maximum month conditions. In contrast, the proposed action would put in state of the art digester equipment and would be able to satisfy PSRP regulations with the additional carbon addition starting in 2014 and through the projected 2045 flow of 124 mgd under all conditions.

Since the proposed action would not result in additional employees, the water demand and generation of wastewater and solid waste at the WPCP would be the same in the No Action Alternative and with the proposed action.

ENERGY

In the No Action Alternative, the Hunts Point WPCP would operate as upgraded under the Phase II Upgrade, which includes upgrades to the plant's electrical power system, including a main electrical substation and six new 2,000 kW emergency generators (diesel-engine driven) to provide back-up power if utility service becomes unavailable. The new main electrical substation would have six transformers, each with a capacity of 7,500 kVa. The emergency generators and other Phase II Upgrade equipment would be operated in accordance with its NYSDEC Air Facility Permit. In addition, it is expected that in the No Action Alternative the WPCP could participate in a Peak Load Management (PLM) program, which aims to reduce peak load demand and prevent the possibility of blackouts or brownouts due to insufficient electric supply within New York City. Under this program, the Hunts Point WPCP may be requested to reduce electrical demand. NYCDEP would utilize ultra low sulfur diesel (ULSD) fuel in these generators, and would limit participation in the PLM program to up to five of the six 2,000 kW emergency generators.

The No Action Alternative would eliminate the increase in electrical energy consumption associated with the proposed action, from 590,400 kW-hr per day (as under the No Action Alternative) to 686,400 kW/hour/day; the introduction of a 500 kW emergency generator (diesel-engine driven) would also not occur. Overall, neither the No Action Alternative nor the proposed action would result in potential significant adverse energy impacts.

HAZARDOUS MATERIALS

SOIL AND GROUNDWATER

Under the No Action Alternative, a 2.75-acre portion of the larger 8-acre portion of the Barretto Point site to be remediated by NYCDEP (described in detail in Chapter 14, "Hazardous Materials") would be remediated in accordance with the Record of Decision (ROD) issued 2003 by the New York State Department of Environmental Conservation. The 2.75-acre area is a portion of the additional parcel northwest of the existing plant boundary. Remediation would

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consist of the excavation of contaminated soils in the former paint and varnish manufacturing facility area, disposal of excavated material to an appropriate off-site NYSDEC-approved treatment/disposal facility; the installation of a temporary structure and carbon filters to control dust and emissions; extraction and treatment of groundwater encountered during excavation of VOC-contaminated soils, discharge of treated groundwater to the Hunts Point WPCP for final treatment; and backfilling the excavation with clean fill. Two feet of clean fill would be placed on a 2.75-acre area as part of the site remediation. The proposed action analyzed in this EIS assumes that the remaining 5.25 acres (Block 2777, Lot 600 and part of Lot 901, and Block 2779, part of Lot 1) of the larger 8-acre Barretto Point site would be remediated as part of the proposed action. However, if the proposed action were not undertaken, this area would be remediated in the No Action Alternative. Therefore, under both the No Action Alternative and the proposed action, 8 acres in total would be remediated. Remediation of the site (under either the No Action or the proposed action) would consist of the placement of clean fill and Institutional Controls/Engineering Controls (IC/EC); however, under the proposed action these measures would be completed at a later date after construction was completed on these portions of the site.

CHEMICAL STORAGE

Under both the No Action Alternative and the proposed action, the Hunts Point WPCP would continue to comply with New York State Petroleum and Chemical Bulk Storage design criteria, including secondary containment and other requirements. The plant would also continue to comply with applicable New York City Department of Transportation (NYCDOT), New York State Department of Transportation (NYSDOT), NYSDEC, and Federal regulations. The No Action Alternative, unlike the proposed action, would not result in the transport and storage of methanol and ethanol for the carbon addition facility. However, no significant adverse impacts are anticipated under the proposed action related to this transport and storage. Storage and use of these flammable chemicals is strictly regulated by the Fire Department of the City of New York (FDNY).

WATER QUALITY

Under the No Action Alternative, the plant's effluent water quality would be enhanced. However, the additional improvement in the plant's effluent water quality from carbon and polymer addition with the proposed action would not occur and therefore the plant would not comply with the 2006 Nitrogen Consent Judgment.

NATURAL RESOURCES

No in-water work is proposed as part of the No Action Alternative or the proposed action; therefore there would be no impacts to aquatic species. The No Action Alternative would enhance the plant's effluent water quality, however, to a lesser degree than the proposed action.

CONSTRUCTION

Under the No Action Alternative, the construction required for the proposed action would not occur. The ongoing work on the Phase II Upgrade would continue through mid-2008 with some additional non-consent order related construction continuing through the first quarter of 2009. Staging activities for the Phase II Upgrade would occur on the 1.2-acre construction staging area. Therefore, the visible and at times intrusive construction activities of the proposed action

would not occur under the No Action Alternative. The proposed action's potential significant adverse construction-period traffic impact at the intersection of Bruckner Boulevard and Tiffany Street would not occur. However, this potential impact under the proposed action could be mitigated by signal timing adjustments. Neither the No Action Alternative nor the proposed action would result in potential significant adverse impacts due to noise; however, under the No Action Alternative, the predicted temporary adverse noise impacts from the construction of the proposed action would not occur.

C. SITE PLAN ALTERNATIVES

Both the Site Plan Alternatives would consist of the construction of a total of four egg-shaped digesters; the difference between these alternatives (and the proposed action) is where the digesters would be located.

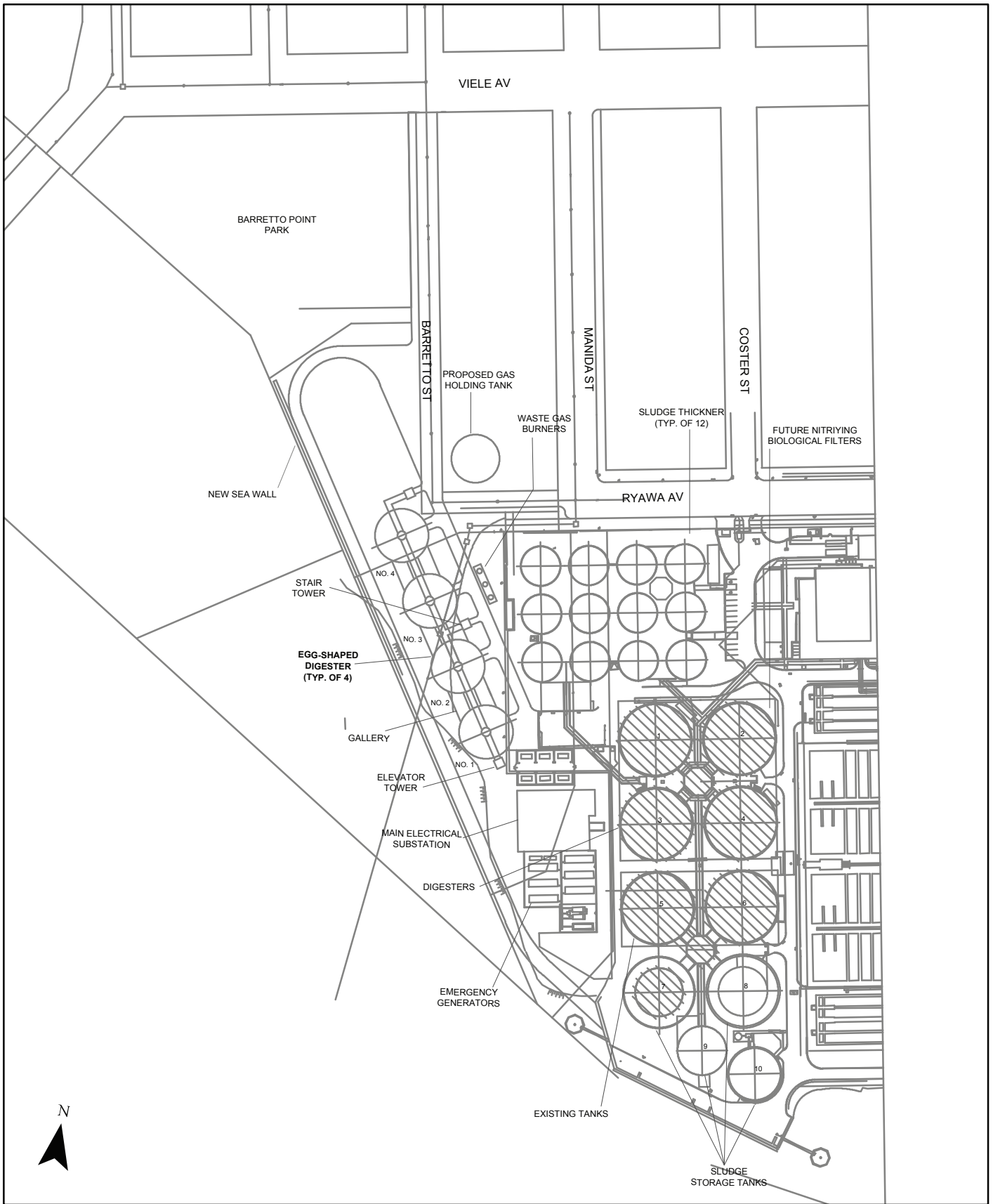
- In the Site Plan Alternative Scenario 1, the egg-shaped digesters would be constructed adjacent to the existing WPCP, but farther south than in the proposed action. They would be parallel to the bulkhead line on Lots 500, 1, and 600 (see Figure 24-1). The main electrical substation would be constructed on Lot 1. A gas holding tank would be constructed north of the existing plant site.
- In the Site Plan Alternative Scenario 2, the egg-shaped digesters would be constructed in the area of the existing conventional digesters and sludge storage tanks on the existing WPCP site (see Figure 24-2).

Since the Site Plan Alternatives would consist of the construction of four egg-shaped digesters—like the four-digester scenario analyzed in the EIS—there would not be any substantial difference between the proposed action/four-digester scenario and any of the Site Plan Alternatives in the following analysis areas: land use, zoning, neighborhood character, and open space; socioeconomic conditions; historic resources; waterfront revitalization; transportation; criteria air pollutants; non-criteria air pollutants; odors; noise; infrastructure and solid waste; energy; water quality; or public health. The analysis areas in which the Site Plan Alternatives may differ from the proposed action are discussed in more detail below.

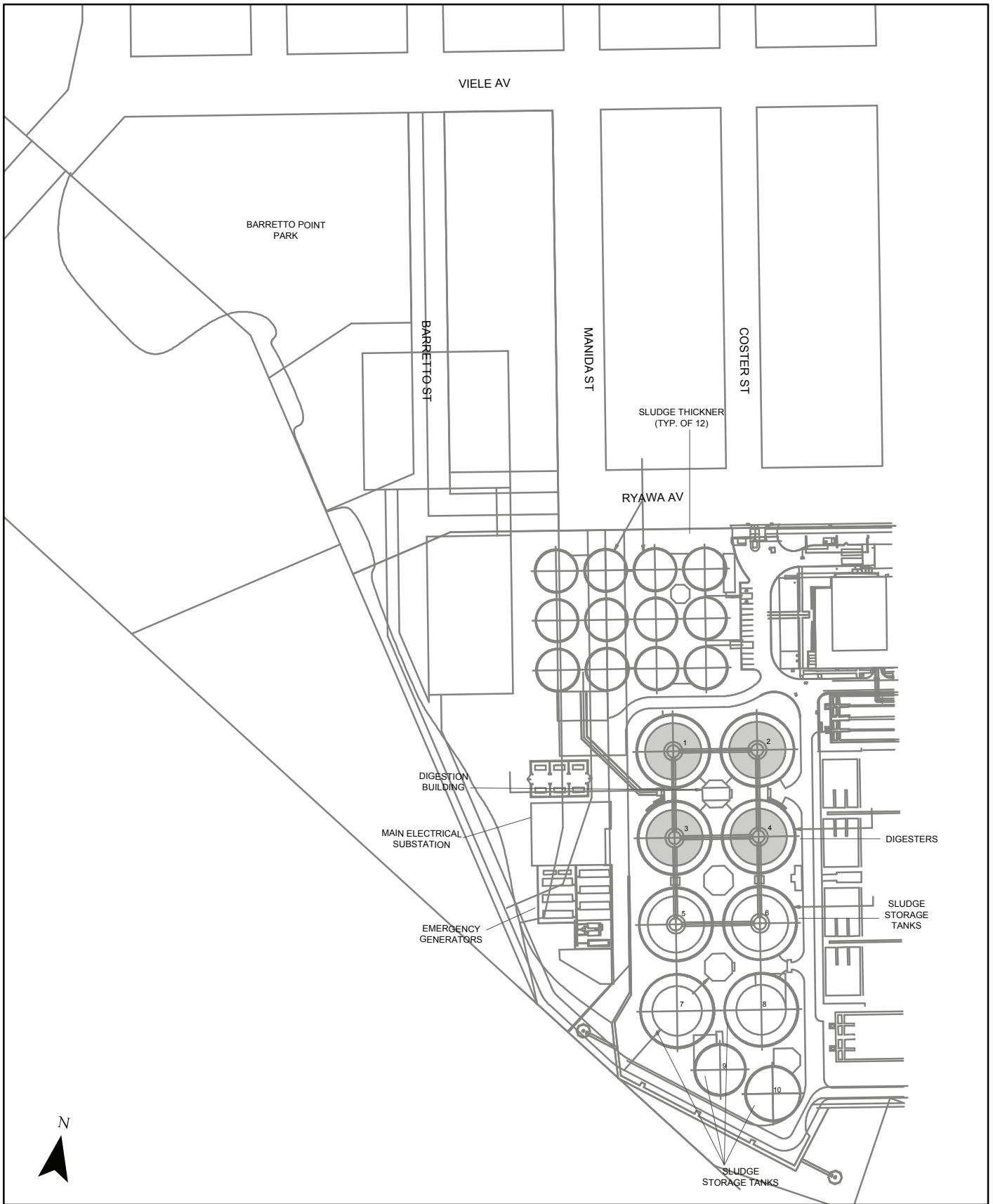
SITE PLAN ALTERNATIVE—SCENARIO 1

In this alternative, the egg-shaped digesters would be constructed parallel to the bulkhead line on Lots 500, 1, and 600 (see Figure 24-1). The main electrical substation would be constructed on Lot 1, and a gas holding tank would be constructed north of the existing plant site. The area of the existing digesters would be reserved (once the existing digesters are no longer in use) for use in meeting future wastewater treatment needs at the plant.

This alternative would require extensive in-water construction, including building out to the bulkhead line within the areas of Lots 1, 500, and 600 that are under water and construction of a new seawall along the bulkhead line to protect the new facility from storm and wave damage. The Site Plan Alternative Scenario 1 would not result in potential impacts substantially different than those of the proposed action or the four-digester scenario with the exception of the following: the need for utility relocation, potential visual impacts and shadows, potential effects on natural resources, and construction impacts.



Source:URS



Source:URS

VISUAL CHARACTER AND SHADOWS

Under this alternative, the digesters would be located farther south than under the proposed action/four-digester scenario analyzed in the EIS thereby reducing the presence of the digesters in the area adjacent to the park. However, the digesters would be prominent and highly visible to users of Barretto Point Park and Tiffany Street Pier as they look to the southeast and would affect waterfront views from the park (see view 1 of Figure 24-3). In addition, the digesters would dominate the view from the 1.2-acre construction staging area that will be incorporated into Barretto Point Park after completion of construction at the plant (see view 2 of Figure 24-3). Like the proposed action, it is expected that this would result in a potential significant adverse impact on park users. No access to the waterfront would be affected by either this alternative or the proposed action. The impact would not significantly impact park users' enjoyment of the park.

Under this alternative, the digesters would cast shadows on Barretto Point Park and on the construction staging area that is to be incorporated into Barretto Point Park in the future. New shadows would be cast on Barretto Point Park during the early morning hours of the winter months and on the construction staging area (future parkland) during the morning and early afternoon hours of the fall and winter months. This alternative would therefore reduce the shadows cast on the current Barretto Point Park relative to the proposed action and would result in a similar amount of shadow on the construction staging area (future parkland). However, shadows from the proposed action are not anticipated to result in a potential significant adverse impact on the park or construction staging area. Like the proposed action and four-digester scenario, this alternative would not result in potential significant adverse shadows impacts on the park.

NATURAL RESOURCES

Unlike the proposed action, this Site Plan Alternative would require extensive in-water construction, including building out to the bulkhead line within the areas of Lots 1, 500, and 600 that are under water and construction of a new seawall along the bulkhead line to protect the new facility from storm and wave damage. This would require additional permits from the New York State Department of Environmental Conservation and the U.S. Army Corps of Engineers. This may also result in adverse impacts on natural resources and mitigation for lost habitat.

CONSTRUCTION-PERIOD IMPACTS

As indicated under "Natural Resources," construction would be more difficult and lengthy due to the need to perform extensive in-water construction. This could exacerbate and lengthen the duration of traffic and other construction-related impacts. However, because the site is located farther from the Barretto Point Park, temporary noise and other impacts may be reduced.

OTHER

Unlike the proposed action and four-digester scenario, this alternative would require the relocation of an existing sewage force main and a high pressure gas main that serve Rikers Island. In addition, this alternative could result in potential flooding issues due to the location of the digesters.



View southeast from within existing Barretto Point Park 1



View south from construction staging area (future Barretto Point Park) 2

SITE PLAN ALTERNATIVE—SCENARIO 2

In the Site Plan Alternative Scenario 2, the egg-shaped digesters would be constructed in the area of the existing conventional digesters and sludge storage tanks on the WPCP site (see Figure 24-2). Because the plant cannot be taken out of service while construction proceeds, the existing digesters would have to be demolished and new digesters constructed one at a time. Temporary piping connections would be required to connect the new tanks with the existing piping. Construction of this alternative would be substantially more complex than construction of the proposed action/four-digester scenario. Because of the complexity, the construction period would also be extended, and this alternative would not be constructed by 2014. Construction complexity would also add over \$15 million to the cost.

The plant site is extremely densely developed with no additional area to meet potential future changes at the plant. Unlike with the proposed action, under this alternative, the area of the existing digesters could not be reserved for use in meeting potential future needs of the plant; instead, the additional parcel would be reserved for such uses. This plant configuration would be less efficient than under the proposed action. Although not known at this time, future needs at the plant could be related to the wastewater process consistent with the history of mandates NYCDEP has received for sewage treatment. Specifically, over the last 20 years, NYCDEP has had to upgrade the plant to meet federal and state mandates, many of which have related to the wastewater process and which have required an intensification of use within the plant site. Mandates have included the following: requirements related to reducing nitrogen, which included construction of bigger aeration blowers, larger solids recycle capabilities, chemical storage and feed systems, and increased electrical requirements; requirements related to CSO capture, which included construction of larger main sewage pumps; requirements related to ammonia removal during sludge dewatering, which necessitates centrate treatment and storage; and additional requirements related to effluent limits, which includes modifications to the disinfection systems and carbon treatment.

It is expected that NYCDEP will continue to have to respond to changing mandates in sewage treatment. Although not known at this time, future requirements could include additional mandates related to wastewater processes, for example, future potential CSO and BNR programs or other wastewater treatment requirements. These future needs cannot be predicted but previous mandates over the last 20 years (as discussed above) have necessitated the construction of additional facilities within the existing plant site, such that the plant is currently fully developed and little open space remains. Locating additional CSO or BNR facilities within the area of the existing digesters is more efficient because these facilities would be associated with the wastewater process.

If future wastewater process needs were to be met on the additional parcel instead of the location of the existing digesters, it would be more difficult to deliver the wastewater to that area. The wastewater treatment facilities transport 120 to 400 mgd, while transporting thickened sludge flow to the additional parcel is less than 1 mgd. The size of piping connections required for the wastewater process facilities would differ by orders of magnitude from the connections for the sludge facilities. The existing underground tunnels on the existing plant site would interfere with the required wastewater conduit connections to the additional parcel.

Furthermore, digester operation is very different than operation of the wastewater processes. Specifically, digesters have stable temperatures and constant mixing, and sludge is intermittently added and removed. In addition, the tanks are sealed, which eliminates the potential for

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significant adverse odor and air quality impacts on adjacent land uses. Wastewater processes, which tend to be more odorous, would be less appropriate to place next to a sensitive use.

Overall, this site plan alternative may preclude efficient wastewater treatment configuration at the plant in the future. In contrast, the proposed action would allow wastewater treatment processes to be consolidated in one location at the plant.

VISUAL CHARACTER AND SHADOWS

Under this alternative, the egg-shaped digesters would be less visible from the surrounding area since they would be constructed within the plant site boundary. Because the digesters would be located within the plant site at a greater distance to Barretto Point Park and users of the park, this alternative would not result in a potential significant adverse visual impact that would occur with the proposed action and four-digester scenario. In terms of shadows, neither the proposed action nor the four-digester scenario would result in potential significant adverse shadow impacts.

Although there would not be a significant visual impact from the park under this alternative, even under the proposed action, the digesters would be in keeping with the area's industrial character. Further, it was conceived that the design of Barretto Point Park would transition from its industrial surroundings to the waterfront. The potential significant visual character impact under the proposed action would be very limited. No views of or access to the waterfront would be affected. Only views looking east from the park would be affected. The impact would not significantly impact park users' enjoyment of the park and there are no significant shadows impacts.

Therefore, although this alternative would eliminate the proposed action's potential significant visual impact, the impact under the proposed action is very limited in nature.

CONSTRUCTION-PERIOD IMPACTS

Under this Site Plan Alternative or the proposed action/four-digester scenario, during the construction period, the WPCP must remain in operation. To achieve this while constructing egg-shaped digesters in the area of the existing conventional digesters, the digesters would need to be constructed one at a time. Therefore, the Site Plan Alternative Scenario 2 would result in a substantially longer construction period than under the proposed action. A larger engineering and construction effort would be required to design and build facilities that would fit within the space at the existing tanks, and to protect the existing tanks and maintain operations during construction. More extensive construction protective measures would be required due to the hazards involved with welding adjacent to existing active digesters and protection and maintenance of plant operations during construction. Construction progress would be slower due to limited site access, demobilization-mobilizations, installation of temporary facilities, and maintenance of plant operations.

Preliminary estimates, which are based on very limited information and are therefore conceptual in nature, indicate that 2-digester construction under this alternative would be about 18 additional months for this scenario compared to the proposed action. Unforeseen and changed conditions may be discovered in the existing facilities during construction which could lead to change orders and delays that are not accounted for in this estimate. This is because the one-digester-at-a-time construction scenario would not allow for optimal coordination between construction stages. Each step of construction, from construction of a single egg-shaped digester followed by demolition of an existing digester, to construction of the next egg-shaped digester

and then demolition of another existing digester, would require additional crew mobilizations for site preparation and construction. These additional steps, which would not be required for the proposed action, would lead to substantial delays in the construction schedule for the digesters in comparison with the schedule for the proposed action. For example, the proposed egg-shaped digesters are complex steel vessels that require a specialized crew of iron workers to construct. The most efficient way to work is to complete the steel erection on one vessel and to immediately move the crew to the next vessel while the mechanical and finishing work starts on the first vessel. If the digesters are constructed one tank at a time, the iron workers would have to demobilize and leave the site while the finishing and mechanical work is proceeding. The iron workers would then have to remobilize after each digester is complete.

The construction of the egg-shaped digesters in the area of the existing digesters would also be more complicated because the amount of space required for ventilation, heating, and fire protection (to meet current codes and standards for ventilation and fire protection) could not be met in the existing buildings and tunnels. Finding space to house the new facilities while the existing facility is maintained in operation would be difficult. Furthermore, the proposed digesters are of welded steel construction, which produces sparks; this type of construction activity in close proximity to active, gas-producing digesters would increase safety hazards and gas monitoring requirements.

Under this alternative, the plant's sludge cake would be able to satisfy the criteria established in the U.S. Environmental Protection Agency's (EPA) Processes to Significantly Reduce Pathogens (PSRP) regulations only under average conditions upon completion of construction of two digesters and implementation of the carbon feed facility. To meet PSRP at the maximum month sludge production, the plant would need two egg-shaped digesters and three conventional digesters in operation (or all four egg-shaped digesters) once carbon addition is online.

Under this alternative, longer construction would lengthen the duration of traffic and other construction-related impacts. However, because the site is located farther from the park, temporary noise and other impacts during construction would be reduced.

D. TECHNOLOGICAL ALTERNATIVE—CONVENTIONAL DIGESTER CONSTRUCTION

In the Conventional Digester Alternative, new conventional digesters would be constructed instead of egg-shaped digesters. Three sludge storage tanks and a gas holding tank would also be constructed as part of this alternative.

Conventional digesters have larger land area requirements than egg-shaped digesters because they are shorter; therefore, their footprint is larger than the footprint required for egg-shaped digesters. To meet the 2045 projected flow, six conventional digesters, each 115 feet in diameter, would be required. The digesters would need more area than the additional parcel (where the egg-shaped digesters would be constructed under the proposed action). To meet the additional requirements, the construction staging area would also be used for the digesters and building out to the bulkhead line within the areas of Lots 1, 500, and 600 would be required. This would require underwater construction of a new seawall along the bulkhead line.

Use of conventional digesters in this alternative would eliminate the technological advantages provided by the egg-shaped digesters. Conventional digesters have a relatively flat profile and large liquid surface areas, which are prohibitive to uniform mixing. As a result, grit and floatable solids in the sludge often accumulate, thereby decreasing the usable volume and energy

efficiency of the digesters. In contrast, the steeply sloped bottoms of the egg-shaped digesters concentrate grit and solids at the bottom of the tank, providing for easier cleaning and more efficient mixing.

The Conventional Digester Alternative would meet the 2045 projected flow (like the proposed action and four-digester scenario). There would not be any substantial difference between the proposed action/four-digester scenario and the Conventional Digester Alternative in the following analysis areas: socioeconomic conditions; historic resources; waterfront revitalization; transportation; criteria air pollutants; non-criteria air pollutants; odors; noise; infrastructure and solid waste; energy; water quality; or public health. The analysis areas in which the Conventional Digester Alternative may differ from the proposed action/four-digester scenario are discussed in more detail below and include potential utility relocation, open space, visual character and shadows, and natural resources impacts.

OPEN SPACE

Because of the larger footprint necessary for conventional digesters, a larger portion of the additional parcel would be developed with the conventional digesters than with egg-shaped digesters proposed under the proposed action (see Figure 24-4). As a result, it would be necessary to use the construction staging area as part of the plant site. This would directly displace land committed as open space and is not a feasible outcome given that NYCDEP has committed to transfer the 1.2-acre construction staging area (the remaining portion of Lot 901) to NYCDPR for incorporation into Barretto Point Park.

VISUAL CHARACTER AND SHADOWS

The conventional digesters would be substantially shorter than the egg-shaped digesters and would therefore be less visible. They would be closer in height to the nearby structures, but would still be new additions to the plant on land that is currently vacant or used for construction staging. Despite their shorter height, the digesters would be massive structures (115 feet in diameter) immediately adjacent to the park and cover a larger area along the park boundary than the proposed egg-shaped digesters. Therefore, this alternative would also be expected to result in a limited potential significant adverse visual impact on Barretto Point Park users looking east and southeast. The conventional digesters would cast smaller shadows on Barretto Point Park. However, the egg-shaped digesters (either two or four) would not affect the public's enjoyment of the adjacent Barretto Point Park, nor would they result in significant adverse shadows impacts.

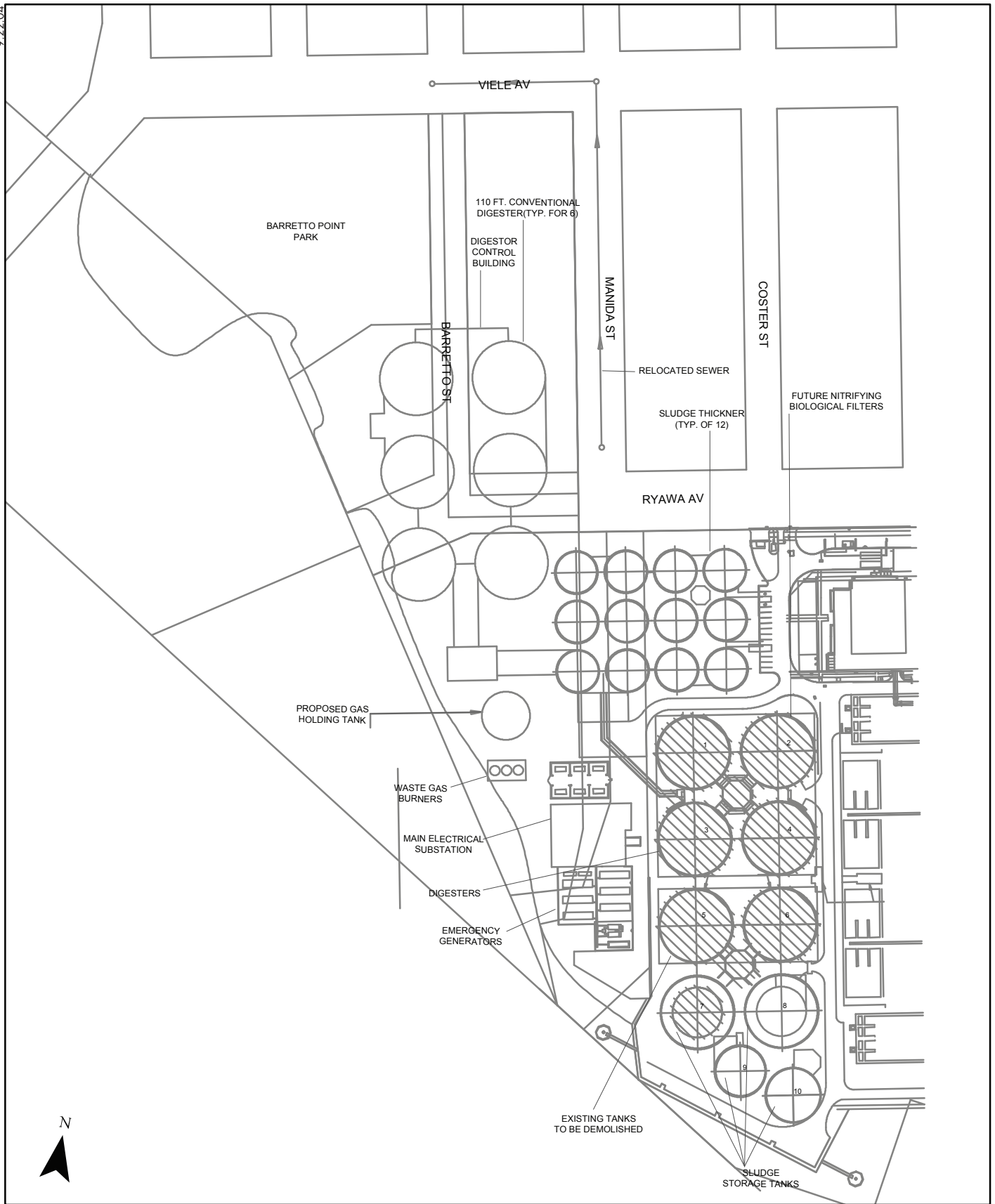
NATURAL RESOURCES

The Conventional Digester Alternative would require in-water construction, including building out to the bulkhead line within the areas of Lots 1, 500, and 600 that are under water and construction of a new seawall along the bulkhead line. This would require additional permits from NYSDEC and ACOE. This may also result in adverse impacts on natural resources that would not occur with the proposed action.

OTHER

Unlike the proposed action and four-digester scenario, this alternative would require the relocation of existing utilities located in the easements of the Rya Avenue and Barretto Street rights-of-way.

9.22.04



Source:URS

Conventional Digester Alternative--Scenario 1
Figure 24-4

E. TECHNOLOGICAL ALTERNATIVE—DIGESTER MIXING SYSTEMS AND SLUDGE HEATING ALTERNATIVES

There are three possible digester mixing systems: gas mixing; external pumped mixing (pumps would withdraw sludge from top of tank and reinject sludge through bottom of tank); and mechanical mixing (mixing impeller to circulate and mix sludge). The proposed action would likely use mechanical mixing. This option for the proposed action is preferred because this mixing system is not dependent on the amount of sludge within the digesters, as the other two mixing options are.

There are five different sludge heating alternatives: single-stage mesophilic; single-stage thermophilic; two-stage mesophilic; two-stage thermophilic-mesophilic; and two-stage mesophilic-thermophilic. The preferred option for the proposed action would consist of mesophilic sludge heating, which is NYCDEP's standard practice at other plants. The existing conventional digesters could not take thermophilic temperatures; however, the new egg-shaped digesters would be structurally designed for thermophilic temperatures to allow for future use of thermophilic-mesophilic combinations.

The different sludge mixing and heating systems would not result in any impacts different than what would occur under the proposed action in any of the EIS impact analysis areas, as these are different methods of operating the plant.

F. CARBON ADDITION ALTERNATIVE

The proposed action analyzed in the EIS assumes that methanol and ethanol would be used in the plant's carbon addition facilities. Two alternative chemicals—acetic acid or sodium acetate—are discussed in this section.

Because the Carbon Addition Alternative would result in all the same facilities as the proposed action but would be different only in terms of the chemical used for carbon addition, there would be no differences between the proposed action/four-digester scenario and the Carbon Addition Alternative in the areas of land use, zoning, neighborhood character, and open space; socioeconomic conditions; visual character and shadows; historic resources; waterfront revitalization; transportation; criteria air pollutants; non-criteria air pollutants; noise; infrastructure and solid waste; energy; water quality; natural resources; public health; or construction-period impacts. The analysis areas in which the Carbon Addition Alternative may differ from the proposed action are discussed in more detail below.

HAZARDOUS MATERIALS

Acetic acid and sodium acetate have significantly different handling and storage requirements than the chemicals that would be used under the proposed action (methanol and ethanol). Specifically, sodium acetate would require the construction of storage facilities capable of storing approximately three times the volume of either methanol or ethanol. Acetic acid is more corrosive than either ethanol or methanol and would require construction of corrosion-resistant facilities. Both acetic acid and sodium acetate are less flammable than methanol and ethanol and do not require as stringent fire control measures. Appropriate storage and handling facilities would be constructed and operated in accordance with federal, state, and local requirements and the guidelines of the National Fire Protection Association. With implementation of these measures, no significant adverse impacts are expected from use of these chemicals.

ODORS

Acetic acid and sodium acetate are more odorous compounds than either methanol or ethanol, and it is likely that additional odor control measures would be required with the use of acetic acid.

G. CONCLUSIONS

CEQR requires that the alternatives analysis should present reasonable options for reducing or eliminating project impacts, while substantively meeting project goals and objectives; demonstrate a reasonable range of options to the proposed action; and compare potential impacts under alternative approaches for meeting project objectives. This chapter analyzed a full range of alternatives to the proposed action that might reduce or eliminate potential impacts identified for the proposed action, but none of the alternatives assessed would better meet project goals:

- The No Action Alternative would eliminate the proposed action's potential significant adverse visual impact but is not a feasible alternative because without changes to the WPCP's existing digesters, they would reach the end of their useful life. In addition, the No Action Alternative would not provide enhanced nitrogen removal to meet 2006 Consent Judgment requirements. This alternative would not improve solids handling at the plant and would not be capable of satisfying the EPA's PSRP regulations under all operating conditions of the Full Step Feed BNR process with the projected 2045 flow of 124 mgd.
- Site Plan Alternative 1 would not eliminate the potential significant adverse visual impact of the proposed action, but would require extensive in-water construction that may result in adverse impacts on natural resources that would not occur with the proposed action, and might exacerbate and lengthen the duration of construction-related impacts.
- Site Plan Alternative 2 would eliminate the potential significant adverse visual impact of the egg-shaped digesters, but would greatly increase the construction complexity and schedule for the Phase III Upgrade and would eliminate future flexibility of the plant configuration for potential future plant needs.
- While the digesters that would be constructed under the Conventional Digester Alternative would not be as visible as the egg-shaped digesters under the proposed action, this alternative would not eliminate the potential significant adverse visual impact. This alternative would also directly displace land committed as open space (the 1.2-acre construction staging area) for incorporation into Barretto Point Park. Use of conventional digesters would also eliminate the technological advantages provided by the egg-shaped digesters. This alternative would also require extensive in-water construction that may result in adverse impacts on natural resources that would not occur with the proposed action.
- The Digester Mixing and Sludge Heating Alternatives would not result in a reduction of identified impacts.
- The Carbon Addition Alternative would not result in a reduction of identified impacts and would require the construction of storage facilities capable of storing approximately three times the volume of either methanol or ethanol (for sodium acetate) or corrosion-resistant facilities (for acetic acid).

In conclusion, the alternatives analysis did not identify any feasible alternatives that would meet the objectives of the proposed action while reducing or eliminating impacts. *