

Elk Township
Gloucester County, New Jersey
Amended Aura III Redevelopment Plan

Block 31, Lots 2.02, 5.01, 7 and 22; Block 32, Lot 1; and Block 58, Lot 1



FEBRUARY 2024

Recommended to Township by the Joint Land Use Board after a public hearing on May 20, 2020 with Resolution 2020-08.

Adoption by Township Committee in accordance with Ordinance O-2-2020 on June 4, 2020.

Amendment Recommended to Township by the Joint Land Use Board after a public hearing on March 20, 2024 with Resolution 2024-08.

Amended Plan Adoption by Township Committee in accordance with Ordinance O-1-2024 on April 4, 2024.

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The original of this document was signed and sealed in accordance with NJAC 13:41-1.3.b

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I. Introduction

The properties within the Redevelopment Area of the Township of Elk were designated by Township Committee as a Non-Condemnation Area in Need of Redevelopment in accordance with Resolution 2016-13 on May 18, 2016. The Preliminary Redevelopment Needs Investigation Report, dated May 2016, as well as the findings of fact in Resolution 2016-13 provide an overview of the Township's redevelopment planning process, a description of the study area, an outline of the redevelopment area and rehabilitation area criteria set forth in New Jersey's Local Redevelopment and Housing Law, a review of the relationship of the study area to the Township's Master Plan and the State Plan, and each report explains the conditions that warranted the redevelopment designation.

By utilizing the redevelopment planning tools provided in N.J.S.A. 40A:12A-1 et. seq., the Township aims to enhance opportunities for reuse, revitalization, and redevelopment of the designated properties and to provide a planning framework that sets a high standard for development and is also responsive to ever-changing market conditions. The Township's Redevelopment Plan supports redevelopment and revitalization that will benefit the Township overall.

The properties listed in section IIA below have been designated as an Area in Need of Redevelopment. Following designation, the next step in the redevelopment planning process is for the Township to prepare and adopt this Redevelopment Plan to govern redevelopment of the Redevelopment Area. The Redevelopment Plan will enable the Township to support and implement a coordinated and proactive land use plan for the area; and will afford Redevelopers the opportunity and ability to market or potentially develop the properties in accordance with the Redevelopment Plan. In the event of more than one Redeveloper being involved, the redevelopers shall work together in a coordinated effort.

The Township's intent in initiating the redevelopment planning effort has been to enable the use of additional tools to facilitate and encourage private investment in the designated Redevelopment Area; and to allow the Township to use its experience and concerns for the long-term well-being of the municipality to foster positive change in this underutilized area. The adopted Redevelopment Plan will provide guidance as to the future use and design of the designated Redevelopment Area. The Redevelopment Plan will provide a framework to guide redesign of and investment in the designated area in a manner consistent with the Township's overall vision.

The changes in the real estate market wrought by the economic recession of the mid-2000s, the coming of age of the Millennial generation and the retirement of the "Baby Boomers" and the need for a broader residential demographic within the region have all contributed to the mutual decision by the Township and property owners to investigate an alternative and more sustainable plan for the Aura Redevelopment Area as a mixed unit-type, age and income level residential development rather than just another subdivision of single family homes.

Throughout the development of this Plan, the focus of the Township was to enable a more sustainable economic future for its residents through the creation of a wide variety of housing types and density and a range of affordability that would be sufficient enough to support existing and new residents in the Township.

Since the area described in section IIA below has been designated as an Area in Need of Redevelopment, the Township Committee, as the Redevelopment Entity, is empowered to adopt

a redevelopment plan to proactively set forth a vision for the Redevelopment Area, facilitate change by working with property owners and potential redevelopers, acquire land and buildings, and sell publicly owned property within the redevelopment area without public bidding to a chosen redeveloper, as set forth in the Local Redevelopment and Housing Law (N.J.S.A. 40A:12A-1 et seq) (LRHL). The Redevelopment Entity's functions and powers are further described in section IIE below.

The Redevelopment Plan is both a regulating document and a tool that the Township will use to stimulate revitalization, investment, and redevelopment activities within the designated area. Though the Redevelopment Plan standards take the specific site conditions and constraints into consideration, and aim to achieve the objectives for the particular Redevelopment Area, the Plan also maintains some standards that are generally consistent with General Requirements for All Districts within the Township Code so that unifying design elements and characteristics will tie the entire area together. The Redevelopment Plan will be adopted by ordinance in accordance with the requirements of the LRHL (N.J.S.A. 40A:12A-7).

II. Redevelopment Plan

The Elk Township Committee will serve as the Redevelopment Entity responsible for preparation of and the execution of the Redevelopment Plan. This Redevelopment Plan specifically addresses the project area known as the “Aura III”. The Redevelopment Plan includes an outline for the planning, development and redevelopment of the project area in accordance with the LHRL (N.J.S.A. 40A:12A-1 et. seq.). The Township Committee, acting as the Redevelopment Entity, acknowledges that refinements to the Redevelopment Plan may be necessary from time to time in order to ensure that the Plan is responsive to current conditions and that it continues to reflect the Township’s evolving goals and objectives. Alterations to the Redevelopment Plan will be made by ordinance in accordance with the requirements of N.J.S.A. 40A:12-7. Pursuant to New Jersey law, all pre-existing uses, types and design of structures, parking and traffic are permitted

A. Area Description

The study area is located within two zoning districts on Aura Road and Whig Lane. The area is bound to the east by State Highway 55. There are no sidewalks and limited utilities throughout the properties, particularly along the Aura Road parcels. The majority of the parcels are agricultural in nature. The zoning districts included within the Aura III Redevelopment Area are R Rural Residential and RE Rural Environmental Residential. The uses range from agricultural, to vacant. A metes and bounds description of each area will be attached to each Redevelopment Agreement. A description of each area shall be attached to the Redevelopment Agreement. The subject area can generally be described as a rural with residential and agricultural uses. This area is accessible by State Highway 55.

The following table contains pertinent information about each redevelopment area designated parcel.

Block	Lot	Property Location	Owner	Acreage	Existing Use	Zone
31	2.02	Aura Rd	Aura Investors, LLC	5.12 Acres	Farm Qualified, Farmland	R
31	5.01	702 Aura Rd	AURA INVESTORS LLC	38.11 Acres	Farm Qualified, Farmland	R
31	7	Aura Rd	Aura Investors, LLC	60.37 Acres	Farm Qualified, Farmland	R
31	22	Aura Rd	Aura Investors, LLC	39.85 Acres	Farm Qualified	R
32	1	Aura Rd	Aura Investors, LLC	24.81 Acres	Farm Qualified, Farmland	RE
58	1	625 Whig Lane	AURA INVESTORS LLC	20.94 Acres	Farm Qualified	R

B. Local Goals

The general goals set forth below provide the framework for the Redevelopment Plan. The goals will guide implementation of the plan and realization of the vision for revitalization of these properties.

1. Enable the use of additional tools as permitted by the Local Redevelopment and Housing Law to facilitate and encourage private investment in the redevelopment area.
2. Provide guidance as to the future use and design of the designated properties, and maintain sufficient flexibility to accommodate an array of possible redevelopment scenarios.
3. Highlight opportunities to remove deteriorated and outdated buildings and to reinvent and revitalize the redevelopment area properties with modernization, adaptive reuse, or redevelopment, consistent with smart growth principles.
4. Create land use, design, and building requirements specific to the Redevelopment Area properties that are compatible with the adjacent land uses and neighborhoods, and that provide sufficient development opportunity to encourage investment and redesign.
5. Encourage cooperation among adjacent property owners to enable coordinated design and connectivity among adjacent properties and within neighborhoods.
6. Provide for maximization of private investment through the attraction of qualified developers.

C. Proposed Land Uses in Redevelopment Area

The development and design requirements for the Redevelopment Area are intended to provide a framework that permits site improvements and new construction. The Elk Township Zoning Map has been amended to include the locations of the Redevelopment Area. All changes of use and redevelopment proposals require site plan approval as set forth in section E below.

The development regulations set forth in this Redevelopment Plan shall constitute an overlay zoning district within the Redevelopment Area and shall supersede the underlying zoning requirements in the event that a redeveloper has been designated and a redevelopment agreement has been entered into by the Township for the parcel in question. In the event that no redeveloper has been selected and no redevelopment agreement has been entered into, the underlying zoning shall continue to apply and all land use matters pertaining to such parcels shall continue to be governed by the underlying zoning.

Potential redevelopers shall approach Township Committee, in its capacity as the Redevelopment Entity, to initiate a dialogue about becoming the designated Redeveloper for a particular site.¹ In order to avail themselves of this Redevelopment Plan, any redeveloper must enter into a Redevelopment Agreement with the Township. All potential redevelopers are encouraged to work with the Township in developing a concept plan that embodies the intent of the Redevelopment Plan and conveys the redeveloper's intentions for the site. Once a qualified redeveloper is chosen and designated, the establishment of a Redevelopment Agreement may streamline the redevelopment process, delineate timelines, benchmarks, expectations, roles and responsibilities, and may open opportunities to support project feasibility.

All provisions of the Elk Township Code not specifically amended or revised in the Redevelopment Plan are incorporated by reference. In the event of conflict between the Township Code and the Redevelopment Plan, the Redevelopment Plan Regulations shall prevail.

I. Permitted Uses

The list of permitted uses in the Redevelopment Area is provided below. All uses are subject to the requirements of the Aura III Redevelopment Plan Design Standards, Elk Township Land Use and Zoning Ordinance or as otherwise stated in this plan. Uses permitted by specific provision of the Municipal Land Use Law shall also be permitted in the Redevelopment Area.

This is an inclusionary project and therefore 20% of all residential for-sale units or 15% of all rental units shall be set aside for low and moderate income households as set forth in the Settlement Agreement between the Township and the Fair Share Housing Center and in accordance with the New Jersey Uniform Housing Affordability Controls and Elk Township Land Development Code Article I. Affordable Housing Requirements. The redeveloper may retain a 5% affordable set-aside for the initial 464 residential units, regardless of rental or for-sale housing types. A maximum of 962 total residential units shall be constructed within the Aura III Redevelopment Area. 71% (686 units), must be age-restricted. A minimum of 24 affordable units shall be provided.

(1) Permitted Residential Uses

(a) Townhomes

¹ Potential redevelopers include current owners as well as prospective investors and buyers.

- (b) Multifamily Dwellings, including flats
- (c) Twin homes
- (d) Duplexes
- (e) Single Family Semi-Detached Homes
- (f) Single Family Detached Homes

(2) Permitted Non-Residential

- (a) New Home Sales Center. Bulk standards shall be consistent with residential building type standards as in Section A- Bulk Standards.
- (b) Common recreational and cultural uses for the use of the residents of the community and their guests (i.e. clubhouse or community building, swimming pools, Sport uses such as shuffleboard courts, bocce courts, tennis courts, pickle ball courts, basketball courts, putting greens and horseshoe pits, no minimum lot area required.
- (c) Pump Station with a 25 foot perimeter buffer (access drive permitted) required, no minimum lot area required.
- (d) Water Tower with a 25 foot perimeter buffer (access drive permitted) required and a maximum height of 150 feet with the fall zone taken into consideration on the proposed site plan, no minimum lot area required.

(3) Permitted Accessory Uses: Residential Uses

- (a) Civic uses and temporary uses to benefit the community (i.e. farmers market, outdoor movies)
- (b) Off Street parking and loading for clubhouse and recreation areas require one (1) space per 400 square feet of non-residential area.
- (c) Parking for all residential units shall be in accordance with N.J.S.A. 5:21 (Residential Site Improvement Standards).
- (d) Cluster Mailboxes.
- (e) Retaining walls.
- (f) Fences.
- (g) Decks and patios.
- (h) Private swimming pools in the rear yard only of single family detached units with ten foot setback from side and rear yards. Setback includes aprons, pavers, walkways, equipment any other associated pool improvements.

- (i) Signs in accordance with Section 96-60 of the Township Code.
- (j) Storm water management structures and facilities.
- (k) Trash enclosures as approved in conjunction with subdivision or site plan approval.
- (l) Gazebos, shelters, benches and other outdoor furniture as approved in conjunction with subdivision or site plan approval.
- (m) Necessary facilities for maintenance and administration of the development including streets, off-street parking facilities and utilities.
- (n) Parking structures as approved in conjunction with site plan approval
- (o) Hot boxes, transformers and other required utilities and their accessories as required by outside agencies.

II. Design Standards

The following design standards will be applied to all development in the Redevelopment Area. Any elements not covered by these standards will be subject to other appropriate provisions of this redevelopment plan and/or the Elk Township Land Development Ordinance. All redevelopment activities are also subject to applicable State and Federal requirements.

Full build-out of the Redevelopment Area could take many years over multiple phases. The standards presented here are meant to provide some degree of flexibility to account for market and regulatory fluctuations, and unanticipated geophysical issues, while ensuring that the goals and objectives of the redevelopment plan are achieved. To ensure conformance with the Land Use & Zoning Plan, the Master Redeveloper or their approved developer partner must prepare a more detailed version of the concept plan as it pertains to the subject redevelopment parcel or Section. The redeveloper shall demonstrate how the applicable portions of the Land Use & Zoning Plan will be incorporated into the Sections.

- A. Water and Sewer Infrastructure shall be provided per the executed shared infrastructure agreement between Aura and Silvergate (Appendix B).
- B. Open Space. Land is to be set aside as open space. Access to and through this open space with linkages to the various Sections will be required to be shown in the concept plan that is attached to the redevelopment agreement or approved by the Redevelopment Entity prior to submission of site plan applications to the Planning Board.
- C. Bulk Requirements. Development in the Redevelopment Area shall conform to the bulk standards provided in Schedule A below. Where a standard in Schedule A differs from a standard in the Elk Township Land Development Code, the standard in Schedule A shall supersede.

Schedule A-Bulk Standards

Land Use Category	Building Type	Min. Lot Size	Lot Width @ Building Setback	Lot Depth	Setbacks	Acc. Setback	Height	Impervious cover
					Front/Side/Rear	rear/side/pool	Floors/Feet	max.
	Single family Detached	8,450 sf	65'min	130'min	25' min / 10' min-25' aggregate / 35' min	5'/5'/10'	2.5 / 35' max	45%
RESIDENTIAL	Multi-Family	no min.	100' min.	100'min	50' min / 20' min/ 20' min	5'/5'/Not Permitted	3/45'	80%
	Townhome	1,700 sf	20' min	85'	18' min-20' min with garage / 20' end unit / 15' min	Not Permitted	3 / 45' max	85%
	Twin	9,900 sf (Combined Lot)	90'min(Co mbin ed Lot)	100'min	15' min-20' min for garage / 10' min-25' aggregate (Combined Lot) / 30' min	Not Permitted	2.5 / 35' max	70%
	Single family Detached (Active adult)	5,000 sf	50'min	100'min	15' min-20' min for garage / 5' min- 15' aggregate / 20' min	Not Permitted	2.5 / 35' max	70%

III. In addition to the submission requirements as set forth above and under the Township of Elk - Land Development Ordinance, the following submission requirements and standards shall apply to all redevelopment projects in the Redevelopment Area.

- A. A general land use plan at a scale of not less than 1" = 50' indicating the tract area and general locations of the land uses to be included in the planned development.
- B. A circulation plan showing the general location and types of transportation facilities, including facilities for pedestrian access within the planned development and any proposed improvements to the existing transportation system outside the planned development; and all parking areas with a calculation showing adequate parking is being provided. A traffic impact report shall be included which shall detail estimated traffic generation on a daily and peak hour basis, the existing traffic on adjacent right-of-way and intersections, impact of proposed traffic, resulting changes in level of service, and means of mitigating impact.
- C. An open space plan shall be provided showing the proposed land area and uses proposed as open space. The plan shall include a general description of improvements to be made thereon, including a plan for the operation and maintenance of the landscaped and recreational areas.
- D. A utility plan indicating the need for and showing the proposed location of sewage and water lines, any drainage facilities necessitated by the physical characteristics of the site, proposed methods for handling solid waste disposal; and a plan for the operation and maintenance of proposed utilities.
- E. A storm water management plan setting forth the proposed method of controlling and managing storm water on the site with preliminary calculations.

- F. An environmental report prepared by an individual or firm qualified by education or experience detailing any remediation necessary and status of same, including copies of all correspondence and reports to any responsible agency.
- G. A traffic impact report prepared by an individual or firm qualified by education or experience providing:
- (1) full documentation of existing conditions on adjacent streets which provide direct site ingress/egress, including roadway pavement width, rights-of-way, parking conditions, pavement conditions, sight distances, grades and alignment of the roadway(s). Existing traffic-control devices (traffic signals, speed limits, etc.) shall be described, as well as any pertinent signing or pavement markings;
 - (2) Existing traffic volumes for peak-hour conditions shall be presented with the source of these data denoted;
 - (3) Projections of traffic to be generated by the proposed development for an average, daily, morning peak hour(s), an average daily, afternoon peak hour(s) and any other peak hour traffic condition deemed applicable as a result of the type and/or location of the proposed generator. Traffic generation rates should be based upon the latest edition of the ITE Trip Generation Handbook or upon local indices which can be substantiated by supporting documentation. Also, a trip distribution relating to the site traffic and the assignment of the site traffic to the adjacent street system shall be provided. The resultant trip distribution/site traffic assignment shall be fully documented. Any assumptions regarding the diversion of existing traffic to or from alternative routes should be clearly specified in the Statement;
 - (4) An assessment of the traffic impact to proposed development; including a capacity study of each site impacted intersection or roadway segment. These capacity studies shall be done for existing conditions, site pre-development conditions and site "build-out" conditions. The site build-out analysis shall be based on traffic volumes projected forward to the anticipated build-out year with adjustments for area-wide growth and seasonal traffic flow variations. Capacity determinations shall be based upon normally accepted standards and documentation, with the basis of these capacity analyses clearly indicated and provided as documentation. In the event the project is staged over a period of time, traffic volume projections for each stage with corresponding capacity analyses shall be provided and documented. The assessment shall include trip generation credits for mass transit, shared transportation, internal capture, and other transportation management programs;
 - (5) Traffic volume contribution to the overall background traffic at each site impacted intersection and/or roadway segment shall be determined;
 - (6) A determination of any roadway/intersection deficiencies for existing and/or future conditions. Specific recommendations for the resolution of these deficiencies shall also be addressed in the Statement. The Statement shall contain a listing of any and all actions to be undertaken by the applicant to mitigate any traffic problems and, as such, shall be considered a firm offer by the applicant to undertake said actions.

- H. Landscaping: A comprehensive landscape plan which provides for shade, buffering to adjacent uses, planting beds within parking areas, foundation plantings adjunct to buildings, and other landscaping elements designed to complement and enhance the overall site and building design.
- I. Architectural design plans consisting of floor plans and elevations of areas visible to the general public, including colors and materials. The features scale and details of the buildings shall demonstrate a comprehensive design approach.
- J. Elevations shall be prepared consistent with the goals and design intent of the architectural requirements. A materials board depicting the proposed building materials shall be included along with the materials identified on the elevations of the buildings.
- K. Fire escapes. Fire escapes shall not be permitted on exterior building facades. Internal stairs, or other routes of egress, shall be used.

IV. Planning Board Review

- A. In accordance with N.J.S.A. 40A:12A-13, Site plan and subdivision review shall be conducted by the Elk Township Planning Board pursuant to N.J.S.A. 40:55D-1 et seq. Site plan review shall consist of a preliminary site plan application and a final site plan application. Subdivisions shall consist of a preliminary major subdivision application and a final major subdivision application. Subdivisions shall be filed with the county recording officer by plat. Applications may be submitted for individual buildings, groups of buildings, entire blocks or portions thereof, or a project group.
- B. As the zoning standards set forth in this Redevelopment Plan constitute an overlay zoning, this overlay zoning shall only apply in the event that the applicant has been named as a redeveloper by the Township of Elk and entered into a redevelopment agreement with the Township of Elk. Execution of a redevelopment agreement shall be a mandatory checklist item for any land use application seeking to apply the zoning set forth in this Redevelopment Plan and any such application shall not be deemed complete pursuant to N.J.S.A. 40:55D-10.3 until proof of an executed redevelopment agreement has been submitted as part of the application.
- C. The Elk Township Planning Board may grant deviations from the strict application of the regulations contained within this Redevelopment Plan, except those standards and regulations specified in paragraph 4 below, in accordance with the provisions of N.J.S.A. 40:55D-60 and -70c.
- D. No deviations shall be granted by the Joint Land Use Board that result in any of the following effects or conditions:
 - (1) To allow a use not specifically permitted within the redevelopment district;
 - (2) Exceeding the maximum building or structure height as measured in feet and/or stories;

- (3) To allow a deviation from any contractual obligations of the redeveloper to the Township;
- (4) Any deviation sought that would necessitate the granting of a variance under N.J.S.A. 40:55D-70.d require an amendment of this Redevelopment Plan (with the exception of off-site signage along Route 55).

D. Potential Acquisition of Property

1. Properties and Interests Subject to Acquisition through Eminent Domain. This Redevelopment Area has been designated as a non-condemnation area in need of redevelopment and therefore eminent domain cannot and will not be utilized.

E. Township and Implementation of Redevelopment Plan

1. The Elk Township Committee is the Redevelopment Entity to implement this Redevelopment Plan (N.J.S.A. 40A:12A-4).
2. Elk Township Committee, acting as the Redevelopment Entity, is authorized to take the actions authorized by New Jersey Redevelopment and Housing Law (N.J.S.A. 40A:12A-1 et seq) in order to effectuate the plan.
3. The following powers are retained by the Township in its capacity as Redevelopment Entity:
 - a. Undertake redevelopment projects and issue bonds in support of same.
 - b. Construct improvements to prepare sites for use in accordance with the redevelopment plan.
 - c. Arrange or contract for professional services in support of redevelopment projects and arrange or contract with redevelopers with the undertaking of redevelopment work (and collect revenue from a redeveloper to defray the Township's costs).
 - d. Lease or convey property within the redevelopment area without public bidding, at prices and terms deemed reasonable
 - e. Arrange or contract with a public agency for the relocation of residents, industry, commerce displaced from a redevelopment area (pursuant to "Relocation Assistance Law" and "Relocation Assistance Act"). This requires a Workable Relocation Assistance Plan (WRAP) and approval of DCA.
 - f. Make plans for carrying out a program of voluntary redevelopment/rehabilitation and plans for the enforcement of laws, codes, and regulations relating to redevelopment.
 - g. Publish or disseminate information concerning any redevelopment area, plan, or project.
 - h. When necessary for the implementation of the Redevelopment Plan, enter into a contract with a redeveloper for any improvement, construction or other work forming a

part of this redevelopment plan. The redeveloper may be chosen through a Request for Proposals, a Request for Qualifications or through direct negotiations.

- i. Enter Agreements with Redevelopers setting forth roles and responsibilities, expectations, obligations, time frames for redevelopment.
 - j. Exercise such other powers as may be vested by the Township Committee, in its capacity as Redevelopment Entity, under N.J.S.A. 40A:12A-22.
4. In the event there is a Redevelopment Agreement between a Redeveloper and the Township, the Redevelopment Plan standards supersede existing and underlying zoning requirements, and will be accompanied by an amendment to the zoning map showing the locations of the redevelopment area.
5. Approval Process.
 - a. All applications for development within Redevelopment Area shall be submitted to the planning board for site plan/subdivision review and approval in accordance with the requirements of Municipal Land Use Law. The Redeveloper shall be required to furnish escrows and performance guarantees as required by the Elk Township Planning Board (N.J.S.A. 40:55D-53).
 - b. Expedited Planning Board review. The Township will facilitate a fast track review process for redevelopment projects that are the subject of a redevelopment Agreement with the Township.
 - c. "C" variances may be reviewed and considered by the Planning Board in accordance with Municipal Land Use Law and Township procedures. "D" Variances may not be granted by the Joint Land Use Board. Instead the Redeveloper must discuss potential changes to use (including the boundaries of use restrictions), height, and set-back requirements with Township Committee and may request that the redevelopment plan be amended by the Township.
 - d. Redevelopment Agreements. Township Committee, acting as the Redevelopment Entity may enter into a redevelopment agreement with a designated redeveloper in order to identify redevelopment objectives for the site, specify roles and responsibilities of both the redeveloper and the Township, set forth time frames for performance and completion of the project, identify any required off tract improvements required as part of the redevelopment, and provide for any special tax treatment or incentives for the proposed redevelopment.
6. The Redevelopment Entity is empowered under N.J.S.A. 40A:12A-1 et. seq., N.J.S.A. 40A:21-1, et seq., and N.J.S.A. 40A:20-1 et. seq. to allow for the implementation of alternative tax structures to assist in realizing the redevelopment plan objectives and to make redevelopment projects economically feasible. The establishment of redevelopment agreements including provisions for short term or long term tax abatement or exemption may benefit the Township by making private investment in the properties attractive and feasible, and by increasing the long term value of the properties. The alternative tax structures may be mutually beneficial for the Township and the redeveloper. Each project and payment structure shall be subject to an individualized program through negotiation and will be based on the specific circumstances and development budget.

F. Master Plan Consistency (State, County, Municipal)

Township Master Plan

Elk Township's Master Plan Reexamination was adopted in July 2016 and sets forth a vision of Elk as a balanced community of agricultural, residential and business uses and provides a framework for land use and development in the Township. The Master Plan is a policy guide that lays out the Township's overall goals and the steps needed to implement the Township's vision, but also maintains an awareness that the social, economic and policy environments are dynamic and may change over the ten year planning horizon. The Master Plan lays the foundation to support land use decisions and upon which the recommendations and plans can be incrementally implemented to realize the Township's goals and objectives.

The Master Plan was reviewed in its entirety for this planning report. The relevant Goals and Objectives are listed below, as they provide support for the Township's revitalization efforts or may point to changes that may be needed. For the reasons set forth below, the Redevelopment Plan is consistent with the Township's Master Plan

Land Use - Goal #1: Provide a balanced land use development pattern which can be effectively serviced by the transportation, the utility and the community facilities systems of the Township.

Objective:

- a. Utilize the P.U.D. and clustering concepts, where appropriate, to regulate pace and intensity of development within the Route 55 growth corridor. This area should include the development of a "Town Center" with a strong visual identity as an identifiable municipal core. A "Town Center" should include a mix of residential and commercial uses, with consideration given to incorporating appropriate government uses and open space to reinforce the core as the hub of activity in the Township.

Housing Plan - Goal #2: Provide a broad range of housing types for permanent residents.

Objectives:

- a. Plan future residential development areas in a manner which will permit Elk Township to provide its fair share of the housing supply for all segments of the future regional housing demand through utilization of its existing supply and proposed future housing development. This is to be done in accordance with the Township's Housing Element and Fair Share Plan as required under the New Jersey Fair Housing Act.
- b. Provide for varied housing types, including single-family detached homes, and limited areas of apartments and townhouses to satisfy the desires and needs of the anticipated future housing demand in the Township.

- c. Promote housing growth at a rate and in locations consistent with the community's ability to provide sanitary sewers and other community services.

Circulation Plan - Goal #3: Provide for more efficient movement of people and goods through the improvement of the Township transportation system.

Objectives:

- c. Orient future Township growth and development to the Route 55 growth corridor and the Planned Unit Development zone (P.U.D.) in that portion of the Township.

Utility Plan - Goal #4: Promote the orderly development of utility services to satisfy the needs of the Township population.

Objectives:

- b. Provide long range plans for solid waste management and coordinate solid waste facility planning with studies conducted by the Gloucester County Planning Department under the auspices of N.J.S.A. 13:IE-1 et seq. Comply with the requirements of the State Recycling Plan by:
 - a. Providing for the collection, disposition and recycling of recyclable materials to be designated in a municipal recycling ordinance.
 - b. Requiring that a plan for the collection, disposition and recycling of recyclable materials be included within any proposal for the construction of 50 or more units of multi-family residential housing, and any commercial or industrial development proposal for the utilization of 1,000 square feet or more of land.
- d. Maintain a sound and balanced municipal structure while delivering the optimum level of services and facilities to encourage orderly development of the Township through the provision of a Planned Unit Development (P.U.D.) zone district.
- e. Provide for a balanced delivery of services and facilities to Township residents within the limits of a sound fiscal system.
- f. Provide locations for future school, fire fighting and first aid squad facilities necessary to service future development.

Recreation Plan - Goal #6: Provide for a comprehensive system of public recreation facilities to serve all segments of the population.

Objectives:

- a. Provide for the development and the expansion of existing Township recreation areas with facilities to satisfy the needs of all age groups within the Township.
- b. Promote the provision of recreation areas within future residential developments by providing appropriate recreational standards for cluster developments and Planned Unit Developments.

2. 2006 Master Plan Reexamination Report Goals

- Provide a balanced land use development pattern
- Provide for a broad range of housing types
- Promote the orderly development of utility services

Redevelopment Plan

The Master Plan indicates that since 2009 Master Plan Reexamination Report, there have been two redevelopment area designations. The subject area of this redevelopment plan was part of one of these two areas, comprised of the following block and lots.

1. Block 29, Lots 24.01, 28 and 29; Block 31, Lots 1, 2.01, 2.02, 3, 7 and 22; Block 32, Lots 1-9 and; Block 33 Lot 12.01, Block 34, Lots 1.03, 3, 4, and 6-9 and Block 58, Lots 1 and 2. (Resolution 2016-13).

Neighboring Municipalities' Master Plans

The neighboring municipal master plans and zoning were reviewed for consistency (Harrison Township, South Harrison Township, Franklin Township, Borough of Glassboro, and Clayton Borough in Gloucester County; and Upper Pittsgrove Township in Salem County). While each municipality is its own entity, they are all similar in that they value the rural and environmental nature of their town while at the same time realize the importance of providing housing and services for residents of all ages regardless of economic status in appropriate locations.

County Comprehensive Plan and State of New Jersey Development and Redevelopment Plan (SDRP)

While the Township has not seen a fundamental shift in the assumptions, goals and objectives that formed the basis for the 1999, 2002, 2004 and 2006 Master Plan Reexaminations; there have been some circumstantial changes in and around the Township, some changes to statewide policies and regulations that impact the Township, and some new perspectives on how to respond to economic and social changes. However, the Township has proactively addressed new requirements and has reached out to the state, regional, county, and other local planning entities to play an active role in the land use planning and regulation process.

Redevelopment planning to promote economic development advances one of the State Plan's primary goals which is to revitalize the State's towns and cities.

County Comprehensive Plan

Gloucester County Comprehensive Plan has common goals that align with this Redevelopment Plan. The relevant goals are as follows, from the GC2040 Plan.

“Healthy Communities Goal: Enable residents to live healthy lifestyles regardless of age, income, or ability;

Promotion Goal: Attract new residents and visitors to the county;

Connectivity Goal: Make strategic infrastructure improvements;

Preservation Goal: Maintain the county's rural character and variety of community types;

Affordability Goal: Maintain the relatively low cost of living while retaining the quality of life valued by county residents.”

State of New Jersey Development and Redevelopment Plan (SDRP)

This Redevelopment plan falls in line with the General Plan Strategy of the SDRP as well as Goals 3 and 6. This redevelopment plan provides a range of housing types. Specifically, the below excerpts apply:

“General Plan Strategy: Achieve all the State Planning Goals by coordinating public and private actions to guide future growth into compact, ecologically designed forms of development and redevelopment and to protect the Environs, consistent with the Statewide Policies and the State Plan Policy Map.

Goal #6: Provide Adequate Housing at a Reasonable Cost Strategy Provide adequate housing at a reasonable cost through public/private partnerships that create and maintain a broad choice of attractive, affordable, ecologically designed housing, particularly for those most in need. Create and maintain housing in the Metropolitan and Suburban Planning Areas and in Centers in the Fringe, Rural and Environmentally Sensitive Planning Areas, at densities which support transit and reduce commuting time and costs, and at locations easily accessible, preferably on foot, to employment, retail, services, cultural, civic and recreational opportunities. Support regional and community-based housing initiatives and remove unnecessary regulatory and financial barriers to the delivery of housing at appropriate locations.”

G. Affordable Housing Provisions

1. Inventory of affordable residential units in the redevelopment area. There are no affordable residential units currently located within the redevelopment area. Therefore, no affordable units are proposed to be removed or relocated.
2. Plan for the provision of affordable replacement housing. A plan for the provision of affordable replacement housing is not needed since there are no existing affordable residential units within the designated redevelopment area or rehabilitation area. The redevelopment project will be inclusionary with 5% for the initial 464 residential units (24 units). Thereafter, 20% of all for-sale residential units and 15% of all rental residential units shall be set aside for low and moderate income households as set forth in the Settlement Agreement between Elk Township and the Fair Share Housing Center, Article 1 of the Elk Township Code, this Redevelopment Plan, and consistent with the New Jersey Uniform Housing Affordability Controls. The Redeveloper will contract with a qualified Administrative Agent to manage the affordable units.
3. The Township Committee, acting as the Redevelopment Entity, reserves the option to amend the Redevelopment Plan in the future to alter the inclusionary housing requirements as may be necessary to provide ample and appropriate affordable housing opportunities in the Township, if it is determined that such change is needed to ensure a viable redevelopment plan or to satisfy the Township's fair share affordable housing obligations.

H. Time Limits.

1. The Redevelopment Plan does not have an expiration date. Once a redevelopment project has been completed in accordance with the Redevelopment Plan and Redevelopment Agreement, and the Redevelopment Entity has affirmed that all obligations have been satisfied; the conditions that warranted the redevelopment area designation shall be deemed to no longer exist. This shall also be reflected in covenants established between the Township/Redevelopment Entity and a redeveloper in accordance with N.J.S.A. 40A:12A-9.

APPENDIX A DEFINITIONS

Aura Redevelopment Plan Definitions

Single family detached - A single family residence is situated on an individual lot with private yards on all four sides of the house.

Single family semi-detached - A single family residence on an individual lot; the building is set on one of the side property lines.

Twin - A free-standing building on one lot, or within a lot held in common ownership, serving two families with private entrances to each dwelling.

Duplex. Two dwellings on adjacent lots or held in common ownership with one common vertical wall.

Townhouse. A one-family dwelling in a building of at least three such units, where no dwelling is located over another dwelling.

Flat: all residential building. Dwelling units that are located on top of each other with access from a common hall or through individual entrances. This type of flat may have multiple levels.

APPENDIX B

Water and Sewer Infrastructure Agreement

**SILVERGATE & AURA
WATER AND SANITARY SEWER
INFRASTRUCTURE AGREEMENT**

THIS AGREEMENT is made on this 28th day of June, 2018, by and between:

SILVERGATE ASSOCIATES, a New Jersey Joint Venture with offices at 593 Bethlehem Pike, Suite 6A, Montgomeryville, PA 18936 (hereinafter "Silvergate"); and

AURA INVESTORS, LLC, a Delaware limited liability corporation with offices at 902 Carnegie Center Boulevard, Suite 300, Princeton, NJ 08054 (hereinafter "Aura")

For purposes of this Agreement, Silvergate and Aura shall collectively be called the "Developers" and either of them may be called a "Developer."

WITNESSETH:

- A. WHEREAS, each of the Developers is planning to construct certain real estate projects in the Township of Elk, Gloucester County, New Jersey. The projects, described by block/lot identification, are set forth below:

Developer/Project
Silvergate

Block and Lot #

Phase 1	N/F Block 56, Lots 4, 11.02 and 12.
Phase 2	N/F Block 63, Lots 2.01 and 2.02.
Phase 3	N/F Block 55, Lot 5 and Lots 5.01-5.52; Block 5.01, Lots 1-7; Block 5.02, Lots 1-51; Block 55.03, Lots 1-18; Block 55.04, Lots 1-18; and, Block 55.05, Lots 1-17.
Phase 4	Block 62, Lots 3.01 and 3.02.
Phase 5	Block 65, P/O Lot 5.
Phase 6	Block 65, P/O Lot 5 and Lot 4.02; Block 170, Lots 14 and 18; and Block 171, Lots 6 and 9.
Phase 7	Block 52, Lot 12.02; Block 53, Lot 1; Block 174, Lot 1; and, Block 213, Lot 3.

Together with such other properties owned or to be acquired by Silvergate to become incorporated as part of the intended Silvergate Project (hereinafter "Silvergate Project/Property(ies)").

Aura

N/F Block 29, Lots 24.02, 24.03 and 24.04; Block 29.01, Lots 55, 56, 57 and 58; Block 29.02, Lots 13 and 20; Block 29.08, Lots 28, 29, 30, 31, 32, 33, 34 and 35; Block 29.11, Lot 13; Block 29.12, Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12; ; Block 31, Lots 2.02, 5.01, 7 & 22; Block 32, Lots 1; and Block 58, Lot 1.

Together with such other properties owned or to be acquired by Aura to become incorporated as part of the intended Aura Project (hereinafter "Aura Project/Property(ies))".

B. WHEREAS, Aura is the successor in title to the lands previously owned by Orleans at Elk, LLC, which may be subject to various Developers Agreements and Infrastructure Cost Sharing Agreements to which Silvergate is a party including, but not limited to:

1. Amended and Restated Developers Agreement Among and Between Silvergate Associates, OHI NJ, Inc. (Orleans), CAN2, LLC (Canuso) and Elk Township Municipal Utilities Authority, dated February 4, 2005.

- Exhibit C-1 to the Amended and Restated Developers Agreement – Primary Water System Schematic prepared by Taylor Wiseman which graphically illustrated the components of the Primary Water System (also attached as Exhibit A to the Water Service Infrastructure Cost Sharing Agreement).
- Exhibit D-1 to the Amended and Restated Developers Agreement – Primary Sewer System Schematic prepared by Taylor Wiseman and Taylor which graphically illustrates the components of the Primary Sewer System (also attached as Exhibit A to the Sewerage Infrastructure Cost Sharing Agreement).
- Exhibit M to the Amended and Restated Developers Agreement:
 - Water Service Infrastructure Cost Sharing Agreement between Silvergate Associates, OHI North Service Corp. (Orleans), CAMCO Management LLC (Canuso), Elk Township Municipal Utilities Authority and New Jersey American Water Company, dated 2004.
 - Sewerage Infrastructure Cost Sharing Agreement between Silvergate Associates and OHI NJ, INC., dated 2005.

2. Addendum to Amended and Restated Developers Agreement Among and Between Silvergate Associates, OHI NJ, INC., CAN2, LLC and Elk Township Municipal Utilities Authority, dated October 9, 2006.

C. WHEREAS, the Developers have obtained or are in the process of obtaining approvals from Elk Township, Gloucester County, and other regulatory agencies to allow for the development of the Silvergate Project and the Aura Project (hereinafter "Projects"); and,

D. WHEREAS, the properties subject to this Agreement have been designated by Elk Township as "Areas in Need of Redevelopment," which may result in the Developers pursuing the modification of approvals which have already been obtained for their projects (hereinafter "Redevelopment Plan(s)"); and,

E. WHEREAS, the Developers recognize that in order for water and sanitary sewer service to be provided for the development of the Projects, it is necessary to design and install comprehensive infrastructure systems (hereinafter "Water System" and "Sanitary Sewer System") that will serve and benefit both the Silvergate Project and the Aura Project, and

that each Developer shall have individual duties and financial responsibilities regarding the installation of the Water System and Sanitary Sewer System as outlined in this Agreement; and,

- F. WHEREAS, the sewerage collection and conveyance system and the water distribution and storage system for the Projects are now under the jurisdiction and control of New Jersey Department of Environmental Protection (hereinafter "NJDEP") and New Jersey American Water (hereinafter "NJAW"); and the sewerage treatment and disposal is under the jurisdiction and control of NJDEP and the Gloucester County Utilities Authority (hereinafter "GCUA"); and prior to the start of the Projects, the Developers must reach mutually satisfactory agreements with NJAW and GCUA to more specifically define the various components of each system, the Developers responsibilities for the construction of each component and any cost sharing responsibilities between the Developers, in a manner by which each Developer may proceed independently or collectively; and,
- G. WHEREAS, the Developers agree that the previous Agreements identified in Section B. above are incorporated herein by reference for background purposes and it is in the interest of both parties to modify, amend and restate the terms and conditions of the said Agreements which apply to the development of the properties, and it is the express purpose of this Agreement to supersede and replace the prior referenced Agreements with the terms and conditions set forth herein:

NOW, THEREFORE, for and in consideration of the mutual terms, covenants and Agreements set forth herein, and intending to be legally bound, the parties agree as follows:

1. BACKGROUND

The purpose and intent of this Agreement is to simplify the process; define individual responsibilities for each Developer; define the cost sharing responsibilities; and provide a procedure by which either Developer can proceed independently or collectively in a fair and equitable basis, without affecting the integrity of the Water System and/or the Sanitary Sewer System which are necessary to serve the intended development of both Projects.

2. WATER SYSTEM: DESIGN, PERMITS, APPROVALS AND CONSTRUCTION

- a. The Water System shall include an extension of the 16" water main (or its equivalent) from its current terminus along CR-667 from Aura to the proposed location of an elevated water storage tank on lands owned by Aura on the west side of Rt. 55 (Block 58, Lot 1); a 750,000-gallon elevated water storage tank; a 12" water main to be extended through an existing sleeve under Rt. 55 and through an existing easement (hereinafter the "Schaffer Easement") from Rt. 55 to CR-619; a 12" water main to be extended along CR-610 from CR-619 to the proposed intersection of Silvergate Drive and CR-610 at Silvergate Phase 1; a 12" water main, or its equivalent, to be extended through Silvergate Phase 1, connecting to an existing 12" water main that extends through an existing sleeve under Rt. 55 between Silvergate Phase 1 and Silvergate Phase 3; a 12" water main, or its equivalent, to be extended from the existing 12"

water main at the sleeve under Rt. 55, through Silvergate Phase 3 to CR-667; and a 12" water main to be extended north along CR-667 and connecting to the 16" water main (or its equivalent) at the intersection of CR-667 and CR-619 to the water distribution system from Aura, as illustrated on **EXHIBIT "A"**.

b. The Developers agree that the responsibilities and obligations for the design, approvals, construction, performance guaranties and all costs associated with of the Water System are as follows:

i. Aura shall have the following responsibilities, duties and obligations regarding the Water System:

- (a.) Aura shall design, obtain all necessary permits and approvals and construct, at its sole cost, the 16" CLDIP Water Main (or its equivalent) from its current terminus along CR-667 from Aura to the proposed location of an elevated water storage tank on lands owned by Aura on the west side of Rt. 55 (Block 58, Lot 1), including a 12" Water Main stub across CR-619 with valve and cap to allow for a future extension of a 12" water main along CR-667. Silvergate shall be responsible for all water improvements from CR-619 to Silvergate Phase 3 and shall be responsible for all costs, easements and performance guaranties related thereto; and,
- (b.) Aura shall design, obtain all necessary permits and approvals and construct a 750,000-gallon elevated water storage tank on lands owned by Aura on the west side of Rt. 55 (Block 58, Lot 1), including a 12" CLDIP water main extension from the elevated water storage tank to a point within 100 feet of the existing sleeve under Rt. 55 with a cap and valve that will allow Silvergate to perform the future extension of a 12" water main through the sleeve under Rt. 55 (subject to Silvergate's responsibilities set forth in Section 2.b.ii.(d.) below), and shall be responsible for all costs, easements and performance guaranties related thereto; with the understanding that NJAW will pay all additional costs to increase the size of the tank from 500,000 gallons to 750,000 gallons; and,
- (c.) Aura shall be responsible for the design and obtaining all necessary permits and approvals (including all costs relating thereto) to extend a 12" Water Main through the existing sleeve under Rt. 55, through New Jersey Department of Transportation (hereinafter "NJDOT") lands adjoining the Rt. 55 Right of Way, and within the Schaffer Easement (including all costs relating to the modification of said easement to allow for construction and maintenance of both water and sanitary sewer utilities) from Rt. 55 to CR-619 and then along CR-610 to the proposed intersection of Silvergate Drive and CR-610. Silvergate shall be responsible for the construction and all other costs related to the construction of this work described in this Section 2.b.i.(c.); and,

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- (d.) Within 30 days of full execution of this Agreement, Aura shall proceed immediately with the design and applications for all necessary permits and approvals for the construction of the water mains and elevated water storage tank for which it is responsible to construct. Within ninety (90) days after obtaining final and unappealable approvals from all governmental authorities, for its project or any single phase requiring the use of the infrastructure improvements, Aura shall proceed with the construction of the Water System as described in this Section 2.
- (e.) Aura shall be responsible for the design, obtaining all necessary permits and approvals and construction of the water distribution system within its property to provide adequate water service for its intended development and all costs and performance guaranties related thereto.
- (f.) The parties shall execute and deliver the appropriate permanent easements for the water system and temporary construction easements as reasonably required to construct and maintain the water system as more particularly set forth on **EXHIBIT "D"**. Each party shall obtain appropriate subordination and non-disturbance agreements from its respective Lenders, if any.
- ii. Silvergate shall have the following responsibilities, duties and obligations regarding the Water System:
- (a.) Silvergate shall design, obtain all necessary permits and approvals and construct a 12" Water Main along CR-667 from the 12" water main stub constructed by Aura from the intersection of CR-667 and CR-619 to Silvergate Phase 3 at such time as development of Phase 3 starts and shall be responsible for all costs, easements and performance guaranties related thereto; and,
- (b.) Silvergate shall design, obtain all necessary permits and approvals and construct a 12" Water Main (or its equivalent) through Silvergate Phase 3, from CR-667 to the existing 12" Water Main that was previously constructed through the sleeves under Rt. 55 as part of the build out of Phase 3, or at such time as development starts in Silvergate Phase 1, whichever occurs first, and shall be responsible for all costs, easements and performance guaranties related thereto; and,
- (c.) Silvergate shall design, obtain all necessary permits and approvals and construct a 12" CLDIP Water Main (or its equivalent) through Phase 1 from the proposed intersection of Silvergate Drive and CR-610 to the existing 12" Water Main that was previously constructed between Silvergate Phase I and Silvergate Phase 3, as part of the build out of Phase 1 and shall be responsible for all costs, easements and performance guaranties related thereto; and,

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- (d.) Silvergate shall construct a 12" CLDIP Water Main through the sleeves under Rt. 55, through NJDOT lands adjoining the Rt. 55 Right of Way and through the Schaffer Easement between Rt. 55 and CR-619 and extending along CR-610 to the proposed intersection of CR-610 and Silvergate Drive at Silvergate Phase 1 pursuant to the design, permits and approvals obtained by Aura and Silvergate shall be responsible for the construction and all costs related to the construction of this work described in this Section 2.b.ii.(d).; and,
- (e.) Silvergate shall be responsible for the design, all necessary permits and approvals and construction of the water distribution system within its property to provide adequate water service for its intended development and all costs and performance guaranties related thereto; and,
- (f.) In the event that NJAW requires an emergency connection with another community water system, Silvergate agrees to cooperate by providing a connection to its water distribution system at the eastern end of Phase 6 and agrees to grant such easements as may be required within the Silvergate Property and any rights to other utility easements which Silvergate may have beyond the limits of the Silvergate Property (provided NJAW assumes responsibility for the design, obtaining all necessary permits, approvals and agreements with the owner of such other community water system in such form that does not subject Aura or Silvergate to any additional connections fees or costs related to such emergency connection) and all construction costs associated with the connection to such other community water system; and,
- (g.) In the event that NJAW requires an ASR well, Silvergate agrees to cooperate by providing a two (2) acre parcel at the previously approved location of the elevated water storage tank on Silvergate's property located along CR-553 (Block 62, Lot 3.02), and any rights that it may have to the existing well on that property, provided NJAW assumes responsibility for the design, obtaining all necessary permits and approvals and all costs related thereto, including construction of a water main connection to the water system constructed for Silvergate's intended development.
- iii. In the event that NJAW requires an increase in the size of any water mains or the extension of any water mains beyond what is necessary to serve the intended developments of Aura and Silvergate, Aura and Silvergate shall cooperate by providing any additional easements as may be required, provided such water main extension does not affect the intended developments of Aura or Silvergate and further provided that NJAW assumes responsibility for all additional costs for design, permits, approvals and increased construction costs related thereto.

3. SANITARY SEWER SYSTEM: DESIGN, PERMITS, APPROVALS, CONSTRUCTION AND COST SHARING REIMBURSEMENT

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- a. The Sanitary Sewer System shall include a series of collection mains, pump stations and force mains which will serve all or portions of the Aura and Silvergate properties and a primary pump station and force mains which will serve the combined sewerage flow from the intended development of the Aura and Silvergate properties or portions thereof, as more specifically described herein and illustrated schematically on **EXHIBIT "B"**. It is the intent of this Agreement to (1) define the responsibilities of each Developer for the construction of certain components of the Sanitary Sewer System under different development scenarios; (2) allow for the orderly and timely construction of the entire Sanitary Sewer System in such a form that either Developer can proceed with its intended development, either independently or collectively, without adversely affecting the other Developer's ability to proceed with its intended development; and (3) define responsibilities for costs and reimbursements between the Developers for certain components of the Sanitary Sewer System which are required and shared by both Developers.
- b. The Developers agree that the shared components of the Sanitary Sewer System will include (1) an 8" force main, starting at a point at the proposed intersection of Silvergate Drive and CR-610, at which point the entire sewerage flow from Aura (currently estimated to be 301,519 g.p.d.) will converge with the sewerage flow from Pump Station #1 (hereinafter "PS-1") which discharges the combined sewerage flow from Silvergate Phases 1, 3, 4 and 7 (currently estimated to be 163,643 g.p.d.) and extending along CR-610 to the proposed Pump Station #2 (hereinafter "PS-2"), which is to be relocated to a location near the intersection of CR-610 and the Road A entrance to Silvergate Phase 6; (2) PS-2 which will receive the entire sewerage flow from Aura (currently estimated to be 301,519 g.p.d.) and the entire sewerage flow from Silvergate (currently estimated to be 378,308 g.p.d.); and, (3) a 10" force main extending from PS-2 and discharging into an existing connection to the GCUA force main at CR-637, through easements to be provided by Silvergate. The design and construction of the shared components of the Sanitary Sewer System shall conform to the Conceptual Design Report, Wastewater Pumping Stations & Force Main Analysis, prepared by Taylor, Wiseman and Taylor, dated January 25, 2018, attached hereto as **EXHIBIT "C"**, subject to such modifications as may be required through the approval process by NJAW, GCUA and NJDEP. The Developers agree that there are three different scenarios under which the design, approvals and sequence of construction of the Sanitary Sewer System could progress, depending upon whether one Developer commences construction ahead of the other, or depending on the which Phase of development Silvergate starts first (hereinafter "Scenario #1," "Scenario #2," and "Scenario #3").
- i. Scenario #1 - Aura starts development of the Aura Project before Silvergate starts the Silvergate Project. Aura constructs a pump station at Aura (hereinafter "Aura PS"), with a force main directly to existing connection to the GCUA force main in CR-637, previously constructed by Silvergate, as set forth herein:

(a) Aura constructs Aura PS.

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(b) Aura constructs 8" force main from Aura PS along CR-667 and CR-619, or through lands owned by Aura to the Sleeves under Rt. 55. (Elk Township to provide access and use of the second sleeve under Rt. 55.)

(c) Aura modifies the Schaffer Easement or obtains a new easement from the sleeves under Rt. 55 to CR-619 as may be required.

(d) Aura constructs 8" force main through the sleeves under Rt. 55 and through the Schaffer Easement to CR-619 and then to CR-610.

(e) Aura constructs 8" force main along CR-610 to the proposed location of PS #2 in Silvergate Phase 6, with a 6" stub connection provided at the intersection of proposed Silvergate Drive and CR-610 for future connection from PS #1 in Silvergate Phase 1; and a by-pass connection in Silvergate Phase 6 for the future connection to PS #2.

(f) Aura constructs a 10" force main from the location of PS#2 through easements provided by Silvergate through Phase 6 to connect to the existing connection to the GCUA force main in CR-637.

(g) At such time as Silvergate starts development of Silvergate Phase 1 or Silvergate Phase 6, Silvergate shall reimburse Aura for its proportionate share of the costs, based on percentage of ultimate projected flow anticipated within each component of the system used by Silvergate, i.e.; if Silvergate starts development of Phase 1 first, it will reimburse Aura its proportionate share of the cost for the 8" force main from the intersection of Silvergate Drive and CR-610 to the relocated site for PS #2 in Phase 6, and its proportionate share of the cost for the 10" force main from the relocated site of PS #2 to the existing connection to the GCUA force main in CR-637.

ii. Scenario #2 - Silvergate starts development of Phases 5 and 6 of the Silvergate Project before Aura starts the Aura Project, as set forth herein:.

(a.) Silvergate constructs PS #2 in Phase 6 with adequate capacity for the full build out of the Silvergate Project and the Aura Project, with an 8" stub connection provided for future 8" force main connection from the Aura Project or Silvergate PS #1.

(b.) Silvergate constructs 10" force main from PS #2 to the existing connection to the GCUA force main in CR-637.

(c.) At such time that Aura starts development of the Aura Project, Aura shall reimburse Silvergate for its proportionate share of the cost for PS #2 and the 10" force main from PS #2 to the GCUA force main based on the percentage of the ultimate projected flow from each project.

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- iii. Scenario #3 - Silvergate starts development of Phase 1 or Phase 3 of the Silvergate Project before Aura starts the Aura Project. Silvergate constructs PS #1 in Phase 1 with a force main connection directly to the existing connection to the GCUA force main in CR-637 as set forth herein:
- (a.) Silvergate constructs PS #1 in Phase 1.
 - (b.) Silvergate constructs a 6" force main through Phase 1 to the proposed intersection of Silvergate Drive and CR-610.
 - (c.) Silvergate constructs a 8" force main from the proposed intersection of Silvergate Drive and CR-610 to the relocated site of PS #2 in Phase 6, with a connection provided at the proposed intersection of Silvergate Drive and CR-610 (at Silvergate Phase 1) for the 8" force main to be constructed by Aura in the future. Silvergate constructs a 10" force main from the PS #2 site to the existing connection to the GCUA force main at CR-637.
 - (d.) At such time as Aura starts construction of the Aura Project, Aura shall reimburse Silvergate for its proportionate share of the costs of the 8" and 10" force mains from the intersection of proposed Silvergate Drive and CR-610 (at Silvergate Phase 1) to the GCUA force main in CR-637, based on the ultimate projected flow from each project.
- c. The Developers agree that Silvergate had previously obtained all necessary permits and approvals for the construction of the shared components a sanitary sewer system intended to serve the Aura Project (formerly Latham Park) and Silvergate Project as approved pursuant to NJDEP TWA Permit # 03-0209, which TWA Permit remains valid. The Sanitary Sewer System described in this Section 3 will require an amendment or modification to said TWA Permit. Aura agrees that it will be responsible for the revised design and all costs associated with revised permits and approvals necessary to affect these revisions and obtain an amendment or modification to said TWA Permit in accordance with the CONCEPTUAL DESIGN REPORT, Wastewater Pumping Stations & Force Mains Analysis for Aura and Silvergate, prepared by Taylor Wiseman & Taylor, dated January 25, 2018 (as previously identified as **EXHIBIT "C"**). Silvergate and Aura will remain responsible for all costs related to the revised design of the sanitary sewer collection mains within their individual Projects required to amend or modify said TWA Permit.
- d. The parties shall execute and deliver the appropriate permanent easements for the sewer system and temporary construction easements as reasonably required to construct and maintain the sewer system as more particularly set forth on **EXHIBIT "D"**. Each party shall obtain appropriate subordination and non-disturbance agreements from its respective Lenders, if any.

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4. DEVELOPERS' OBLIGATION TO PROVIDE NOTICE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OF WATER SYSTEM AND SANITARY SEWER SYSTEM

Silvergate and Aura acknowledge and agree that due to the interrelationship of the Projects and the Developers' individual and joint responsibilities in regards to the Water System and the Sanitary Sewer System, it is imperative that they keep one another informed as to the timing for the commencement of construction of their respective Project, and therefore agree to undertake the following steps, in accordance with the Notice provisions in Section 10 below:

a. Water System:

- i. Aura agrees that at least 45 days prior to the commencement of construction of the Water System, it will provide written notice to Silvergate.
- ii. Within 15 days of receipt of such notice, Silvergate shall advise Aura if it intends to commence construction of any portion of its Project, and of any additional portions of the Water System required to serve that portion of Silvergate's Project. The Developers agree to coordinate the timing, sequence and construction of the various components of the Water System in such a manner to result in the most cost effective and timely completion of each component in the best interest of both Developers.

b. Sanitary Sewer System - Scenario #1:

- i. Aura agrees that at least 45 days prior to the commencement of construction of the Sewer System under Scenario #1, it will provide written notice to Silvergate.
- ii. Within 15 days of receipt of such notice, Silvergate shall advise Aura if it intends to commence construction of any portion of its Project, and of any additional portions of the Sanitary Sewer System required to serve that portion of Silvergate's Project. The Developers agree to coordinate the timing, sequence and construction of the various components of the Sanitary Sewer System in such a manner to result in the most cost effective and timely completion of each component in the best interest of both Developers.
- iii. If Silvergate provides notification to Aura that it does not intend to commence construction in conjunction with Section 4.b.ii. above, then Silvergate shall provide Aura with at least 45 days written notice prior to its commencement of construction of either Phase 1 or Phase 6, and Silvergate's Reimbursement Obligations (as defined in Section 5 below) shall become due and payable.

c. Sanitary Sewer System - Scenario #2 or Scenario #3:

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- i. Silvergate agrees that at least 45 days prior to the commencement of construction of the Sewer System under Scenario #2 or Scenario #3, it will provide written notice to Aura.
- ii. Within 15 days of receipt of such notice, Aura shall advise Silvergate if it intends to commence construction of any portion of its Project, and of any additional portions of the Sanitary Sewer System required to serve that portion of Aura's Project. The Developers agrees to coordinate the timing, sequence and construction of the various components of the Sanitary Sewer System in such a manner to result in the most cost effective and timely completion of each component in the best interest of both Developers.
- iii. If Aura provides notification to Silvergate that it does not intend to commence construction in conjunction with Section 4.c.ii. above, Aura shall provide Silvergate with at least 45 days written notice prior to its commencement of construction, and Aura's Reimbursement Obligations (as defined in Section 5 below) shall become due and payable.

5. DEVELOPERS' REIMBURSEMENT OBLIGATIONS

The Developers acknowledge that they are subject to Reimbursement Obligations (as defined herein) for the shared components of the Sanitary Sewer System as defined in Section 3.b. above, and agree to pay its respective Reimbursement Obligation at such time as specifically set forth under each Scenario described in Section 3. above, pursuant to the following:

- a. The total amount that will be used to calculate the Reimbursement Obligation(s) shall include the actual cost of construction, the cost of performance guaranties (if any), survey layout, inspections, NJAW overhead charges, dedication/asset transfer fees, and interest that may accrue as set forth in Section 5. d. below.
- b. The amount of the Reimbursement Obligation(s) to be paid shall be based on the percentage of ultimate projected flow anticipated within each component of the system from each Project at the time that Reimbursement Obligation payment is due, however, at no time shall the ultimate projected sewerage flow from the entire Aura Project be less than 214,216 g.p.d.; and the ultimate projected sewerage flow from the entire Silvergate Project be less than 358,318 g.p.d. as set forth in **EXHIBIT "E"**.
- c. The Developer entitled to receive the Reimbursement Obligation payment shall provide the other party with an Invoice (hereinafter "Original Invoice") for the total Reimbursement Obligation amount as set forth in Section 5. a. and Section 5. b. above, within 30 days of completion of the work for which reimbursement is due, including the following written documentation:



- i. Invoices detailing the cost of each component of the Sewer System which is subject to a Reimbursement Obligation under the scenario that was constructed, with proof of payment.
 - ii. A calculation showing the total flow through each of those components, and what percentage of that flow is attributable to each of the Projects.
 - iii. A letter from NJAW or its Engineer acknowledging satisfactory completion of the work.
 - iv. The items described in Section 5.c.(i) and Section 5.c.(ii) above shall be combined to provide an invoice outlining the Developer's Reimbursement Obligation.
- d. If full payment of the Reimbursement Obligation is not made within thirty (30) days of receipt of the Original Invoice, interest shall accrue at a rate of five percent (5%) per annum, calculated from the date of the Original Invoice until full payment, including accrued interest, is made as required in Section 4. b. and 4. c. above.
- d. The parties agree that invoices sent by facsimile transmission or email shall be acceptable.
- e. The failure of Silvergate or Aura to fulfill their Reimbursement Obligation(s) as described herein shall constitute an "event of default" which shall trigger the remedies outlined in Section 6 below.

6. DEFAULT

In the event Silvergate or Aura fails or refuses to comply fully with any term of the Agreement (hereinafter "Defaulting Party"), the other party (hereinafter "Non-Defaulting Party") may declare them in Default through written notice describing such default (hereinafter "Notice of Default"). If the Defaulting Party fails to cure such monetary default within ten (10) days or thirty (30) days for a non-monetary default following its receipt of Notice of Default, the Non-Defaulting Party shall have the right to undertake any or all of the following steps:

- a. The Non-Defaulting Party shall have the right to proceed with the construction of any components of the Water System and/or the Sanitary Sewer System which are the responsibility of the Defaulting Party, but only to the extent necessary for the Non-Defaulting Party to proceed with the development of its Project. Upon completion of such work, the Non-Defaulting Party shall present Defaulting Party with an invoice for reimbursement of all costs incurred for the performance of such work, which the Defaulting Party shall be required to pay within 30 days from the date of such invoice.

- b. The Non-Defaulting Party shall be permitted to file a Construction Lien Claim against the Property of the Defaulting Party to secure payment of the Reimbursement Obligation(s).
- c. The Defaulting Party shall be responsible for paying interest on outstanding Invoices and/or Reimbursement Obligations at the rate of 1.5% compound interest per month from the date of receipt of Notice of Default until payment is made in full, in addition to reimbursing the Non-Defaulting Party for all collection costs and reasonable attorneys' fees.

In the event of Default, the Defaulting Party shall not be entitled to use or make connection to any components of the Water System and/or Sanitary Sewer System until and unless all obligations of the Defaulting Party have been satisfied. The Non-Defaulting Party shall be permitted to notify all appropriate agencies, authorities and public entities having authority and control of the Projects that a Default has occurred and the Defaulting Party is restricted from any use or connection to the Water System and/or Sanitary Sewer System until the Default has been satisfied, and take any action necessary to enforce the restriction, without recourse by the Defaulting Party.

7. TIMING

In the event that Aura fails to pursue its obligations for design, permits and approvals and construction for the Water System as set forth in Section 2 above in a diligent and timely manner, Silvergate may provide notice to Aura that it intends to assume the responsibility and obligations of Aura, and if Aura fails to satisfy those obligations within ninety (90) days of receipt of such notice, Silvergate may, but is not obligated to, complete the obligations of Aura as it relates to Section 2 above. Upon completion of the work related thereto, Silvergate shall be entitled to reimbursement of all costs related thereto, pursuant to the provisions of Section 5 above, and if full payment is not received by Silvergate within the time specified therein, Aura shall be declared in Default pursuant to the provisions of Section 6 above.

8. DISPUTE RESOLUTION BETWEEN THE DEVELOPERS

Any dispute between the Developers concerning the terms and conditions of this Agreement, or its interpretation, shall be resolved through mediation with an agreed-upon mediator. The Developer seeking mediation shall transmit a written Notice of Requested Mediation to the other Developer, and the mediation shall be scheduled thereafter as soon as a mediator has been selected, as set forth below, but in no event later than thirty (30) days following the date of the Notice of Requested Mediation. The mediator shall attempt to mediate the dispute and, if the mediation is unsuccessful, the matter shall thereafter proceed to binding arbitration to be conducted in accordance with the Rules of the American Arbitration Association.

The Developers shall jointly choose the qualified mediator/arbitrator. If the Developers are unable to agree upon selection of a mediator/arbitrator, each Developer shall choose a qualified mediator/arbitrator, who shall in turn jointly choose a third mediator/arbitrator, who shall individually hear and decide the dispute. The determination of the third mediator/arbitrator shall be conclusive, final and binding on all parties. The parties agree to split the cost of any mediation or arbitration under this section.

9. GOVERNING LAW

The Agreement shall be governed and construed by the laws of the State of New Jersey.

10. NOTICES

All notices, consents, approvals or other communications hereunder or necessary to affect the purpose and intent of this Agreement shall be in writing and shall be deemed properly given if sent by the United States Mail, Certified, Return Receipt Requested, addressed to the appropriate party or successor in interest, or sent via telefax or email with a copy sent via regular mail. Changes in notice recipient for any parties to this Agreement shall be made in writing under the terms of this Section 10. Notice shall be effective upon mailing.

NOTICES shall be sent as follows:

Notice to Silvergate:

Silvergate Associates
c/o The Quaker Group
593 Bethlehem Pike
Suite 6A
Montgomeryville, PA 18936

ATTN: Nicholas Casey
Phone: (856) 627-1809
Email: ncasey@quakergroup.com

With Copy to:

M. James Maley, Jr., Esq.
Maley Givens, P.C.
1150 Haddonfield Avenue
Suite 210
Collingswood, NJ 08108

Phone: (856) 854-1515
Fax: (856) 858-2944
Email: jmaley@maleygivens.com

Handwritten signature and initials in blue ink, located in the bottom right corner of the page.

Notice to Aura:

Aura Investors, LLC
902 Carnegie Center Blvd.
Suite 300
Princeton, NJ 08540

ATTN: Dennis W. Stattman
Phone:
Email:

With Copy to:
Aura Investors, LLC
c/o Harvestate Group, LLC
188 Tamarack Circle
Skillman, NJ 08588

ATTN: Stephen Patron
Phone: (609) 448-3300
Email: spatron@Harvestate.com

With Additional Copy to:

Jack Plackter, Esq.
Fox Rothschild, LLP
Midtown Building
1301 Atlantic Avenue
Suite 400
Atlantic City, NJ 08401-7212

Phone: (609) 348-4515
Fax: (609) 348-6834
Email: jplackter@foxrothschild.com

11. MISCELLANEOUS

- a. This Agreement may be signed in one or more counterparts (or with scanned or facsimile counterpart signature pages) which, taken together, shall constitute a fully executed Agreement and shall be considered as a single document. The effective date shall be the date of the last signature.
- b. This Agreement shall inure to the benefit of and be binding upon the parties, their successors and assigns, including any successor in title, interest or equity to all or any portion of the properties specified in Section A above. The terms, conditions, covenants and provisions of this Agreement shall be binding and fully enforceable not only on the parties named herein, but also their or its respective heirs, executors,

administrators and successors in title, interest or equity to the property or any portions thereof.

12. DEVELOPERS' REPRESENTATIONS AND WARRANTIES

Silvergate and Aura represent and warrant that each has the full power and authority to enter into and fulfill its obligations under this Agreement, and the execution, delivery and performance of this Agreement by Developer constitutes a valid and binding obligation of Developer and the respective Developer's property, enforceable in accordance with its terms. No consent, waiver or approval by any other party or person is required in connection with the execution and delivery by Developer of this Agreement, or the performance by Developer of its obligations hereunder, or any instrument contemplated thereby.

13. ENTIRE AGREEMENT

The entire Agreement between the Developers is expressly set forth in this Agreement, and the parties are not bound by any agreements, understandings, provision, conditions, representations or warranties other than those expressly set forth herein. It is further agreed and understood, that upon execution hereof, the terms and conditions set forth in this Agreement shall replace and supersede all prior Agreements set forth in Section B. 1. and Section B. 2. above.

14. CHANGES

No change, alteration, amendment, modification or waiver of any of the terms or provisions hereto shall be valid, unless the same shall be in writing and signed by parties hereto.

15. OTHER PARTIES

Nothing in this Agreement shall preclude a subsequent amendment to permit additional developers to become a party to this Agreement, including, but not limited to, the assignee of any party hereto, provided, however, that any such additional party shall execute an appropriate assignment and assumption agreement agreeing to be bound by this Agreement and such other agreements as are required.

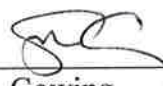
IN WITNESS WHEREOF, the parties hereto have executed this Agreement effective the day and date first above written.

WITNESS:



Nicholas P. Pusney

SILVERGATE ASSOCIATES:



Sara Gowing
President of Managing Partner



Date: June 28 , 2018

WITNESS:

Dawn E Pharo

AURA INVESTORS, LLC

Dennis W. Stattman

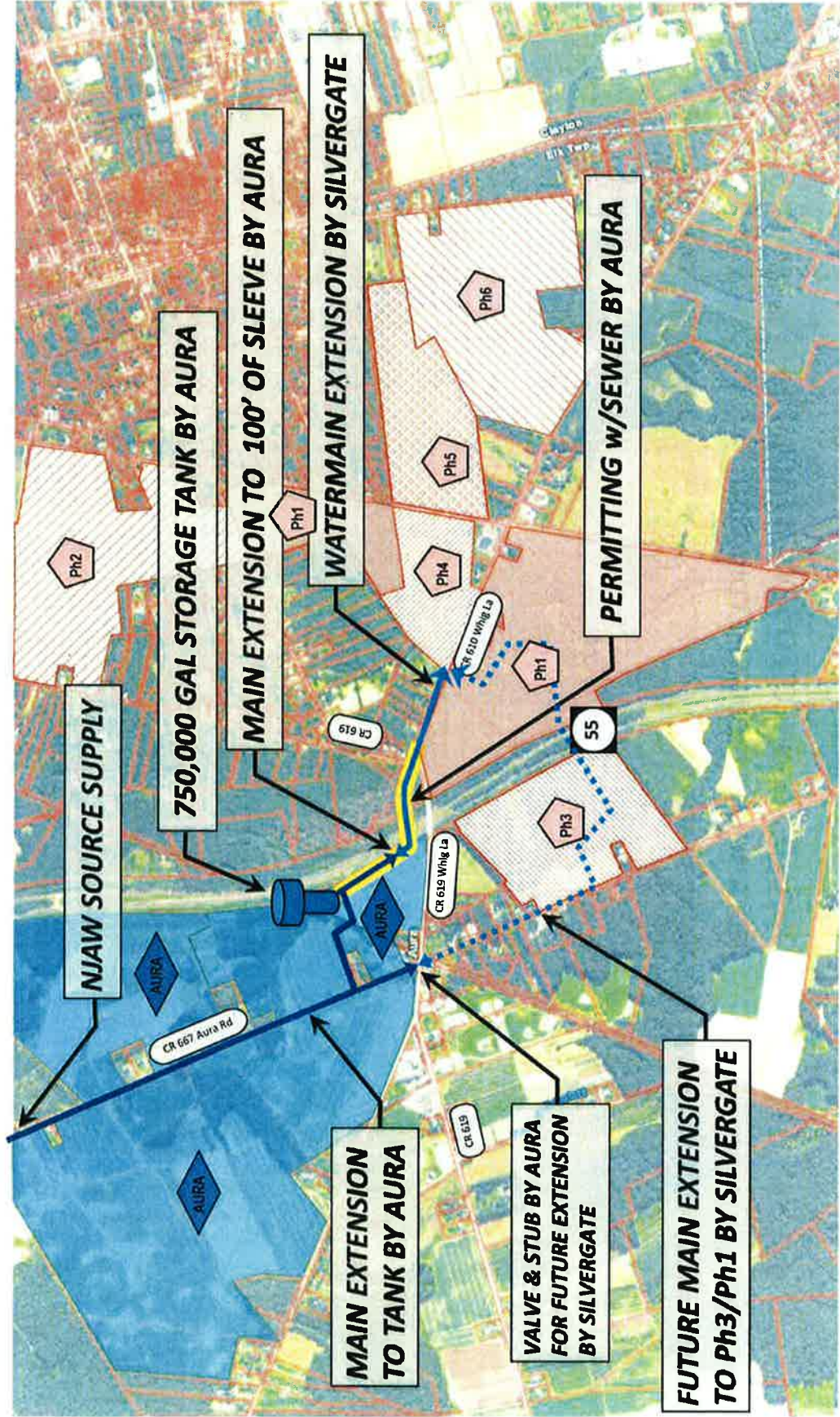
Dennis W. Stattman
Managing Member

Date: June 28 , 2018

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initialed by
me

of
5

SCHEMATIC LAYOUT
COMMON/INTERCONNECTED WATER FACILITIES
 ELK TOWNSHIP, GLOUCESTER COUNTY, NJ



The map illustrates the water infrastructure for the Silvergate area. Key features include:

- Aura Pumping:** Located in the bottom left, connected to the '8" FM - ALTERNATE PATH, Aura'.
- 8" FM - ALTERNATE PATH, Aura:** A line connecting the Aura Pumping to the Silvergate 2 Pump Station.
- Silvergate 2 Pump Sta. Shared:** A central pumping station serving multiple phases (PH1, PH2, PH3, PH4, PH5, PH6).
- 8" FM - Shared:** A line connecting the Silvergate 2 Pump Station to the Silvergate 1 Pump Station.
- 8" FM - Aura:** A line connecting the Silvergate 2 Pump Station to the Aura Pumping.
- Silvergate 1 Pump Sta.:** A pumping station located near the center-right of the map.
- 6" FM - Silvergate:** A line connecting the Silvergate 1 Pump Station to the 10" FM line.
- 10" FM - Shared:** A line connecting the Silvergate 1 Pump Station to the GCUA Clayton FM.
- GCUA Clayton FM:** A line connecting the 10" FM line to the GCUA Connection (exist).
- GCUA Connection (exist):** A line connecting the GCUA Clayton FM to the Aura Pumping.
- Phases (PH1, PH2, PH3, PH4, PH5, PH6):** Various areas of the map are labeled with these phase numbers.
- Roads:** Labeled roads include CR 619, CR 619 Whig La, CR 607 Aura Rd, and CR 610 Whig La.

EXHIBIT "C"

CONCEPTUAL DESIGN REPORT Wastewater Pumping Stations & Force Mains Analyses

Aura & Silvergate
Elk Township
Gloucester County, NJ

Prepared for:

Aura Investors, LLC
902 Carnegie Center Boulevard, Suite 300
Princeton, NJ 08540

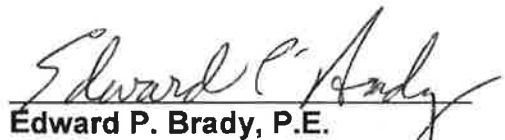
Prepared by:



Taylor Wiseman & Taylor

ENGINEERS SURVEYORS SCIENTISTS

124 Gaither Drive, Suite 150
Mount Laurel, NJ 08054
(856) 235 - 7200


Edward P. Brady, P.E.

NJ Professional Engineer No. 24GE03283600

Assisted by: Thomas A. Wingate
Christopher M. Bryan, PE

Project #: 17715.1012.00

Date: January 25, 2018

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II.	Purpose & Background	Page 1
III.	Description of Study	Page 2
IV.	Flows	Page 3
V.	Analysis	Page 4

Appendix

- Aura & Silvergate Wastewater Flows Calculations
- GCUA Clayton Pumping Station & Force Main Data
- Fairbanks Morse Model 5433 Pump Curve
- Flygt Pump Curves
- Concept Design Schematic
- WaterCAD V8i Output Results (Aura Pumping Station & Full Build Out)



I. Executive Summary

This document was prepared as a discussion instrument for the conceptual design modifications of the Elk Township Wastewater Collection System. The base wastewater system has been designed and permitted through the New Jersey Department of Environmental Protection Department (NJDEP) for the Silvergate Development (TWA Permit # 00-3697). Modification of the permit is required due to overall changes in the development plans for Elk Township, acquisition of the wastewater franchise by New Jersey American (NJA), and acceptance from the Gloucester County Utilities Authority (GCUA) of the total wastewater generated within Elk Township. The core concept of disposal remains the same as the approved permit, with Silvergate Pumping Station # 2 injecting into the GCUA Clayton Force Main at final full buildout, but now allows for interim direct connection of Silvergate Pumping Station #1 and the Aura Pumping Station. Note: there would remain the single connection point with the Clayton Force Main which is currently constructed. The changes in the development is a result of the land use changes, relocation of the pumping stations and the phasing of the proposed development, with the understanding that build-out would take approximately 10-15 years. This study is based on the full build-out of development with sewer flows based on current NJDEP criteria, which historically are conservative. It should be expected that once development begins, the actual sewer flows will be monitored, quantified, compared with projections and the balance of capacity evaluated on a semi-annual basis. In doing so, it is anticipated that the need for larger capacity pumps in the future may not be required.

II. Purpose & Background

The purpose of this study was to analyze the proposed wastewater pumping stations and force mains for the Aura and Silvergate development projects. Wastewater will be conveyed to the pumping stations via gravity sewers and then pumped from the stations into a shared force main that discharges into the Gloucester County Utility Authority's (GCUA) Clayton Force Main. The Aura and Silvergate projects will be constructed in phases. The Aura project will be served by a single pumping station, referenced in this report as Aura P.S. The Silvergate project will be served by two pumping stations, referenced in this report as Silvergate P.S. #1 and Silvergate P.S. #2. The study analyzed various scenarios as the phases of the projects are constructed. The objective was to size the pumping systems for each pumping station and study how the



system will perform given the changing operating conditions as the pumping stations become operational over the course of the phased construction.

III. Description of Study

The wastewater conveyance system was analyzed using Bentley WaterCAD V8i hydraulic modeling software. The location of pumping stations and force main routes were based on the latest available information from Aura Investors, LLC. and Silvergate Associates on their proposed projects. The analysis uses Silvergate Associates recently revised locations for the pumping stations within the Phase 1 and Phase 6 of its project. The new station locations reduced the size and depth of the gravity collection mains and reduced the depth of the station wet wells. The GCUA Force Main discharge was modeled using pump and force main data provided by the GCUA for the Clayton Pumping Station¹.

The final build out will consist of the Aura P.S. with an 8-inch force main that runs south along RT 667 and then east along RT 610 until it discharges into the Silvergate P.S. #2. The Silvergate P.S. #1 will connect into the 8-inch force main at the proposed intersection of RT 610 and Silvergate Drive via a 6-inch force main running through the Silvergate Phase 1 project. The Silvergate P.S. #2 will then pump the total flow from the Silvergate and Aura projects via a 10-inch force main that discharges at the existing connection point into the GCUA 16-inch force main located along RT 637.

The study considered the possibility of the Silvergate and Aura projects being constructed independent of one another's timelines. If the Aura project is constructed first, the 10-inch force main for the Silvergate P.S. #2 to the GCUA system connection would be constructed at the same time as the 8-inch force main from the Aura P.S. and a by-pass connection installed near the Silvergate P.S. #2 that will allow the 8-inch force main to be connected directly to the 10-inch force main until the Silvergate P.S. #2 is built. If the Silvergate P.S. #2 is the first station built, the 10-inch force main would be constructed and an 8-inch stub would be constructed from the wet well that provides for the future connection of the 8-inch force main to the pumping station.

¹ Minimal Information was provided by the GCUA. Information used in this study is based on assumed data that closely correlates with the data provided



Various operating conditions were analyzed as part of the study to see how the entire system will perform during the implementation of the projects. Below is a brief description of the 6 scenarios that were analyzed:

- Scenario #1:** Aura P.S. Discharging Directly into GCUA Force Main
- Scenario #2:** Silvergate P.S. #1 Discharging Directly into GCUA Force Main
- Scenario #3:** Aura and Silvergate P.S. #1 Discharging Directly into GCUA Force Main Simultaneously
- Scenario #4:** Aura P.S. Discharging into Silvergate P.S. #2. Silvergate P.S. #2 Discharging into GCUA Force Main.
- Scenario #5:** Silvergate P.S. #1 Discharging into Silvergate P.S. #2. Silvergate P.S. #2 Discharging into GCUA Force Main.
- Scenario #6:** Aura P.S. and Silvergate P.S. #1 Discharging into Pumping Silvergate P.S. #2 Simultaneously. Silvergate P.S. #2 Discharging into GCUA Force Main.

IV. Flows

The table below is a summary of the contributing daily flows, at full build out, for the three pumping stations and the required pumping rate of the stations to meet the NJDEP requirement of 2.5 times the average daily flow. A full breakdown of the phased contributing flows for each station can be found in the appendix of this report.

Description	Total Avg. Daily Flow	Avg. Daily Flow Rate	Minimum Pumping Rate ²
	GPD	GPM	GPM
Aura Pumping Station	301,519	209	523
Silvergate Pumping Station #1	163,643	114	284
Silvergate Pumping Station #2	214,665	149	1225 ³

² Minimum Pumping Rate is 2.5 times the average daily flow into the station per NJDEP pumping station requirements.

³ $(2.5 \times \text{Total Avg. Day Flow}) + (\text{Aura P.S. Pumping Rate}) + (\text{Silvergate P.S. \#1 Pumping Rate})$



The GCUA Clayton Pumping Station is reported to have an operating point of 1,300 GPM at 80 feet of head with one pump in operation and an operating point of 1,623 GPM at 89 feet of head with two pumps operating. The current average daily flow through the station is reported at 601,000 GPD with an additional committed flow of 327,000 GPD, for a future flow of 928,000 GPD. The current minimum pumping rate of the station is 1043 GPM and the future minimum pumping rate of the station is 1611 GPM.

V. Analysis

The hydraulic analysis was run with published pump curve data from manufacturers. For the GCUA Clayton Pumping Station, the pump curve used in the study was the flooded suction Fairbanks Morse model 5433 with 10.2" Impeller and 6" discharge. The data points used for the curve were a shutoff head of 111 Feet, 1300 GPM at 80 feet, 812 GPM at 89 feet, and max operating of 2500 GPM at 40 feet. Proposed pumping stations pumps were based on Flygt duplex submersible pumps. The pumps were sized to meet or exceed the minimum pumping rate for each station. The full buildout pumping rate was used for each scenario and a pump was chosen that can achieve the required flows for each scenario. Following is a table summarizing the results of the pump operating points for the various scenarios.

Description	Pumping Rate	Static Head	Total Dynamic Head	Pump Size
	GPM	Feet	Feet	HP
Scenario #1: Aura P.S. to GCUA				
Aura Pumping Station	610	4	130	35
GCUA Pumping Station	1115	28	84	40
Scenario #2: Silvergate P.S. #1 to GCUA				
Silvergate Pumping Station #1	385	18	181	35
GCUA Pumping Station	1175	28	83	40
Scenario #3: Aura P.S. & Silvergate P.S. #1 to GCUA				
Aura Pumping Station	555	4	143	35
Silvergate Pumping Station #1	255	22	212	35
GCUA Pumping Station	1060	28	86	40
Scenario #4: Aura P.S. to Silvergate P.S. #2 to GCUA				
Aura Pumping Station	570	-10	68	23



Silvergate Pumping Station #2	1325	19	113	60
GCUA Pumping Station	890	28	91	40
Scenario #5: Silvergate P.S. #1 to Silvergate P.S. #2 to GCUA				
Silvergate Pumping Station #1	295	4	126	23
Silvergate Pumping Station #2	1325	19	113	60
GCUA Pumping Station	890	28	91	40
Scenario #6: All Stations Operating				
Aura Pumping Station	540	-10	74	23
Silvergate Pumping Station #1	220	4	143	23
Silvergate Pumping Station #2	1325	19	113	60
GCUA Pumping Station	890	28	91	40

The analysis found that the highest operating condition for the Aura P.S. and Silvergate P.S. #1 is if the stations discharge directly into the GCUA force main. This is due to the increase pipe length and the injection pressure required for the discharge into the 16-inch force main. Once the Silvergate P.S. #2 is in service, the total dynamic head is reduced for the other two stations. In this situation, the pumps for the Aura P.S. and Silvergate P.S. #1 pumping stations could be changed out to smaller pumps or variable frequency drives (VFD) could be used to reduce the running speeds of the pumps so that energy savings can be realized once the entire wastewater system is constructed. Installation of VFD's for each station is recommended in general so that run speeds can be adjusted as contributing flows increase as phases of construction progress and also to lessen the impact on the downstream system pressure by the pumping stations.

In Scenarios #3 and #6, when both the Aura P.S. and Silvergate P.S. #1 are operating simultaneously, the pumping rate drops below the minimum pumping rate for the Silvergate P.S. #1. Given that the pumps still operate well above the average daily flow rate and the operating condition will only occur temporarily, the risk of over flowing the station is minimal. If the water level in the station did start to exceed normal operating, the lag pump would come on to achieve a flow greater than the minimum pumping rate.

The flow velocities in the force mains were also analyzed. A flow velocity greater than 2 feet/second was achieved in the force mains for each scenario, except for the 10-inch portion of the force main in Scenario #2. This scenario will only be of concern if the Silvergate P.S. #1



becomes operational before the Aura P.S. or the Silvergate P.S. #2. In that scenario, a maintenance plan may need to be developed for the 10-inch force main to ensure there is no accumulation of sediment.



APPENDIX



Taylor Wiseman & Taylor
ENGINEERS SURVEYORS SCIENTISTS

CALCULATIONS

BY **TAW** DATE **01/08/18**
CHK'D **EPB** DATE

SHEET 1 of 2
JOB # 17715.1011.06

Flow

Determine Wastewater Flow Generation for Proposed Aura Development unit count provided by M.Canuso 12/08/17 (& revised per discussion)

Plan A (Existing Approval at Age Restricted Flow)

Unit Type	# Units	3 Bed	2 Bed	1 Bed	Total Flow
Residential	AR Q/unit>>	225	170	110	GPD
	Q/unit>>	300	225	150	GPD
AR Single Family	477	477	0		107,325
Ap'd Single Fam >> to Glassboro				0	0
Totals	477	477	0	0	107,325

Commercial

Retail (sf)	160,000	16,000
		123,325

Municipal Allocation	4,600
Future Growth 18%	22,266

Total Estimated Flow 150,191 >>>>>>>
Round Up 151,000 GPD~gpm

ADF gpm	PF	Min Pump
105	2.5	262

Plan C - (per M.Canuso & follow-up with S.Patron)

Age Restricted (reduced flow)

Unit Type	# Units	3 Bed	2 Bed	1 Bed	Total Flow
Residential	Q/unit>>	225	170	110	GPD
Multi Family	684		479	205	103,980
Townhouse	390	117	273	0	72,735
Single Family	320	96	224	0	59,680
Totals	1394	213	976	205	236,395

Commercial

Retail (sf)	150,000	15,000
		251,395

Municipal Allocation	4,600
Future Growth 18%	45,524

Total Estimated Flow 301,519 >>>>>>>
Round Up 302,000 GPD~gpm

ADF gpm	PF	Min Pump
210	2.5	524



Taylor Wiseman & Taylor
ENGINEERS SURVEYORS SCIENTISTS

CALCULATIONS

BY **TAW** DATE **1/18/2018**
CHK'D **EPB** DATE

SHEET 1 of 2
JOB # 17715.1011.06

Flow

Determine Wastewater Flow Generation for Proposed Silvergate Development
Contributing Flow Data Provided by Richard Clemson on 1/15/18

Silvergate Flows to Pump Station #1:

Silvergate Phase 1:	13,340 gpd			
Silvergate Phase 3:	48,600 gpd			
Silvergate Phase 4:	55,967 gpd	gpm		
Silvergate Phase 7:	45,736 gpd		PF	Min Pump
Total to PS#1:	163,643 gpd	114	2.5	284

Silvergate Flows to Pump Station #2:

Silvergate Phase 2:	68,700 gpd			
Silvergate Phase 5:	56,265 gpd			
Silvergate Phase 6:	89,700 gpd	gpm		
Flow from PS#1:	163,643 gpd		PF	Min Pump
Total to PS#2:	378,308 gpd	263	2.5	657

Silvergate PUD
 Elk Township, Gloucester County, NJ

LAND USE SCHEDULE AND WASTEWATER FLOW PROJECTION

PHASE	RESIDENTIAL UNITS APPROVED PER GENERAL DEVELOPMENT PLAN				RESIDENTIAL PROJECTED FLOW (GPD)	* RESIDENTIAL UNITS WITH PRELIMINARY APPROVAL OR ANTICIPATED				RESIDENTIAL PROJECTED FLOW (GPD)	NON-RESIDENTIAL SQUARE FOOTAGE APPROVED PER GENERAL DEVELOPMENT			** NON-RESIDENTIAL SQUARE FOOTAGE WITH PRELIMINARY APPROVAL OR ANTICIPATED			TOTAL PROJECTED FLOW PER GPD			TOTAL ANTICIPATED FLOW (GPD)	
	PLAN	UNIT	TYPE	NUDEP REQUIRED UNIT FLOW		PLAN	UNIT	TYPE	NUDEP REQUIRED UNIT FLOW		PLAN	UNIT FLOW	UNITS	NUDEP REQUIRED UNIT FLOW	UNITS	NUDEP REQUIRED UNIT FLOW	UNITS	TOTAL PROJECTED FLOW PER GPD (GPD)	TOTAL ANTICIPATED FLOW (GPD)	TOTAL PROJECTED FLOW PER GPD (GPD)	TOTAL ANTICIPATED FLOW (GPD)
1	35	SFD	300	GPDDU	10,500	35	SFD	300	GPDDU	10,500	25,400	0.10	GPDSF	2,540	25,400	0.10	GPDSF	13,240	13,240	13,240	13,240
2	384	SFD	300	GPDDU	10,500	229	SFD	300	GPDDU	68,700	N/A	N/A	N/A	N/A	N/A	N/A	N/A	85,200	85,200	85,200	85,200
3	181	SFD	300	GPDDU	10,500	182	SFD	300	GPDDU	68,800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54,300	54,300	54,300	54,300
4	98	2BR DU	225	GPDDU	21,000	48	2BR DU	225	GPDDU	10,800	100,000	0.10	GPDSF	10,000	148,042	Varies	GPDSF	30,767	66,400	55,067	55,067
5	98	3BR DU	300	GPDDU	28,800	48	3BR DU	300	GPDDU	14,400											
5 (100% CENTER)	228	THU	300	GPDDU	67,800	172	THU	300	GPDDU	51,800	45,650	0.10	GPDSF	4,565	40,650	0.10	GPDSF	4,065	72,455	56,285	56,285
5		APT			0	48	2BR APT	225	GPDDU	10,800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	117,000	88,700		
5	208	DUPLEX	300	GPDDU	79,800	70	3BR APT	300	GPDDU	14,400											
5	127	SFD	300	GPDDU	38,100	145	DUPLEX	300	GPDDU	21,000											
***7 (REGIONAL COMMERCIAL)	N/A					N/A					237,500	0.10	GPDSF	23,750	180,000	0.10	GPDSF	18,000	23,750	18,000	18,000
***7 (REGIONAL COMMERCIAL)	N/A					N/A					237,500	0.10	GPDSF	23,750	180,000	0.10	GPDSF	18,000	23,750	18,000	18,000
***7 (REGIONAL COMMERCIAL)	N/A					N/A					38,200	0.10	GPDSF	3,820	31,380	0.10	GPDSF	3,138	3,820	3,138	3,138
***7 (REGIONAL COMMERCIAL)	N/A					N/A					230	25	GPDEMP	5,750	184	25	GPDEMP	4,800	5,750	4,800	4,800

TOTAL PROJECTED FLOW PER GENERAL DEVELOPMENT PLAN APPROVAL = 469,775

TOTAL ANTICIPATED SEWAGE FLOW = 378,308

1 Proposed residential/non-residential quantities shown hereon for Phases 1, 2, 3, 5 and 6 reflect residential and non-residential yields obtained from engineered plans that have been prepared and submitted to Elk Township for approval. Phases 1 and 3 have received Final Approval; Phases 2, 5 and 6 have received conditional Preliminary Approval; Phase 4 has been temporarily tabled.

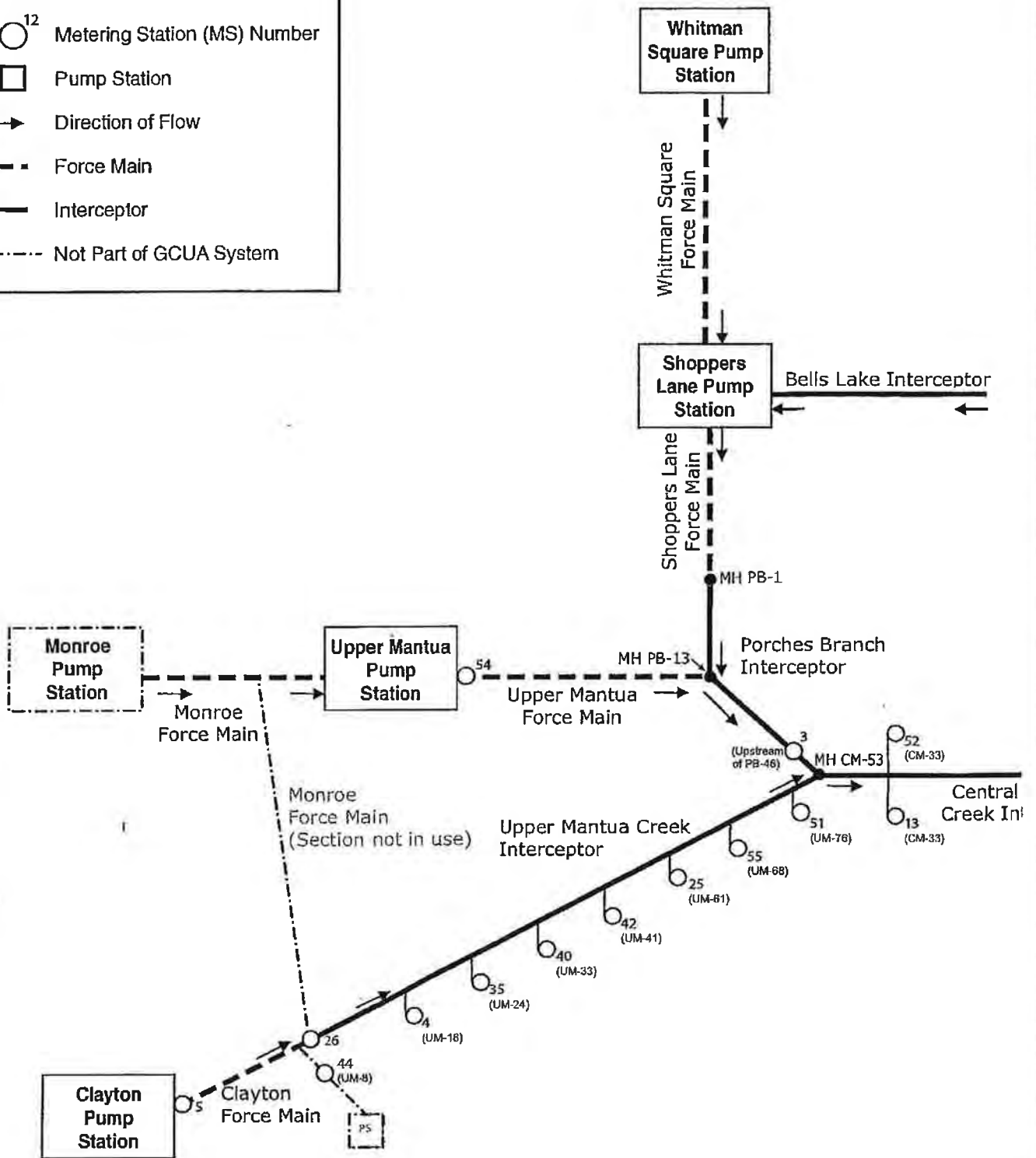
* Proposed residential quantities shown hereon for Phase 4 reflects transfer of 98 apartment units from Phase 4 to Phase 6.

** Proposed non-residential quantities shown hereon for Phase 4 reflecting an estimated yield based on a Concept Plan developed by Silvergate.
 Proposed non-residential quantities shown hereon for Phase 7 reflects an estimated yield obtained by reducing the General Development Approved Land Use yield by 25%.

*** Total yield approved by the GPD is 815,200 sf. 140,200 sf is designated as Industrial/Office, leaving 237,500 sf as commercial space. Out of the 140,200 sf, 38,200 sf is designated as office space. The remaining 101,000 sf is designated as warehouses. It is anticipated that this space would support 230 employees.

LEGEND

-  Metering Station (MS) Number
-  Pump Station
-  Direction of Flow
-  Force Main
-  Interceptor
-  Not Part of GCUA System



2.3.3 Clayton Connection

The Clayton connection consists of a pump station, force main, and MS #5. Flows collected at the pump station are discharged through a force main with a total equivalent length of 24,715 lf constructed of 16-inch cement-lined ductile iron pipe. The Clayton force main terminates at Manhole UM-1, the upstream end of the Upper Mantua Creek interceptor. Table 2-11 summarizes the physical characteristics of Clayton force main.

Table 2-11
Summary of Clayton Force Main

System Component	Location	Pipe Size (inches)	Length (lf)	Material
Clayton force main	Clayton pump station to UM-1	16	24,715*	Cement-lined ductile iron

*Length equals total equivalent length.

The Clayton pump station consists of two installed Fairbanks Morse pumps. There is also a shelf spare available. Each pump at Clayton pump station has an impeller diameter of 10.2 inches. The pumps are individually rated to discharge 1,300 gpm at a total dynamic head of 80 ft. Pumping in parallel, the pump station flow capacity is 1,623 gpm at a total dynamic head of 89 ft. Power for the pumps is provided by 40-hp, constant speed electric motors operating at 1,750 rpm.

All wastewater collected by the Clayton Sewerage Authority collection system discharges into the Clayton pump station. MS #5 is located immediately downstream of the pump station to measure flows being discharged to the GCUA system. Average daily flows through this station are approximately 601,000 gpd. In addition, approximately 327,000 gpd are committed from various approved projects.

2.3.4 Upper Mantua Creek Interceptor

The main trunkline of the Mantua Creek collection system begins with the Upper Mantua Creek interceptor at the discharge point of the Clayton force main. The upstream end of this interceptor

is defined by Manhole UM-1. Flows are conveyed to the downstream end of the Upper Mantua Creek interceptor at Manhole CM-53, the upstream end of the Central Mantua interceptor.

The Upper Mantua Creek interceptor is 27,807 ft long and is connected by 93 manholes. When first constructed, the sewer was composed entirely of reinforced concrete pipe, but a multi-phase rehabilitation project was implemented in the mid-1980s during which the interceptor between Manholes UM-1 and UM-19 was sleeved with a polyethylene liner. This resulted in a 2-inch reduction in pipe diameter, but the hydraulic capacity of the pipe was not critically reduced due to improved flow conditions. Table 2-12 summarizes the physical characteristics of the Upper Mantua Creek interceptor.

Table 2-12
Summary of Upper Mantua Creek Interceptor

System Component	Location	Pipe Size (inches)	Length (lf)	Material
Upper Mantua Creek interceptor	UM-1 to UM-8	22	2,835	Polyethylene-lined reinforced concrete
Upper Mantua Creek interceptor	UM-8 to UM-19	25	4,112	Polyethylene-lined reinforced concrete
Upper Mantua Creek interceptor	UM-19 to CM-53	30	20,860	Reinforced concrete
Total length of pipe = 27,807 lf				
Total number of manholes = 93				

There are eight locations at which flows are metered from municipal sewer line connections with the GCUA system. All MSs along this interceptor are offline. Below, the locations at which each connection ties into the system, as well as the average flows measured by the MSs, are specified:

- **Stanger Avenue MS #44:** Measures flows that connect to the Upper Mantua Creek interceptor at Manhole UM-8. Average flows are approximately 64,400 gpd.
- **Birches MS #4:** Measures flows that connect to the Upper Mantua Creek interceptor at UM-18. Average flows are approximately 1.5 mgd.
- **Whethersfield Woods MS #35:** Measures flows that connect to the Upper Mantua Creek interceptor at UM-24. Average flows are approximately 192,000 gpd.

- **Doubletree MS #40:** Measures flows that are conveyed through a short interceptor to Manhole UM-33, the connection point with the Upper Mantua Creek interceptor. The short interceptor consists of two pipe segments and Manhole UM-33A. The upstream pipe segment between Doubletree MS #40 and UM-33A is approximately 125 ft long and the downstream pipe segment between UM-33A and UM-33 is approximately 257 ft long. Average flows through Doubletree MS #40 are approximately 176,000 gpd.
- **Autumn Ridge MS #42:** Measures flows that connect to the Upper Mantua Creek interceptor at UM-41. Average flows are approximately 56,000 gpd.
- **Pitman East MS #25:** Measures flows that connect to the Upper Mantua Creek interceptor at UM-61. Average flows are approximately 211,000 gpd.
- **Parke Place MS #55:** Measures flows that connect to the Upper Mantua Creek interceptor at UM-68. Average flows are approximately 65,800 gpd.
- **Bethel Mill Park MS #51:** Measures flows that connect to the Upper Mantua Creek interceptor at UM-76. Average flows are approximately 6,700 gpd.

In addition to currently metered flows, approximately 280,000 gpd are committed from various approved projects.

2.3.5 Whitman Square Pump Station and Force Main

The Whitman Square pump station is located at the site of a former sewage treatment plant on Whitman Drive in Washington Township. Flows are discharged from the pump station to the Whitman Square force main, which conveys flows to the Shoppers Lane pump station. The force main varies in diameter from the upstream to the downstream end. At the upstream end, a 12-inch main constructed of cast iron extends approximately 3,800 ft from the pump station to Black Horse Pike (State Route 42), where it is reduced to an 8-inch cement-lined cast iron main, which continues for approximately 1,750 ft along Greentree Road. At a point about 500 ft west of Barclay Drive, the main connects to a wye leading to parallel 8-inch and 12-inch pipes. However, the 8-inch main has been valved off and is no longer in use. All of the flow is conveyed through the 12-inch reinforced concrete main, which continues for approximately 2,220 ft to the terminus of the force main at Manhole WS-1 on Shoppers Lane. The total equivalent length of the force main is 7,808 lf. A 60-ft gravity line constructed of 24-inch reinforced concrete pipe connects the Whitman Square force main at Manhole WS-1 to the wet well at Shoppers Lane pump station. Table 2-13 summarizes the physical characteristics of the Whitman Square connection.

6"

5413

VERTICAL FOR
FLEXIBLE
SHAFTING

5423

HORIZONTAL

5433

VERTICAL
BILTOGETHER

5443

VERTICAL CLOSE
COUPLED

1780 RPM

NO. OF VANES 2

SUCTION SIZE

5423: 6"

OTHER: 6" OR 8"

IMPELLER

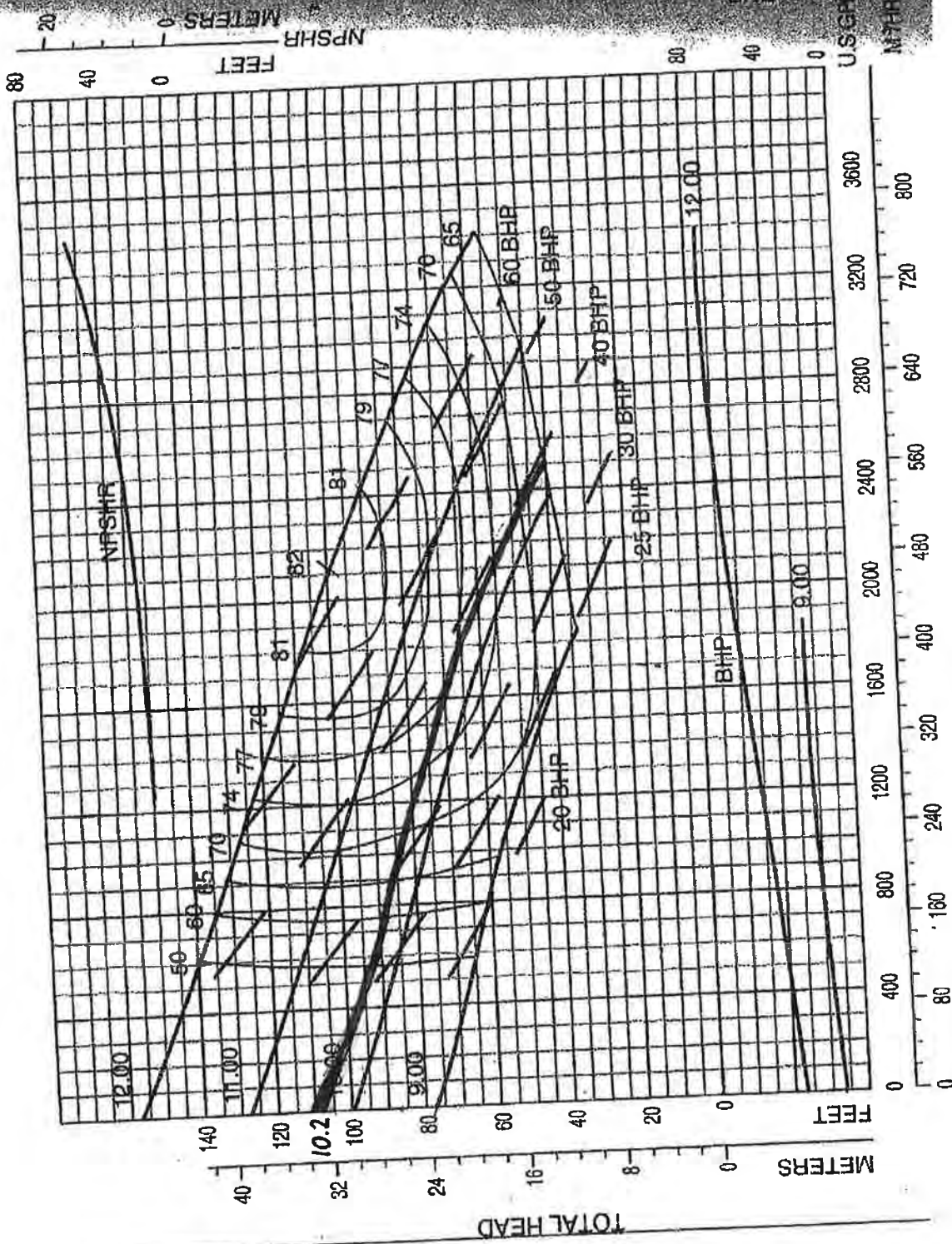
T6C1C

INLET AREA

52.88 SQ. IN.

MAX. SPHERE

3"





PERFORMANCE CURVE

PRODUCT

NP3202.180

TYPE

HT

DATE

2018-01-24

PROJECT

CURVE NO

63-456-00-3050

ISSUE

3

POWER FACTOR
EFFICIENCY
MOTOR DATA

1/1-LOAD

0.89

91.5 %

3/4-LOAD

0.86

92.5 %

1/2-LOAD

0.79

92.0 %

COMMENTS

INLET/OUTLET

- / 6 inch

IMP. THROUGHLET

RATED POWER 60 hp
STARTING CURRENT ... 465 A
RATED CURRENT ... 68 A
RATED SPEED 1775 rpm
TOT. MOM. OF INERTIA ... 0.39 kgm2
NO. OF BLADES 2

IMPELLER DIAMETER

326 mm

MOTOR #

30-24-4AA

STATOR

01D

REV

10

FREQ.

60 Hz

PHASES

3

VOLTAGE

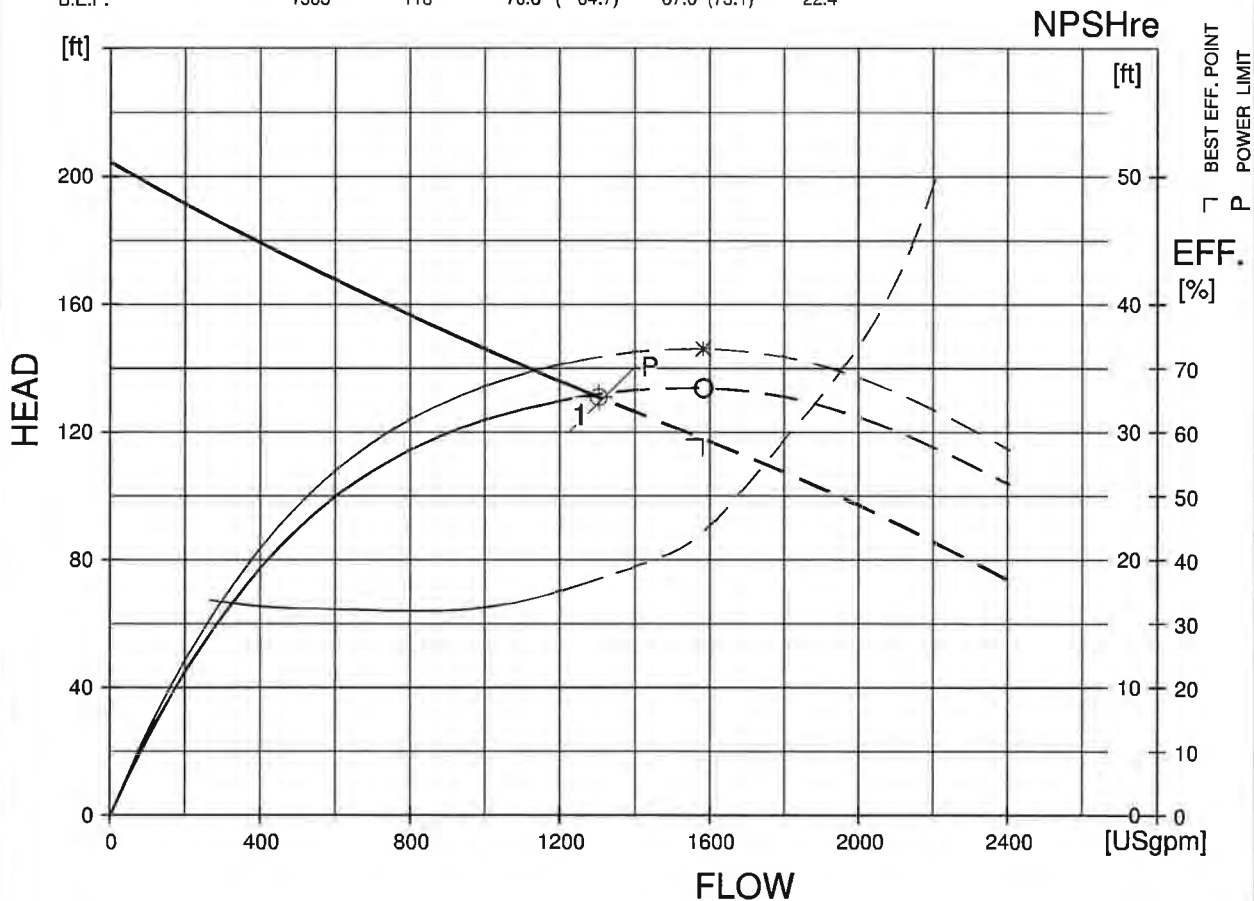
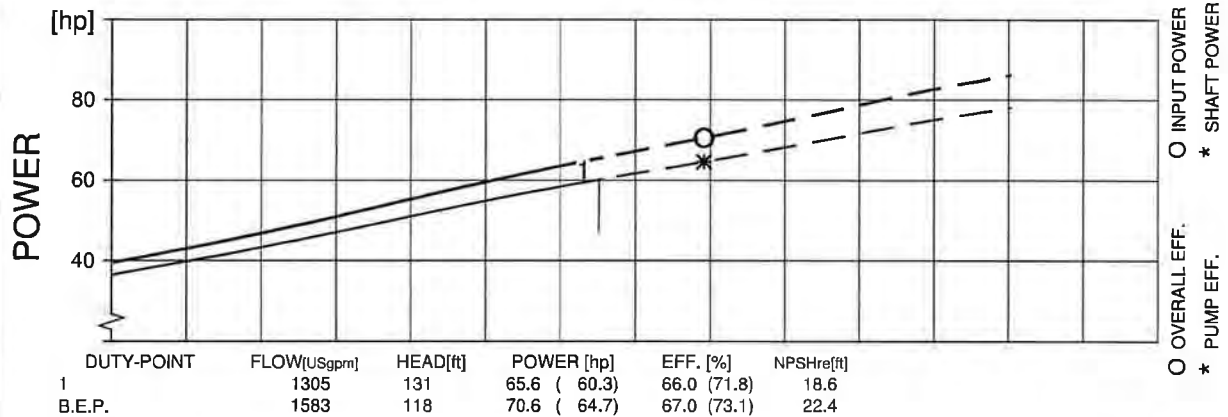
460 V

POLES

4

GEARTYPE

RATIO



FLYPS3.1.0.0 (20050224)

NPSHre = NPSH3% + min. operational margin

Performance with clear water and ambient temp 40 °C



HI B Curve



PERFORMANCE CURVE

PRODUCT

NP3171.180

TYPE

SH

DATE

2018-01-24

PROJECT

CURVE NO

63-275-00-1070

ISSUE

3

	1/1-LOAD	3/4-LOAD	1/2-LOAD	RATED POWER	35	hp
POWER FACTOR	0.91	0.89	0.82	STARTING CURRENT ...	292	A
EFFICIENCY	91.0 %	91.5 %	92.0 %	RATED CURRENT ...	40	A
MOTOR DATA	---	---	---	RATED SPEED	3530	rpm
COMMENTS	INLET/OUTLET			TOT.MOM.OF	0.073	kgm2
	- / 4 inch			NO. OF	2	
	IMP. THROUGHLET			BLADES		

IMPELLER DIAMETER

195 mm

MOTOR #

25-18-2AA

STATOR

09YSER

REV

10

FREQ.

60 Hz

PHASES

3

VOLTAGE

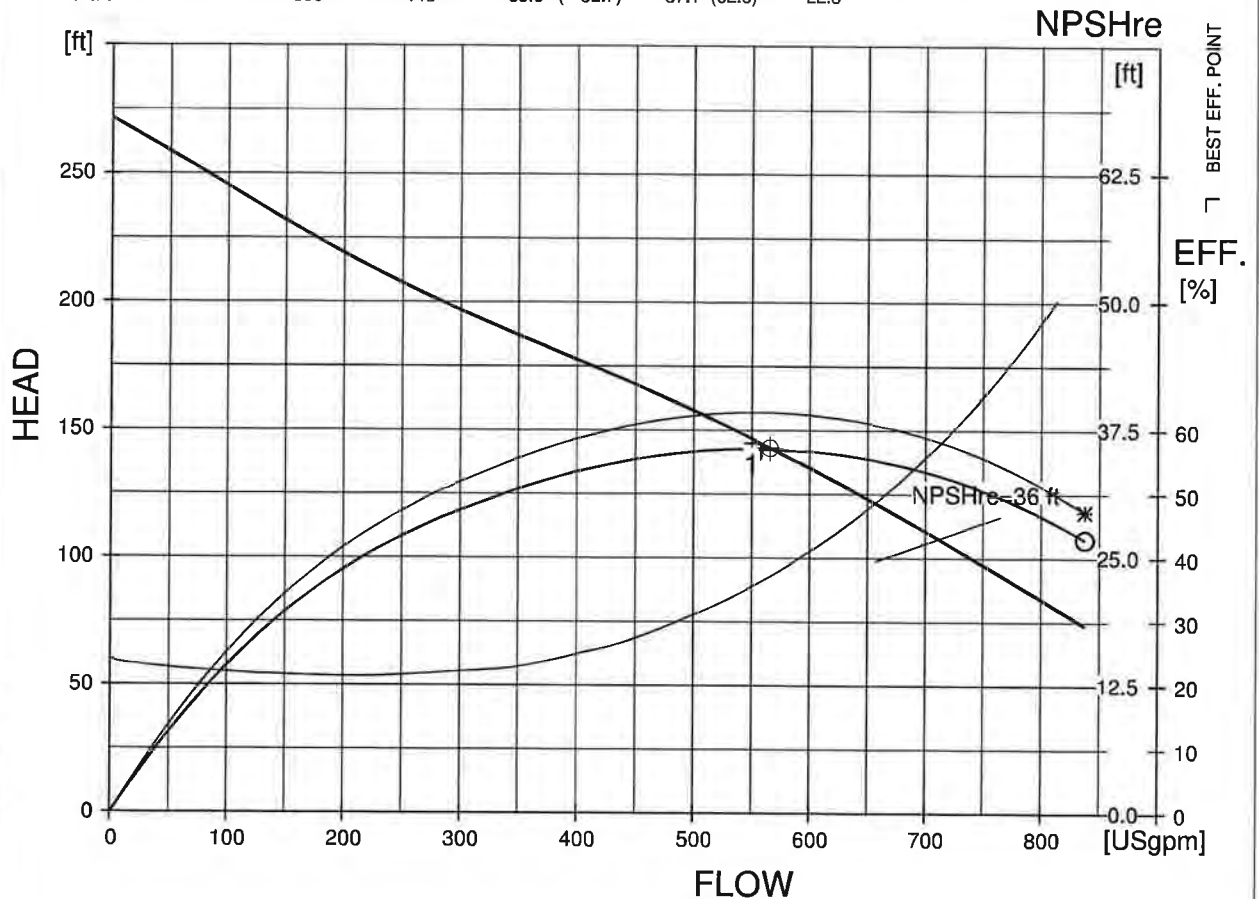
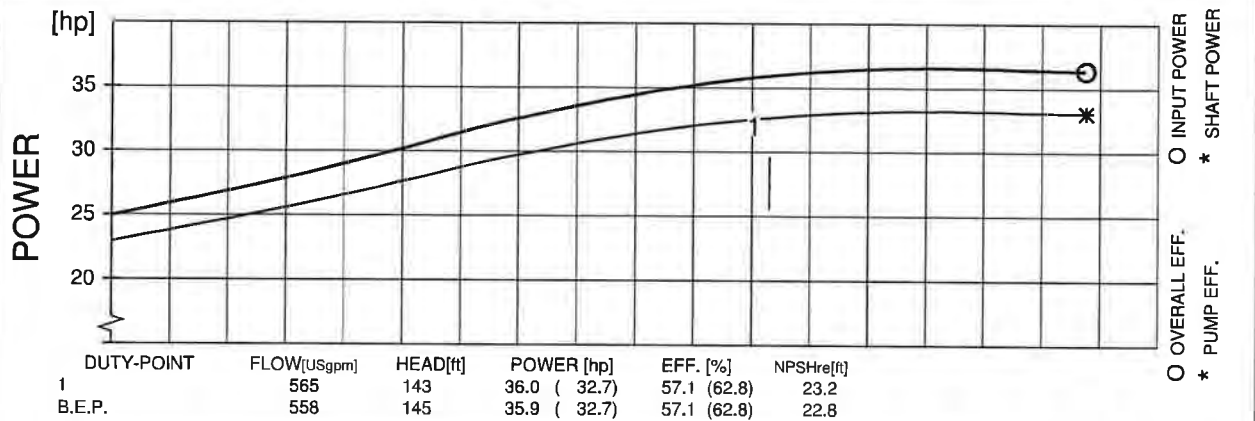
460 V

POLES

2

GEARTYPE

RATIO



FLYPS3.1.0.0 (20050224)

NPSHre = NPSH3% + min. operational margin

Performance with clear water and ambient temp 40 °C



HI B Curve



PERFORMANCE CURVE

PRODUCT

NP3153.181

TYPE

SH

DATE

2018-01-24

PROJECT

CURVE NO

63-275-00-1070

ISSUE

1

	1/1-LOAD	3/4-LOAD	1/2-LOAD	RATED POWER	23	hp
POWER FACTOR	0.91	0.87	0.79	STARTING CURRENT ...	207	A
EFFICIENCY	91.0 %	91.5 %	91.5 %	RATED CURRENT ...	26	A
MOTOR DATA	---	---	---	RATED SPEED	3510	rpm
COMMENTS	INLET/OUTLET			TOT.MOM.OF	0.030	kgm2
	- / 4 inch			INERTIA ...		
	IMP. THROUGHLET			NO. OF	2	
	---			BLADES		

IMPELLER DIAMETER

166 mm

MOTOR #

21-18-2BB

STATOR

04YSER

REV

10

FREQ.

60 Hz

PHASES

3

VOLTAGE

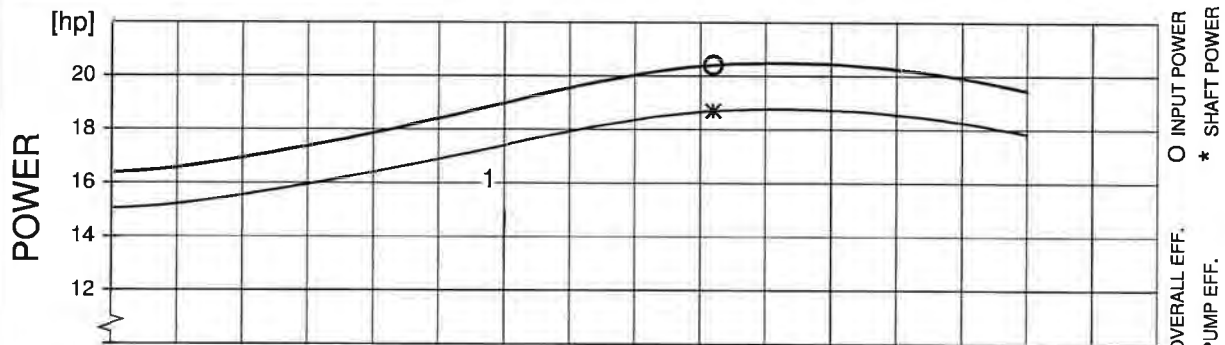
460 V

POLES

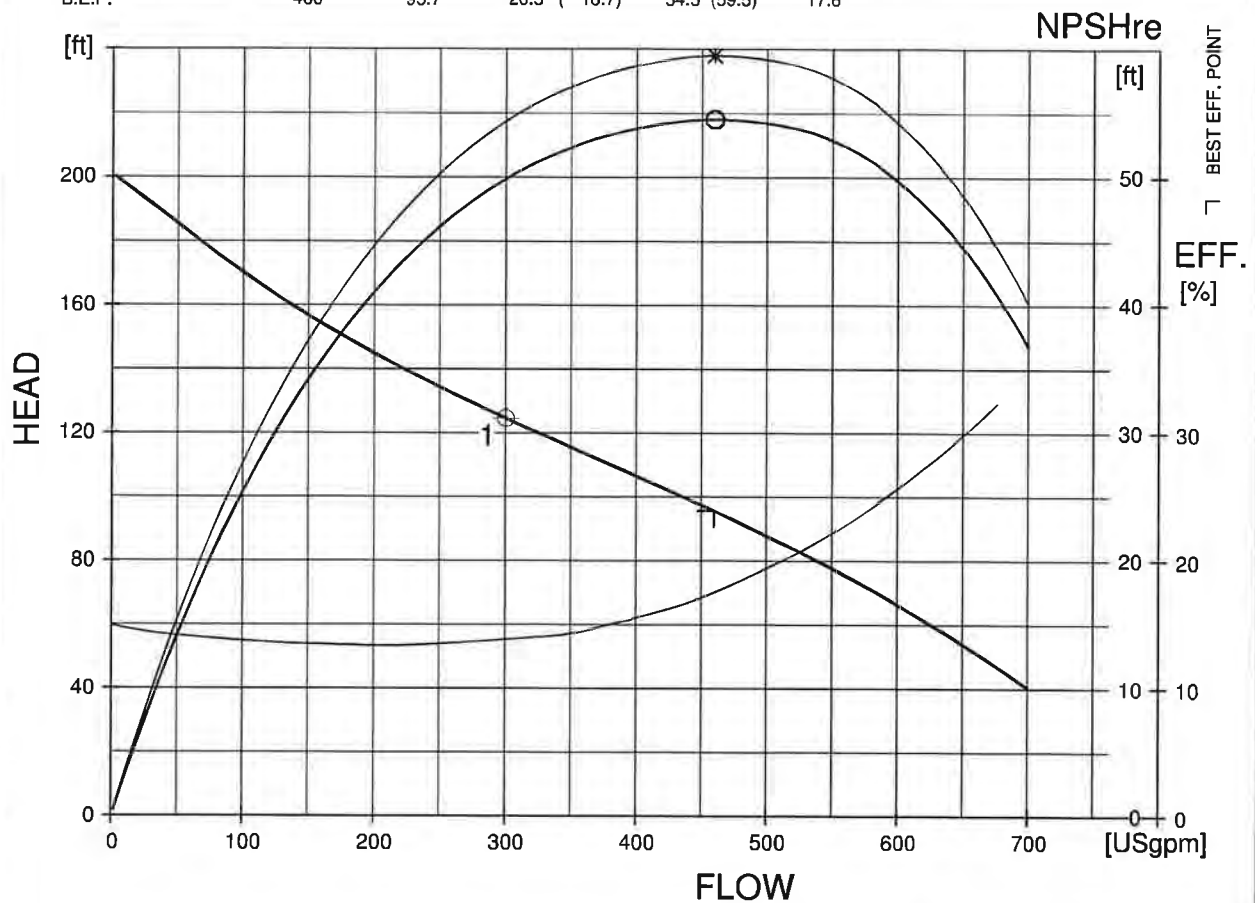
2

GEARTYPE

RATIO



DUTY-POINT	FLOW[USgpm]	HEAD[ft]	POWER [hp]	EFF. [%]	NPSHre[ft]
1	300	125	19.0 (17.5)	49.9 (54.4)	13.8
B.E.P.	460	95.7	20.5 (18.7)	54.5 (59.5)	17.6



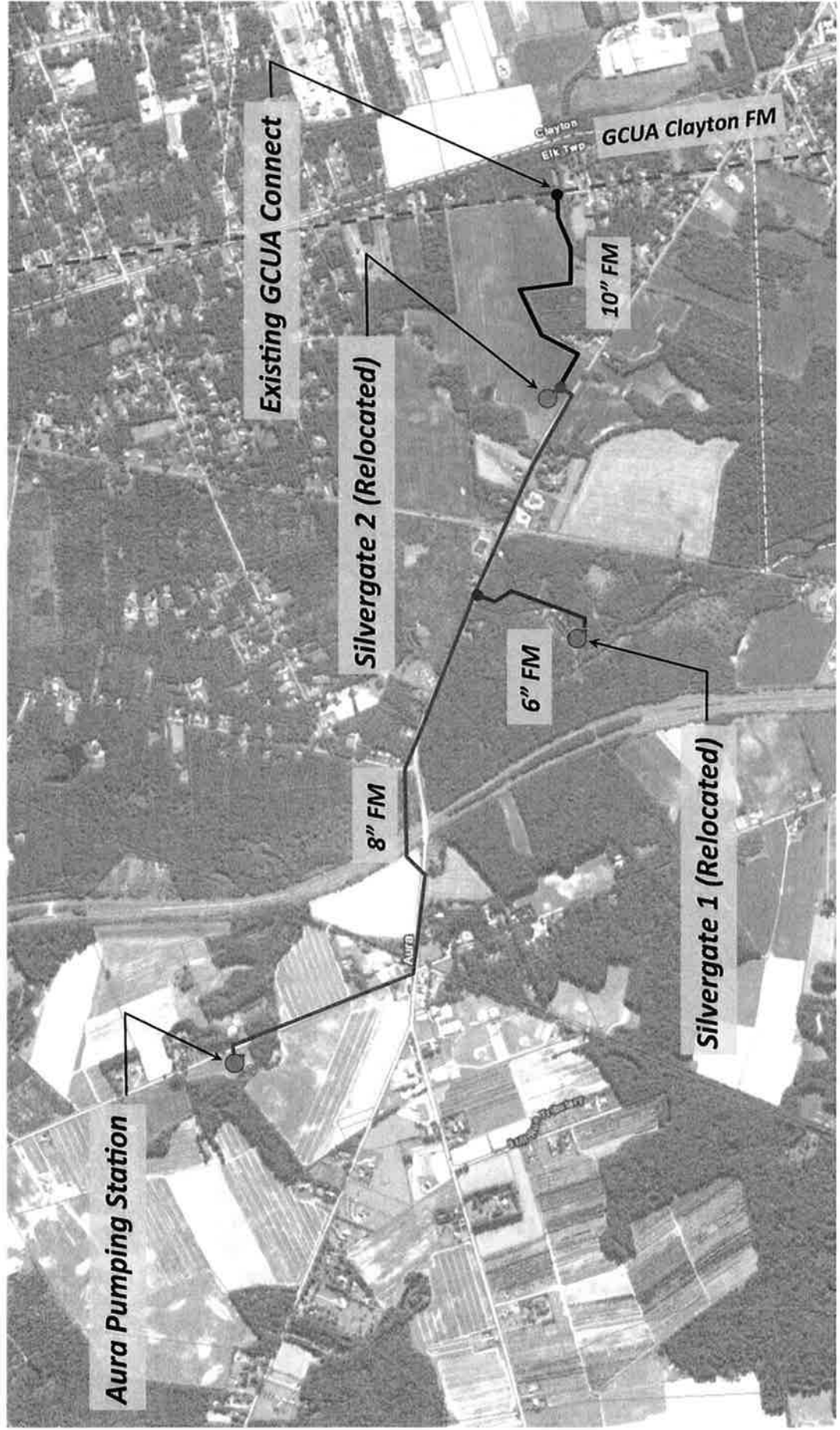
NPSHre = NPSH3% + min. operational margin

Performance with clear water and ambient temp 40 °C

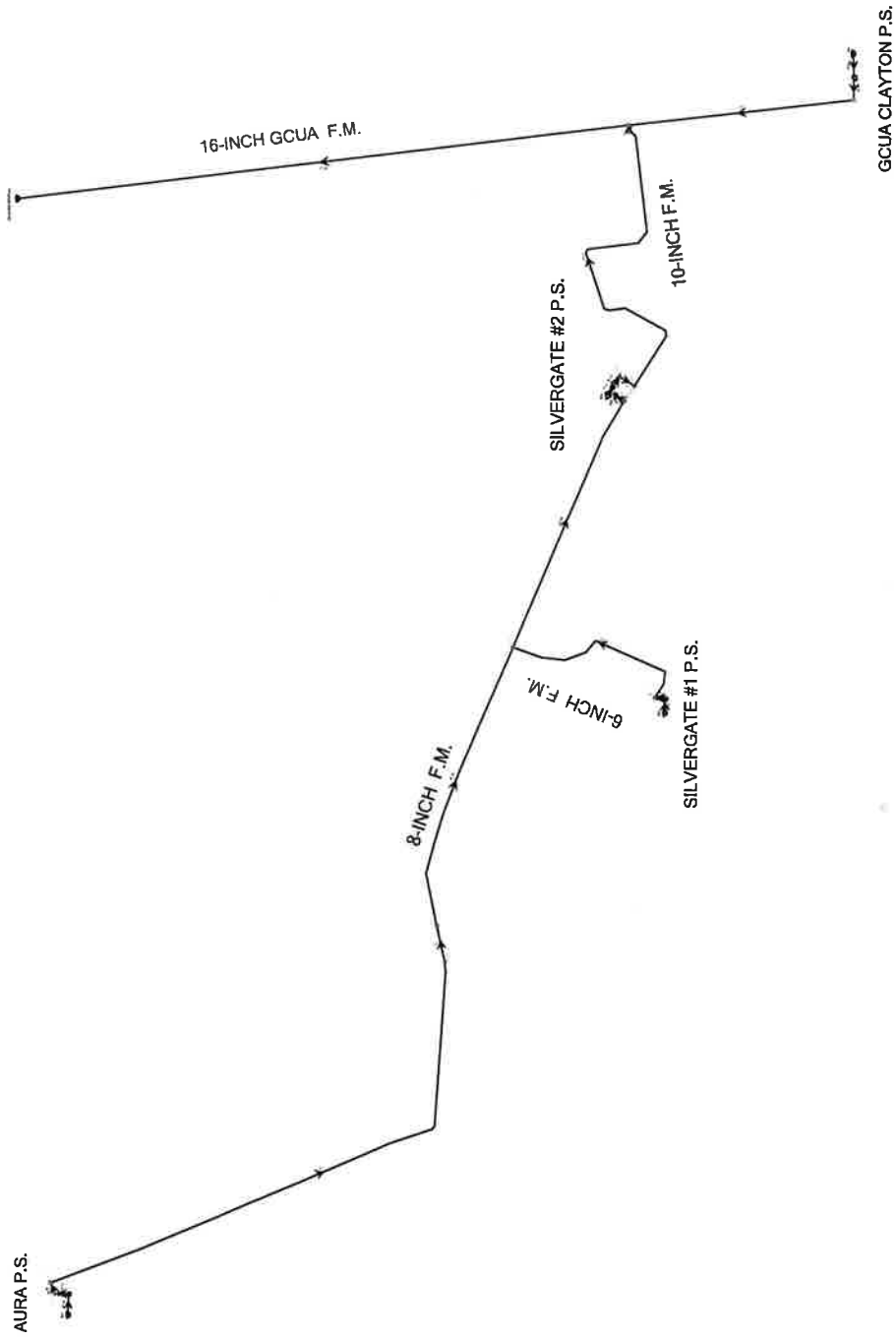


HI B Curve

CONCEPTUAL DESIGN SCHEMATIC
Wastewater Pumping Station & Force Main
ELK TOWNSHIP, GLOUCESTER COUNTY, NJ



Scenario: All Stations Operating Simultaneously



Scenario: Aura Pumping Station
Current Time Step: 0.000 h
FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
57	AURA P.S.	114.00	NP3171 SH3 35 HP	On	115.00	244.94	612	129.94
79	SILVERGATE #1 P.S.	96.00	NP3171 SH3 35 HP	Off	0.00	175.19	0	0.00
85	SILVERGATE #2 P.S.	99.00	NP3202.180-HT 60 HP	Off	100.00	128.41	0	0.00
114	GCUA CLAYTON P.S.	90.00	GCUA Pump	On	91.00	175.24	1,117	84.24

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Scenario: Aura Pumping Station
Current Time Step: 0.000 h
FlexTable: Pipe Table

Label	Start Node	Stop Node	Status (Initial)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient (Local)	Length (ft)	Flow (gpm)	Velocity (ft/s)
P-12	R-1	AURA P.S.	Open	100.0	Ductile Iron	100.0	0.000	0	612	0.03
P-13	AURA P.S.	J-10	Open	6.0	Ductile Iron	100.0	8.100	25	612	6.95
P-14	J-10	J-11	Open	8.0	PVC	130.0	0.000	109	612	3.91
P-15	J-11	J-12	Open	8.0	PVC	130.0	0.000	5,318	612	3.91
P-16	J-12	J-13	Open	8.0	PVC	130.0	0.000	332	612	3.91
P-17	J-13	J-14	Open	8.0	PVC	130.0	0.000	2,728	612	3.91
P-18	J-14	J-15	Open	8.0	PVC	130.0	0.000	2,495	612	3.91
P-20	J-15	J-16	Open	8.0	PVC	130.0	0.000	163	612	3.91
P-21	J-16	J-17	Open	10.0	PVC	130.0	3.000	3,354	612	2.50
P-22	J-17	J-18	Open	8.0	PVC	130.0	0.000	60	612	3.91
P-23	R-2	SILVERGATE #1 P.S.	Open	100.0	Ductile Iron	100.0	0.000	0	0	0.00
P-24	SILVERGATE #1 P.S.	J-19	Open	6.0	Ductile Iron	100.0	8.100	20	0	0.00
P-25	J-19	J-14	Open	6.0	PVC	130.0	0.800	1,795	0	0.00
P-26	R-4	SILVERGATE #2 P.S.	Open	100.0	Ductile Iron	130.0	0.000	0	0	0.00
P-28	J-15	R-3	Closed	8.0	PVC	130.0	0.000	92	0	0.00
P-29	J-18	GCUA DOWNSTREAM	Open	16.0	Ductile Iron	130.0	0.000	16,015	1,729	2.76
P-30	SILVERGATE #2 P.S.	J-20	Open	8.0	Ductile Iron	100.0	8.100	20	0	0.00
P-31	J-20	J-16	Closed	10.0	PVC	130.0	0.000	156	0	0.00
P-32	R-7	GCUA CLAYTON P.S.	Open	100.0	Ductile Iron	130.0	0.000	1	1,117	0.05
P-33	GCUA CLAYTON P.S.	J-21	Open	6.0	Ductile Iron	130.0	8.100	20	1,117	12.67
P-34	J-21	J-18	Open	16.0	Ductile Iron	130.0	0.000	8,700	1,117	1.78

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Scenario: Aura Pumping Station
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
59	J-10	141.00	0	237.66	42
61	J-11	141.00	0	236.86	41
63	J-12	126.00	0	197.71	31
65	J-13	121.00	0	195.26	32
67	J-14	126.00	0	175.19	21
69	J-15	125.00	0	156.82	14
71	J-16	125.00	0	155.62	13
74	J-17	127.00	0	147.00	9
76	J-18	127.00	0	146.56	8
81	J-19	124.00	0	175.19	22
92	J-20	124.00	0	128.41	2
116	J-21	109.00	0	153.22	19

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Scenario: All Stations Operating Simultaneously
Current Time Step: 0.000 h
FlexTable: Pump Table

ID	Label	Elevation (ft)	Pump Definition	Status (Initial)	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
57	AURA P.S.	114.00	NP 3153 SH3 23 HP	On	115.00	188.68	540	73.68
79	SILVERGATE #1 P.S.	99.00	NP 3153 SH3 23 HP	On	0.00	142.50	220	142.50
85	SILVERGATE #2 P.S.	99.00	Constant Power Sizing	On	100.00	212.29	1,325	112.29
114	GCUA CLAYTON P.S.	90.00	GCUA Pump	On	91.00	181.18	892	90.18

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Scenario: All Stations Operating Simultaneously
Current Time Step: 0.000 h
FlexTable: Pipe Table

Label	Start Node	Stop Node	Status (Initial)	Diameter (in)	Material	Hazen- Williams C	Minor Loss Coefficient (Local)	Length (ft)	Flow (gpm)	Velocity (ft/s)
P-12	R-1	AURA P.S.	Open	100.0	Ductile Iron	100.0	0.000	0	540	0.02
P-13	AURA P.S.	J-10	Open	6.0	Ductile Iron	100.0	8.100	25	540	6.13
P-14	J-10	J-11	Open	8.0	PVC	130.0	0.000	109	540	3.45
P-15	J-11	J-12	Open	8.0	PVC	130.0	0.000	5,318	540	3.45
P-16	J-12	J-13	Open	8.0	PVC	130.0	0.000	332	540	3.45
P-17	J-13	J-14	Open	8.0	PVC	130.0	0.000	2,728	540	3.45
P-18	J-14	J-15	Open	8.0	PVC	130.0	0.000	2,495	760	4.85
P-20	J-15	J-16	Closed	8.0	PVC	130.0	0.000	163	0	0.00
P-21	J-16	J-17	Open	10.0	PVC	130.0	3.000	3,354	1,325	5.41
P-22	J-17	J-18	Open	8.0	PVC	130.0	0.000	60	1,325	8.46
P-23	R-2	SILVERGATE #1 P.S.	Open	100.0	Ductile Iron	100.0	0.000	0	220	0.01
P-24	SILVERGATE #1 P.S.	J-19	Open	6.0	Ductile Iron	100.0	8.100	20	220	2.50
P-25	J-19	J-14	Open	6.0	PVC	130.0	0.800	1,795	220	2.50
P-26	R-4	SILVERGATE #2 P.S.	Open	100.0	Ductile Iron	130.0	0.000	0	1,325	0.05
P-28	J-15	R-3	Open	8.0	PVC	130.0	0.000	92	760	4.85
P-29	J-18	GCUA DOWNSTREAM	Open	16.0	Ductile Iron	130.0	0.000	16,015	2,217	3.54
P-30	SILVERGATE #2 P.S.	J-20	Open	8.0	Ductile Iron	100.0	8.100	20	1,325	8.46
P-31	J-20	J-16	Open	10.0	PVC	130.0	0.000	156	1,325	5.41
P-32	R-7	GCUA CLAYTON P.S.	Open	100.0	Ductile Iron	130.0	0.000	1	892	0.04
P-33	GCUA CLAYTON P.S.	J-21	Open	6.0	Ductile Iron	130.0	8.100	20	892	10.13
P-34	J-21	J-18	Open	16.0	Ductile Iron	130.0	0.000	8,700	892	1.42

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Scenario: All Stations Operating Simultaneously
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
59	J-10	141.00	0	182.99	18
61	J-11	141.00	0	182.35	18
63	J-12	126.00	0	151.30	11
65	J-13	121.00	0	149.36	12
67	J-14	127.00	0	133.43	3
69	J-15	125.00	0	106.01	-8
71	J-16	125.00	0	200.68	33
74	J-17	127.00	0	164.54	16
76	J-18	127.00	0	162.68	15
81	J-19	116.00	0	141.57	11
92	J-20	124.00	0	202.30	34
116	J-21	109.00	0	167.08	25

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EXHIBIT "D"

RECIPRICAL UTILITY & CONSTRUCTION EASEMENTS

Aura Investors, LLC shall grant Utility, Access and Construction Easements to Silvergate Associates and New Jersey American Water within the following properties for the stated purposes:

- 1. Block 31, Lots 2.02, 5.01, 7 & 22; and, Block 58, Lot 1 for construction, access and maintenance of a water main extension from the existing 16" water main in CR-667 to the proposed location of the elevated water storage tank as illustrated on Exhibit "A", including access easements from CR-667 and CR-619, pursuant to plans and descriptions to be prepared by Taylor, Wiseman and Taylor.**
- 2. Block 58, Lot 1 for construction, access and maintenance of the proposed water storage tank and the water main extension from the proposed elevated water storage tank to the existing sleeve under Rt. 55 as illustrated on Exhibit "B" and for a water main extension to provide for a future 12" water main connection at the intersection of CR-667 and CR-619, including an access easement from CR-619, pursuant to plans and descriptions to be prepared by Taylor, Wiseman and Taylor.**

Silvergate Associates shall grant Utility, Access and Construction Easements to Aura Investors, LLC and New Jersey American Water within the following properties for the stated purposes:

- 1. Block 170, Lots 14 & 18 for construction, access and maintenance of a sanitary sewer force main, including a by-pass connection at the proposed location of PS #2, and connection to an existing sanitary sewer connection to the GCUA force main in CR-637 as illustrated on Exhibit "B", including access easements from CR-610 and CR-637, pursuant to plans and descriptions to be prepared by James Sassano Associates.**

Aura Investors, LLC and Silvergate Associates agree to cooperate in providing any additional easements as may be required by New Jersey American Water and necessary to complete the Water System and Sanitary Sewer System as described in Sections 2 and 3 of the underlying Water and Sanitary Sewer Infrastructure Agreement.

EXHIBIT "E"
Base Projected Sewer Flows

	Unit Type	No. of Units	GPD/Unit	Total GPD
Latham Park				
	Single Family	646	300	193,800
	Commercial	204,160	0.10	<u>20,416</u>
Total Projected Sewerage Flow				214,216

Silvergate				
	Single Family	571	300	171,300
	Twins	70	300	21,000
	Townhouses	172	300	51,600
	Afford. Apts	192	262.5	50,400
	Commercial	640,182	0.1	<u>64,018</u>
Total Projected Sewerage Flow				358,318

Map 1

Zoning Map with Redevelopment Overlay

Legend

Aura III Parcels

Parcels

Zoning

C1-Neighborhood Commercial

C2-Highway Commercial

M1-Light Manufacturing

MHP-Moble Home Park

MD-Moderate Density Residential

LD-Low Density Residential

R-Rural Residential

RE-Rural Environmental Residential

RR-Recreational Residential

BA

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*This map was developed using NJGIN/NJDEP Geographic Information System digital data, but this is a secondary product which has not been verified by NJGIN/NJDE and is not state authorized

AURA III
REDEVELOPMENT AREA

Township of Elk
Gloucester County, NJ

Map Data & Source:

Data Source: NJGIN

Scale: 1" = 600'

Project Number: ET2022-1

Date: January 2024

Drafted by: Chloe Bach

Prepared by: Candace Kanaplue, AICP, PP

State of New Jersey, Delaware FirstMap, Esri, HERE, Garmin, INCREMENT P, NGA, USGS