

FINAL PROJECT MEMORANDUM

LIVE! POMPANO ISLE CASINO WATER SERVICE CAPACITY STUDY

Date: February 9, 2022,
Revised by
Amendment
4/22/2022

Project No.: 200060.00

KEITH AND ASSOCIATES, INC.

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| Subject: | Water Service Capacity Study for Development by Keith and Associates in the City of Pompano Beach, FL – Findings and General Recommendations |

Purpose

The purpose of this document is to transmit to Keith and Associates, Inc. (Client) general findings and recommendations for the future connection of The Cordish / El Dorado's platted development Live! Pompano Isle Casino to the City of Pompano Beach (City) potable water system, and their potential impact on the City's level of service and operation as related to pipe capacity and adequacy, and potable water service pressure. In order to issue recommendations, Carollo Engineers, Inc. (Carollo) used the City's potable water hydraulic model, developed in 2020 as part as the most recent Water Master Plan Update. It is Carollo's understanding that both the Client and the City will use recommendations provided herein to define service to the development, determine potential impacts to the timeline and/or nature of planned capital improvements to the area if needed, and identify further necessary related work.

Challenges and Definition of Scenarios

The development proposed by the Client is located in the City of Pompano Beach south of Race Track Road, or SW 3rd Street, and east of Powerline Road, as shown in Figure 1. The Live! Pompano Isle Casino proposed site currently has potable water service through three public supply accounts/meters. However, the majority of the area proposed for development does not currently have access to potable water distribution lines. The water utility service in the surrounding existing parcels is commercial and residential in nature. The existing commercial parcels shown to the south of Race Track Road/SW 3rd Street and north of N Cypress Bend Drive are subject to redevelopment as part of the project.

The City has recognized that, due to the criticality of the potable water transmission lines east and north of the area, and the large size of the proposed development, this development has the potential to influence supply, treatment, transmission, and distribution operations. Future plans to obtain additional water supply from alternative sources, and the availability of treatment capacity at the water treatment plant help eliminate uncertainty regarding the potential influence of the development on supply and treatment. This memorandum studies the potential impact on the remaining challenges – transmission and distribution.



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Carollo created scenarios in the City's potable water hydraulic model under average daily demand (ADD) and maximum day demand (MDD) conditions, without and with the development. The transmission and distribution system were then evaluated comparatively to determine and quantify the impact of the development on the City's potable water system. Scenarios used in this study include:

- Baseline Hydraulic Conditions
 - Projected 2025 ADD and MDD – without the proposed development
 - Projected 2040 ADD and MDD – without the proposed development
- Scenario 1 – Live! Casino Phase 1 development in 2025 (Phase 1)
 - 2025 ADD: 2025 demands with the addition of the Phase 1 development calculated demands under ADD conditions.
 - 2025 MDD: 2025 demands with the addition of the Phase 1 development calculated demands under MDD conditions.
- Scenario 2 – Live! Casino Phased development 2040 (Buildout)
 - 2040 ADD: 2040 demands with the addition of the calculated demands from the development during complete buildout under ADD conditions.
 - 2040 MDD: 2040 demands with the addition of the calculated demands from the development during complete buildout under MDD conditions.

Data and Assumptions

The City's potable water hydraulic model was modified to include pipes that were configured using a preliminary pipe layout and development plans provided by the Client. Demands and land use patterns were assigned to intersections between pipe segments, or junctions, based on proximity to buildings and land use type.

Carollo was provided with a phased development plan and corresponding calculated demands per phase. This data was evaluated for concurrency with City standards and applicable codes. When two standards provided different design demands, the higher unit demand was selected for conservatism.

Figure 2 shows the proposed pipe layout as included in the hydraulic model. Model junctions were placed in proximity of expected connections to the public utility pipes. Variable demands by phase were assigned to model junctions.

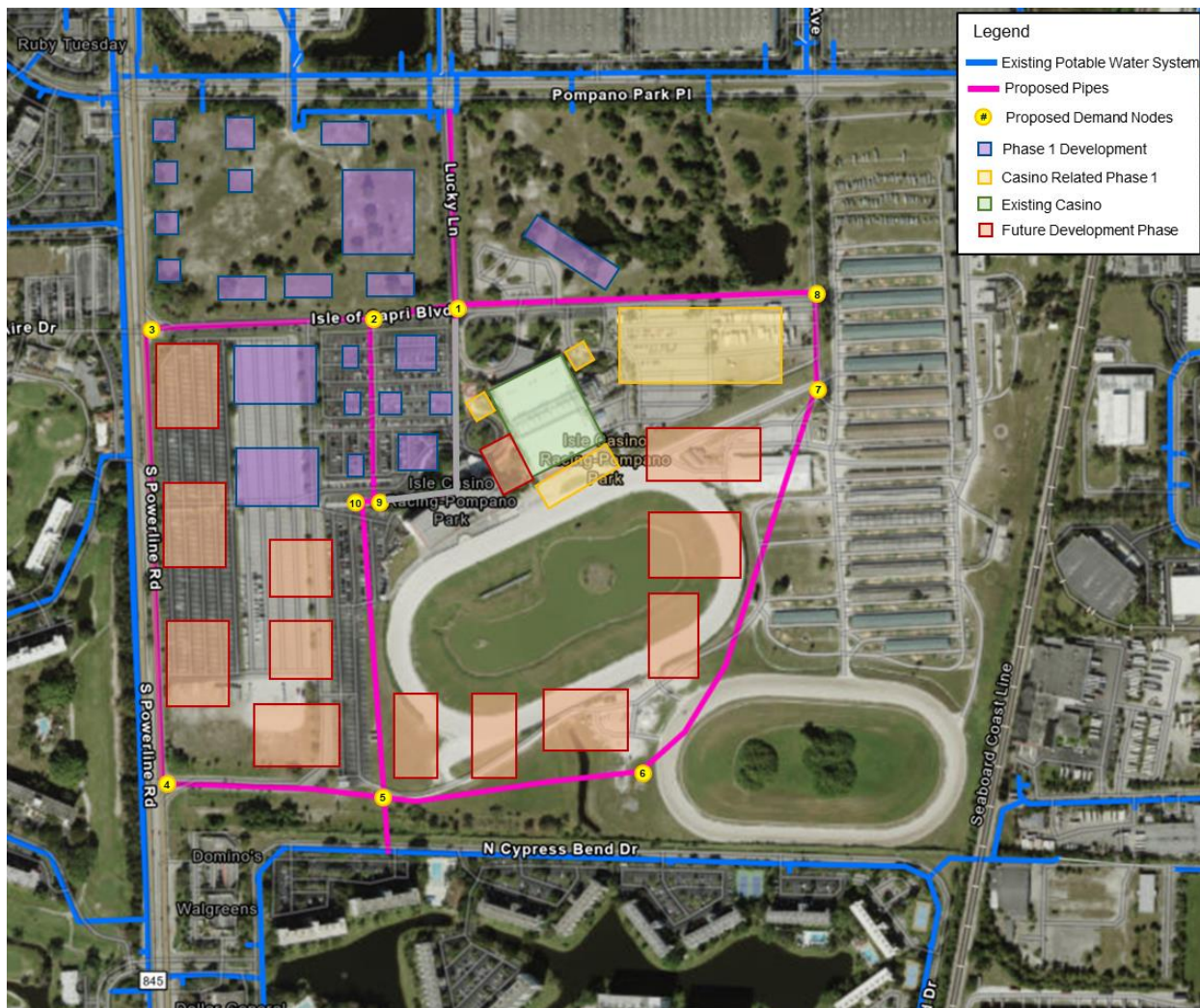


Figure 2 Developer Proposed Pipe Layout as Included in the Hydraulic Model

Table 1 shows the average water demands allocated to the corresponding junctions shown in Figure 2, for the Phase 1 and Buildout scenarios. Although junctions 4, 5, 6, and 7 do not have allocated demands in the Phase 1 scenario, simulations were performed with the entire piping loop in place. Water quality will be affected if a complete loop that connects the northern and the southern sides of the development with the public potable water distribution system is not built. The developer may add service lines to connect the different buildings to the main loop shown in Figure 2. The number of service lines departing from the main loop will not affect the results of this study if the total applied demand at the junctions shown is kept consistent.

Appendix A shows the proposed demands for each of the scenarios as listed originally by the Client and as amended by the Client upon further project refinement.

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Table 1 Water Demands for the Live! Pompano Isle Casino Development

| Assigned Junction ⁽¹⁾ | Establishment | No. of Units ⁽²⁾ | Demand per Unit (gpd) | Demand (gpd) | | Land Use ⁽⁴⁾ |
|----------------------------------|---|-----------------------------|-----------------------|--------------|------------------------------|-------------------------|
| | | | | 2025 Phase 1 | 2040 Buildout ⁽³⁾ | |
| 1 | Live! F&B (per seat) ⁽⁵⁾ | 833.5 | 39 | 32,506.5 | 32,506.5 | Institutional |
| | Casino Expansion (per SF) | 5,500 | 0.38 | 2,090 | 2,090 | General |
| | Existing Isle Casino Sub Meter #11059581 | NA | Existing | 19,765 | 19,765 | General |
| | Grocery Store (per SF) ⁽⁵⁾ | 48,387 | 1.25 | 60,484 | 60,484 | General |
| | Top Golf | 1 | 8778 | 8,778 | 8,778 | General |
| | Industrial Development/Warehouse (per SF) | 232,754 | 0.1 | 23,275.3 | 23,275.3 | Industrial |
| | Jai Alai Fronton (per seat) | 150 | 5 | 750 | 750 | Institutional |
| 2 | Live! F&B (per seat) ⁽⁵⁾ | 833.5 | 39 | 32,506.5 | 32,506.5 | Institutional |
| 3 | Retail (per SF) | 105,650 | 0.1 | 10,565 | 10,565 | Commercial |
| | Recreation (per seat) | 350 | 5 | 1,750 | 1,750 | Institutional |
| | Residences #1 ⁽⁵⁾ | 450 | 270 | - | 121,500 | Residential |
| 4 | Hotels (per room) ⁽⁵⁾ | 250 | 161 | - | 40,250 | Institutional |
| | Residences #1 ⁽⁵⁾ | 450 | 270 | - | 121,500 | Residential |
| 5 | Residences #1 ⁽⁵⁾ | 450 | 270 | - | 121,500 | Residential |
| | Residences #2 ⁽⁵⁾ | 600 | 270 | - | 162,000 | Residential |
| 6 | Residences #2 ⁽⁵⁾ | 600 | 270 | - | 162,000 | Residential |
| | Industrial Development/Warehouse (per SF) | 232,754 | 0.1 | 23,275.3 | 23,275.3 | Industrial |
| 7 | Residences #2 ⁽⁵⁾ | 600 | 270 | - | 162,000 | Residential |
| | Industrial Development/Warehouse (per SF) | 232,754 | 0.1 | 23,275.3 | 23,275.3 | Industrial |
| 8 | Casino Expansion (per SF) | 5,500 | 0.38 | 2,090 | 2,090 | General |
| | Existing Isle Casino Sub Meter #11059581 | NA | Existing | 19,765 | 19,765 | General |

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| Assigned Junction ⁽¹⁾ | Establishment | No. of Units ⁽²⁾ | Demand per Unit (gpd) | Demand (gpd) | | Land Use ⁽⁴⁾ |
|----------------------------------|--|-----------------------------|-----------------------|----------------|------------------------------|-------------------------|
| | | | | 2025 Phase 1 | 2040 Buildout ⁽³⁾ | |
| | Parking Garage Office (per SF) | 5,700 | 0.2 | 1,140 | 1,140 | General |
| | Industrial Development/Warehouse (per SF) | 232,754 | 0.1 | 23,275.3 | 23,275.3 | Industrial |
| | Jai Alai Fronton (per seat) | 150 | 5 | 750 | 750 | Institutional |
| 9 | Hotels (per room) ⁽⁵⁾ | 250 | 161 | 40,250 | 40,250 | Institutional |
| | Hotels (per room) ⁽⁵⁾ | 250 | 161 | - | 40,250 | Institutional |
| 10 | Lagoon (per person) | 500 | 10 | 5,000 | 5,000 | General |
| | Parking Garage/Residential (per d.u.) ⁽⁵⁾ | 500 | 270 | 135,000 | 135,000 | Residential |
| | Residences #1 ⁽⁵⁾ | 450 | 270 | - | 121,500 | Residential |
| Total Demand (gpd) | | | | 443,016 | 1,455,266 | |

Notes:

- (1) Refer to Figure 2 for location of junctions in the hydraulic model.
- (2) Information provided by the Developer.
- (3) Complete buildout of future development in year 2040.
- (4) Land use type determined by Carollo based on establishment. Corresponding land use diurnal pattern (typical 24-hour demand fluctuation) used in model.
- (5) Demand per unit based on City concurrency table.

This memorandum uses the data presented in Table 1 and demand data and infrastructure as found in the City's water hydraulic model previous to the development. A peaking factor of 1.41 is applied to calculate MDD from ADD, which corresponds to the City's MDD peaking factor as developed in the referenced Master Plan.

This memorandum summarizes the large-scale findings related to the hydraulic performance of incumbent infrastructure. Assessments provided are the result of desktop and engineering analyses, and not from condition assessments in the field. The computer model relies on available physical and operational data, understood to be the best available.

The pipe materials in this area according to the available GIS data are polyvinyl chloride (PVC) and cast iron pipe (CIP) which are assumed to have a Hazen-Williams C-factor of 150 and 130, respectively. This study does not include flow measurement. The existing total flow through transmission mains was sourced from the hydraulic model, based on existing water demand allocation which uses population projections and a per capita factor.

Transmission and distribution mains must be able to meet peak demands, which are assumed to occur at the highest point in a day with MDD conditions. The evaluations are based on performance criteria used in the City's latest Water Master Plan to identify system deficiencies. Table 3 summarizes the performance criteria used to evaluate the scenarios.

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Table 2 Performance Criteria for Hydraulic Modeling Evaluations

| Parameter | ADD Scenario | MDD Scenario |
|------------------------|---|--|
| Velocity | Less than or equal to 6 feet per second (fps) | Less than or equal to 7 fps. |
| Headloss | <ul style="list-style-type: none">• Less than 3.5 feet per 1,000 feet for pipes 36 inches in diameter or larger.• Less than 5.5 feet per 1,000 feet for pipes with a diameter greater than or equal to 24 inches and less than 36 inches.• Less than 10 feet per 1,000 feet for pipes with a diameter less than 24 inches | |
| Junction Pressure | Greater than 50 pounds per square inch (psi) and less than 80 psi. | |
| Fire Flow Availability | Not applicable | Greater than the Need for Fire Flow (NFF) at critical sites, with uninterrupted domestic demand at a residual pressure of 20 psi |

The ADD and MDD conditions are modeled using extended period simulation (EPS) scenarios. EPS (as opposed to steady state (SS) simulations) are used to evaluate 24-hour system response, and to assess the duration and severity of identified deficiencies.

Analyses

The impact of the Live! Pompano Isle Casino development on the potable water distribution system is summarized in this section by comparing the baseline hydraulic conditions (without the development) with the modified hydraulic conditions (with the development infrastructure and demand).

Baseline Hydraulic Conditions - System Analysis without the Infrastructure Proposed by the Developer

There are two scenarios considered as baseline hydraulic conditions: 1) Without the development and with 2025 City's demands (2025 Baseline Scenario), and 2) Without the development but with 2040 projected City demands (2040 Baseline Scenario).

2025 Baseline Scenario

This section presents the existing distribution system performance results without the development under 2025 ADD and MDD conditions. Parameters shown in Table 2 such as critical velocity in pipes, maximum headloss in pipes, and junction pressures were evaluated to identify non-compliant areas of the network. Results include:

Under ADD conditions:

- The majority of pipes throughout the system experience velocities lower than 6 fps, except suction and discharge headers of high service pumps. Velocity in the suction and discharge headers reach 22 fps during the highest average diurnal production, which occurs around 3 am, for storage tank filling. This is a normal velocity for the service that the headers provide.
- Junction pressures throughout the system meet the pressure performance criteria.
- Several distribution pipes may be reaching capacity within the system. The highest simulated velocity in distribution pipes during average daily demand conditions was 16 fps.
- All storage tanks are able to pump required flows and maintain normal tank levels under baseline ADD conditions.

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- The water distribution system meets the selected performance criteria for the average day demand analysis.

Under MDD conditions:

- The majority of pipes throughout the system experience velocities lower than 7 fps. However, some pipes have velocities ranging from 7.28 to 20.9 fps. Most of these pipes are located directly downstream of the high service pumps.
- Junction pressures throughout the system meet the criteria.
- Only 0.06 percent of pipes in the network present a headloss in excess of the established criteria, and are short segments of 2-inch and 6-inch pipes, which are suspected to create hydraulic bottlenecks in the system. The 30-inch discharge header leaving the plant is beginning to show borderline high headlosses during the MDD baseline condition.
- All storage tanks can pump required flows and maintain normal tank levels under MDD conditions.
- The water distribution system meets the selected performance criteria for MDD.

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2040 Baseline Scenario

This section includes distribution system performance with the City's 2040 projected demands without the development, under ADD and MDD. The system was evaluated to illustrate typical operating parameters without the inclusion of the development.

Under ADD conditions:

- The majority of pipes throughout the system experience velocities lower than 6 fps. No significant changes from the baseline ADD conditions are noted aside from pipes around the water treatment plant (WTP) and the Indian Mound remote pumping facility that are might be reaching capacity.
- Junction pressures throughout the system meet the pressure performance criteria.
- Several distribution pipes may be reaching capacity within the system. The highest simulated velocity in distribution pipes was 18 fps.
- All storage tanks can pump required flows and maintain normal tank levels.
- The water distribution system meets the selected performance criteria for the average day demand analysis.

Under MDD conditions:

- The majority of pipes throughout the system experience velocities lower than 7 fps. However, some pipes present velocities ranging from 7.62 to 21.8 fps. Most of these pipes are located directly downstream of the high service pumps and near the Indian Mound remote pump station.
- Junction pressures throughout the system meet performance criteria.
- Only 0.23 percent of pipes in the network present a headloss in excess of the established criteria. Such pipes are short segments of 2-inch and 6-inch diameters, which are suspected to create hydraulic bottlenecks in the system. The 30-inch discharge header leaving the plant is experiencing high headlosses during the 2040 baseline MDD condition.
- All storage tanks can pump required flows and maintain normal water levels.
- The water distribution system meets the selected performance criteria.

System Analysis with the Addition of Infrastructure Proposed by the Developer

This section describes the results of the simulations with the inclusion of the Live! Pompano Isle Casino development under ADD and MDD conditions. The proposed pipes are PVC material and range in size from 8- to 12-inches in diameter. The pipe that connects to the existing pipe along Race Track Road/SW 3rd Street in the northern side of the development is a 12-inch pipe and the pipe that connects to the existing line along N. Cypress Bend Drive in the southern side of the development is a 12-inch diameter pipe as well. All other pipes, including the loop, consist of 8-inch pipes throughout, and connect with the 12-inch pipes both at the northern and southern sides of the loop. Figure 3 shows the pipe diameters used in the simulations to meet the hydraulic performance criteria within the development.

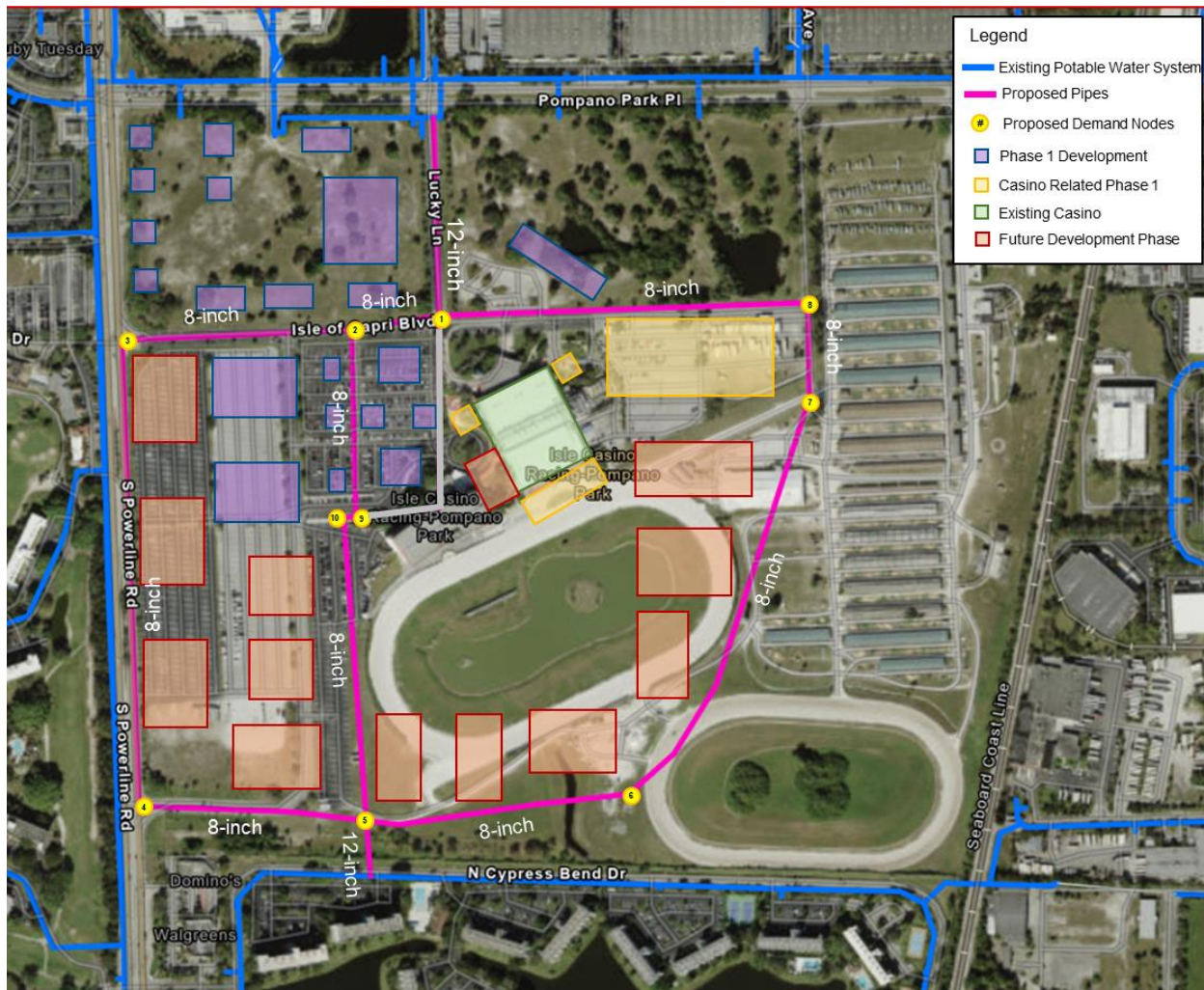


Figure 3 Proposed Water Infrastructure for the Development and Minimum Pipe Diameters Resulting from the Study.

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Scenario 1 – Live! Casino Phase 1 Development in 2025 (Phase 1)

The Phase 1 scenario includes the demands proposed by the developer, allocated in the model per Table 1, and the 2025 projected ADD in the remainder of the City service area. A peaking factor of 1.41 is applied to all demands to simulate MDD conditions.

Under Phase 1 ADD conditions:

- With the exception of a few pipes near the discharge of the high service pumps where the highest simulated velocity in distribution pipes was 17.6 fps, system velocities are lower than 6 fps. The pipes around the Indian Mound tank and pump station briefly experience high velocities. Overall, demand conveyance capacity is nearly unaffected by the Phase 1 development during ADD conditions.
- Junction pressures throughout the system range from 55 psi to 79 psi. This means that the level of service relative to water service pressure will meet the performance criteria in an average day, even with the development in place, by 2025.

Under Phase 1 MDD conditions:

- The majority of pipes throughout the system experience velocities lower than 7 fps.
- Junction pressures throughout the system meet the criteria.

Figures 4 through 6 show localized comparisons of the critical flow velocity, maximum headloss in pipes, and minimum junction pressure, respectively, without and with the proposed development in 2025 under MDD conditions. The following is highlighted in these figures:

- Pipe velocities remain the same without and with the development aside from slight increases in pipes that were already reaching capacity. Increased velocities are experienced near the Indian Mound tank and pump station area, and directly southeast of the WTP. No marked increases in velocity are noted.
- There are only a few additional pipes that would not meet the headloss criterion.
- Minimum pressures decrease by less than 1 psi throughout the system. Decreases are noted in the southeast portion of the service area near the intracoastal waterway.

Tables in Appendices B and C include detail of the impact of the development in terms of the additional length of pipe that fall out of compliance for velocity and headloss, respectively, after the proposed phased construction and connection to the potable water distribution system. The tables identify the pipes of concern and location within the distribution system in 2025 and in 2040.

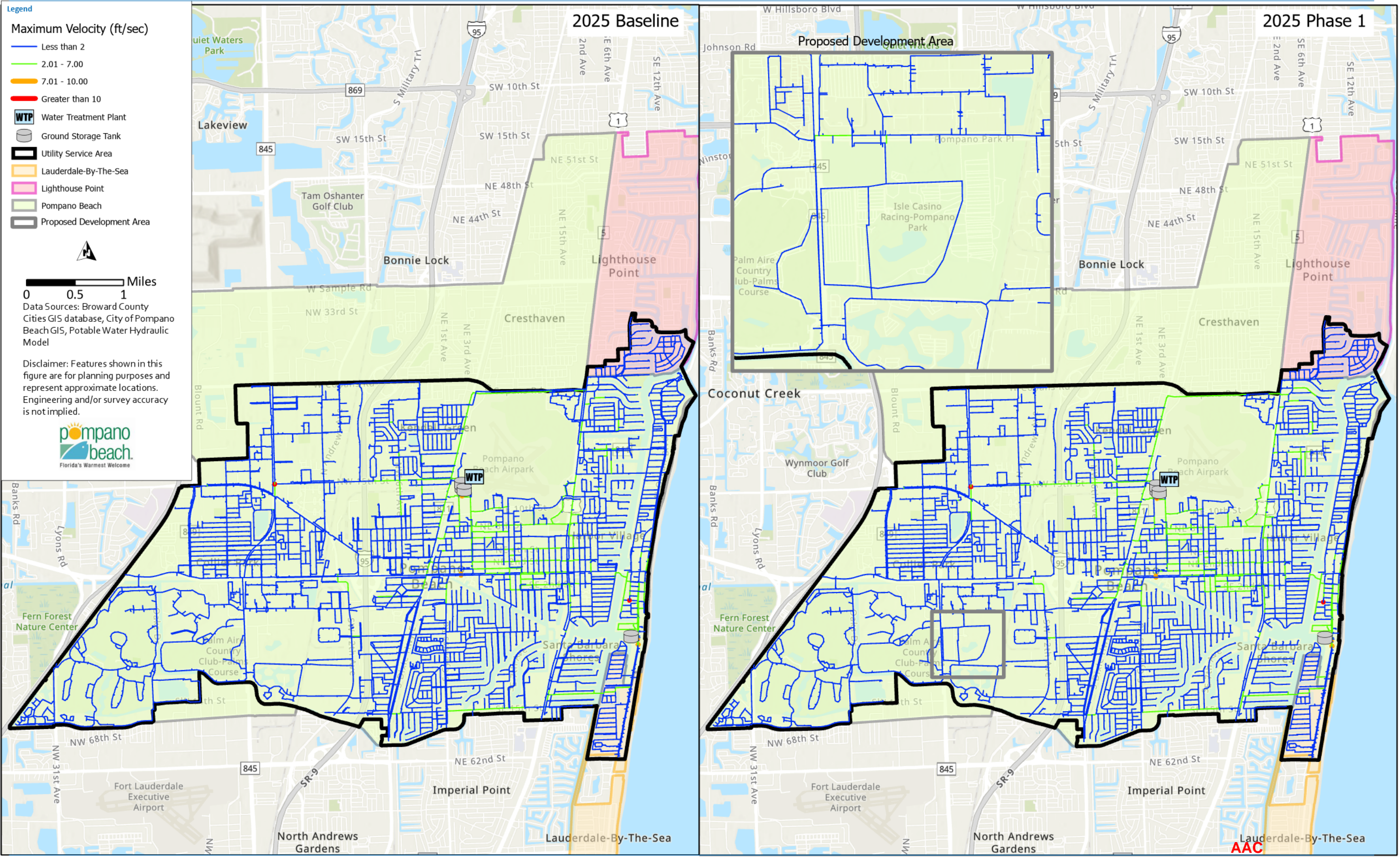


Figure 4 Maximum Velocity - Baseline vs. Phase 1, 2025 Maximum Day Demand Condition

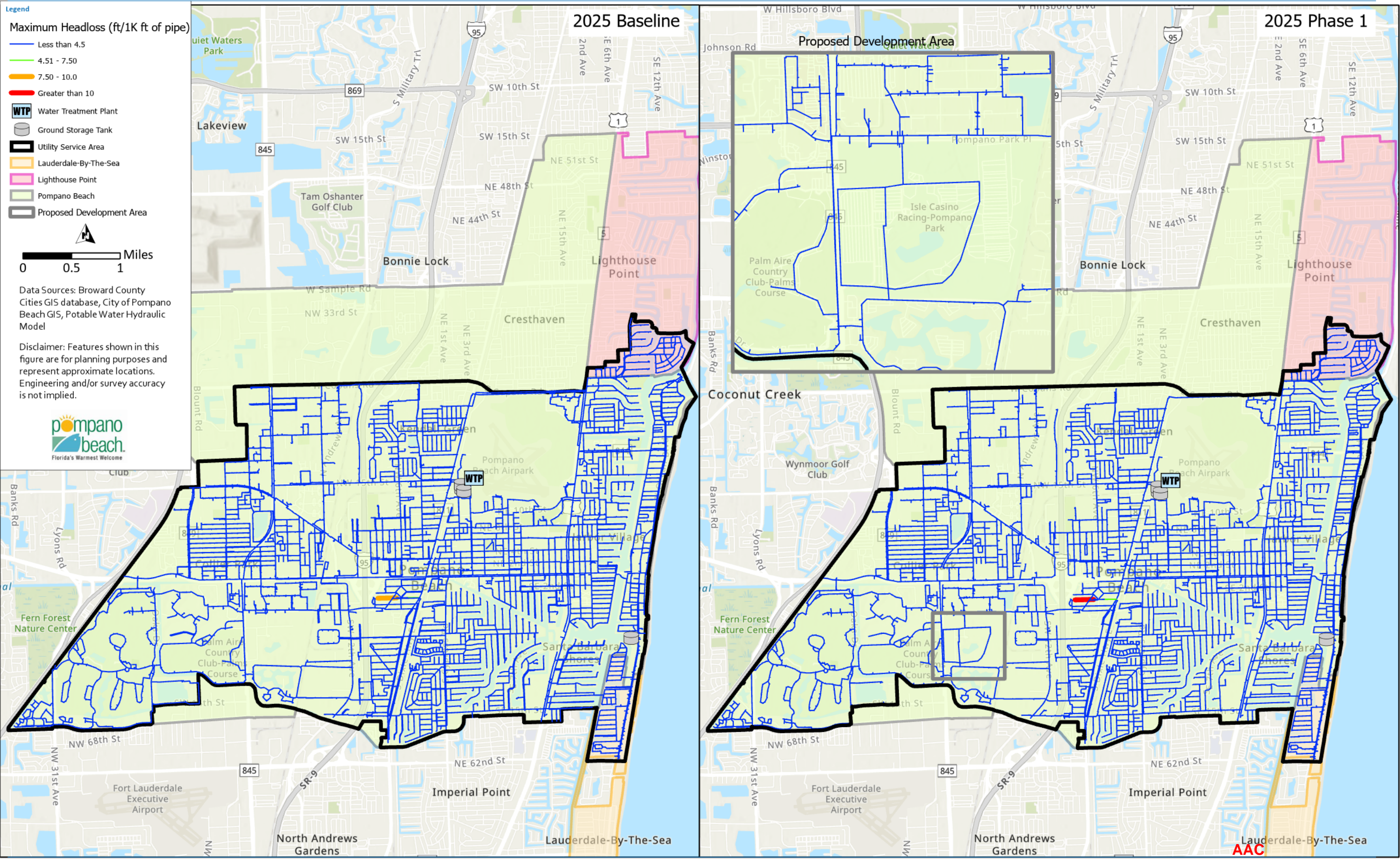


Figure 5 Maximum Headloss - Baseline vs. Phase 1, 2025 Maximum Day Demand Condition

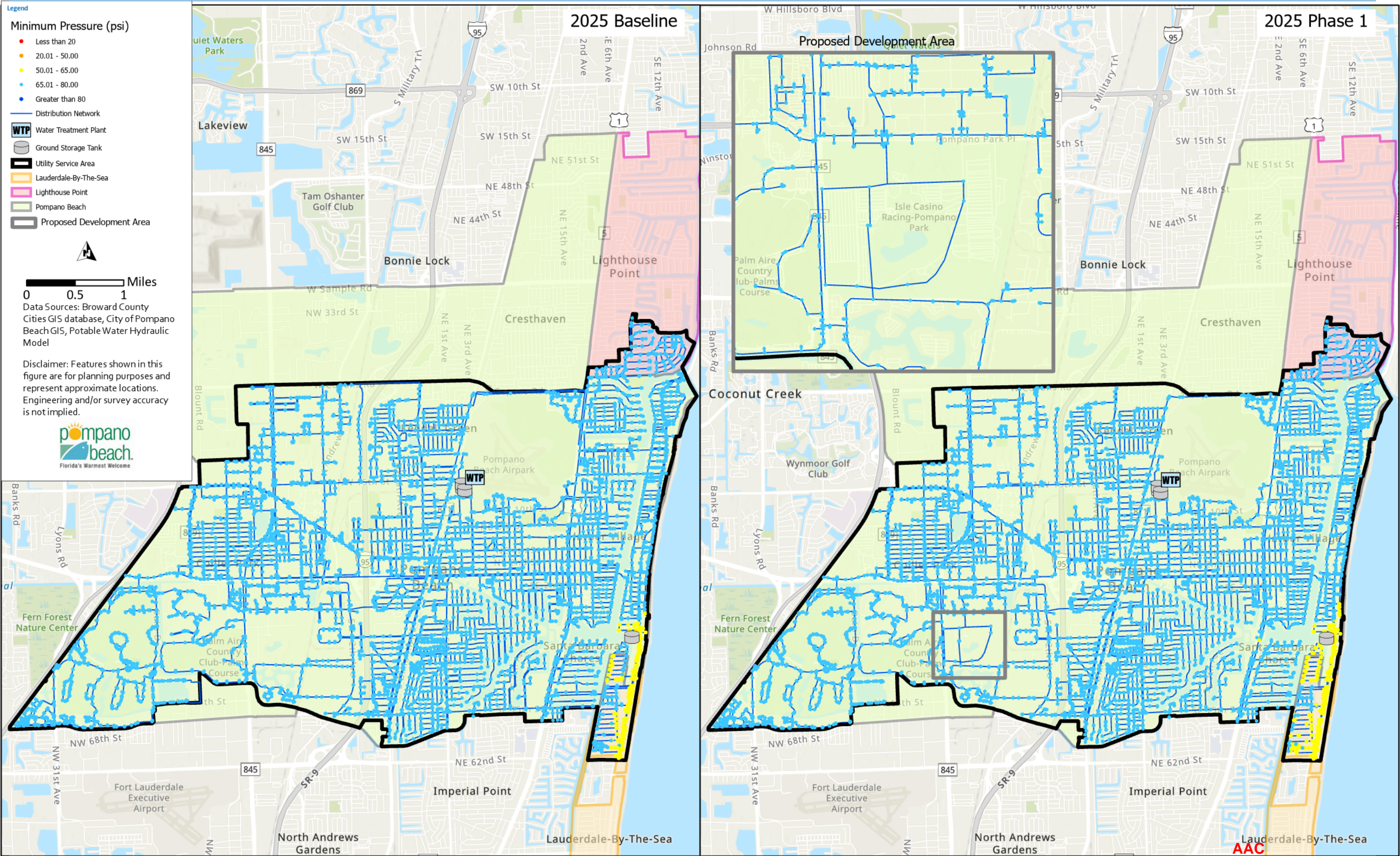


Figure 6 Minimum System Pressure - Baseline vs. Phase 1, 2025 Maximum Day Demand Condition

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Scenario 2 – Live! Casino Phased Development in 2040 (Buildout)

The 2040 Buildout scenario includes the allocated demands for the development at buildout, as listed in Table 1, along with the City's ADD demands projected in 2040. The peaking factor of 1.41 is applied to all demands under MDD conditions.

Under 2040 Buildout ADD conditions:

- Several distribution pipes are reaching capacity within the system. The highest simulated velocity in distribution pipes during average daily demand conditions was 18.0 fps.
- Junction pressures range from 55 psi to 79 psi.

Under 2040 Buildout MDD conditions:

Simulations support a change of pumping operations at the plant, which includes the operation of a previously stand-by pump (HSP3) in order to fill tanks, meet the peak system demands, and comply with the performance criteria and therefore the standard level of service. After this change, it is observed that:

- A few additional pipes do not comply with the headloss criterion during MDD conditions by 2040.
- The majority of pipes throughout the system experience velocities lower than 7 fps. The few exceptions range from 7.38 to 21.8 fps and are located at large distribution mains directly downstream of HSPs. Some smaller diameter pipes throughout the distribution system are reaching capacity in this scenario as well.
- Junction pressures throughout the system meet the pressure criteria.

Figures 7 through 9 show localized comparisons of the critical flow velocity, maximum headloss in pipes, and minimum junction pressure, respectively, without and with the proposed development for the buildout year, 2040, under MDD conditions. The following is highlighted in these figures:

- Pipe velocities increase slightly in the main distribution pipes directly downstream of the plant and near the Indian Mound tank and pump station when comparing the service area without and with the development at buildout.
- There are only a few additional pipes that would not meet the headloss criterion.
- Pressure decreases of 1 to 2 psi are experienced from the southeast portion moving northward along the intracoastal waterway. Pressures in the development show pressure decreases of 1 to 2 psi as well, but still meet the criteria. The areas surrounding the development show no significant pressure changes.

Tables in Appendices B and C include detailed tables that show the impact of the development in terms of the additional pipes that fall out of compliance for velocity and headloss, respectively, after the proposed construction and connection to the potable water distribution system at buildout. The tables identify the pipes of concern and location within the distribution system.

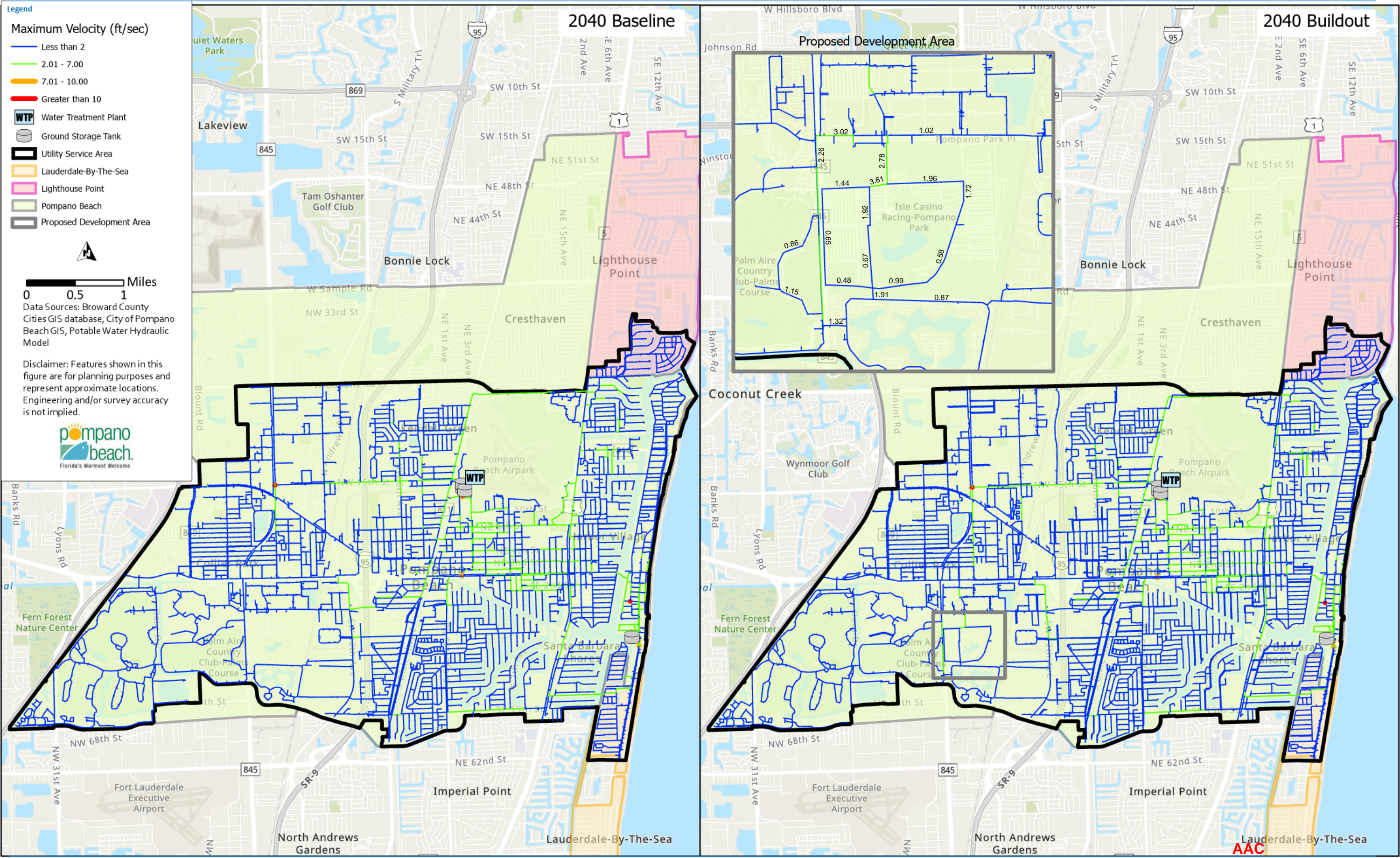


Figure 7 Maximum Velocity - Baseline vs. Buildout, 2040 Maximum Day Demand Condition

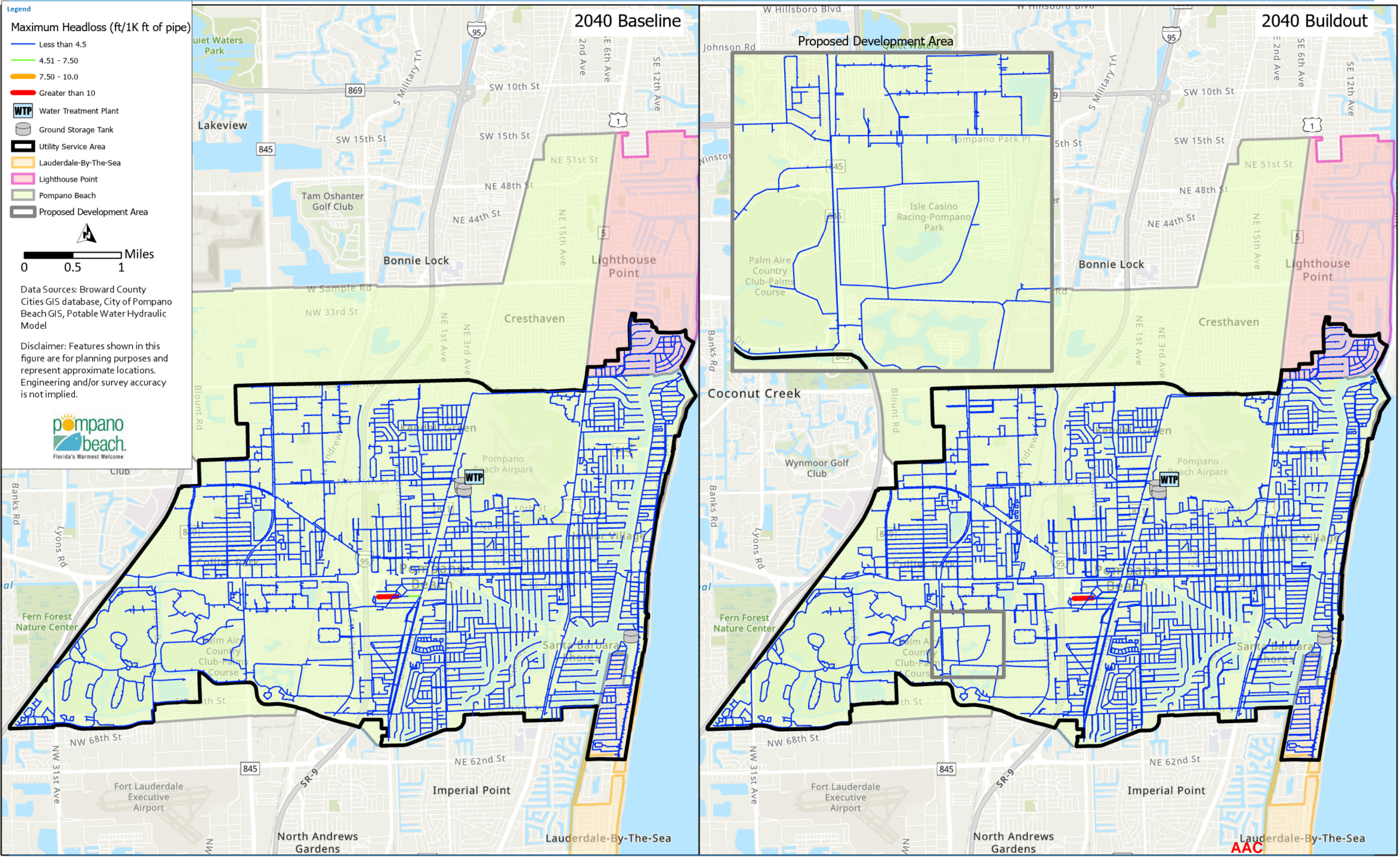


Figure 8 Maximum Headloss - Baseline vs. Buildout, 2040 Maximum Day Demand Condition

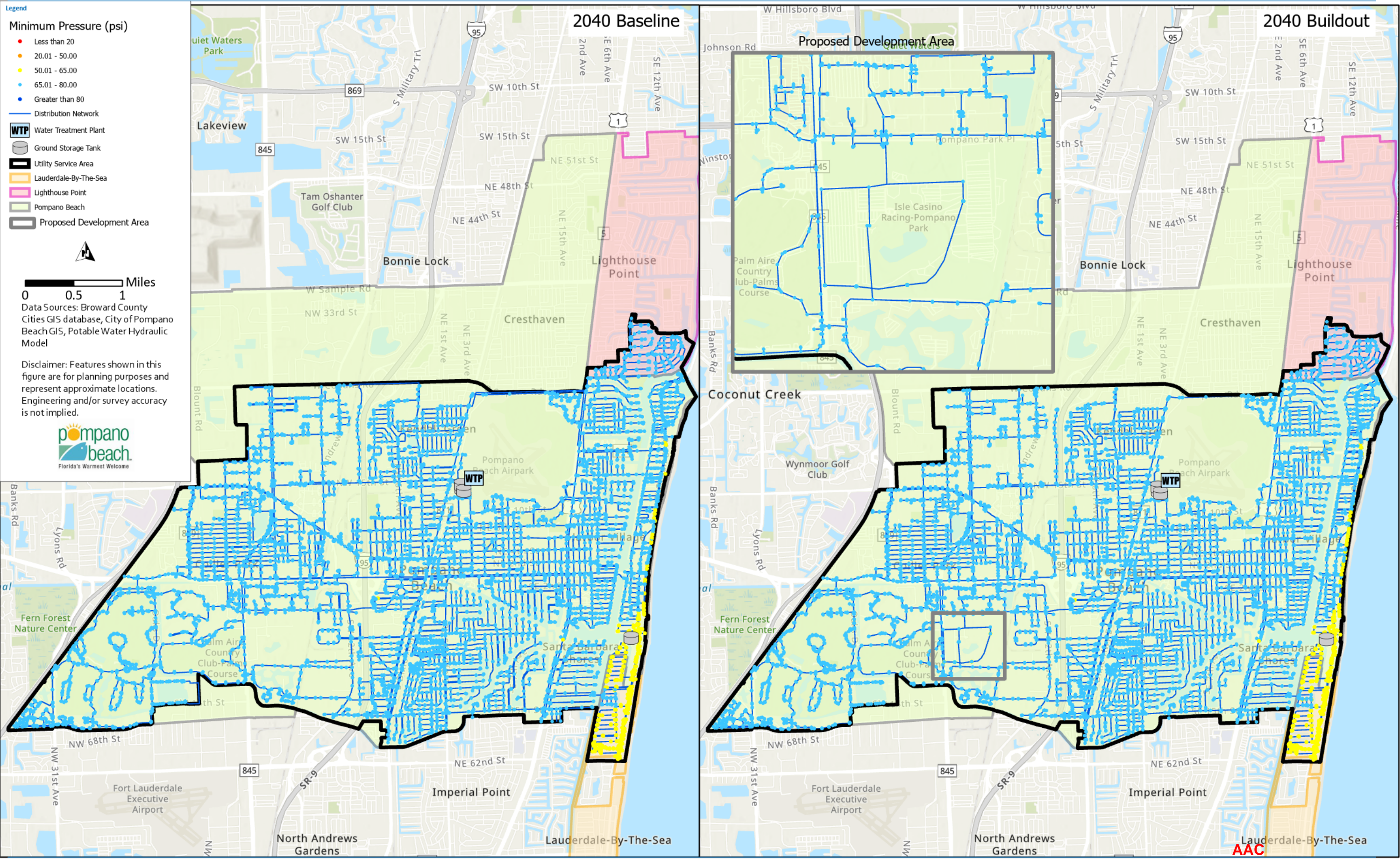


Figure 9 Minimum System Pressure - Baseline vs. Buildout, 2040 Maximum Day Demand Condition

Fire Flow Availability

Fire flow 2025 and 2040 scenarios were simulated for the most critical Need for Fire Flow (NFF) expected within and around the Isle Casino development to establish fire flow requirement compliance. Model scenario runs are performed using the fire flow criteria set forth in Table 2.

Methodology and Assumptions

If a limiting factor for firefighting is identified for the most critical location, then the procedure would call for the investigation of other less critical demands and locations in the analysis. If no limiting factors for firefighting are identified for the most critical node, it is safe to assume that less critical fire nodes will attain their required firefighting flow need.

Fire flow scenarios were assumed to occur at maximum day demands, but not at peak hour. Therefore, fire flows were added to the base maximum day demands for the fire flow verification scenarios.

This same methodology was employed in the City of Pompano Beach Water Master Plan fire flow analyses.

Fire Flows

The most critical NFF within and around the development will be served from a node at the easternmost boundary of the pipe loop, as shown in Figure 10. A fire hydrant service line for a neighboring industrial development (a mail sorting facility) will tap into the Isle Casino main loop as shown. Such demand will be of a magnitude of 3,000 gpm. Data in Appendix A indicates that the second most critical fire flow demand will be 1,500 gpm, located at a future parking garage within the Isle Casino development.

Fire Flow Simulation Results

Table 3 shows results where scenarios are run first using a 6-inch diameter service line to the critical fire hydrant. The resulting flow availability under both 2025 and 2040 MDD scenarios is lower than the 3,000 gpm NFF identified by the developer. The scenarios were run a second time to avoid the pipe size limitation. An 8-inch fire hydrant service line from the loop to the critical location shown in Figure 10 would provide fire flow compliance given that the available fire flow would be greater than 3,000 gpm.

It should be noted that this analysis is valid only if the main Isle Casino pipe loop (8-inch pipe) is interconnected with the 12-inch incoming lines at intersections shown in Figure 10. As an example, if the 8-inch pipe in the southern part of the loop is not physically connected with the 12-inch line that comes north from N. Cypress Bend Drive, then a reduction in fire flow availability of approximately 20 percent is expected. Such reduction in fire flow availability can hinder firefighting capabilities.

Table 3 Fire Flow Availability and Limiting Factor at the Most Critical Node (NFF = 3,000 gpm)

| Diameter of Fire Hydrant Service Pipe | Available Fire Flow (gpm) 2025 MMD Scenario | Available Fire Flow (gpm) 2040 MMD Scenario |
|---------------------------------------|--|--|
| 6-inch | 2,953 gpm | 2,770 gpm |
| 8-inch | 3,696 gpm | 3,430 gpm |

Given that all the proposed water distribution pipes within the Isle Casino development are greater than 6-inch in diameter, and that fire flow availability has been confirmed for a 3,000 gpm NFF, all other proposed fire needs as identified in Appendix A will be met.

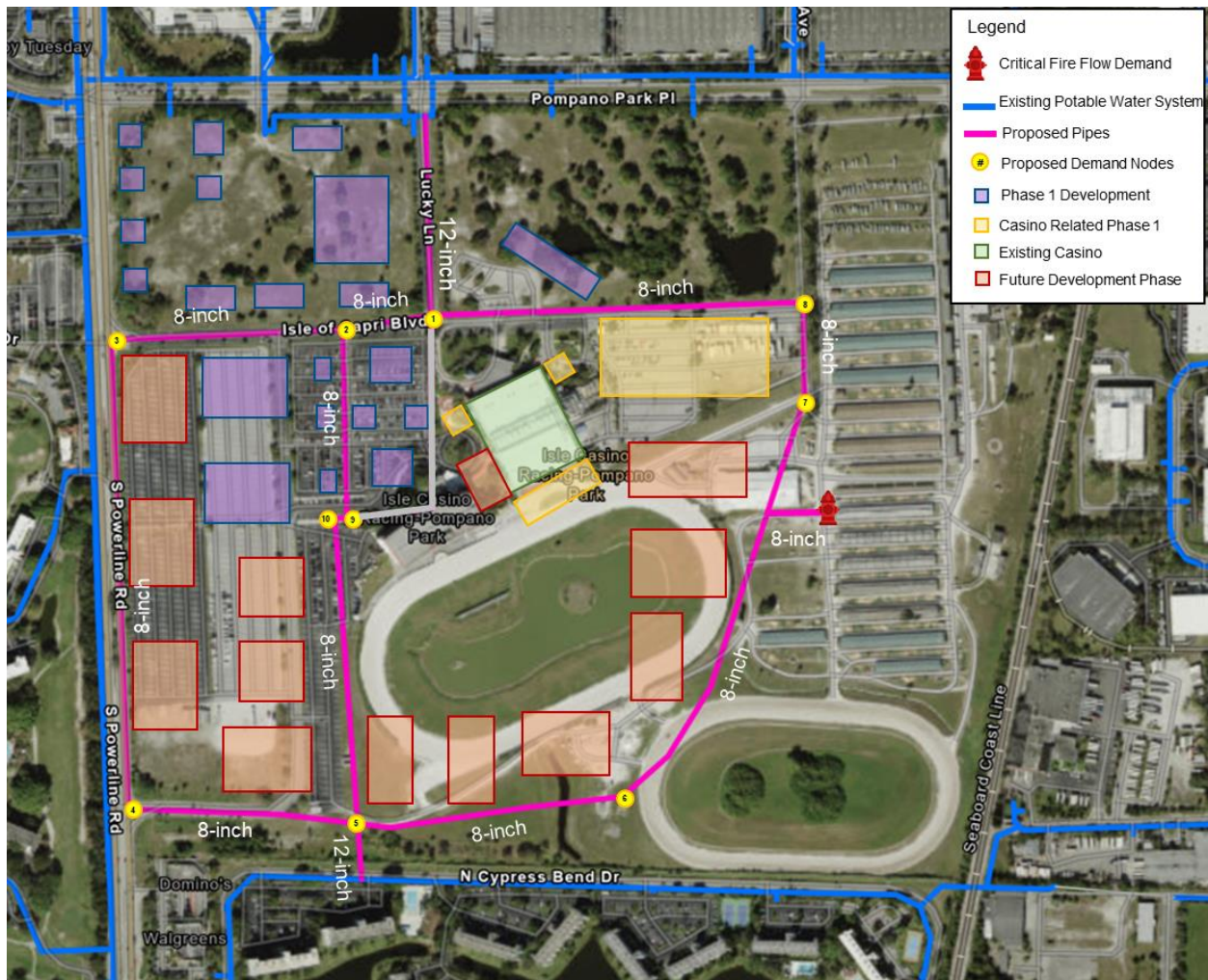


Figure 10 Proposed Location of the Most Critical Fire Flow Demand within the Development.

Conclusion and Recommendations

The addition of the Live! Pompano Isle Casino development has minimal impact to the current system and neighboring communities. This is summarized in Table 4 in terms of the performance criteria.

Table 4 Summary of Hydraulic Results With and Without the Addition of the Development

| Analysis | Parameter | MDD Without the Development | MDD With the Development | Engineer Observation |
|--------------------------------|------------------------|---|---------------------------------------|---|
| Without the Development | | | | |
| Phase 1 | Velocity | 0.01% of pipes do not meet criterion. | 0.06% of pipes do not meet criterion. | 0.05% more pipes exceed the velocity criterion as compared to the baseline scenario. Deficiencies stay localized at headers near or around HSPs by the WTP and Indian Mound remote pump station. |
| | Headloss | 0.05% of pipes do not meet criterion. | 0.18% of pipes do not meet criterion. | 0.13% more pipes exceed the headloss criterion as compared to the baseline scenario. Deficiencies are at small diameter pipes throughout the system that create bottlenecks. |
| | Pressure | Pressures between 55 and 79 psi. | | No impacts observed. |
| | Fire Flow Availability | Greater than NFF at critical sites, with uninterrupted domestic demand at a residual pressure of 20 psi | | Compliant |
| Buildout Phase | Velocity | 0.06% of pipes do not meet criterion. | 0.07% of pipes do not meet criterion. | Standby pump HSP3 at the WTP must be turned on to meet system demands with the development. A few more pipes, mostly near or around HSPs by the WTP and Indian Mound pump station, are noted to reach capacity compared to 2040 Baseline. |
| | Headloss | 0.23% of pipes do not meet criterion. | 0.23% of pipes do not meet criterion. | No significant difference noted from 2040 Baseline. |
| | Pressure | Between 55 and 79 psi. | Between 55 and 78 psi. | Standby pump HSP3 at the WTP must be turned on to meet minimum system pressure with the development. Slight decrease in pressures are seen near Indian Mound and intracoastal waterway in southeastern portion of service area. |
| | Fire Flow Availability | Greater than NFF at critical sites, with uninterrupted domestic demand at a residual pressure of 20 psi | | Compliant |

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Overall, the Isle Casino Development does not substantially impact the City's water system. In addition, neighboring communities directly surrounding the development show no signs of impact if the developer maintains the diameters shown in Figure 3 and the demand distribution as presented in Table 1. The potable water distribution system will be capable to provide firefighting flow to the area, and the infrastructure proposed by the developer as shown in this memorandum will be capable to serve the most critical need for fire flow that has been identified by the developer.

The impact, even though small and less significant in the long term, is quantifiable. Such impact is measured by means of comparing the infrastructure that was out of compliance with the performance criteria before the addition of the development (as documented in the City of Pompano Beach 2020 Master Plan), with the simulation outcome after the development. Comparative Figures 7 through 9 and tables in Appendices B and C show the deficiencies identified in the baseline hydraulic condition (without the development) vs. the deficiencies identified after the development. The difference among these two conditions may be attributed to the development and its demand on the system. The following is true from Figures 7 through 9 and tables in Appendices B and C:

- Near-term diminished hydraulic performance of transmission lines near the discharge of the high service pump station of the WTP (which had been identified before) will slightly worsen due to the increase in demand.
- High headloss and velocity are seen in some pipes with small diameters throughout the system; however, similar results were seen in the City's 2020 Water Master Plan.

Recommendations to eliminate the impact include:

The list of potential Capital Improvements Plan projects in the City's Water Master Plan could be expanded to include the few additional pipes impacted by the Isle Casino development in the long term.

With some operational adjustments, such as turning on an additional HSP during future MDD conditions and monitoring pressures to adjust filling of the Indian Mound tank, the system will be able to maintain and account for the additional demands in the long term.

It is recommended that the development stay true to their land use type as WTP pumping and storage operations are highly dependent on land use type patterns. Additional analyses to configure WTP pump station and storage tank operations will be needed for MDD conditions as future growth progresses. The Indian Mound facility in the east portion of the service area should be monitored as well since results show impact of the increased demand due to the development on this facility's pipe capacity in future scenarios.

Appendix A

DEMANDS PROPOSED BY DEVELOPER

Original and Amended



LIVE! Resorts Pompano
Keith Project No. 10230.09
Date:05/13/2021

Estimated Master Water Demand

Proposed Water Demand - Years 0-5

| Establishment | # Units | Per Unit gal/day | gal/day |
|---|---------|------------------|----------------|
| Hotels (per room) | 250 | 150 * | 37,500 |
| Retail (0.1 gpd / sq. ft.) | 105,650 | 0.1 ** | 10,565 |
| LIVE! F&B (30 gpd / seat) | 1,667 | 30 * | 50,010 |
| Lagoon (10 gpd / person) | 500 | 10 ** | 5,000 |
| Existing Isle Casino Sub Meter #11059581 | N/A | Existing *** | 39,530 |
| Casino Expansion (sq. ft.) | 11,000 | 0.38 *** | 4,180 |
| Jai Alai Fronton (5 gpd / seat) | 300 | 5 * | 1,500 |
| Recreation (5 gpd / seat) | 350 | 5 * | 1,750 |
| Grocery Store (0.1 gpd / sq. ft.) | 48,387 | 0.1 ** | 4,839 |
| Top Golf | 1 | 8778 **** | 8,778 |
| Parking Garage Office (0.2 gpd / sq. ft.) | 5,700 | 0.2 * | 1,140 |
| Industrial Development/Warehouse(0.1 gpd / sq. ft.) | 698,262 | 0.1 * | 69,826 |
| Parking Garage/Residential (per dwelling unit) | 500 | 250 * | 125,000 |
| Total Estimated Daily Volume | | | 359,618 |

Proposed Water Demand - Years 5-10

| Establishment | # Units | Per Unit gal/day | gal/day |
|--|---------|------------------|----------------|
| Residences - multiple family (per dwelling unit) | 1,800 | 250 * | 450,000 |
| Total Estimated Daily Volume | | | 450,000 |

Proposed Water Demand - Years 10-15

| Establishment | # Units | Per Unit gal/day | gal/day |
|--|---------|------------------|----------------|
| Residences - multiple family (per dwelling unit) | 1,800 | 250 * | 450,000 |
| Hotels (per room) | 225 | 150 * | 33,750 |
| Total Estimated Daily Volume | | | 483,750 |

References:

* Broward County Code of Ordinances, Chapter 27, Section 27-201

** Florida Administrative Code Chapter 64E-6

*** City of Pompano Beach Water Meter Readings

**** Per Information Provided by TopGolf

AAC

PZ24-12000022

02/19/2025

From: Martin Grinbank
<MGrinbank@keithteam.com>
Sent: Wednesday, January 5, 2022 1:49 PM
To: Angelica Gregory
Cc: Stephen Williams, Sr.
Subject: FW: LIVE! Resorts Pompano (KEITH 10230.09)

Angelica, we have not yet heard from you. We received the information below from the Developer of the industrial parcel with relation to the required fire flow demand:

Delivery Station: 1,250 gpm at the pump
Sortation Facility: 3,000 gpm at the pump

Please incorporate into your study.

Please let me know if you have any questions or if you need any additional information.

Regards,



Martin Grinbank
Project Manager II
Office: 954.788.3400
Email: MGrinbank@keithteam.com
www.KEITHteam.com

AAC

PZ24-12000022

02/19/2025

LIVE! Resorts Pompano
KEITH Project No. 10230.00
Fire Demand Calculations

| Building # | Fire Demand |
|-------------------|--------------------|
| Building 1 | 1,250 GPM |
| Building 2 | 1,000 GPM |
| Building 3 | 1,000 GPM |
| Building 4 | 1,000 GPM |
| Building 5 | 1,000 GPM |
| Building 6 | 1,000 GPM |
| Building 7 | 1,000 GPM |
| Building 8 | 1,000 GPM |
| Building 9 | 1,000 GPM |
| Building 10 | 1,000 GPM |
| Building 11 | 1,000 GPM |
| Building 12 | 1,000 GPM |
| Building 13 | 1,000 GPM |
| Building 14 | 1,000 GPM |
| Building 15 | 1,125 GPM |
| Building 16 | 1,000 GPM |
| Building 17 | 1,565 GPM |
| Building 18 | 1,625 GPM |
| Building 19 | N/A |
| Building 20 | 1,440 GPM |
| Building 21 | 1,440 GPM |
| Building 22 | 1,315 GPM |
| Building 23 | 1,500 GPM |
| Building 24 | 1,440 GPM |
| Building 25 | 1,500 GPM |
| Building 26 | 1,125 GPM |
| Building 27 | 1,125 GPM |
| Building 28 | 1,250 GPM |
| Building 29 | 1,190 GPM |
| Building 30 | 1,190 GPM |
| Building 31 | 1,125 GPM |
| Exist. Casino | 1,000 GPM |
| Parking Garage | 1,500 GPM |

AAC

PZ24-12000022

02/19/2025

From: Stephen Williams, Sr.
<SWilliams@keithteam.com>
Sent: Thursday, April 14, 2022 12:41 PM
To: Angelica Gregory; Martin Grinbank; Juniper Marini
Subject: RE: LIVE! Resorts Pompano Master Development (KEITH 10230.09)
Attachments: [10230.09 - Master Water System Concept.pdf](#); [LIVE! Program Assessment - SF and Counts.pdf](#); [10230.09 LIVE! Resorts Pompano Master Water Demand Calculations-NodeSplit.pdf](#)

Angelica,
Thanks for the preliminary results.

The Live! Loop connects to the south, as we discussed yesterday. All the scenarios should be run with the LIVE! Loop connected to the 12" mains to the North and to the South and all the pipe intersections within the LIVE! Development connected (shift node 5 to the intersection of the central pipe run).

We looked at the node splits for the planned development and they need to be adjusted to match the proposed development. See the attached which shows the development and the node splits. See flow splits summary below:

| | Nodes | | | | | | | | | |
|---------------------|----------|----------|---------|----------|---------|---------|---------|--------|--------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Flow Split - KEITH | 124,373 | 32,507 | 133,815 | 121,500 | 283,500 | 185,275 | 185,275 | 45,880 | 80,500 | 2 |
| Flow Split - Report | 244771 | 136500 | 12315 | 283250 | 243000 | 243000 | 243000 | 4180 | 40250 | |
| Difference | -120,398 | -103,994 | 121,500 | -161,750 | 40,500 | -57,725 | -57,725 | 41,700 | 40,250 | 2 |

AAC

PZ24-12000022

02/19/2025

FINAL PROJECT MEMORANDUM

Table 1 Water Demands for the Live! Pompano Isle Casino Development

| Assigned Junction ⁽²⁾ | Establishment | No. of Units ⁽²⁾ | Demand per Unit (gpd) | Demand (gpd) | | Land Use ⁽⁴⁾ |
|----------------------------------|--|-----------------------------|-----------------------|--------------|------------------------------|-------------------------|
| | | | | 2025 Phase 1 | 2040 Buildout ⁽³⁾ | |
| 1&2 even split | Live! F&B (per seat) ⁽⁵⁾ | 1,667 | 39 | 65,013 | 65,013 | Institutional |
| 1& 8 even split | Existing Isle Casino Sub Meter #11059581 | NA | Existing | 39,530 | 39,530 | General |
| | Grocery Store (per SF) ⁽⁵⁾ | 48,387 | 1.25 | 60,484 | 60,484 | General |
| 1 | Top Golf | 1 | 8778 | 8,778 | 8,778 | General |
| 8 | Parking Garage Office (per SF) | 5,700 | 0.2 | 1,140 | 1,140 | General |
| 6,7&8 even split | Industrial Development/Warehouse (per SF) | 698,262 | 0.1 | 69,826 | 69,826 | Industrial |
| 10 | Parking Garage/Residential (per d.u.) ⁽⁵⁾ | 500 | 270 | 135,000 | 135,000 | Residential |
| 2 | Jai Alai Fronton (per seat) | 300 | 5 | 1,500 | 1,500 | Institutional |
| 1& 8 even split | Retail (per SF) | 105,650 | 0.1 | 10,565 | 10,565 | Commercial |
| 3 | Recreation (per seat) | 350 | 5 | 1,750 | 1,750 | Institutional |
| 9 | Hotels (per room) ⁽⁵⁾ | 250 | 161 | - | 40,250 | Institutional |
| 4, 8, 5 ⁽⁵⁾ | Residences #1 ⁽⁵⁾ | 1,800 | 270 | - | 486,000 | Residential |
| 3,4,5&10 even split | Residences #2 ⁽⁵⁾ | 1,800 | 270 | - | 486,000 | Residential |
| 5,6,&7 even split | Casino Expansion (per SF) | 11,000 | 0.38 | 4,180 | 4,180 | General |
| 1& 8 even split | Hotels (per room) ⁽⁵⁾ | 250 | 161 | 40,250 | 40,250 | Institutional |
| 9 | Lagoon (per person) | 500 | 10 | 5,000 | 5,000 | General |
| 10 | | | | | | |
| Total Demand (gpd) | | | | 443,016 | 1,455,266 | |

Notes:

AAC

PZ24-12000022

02/19/2025



Figure 2 Developer Proposed Pipe Layout as Included in the Hydraulic Model

Please call me if you get a chance.

Take care,



AAC

PZ24-12000022

02/19/2025

Appendix B

PIPES EXCEEDING VELOCITY CRITERIA

Table B-1 Pipeline Exceeding Velocity Criteria – Existing MDD vs. Phase 1 MDD Conditions

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Maximum Velocity (fps) |
|---|--|-------------|---------------|------------------------|
| <i>Pipes Exceeding Velocity Criterion – Existing MDD Conditions without the Development</i> | | | | |
| PW-PIP-61-9055 | SE 13 th Avenue and SE 2 nd Street | 26.77 | 6 | 20.9 |
| PW-PIP-12-2895 | Along Hibiscus Avenue and SE 6th Street | 2.83 | 2 | 14.1 |
| PW-PIP-104-7174 | Southeast corner of NW 15 th Street and N Powerline Road | 13.94 | 12 | 13.4 |
| PW-PIP-61-175 | WTP HSP header downstream of HSP 1 | 10.87 | 30 | 9.47 |
| PW-PIP-61-1233 | WTP HSP header downstream of PW-PIP-61-175 | 17.07 | 30 | 9.47 |
| PW-PIP-61-178 | WTP HSP header downstream of PW-PIP-61-1233 | 27.82 | 30 | 9.47 |
| PW-PIP-61-1133 | NE 4 th Avenue and E Atlantic Boulevard | 16.79 | 6 | 8.27 |
| PW-PIP-61-35 | | 62.31 | 6 | 8.27 |
| PW-PIP-61-1235 | 30-in transmission main downstream of the HSPs | 16.11 | 30 | 7.28 |
| PW-PIP-61-9696 | | 16.15 | 30 | 7.28 |
| <i>Additional Pipes Exceeding Velocity Criterion – Phase 1 MDD Conditions with the Development</i> | | | | |
| PW-PIP-21-9883 | Pipes leading to Indian Mound Tank to the east of Hibiscus Avenue. | 101.7 | 12 | 11.4 |
| PW-PIP-21-9884 | | | | |
| TO_INDIAN_MOUND_TANK | | | | |
| PW-PIP-21-9878 | Pipes to east of Hibiscus Avenue coming from Indian Mound Pump Station. | 29.96 | 12 | 10.3 |
| PW-PIP-21-9879 | | | | |
| PW-PIP-21-9880 | | | | |
| PW-PIP-21-9881 | | | | |
| PW-PIP-21-2742 | Pipes leaving Indian Mound Pump Station heading south along Hibiscus Avenue and east along SE 13th Street. | 650.8 | 12 | 8.60 |
| PW-PIP-21-9891 | | | | |
| PW-PIP-21-9892 | | | | |
| INDIAN_MOUNT_TO_DISTRIBUTION_1 | | | | |
| PW-PIP-21-9882 | | | | |

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Maximum Velocity (fps) |
|---|--|-------------|---------------|------------------------|
| PW-PIP-21-2387 | 8-inch line connecting two 12-inch lines at the intersection S Ocean Boulevard just south of SE 13th Street. | 30.54 | 8 | 7.68 |
| PW-PIP-21-2970 | | | | |
| PW-PIP-61-176 | WTP HSP header downstream of HSP 1 and HSP 2. | 14.0 | 30 | 7.38 |
| Total Impacted Length of Pipe in Phase 1 Scenarios | | 827 | | |

Table B-2 Pipeline Exceeding Velocity Criteria – 2040 Baseline MDD vs. 2040 Buildout MDD Conditions

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Maximum Velocity (fps) |
|---|--|-------------|---------------|------------------------|
| <i>Pipes Exceeding Velocity Criterion – 2040 Baseline MDD Conditions without the Development</i> | | | | |
| PW-PIP-61-9055 | SE 13th Avenue and SE 2nd Street | 26.77 | 6 | 21.8 |
| PW-PIP-104-7174 | Southeast corner of NW 15th Street and N Powerline Road | 13.94 | 12 | 15.1 |
| PW-PIP-12-2895 | Along Hibiscus Avenue and SE 6th Street | 2.83 | 2 | 14.1 |
| PW-PIP-21-9883 | Pipes leading to Indian Mound Tank to the east of Hibiscus Avenue. | 50.58 | 12 | 11.3 |
| PW-PIP-21-9884 | | | | |
| TO_INDIAN_MOUND_TANK | | | | |
| PW-PIP-61-1233 | WTP HSP header downstream of PW-PIP-61-175 | 17.07 | 30 | 10.6 |
| PW-PIP-61-178 | WTP HSP header downstream of PW-PIP-61-1233 | 27.82 | 30 | 10.6 |
| PW-PIP-61-175 | WTP HSP header downstream of HSP 1 | 10.87 | 30 | 10.6 |
| PW-PIP-21-9878 | Pipes to east of Hibiscus Avenue coming from Indian Mound Pump Station. | 29.96 | 12 | 10.2 |
| PW-PIP-21-9879 | | | | |
| PW-PIP-21-9880 | | | | |
| PW-PIP-21-9881 | | | | |
| PW-PIP-61-1133 | NE 4th Avenue and E Atlantic Boulevard | 79.10 | 6 | 9.68 |
| PW-PIP-61-35 | | | | |
| PW-PIP-21-2742 | Pipes leaving Indian Mound Pump Station heading south along Hibiscus Avenue and east along SE 13th Street. | 650.8 | 12 | 8.55 |
| PW-PIP-21-9891 | | | | |
| PW-PIP-21-9892 | | | | |
| INDIAN_MOUNT_TO_DISTRIBUTION_1 | | | | |
| PW-PIP-21-9882 | | | | |
| PW-PIP-61-176 | WTP HSP header downstream of HSP 1 and HSP 2. | 14 | 30 | 8.46 |
| PW-PIP-61-1235 | 30-in transmission main downstream of the HSPs | 32.26 | 30 | 8.12 |
| PW-PIP-61-9696 | | | | |

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Maximum Velocity (fps) |
|--|--|-------------|---------------|------------------------|
| PW-PIP-21-2970 | 8-inch line connecting two 12-inch lines at the intersection S Ocean Boulevard just south of SE 13th Street. | 30.54 | 8 | 7.62 |
| PW-PIP-21-2387 | | | | |
| Additional Pipes Exceeding Velocity Criterion – 2040 MDD Conditions with the Development | | | | |
| PW-PIP-61-1229 | WTP HSP header downstream of HSP 3. | 12 | 18 | 7.94 |
| PW-PIP-61-170 | | | | |
| Total Additional Impacted Length of Pipe in 2040 Buildout Scenario | | 12 | | |

Appendix C

PIPES EXCEEDING HEADLOSS CRITERIA

Table C-1 Pipelines Exceeding Headloss Criteria - Existing MDD vs. Phase 1 MDD Conditions

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Maximum Headloss per 1,000 ft (ft) |
|--|---|-------------|---------------|------------------------------------|
| <i>Pipes Exceeding Headloss Criterion – Existing MDD Conditions without the Development</i> | | | | |
| PW-PIP-12-2895 | Along Hibiscus Avenue and SE 6th Street | 2.83 | 2 | 318.46 |
| PW-PIP-61-9055 | Along SE 13th Avenue and SE 2nd Street | 26.77 | 6 | 197.78 |
| PW-PIP-61-8974 | Along SE 17th Avenue, connecting to 6-in line along E Atlantic Boulevard | 16.02 | 2 | 71.77 |
| PW-PIP-61-9393_A | Along SE 17th Avenue connecting to a 6-in line in the south; south of PW-PIP-61-8974 | 26.1 | 2 | 71.77 |
| PW-PIP-61-9393_B | | | | |
| PW-PIP-90-6893 | North of SW 2nd Court and SW Avondale Drive | 107.55 | 2 | 56.62 |
| PW-PIP-90-8010 | | | | |
| PW-PIP-90-12010 | | | | |
| PW-PIP-104-7174 | Southeast corner of NW 15 th Street and N Powerline Road | 13.94 | 12 | 44.21 |
| PW-PIP-61-1133 | Along NE 4th Avenue and E Atlantic Boulevard | 79.10 | 6 | 35.48 |
| PW-PIP-61-35 | | | | 35.02 |
| PW-PIP-21-2791 | Along Hibiscus Avenue, north of pipe PW-PIP-21-2260 | 305.2 | 6 | 22.35 |
| PW-PIP-21-2260 | Along Hibiscus Avenue, downstream and north of Indian Mound discharge | 3.9 | 6 | 22.29 |
| PW-PIP-21-2398_B | Along Hibiscus Avenue, north of pipe PW-PIP-21-2971 | 8.0 | 6 | 22.29 |
| PW-PIP-21-2387 | East along S Ocean Drive southeast of Indian Mound | 8.39 | 8 | 20.44 |
| PW-PIP-21-2970 | East along S Ocean Drive southeast of Indian Mound; connects to PW-PIP-21-2387 | 22.15 | 8 | 20.44 |
| PW-PIP-44-9169 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9497_2 in the north | 6.5 | 2 | 18.02 |
| PW-PIP-44-9497_1 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9497_4 in the south | 66.0 | 2 | 18.02 |
| PW-PIP-44-9497_2 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9169 in the south and pipe PW-PIP-44-9497_4 in the north | 1.5 | 2 | 18.02 |

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Maximum Headloss per 1,000 ft (ft) |
|---|---|-----------------|---------------|------------------------------------|
| PW-PIP-44-9497_4 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9497_2 in the south and pipe PW-PIP-44-9497_1 in the north | 66.5 | 2 | 18.02 |
| <i>Additional Pipes Exceeding Headloss Criterion – Phase 1 MDD Conditions with the Development</i> | | | | |
| PW-PIP-21-9884 | Pipes leading to Indian Mound Tank to the east of Hibiscus Avenue. | 50.85 | 12 | 33.16 |
| TO_INDIAN_MOUND_TANK | | | | |
| PW-PIP-21-9883 | | | | |
| PW-PIP-21-9879 | Pipes to east of Hibiscus Avenue coming from Indian Mound Pump Station. | 29.96 | 12 | 21.83 |
| PW-PIP-21-9880 | | | | |
| PW-PIP-21-9881 | | | | |
| PW-PIP-21-9878 | Pipes leaving Indian Mound Pump Station heading south along Hibiscus Avenue and east along SE 13th Street. | 7 | 12 | 18.62 |
| INDIAN_MOUNT_TO_DISTRIBUTION_1 | | | | |
| PW-PIP-32-893 | 2-inch line connecting two 6-inch lines along NE 18th Street between NE 27th Avenue and NE 28th Avenue. | 211.57 | 2 | 17.97 |
| PW-PIP-61-121 | Along NE 6th Street at the intersection of NE 5th Avenue. | 35.25 | 6 | 16.40 |
| PW-PIP-61-1190 | | | | |
| PW-PIP-21-2742 | Pipe leaving Indian Mound Pump Station heading south along Hibiscus Avenue and east along SE 13th Street. | 643.8 | 12 | 15.76 |
| PW-PIP-21-9891 | | | | |
| PW-PIP-21-9892 | | | | |
| PW-PIP-21-9882 | 2-inch line along SW 2nd Court crossing Avondale Drive. | 1,034.18 | 2 | 15.76 |
| PW-PIP-90-5411 | | | | |
| PW-PIP-61-175 | | | | |
| PW-PIP-61-1233 | | | | |
| PW-PIP-61-178 | WTP HSP header downstream of PW-PIP-61-1233 | 55.76 | 30 | 7.69 |
| Total Impacted Length of Pipe in Phase 1 Scenarios | | 2,068.37 | | |

Table C-2 Pipelines Exceeding Headloss Criteria – 2040 Baseline MDD vs. 2040 Buildout MDD Conditions

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Max. Headloss per 1,000 ft (ft) |
|--|--|-------------|---------------|---------------------------------|
| <i>Pipes Exceeding Headloss Criterion – Existing MDD Conditions without the Development</i> | | | | |
| PW-PIP-12-2895 | Along Hibiscus Avenue and SE 6th Street | 2.83 | 2 | 316.3 |
| PW-PIP-61-9055 | Along SE 13th Avenue and SE 2nd Street | 26.77 | 6 | 213.9 |
| PW-PIP-61-8974 | Along SE 17th Avenue, connecting to 6-in line along E Atlantic Boulevard | 16.02 | 2 | 76.68 |
| PW-PIP-61-9393_A | Along SE 17th Avenue connecting to a 6-in line in the south; south of PW-PIP-61-8974 | 26.10 | 2 | 76.68 |
| PW-PIP-61-9393_B | | | | |
| PW-PIP-90-6893 | North of SW 2nd Court and SW Avondale Drive | 107.55 | 2 | 78.68 |
| PW-PIP-90-8010 | | | | |
| PW-PIP-90-12010 | | | | |
| PW-PIP-104-7174 | Southeast corner of NW 15th Street and N Powerline Road | 13.94 | 12 | 55.02 |
| PW-PIP-61-1133 | Along NE 4th Avenue and E Atlantic Boulevard | 79.10 | 6 | 47.65 |
| PW-PIP-61-35 | | | | |
| PW-PIP-21-9884 | Pipes leading to Indian Mound Tank to the east of Hibiscus Avenue. | 50.85 | 12 | 32.89 |
| TO_INDIAN_MOUND_TANK | | | | |
| PW-PIP-21-9883 | Along Hibiscus Avenue, north of pipe PW-PIP-21-2971 | 8.0 | 6 | 21.95 |
| PW-PIP-21-2398_B | | | | |
| PW-PIP-21-2260 | | 3.9 | 6 | 21.89 |
| PW-PIP-21-2791 | Along Hibiscus Avenue, downstream and north of Indian Mound discharge | | | |
| PW-PIP-21-2791 | Along Hibiscus Avenue, north of pipe PW-PIP-21-2260 | 305.2 | 6 | 21.89 |
| PW-PIP-21-9879 | Pipes to east of Hibiscus Avenue coming from Indian Mound Pump Station. | 29.96 | 12 | 21.56 |
| PW-PIP-21-9880 | | | | |
| PW-PIP-21-9881 | | | | |
| PW-PIP-21-9878 | | | | |
| PW-PIP-90-5411 | 2-inch line along SW 2nd Court crossing Avondale Drive. | 1,034.18 | 2 | 20.12 |
| PW-PIP-21-2387 | East along S Ocean Drive southeast of Indian Mound | 8.39 | 8 | 19.96 |

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Max. Headloss per 1,000 ft (ft) |
|--------------------------------|---|-------------|---------------|---------------------------------|
| PW-PIP-21-2970 | East along S Ocean Drive southeast of Indian Mound; connects to PW-PIP-21-2387 | 22.15 | 8 | 19.96 |
| PW-PIP-90-12013 | 2-inch line along SW 2nd Court just east of SW 4th Avenue. | 17.06 | 2 | 19.07 |
| INDIAN_MOUNT_TO_DISTRIBUTION_1 | Pipes leaving Indian Mound Pump Station heading south along Hibiscus Avenue and east along SE 13th Street. | 7 | 12 | 19.00 |
| PW-PIP-61-121 | Along NE 6th Street at the intersection of NE 5th Avenue. | 16.61 | 6 | 18.31 |
| PW-PIP-61-1190 | | 18.64 | 6 | 18.07 |
| PW-PIP-32-893 | 2-inch line connecting two 6-inch lines along NE 18th Street between NE 27th Avenue and NE 28th Avenue. | 211.57 | 2 | 17.24 |
| PW-PIP-90-12011 | 2-inch line along SW 2nd Court just east of SW 4th Avenue. | 664.42 | 2 | 17.10 |
| PW-PIP-90-6881 | | | | |
| PW-PIP-44-9169 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9497_2 in the north | 6.5 | 2 | 17.06 |
| PW-PIP-44-9497_1 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9497_4 in the south | 66.0 | 2 | 17.06 |
| PW-PIP-44-9497_2 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9169 in the south and pipe PW-PIP-44-9497_4 in the north | 1.5 | 2 | 17.06 |
| PW-PIP-44-9497_4 | Between SE 13th Court and SE 13th Street; connects to pipe PW-PIP-44-9497_2 in the south and pipe PW-PIP-44-9497_1 in the north | 66.5 | 2 | 17.06 |
| PW-PIP-21-2742 | Pipe leaving Indian Mound Pump Station heading south along Hibiscus Avenue and east along SE 13th Street. | 643.8 | 12 | 15.55 |
| PW-PIP-21-9891 | | | | |
| PW-PIP-21-9892 | | | | |
| PW-PIP-21-9882 | | | | |
| PW-PIP-61-1233 | WTP HSP header downstream of PW-PIP-61-175 | 17.07 | 30 | 8.67 |
| PW-PIP-61-175 | WTP HSP header downstream of HSP 1 | 10.87 | 30 | 8.67 |
| PW-PIP-61-178 | WTP HSP header downstream of PW-PIP-61-1233 | 27.82 | 30 | 8.67 |

| Pipe GIS ID | Location | Length (ft) | Diameter (in) | Max. Headloss per 1,000 ft (ft) |
|---|---|-------------|---------------|---------------------------------|
| Additional Pipes Exceeding Headloss Criterion – 2040 Buildout MDD Conditions with the Development | | | | |
| PW-PIP-61-1229 | WTP HSP header downstream of HSP 3. | 12 | 18 | 10.61 |
| PW-PIP-61-170 | | | | |
| PW-PIP-61-176 | WTP HSP header downstream of HSP 1 and HSP 2. | 14 | 30 | 6.14 |
| PW-PIP-61-1235 | 30-in transmission main downstream of the HSPs. | 32.26 | 30 | 5.77 |
| PW-PIP-61-9696 | | | | |
| Total Additional Impacted Length of Pipe in 2040 Buildout Scenarios | | 58.26 | | |