

NORTH SPRINGS IMPROVEMENT DISTRICT

10 – YEAR WATER SUPPLY FACILITIES WORK PLAN



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SECTION 1 INTRODUCTION

1.1 INTRODUCTION

The purpose of the North Springs Improvement District's (NSID) 10-Year Water Supply Facilities Work Plan (Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within NSID's jurisdictional boundaries. In addition, this work plan will help the local general-purpose governments of the City of Parkland and the City of Coral Springs guide their planning processes for growth and development. The North Springs Improvement District provides municipal water services to two municipalities, which are the City of Coral Springs and the City of Parkland. Both of these cities are located within Broward County. This Water Supply Facilities Work Plan has been prepared in response to the requirements of Florida Statute 163.3177(4). Chapter 163, Part II, Florida Statutes (F.S.), requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan or its update. The Lower East Coast Water Supply Plan update was approved by the District's Governing Board on January 11, 2019. Therefore, the deadline for local governments within the Lower East Coast Water Supply Plan Region to amend their comprehensive plans to update the Work Plan is July 11, 2020. NSID last completed a 10-Year Water Supply Facilities Work Plan on October 21, 2008. This work plan will replace the NSID's previous work plan with crucial updates.

1.2 STATUTORY HISTORY

The Florida Legislature enacted bills in the 2002, 2004, 2005, and 2011 sessions to address the state's water supply needs. These bills, in particular Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapters 163 and 373, F.S. by strengthening the statutory links between the regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between local land use planning and water supply planning.

1.3 STATUTORY REQUIREMENTS

NSID has considered the following statutory provisions during the creation of its 10-Year Water Supply Facilities Work Plan (Work Plan):

1. Coordinating appropriate aspects of its work plan with the Lower East Coast Water Supply Plan [163.3177(4) (a), F.S.].
2. Providing copies of the work plan to local governments to ensure that future land use plans are based upon availability of adequate water supplies, public facilities, and services [s.163.3177 (6) (a), F.S.]. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands.
3. Ensuring that adequate water supplies and potable water facilities are available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent. Also, consulting with the applicable water supplier to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2), F.S.].
4. Revising the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element (the "Infrastructure Element") within 18 months after the water management district approves an updated regional water supply plan for local governments subject to a regional water supply plan, to:
 - a. Identify and incorporate the alternative water supply project(s) selected by NSID from projects identified in the Lower East Coast Regional Water Supply Plan, or alternative project(s) proposed by the local government under s. 373.709(8)(b), F.S. [s. 163.3177(6)(c), F.S.];
 - b. Identify the traditional and alternative water supply projects and the conservation and reuse programs necessary to meet water needs identified in the Lower East Coast Regional Water Supply Plan [s. 163.3177(6)(c)3, F.S.]; and
 - c. Update the Work Plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development [s. 163.3177(6)(c)3, F.S.].

5. Revising the Five-Year Schedule of Capital Improvements to include water supply, reuse, and conservation projects and programs to be implemented during the five-year period [s. 163.3177(3)(a)4, F.S.].
6. Revising the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the Lower East Coast Regional Water Supply Plan, as well as applicable consumptive use permit(s) to the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above [s.163.3177 (6) (d), F.S.]. This plan addresses the water supply sources necessary to meet and achieve the existing and projected water use demand for the established planning period, considering the applicable regional water supply plan [s.163.3167(9), F.S.].
7. Revising the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the Lower East Coast Regional Water Supply Plan to the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above [s.163.3177 (6) (h) 1., F.S.].
8. Updating the comprehensive plans to reflect changes in local conditions. While an Evaluation and Appraisal Report is not required, local governments are encouraged to comprehensively evaluate, update and as necessary. The evaluation could address the extent to which the local government has implemented the need to update their Work Plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, and conservation and reuse programs are meeting local water use demands [s.163.3191 (3), F.S.].

SECTION 2 BACKGROUND INFORMATION

2.1 OVERVIEW

North Springs Improvement District (NSID) was established in 1971 through a special legislative act under House Bill 1479, as amended. NSID is considered an Independent Special District and derives its powers from Chapter 2005-341 Laws of Florida and Florida Statutes 196.199; 189 & 298. These laws give NSID special powers to fulfill its duties. Independent Special Districts are created to serve specific purposes of a community and have some of the same powers of cities or municipalities. In 1971, the North Springs Improvement District started out with 3,000 acres and has grown to over 8,500 acres within its District Boundaries. The North Springs Improvement District provides drainage, potable water services, and wastewater collection to portions of the City of Coral Springs and the City of Parkland, which are located in the municipal boundaries of the North Springs Improvement District.

NSID has experienced tremendous growth within its Northern Boundary known as the geographical area as “The Wedge.” NSID has had several annexations within the past 10 years that has contributed to its growth and development.

2.2 REGIONAL ISSUES

Most utilities have restrictions on traditional water sources such as the Biscayne Aquifer and other watershed bodies. NSID has its primary water source from the Biscayne Aquifer, which has withdrawal limits based on its Consumptive Use Permit issued by South Florida Water Management District. As a result of the restrictions, NSID has implemented capital projects that involve alternative water sources to meet future potable water demands within its boundaries and anticipated future annexations. Some projects involve reuse, implementation of two Floridan wells, and upgrades to its Reverse Osmosis Water Treatment Plant. Additional regional issues are discussed in greater detail in the Lower East Coast Regional Water Supply Plan.

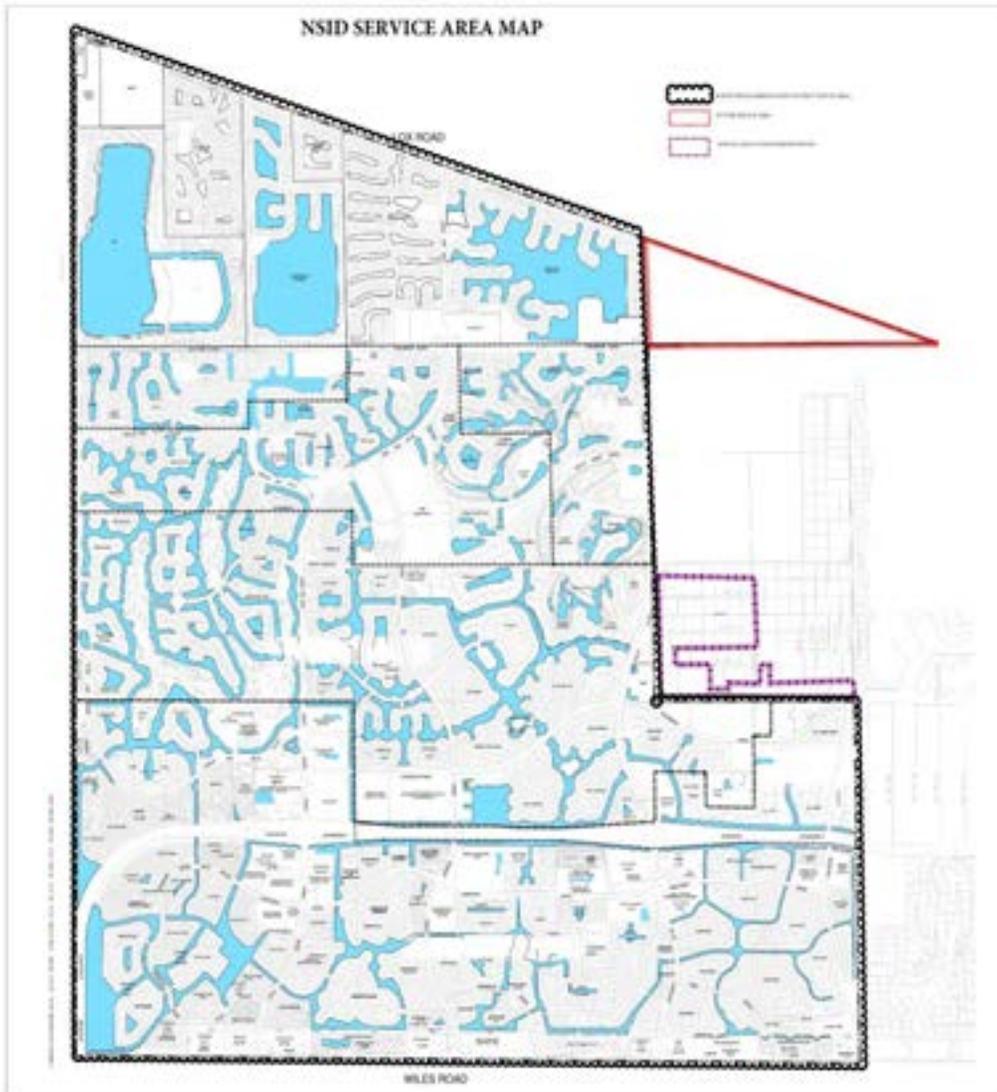
SECTION 3 DATA & ANALYSIS

3.1 POPULATION INFORMATION

Section 3.4 discusses population information and growth analyses.

3.2 MAP OF CURRENT AND FUTURE AREAS SERVED

This map illustrates the boundary for NSID. NSID serves the northwest portion of Coral Springs and the western portion of Parkland. It also includes the areas that are served which are not in the NSID service area and the future parcel for development.



3.3 POTABLE WATER LEVEL OF SERVICE

NSID has set service standards that comply with all regulatory standards set forth by the Safe Drinking Water Act and Florida Administrative Code (FAC) pertaining to drinking water standards. In addition, NSID follows best management practices established by the American Water Works Association. The following is a brief summary of service standards:

- **PSI:** NSID adheres to FAC by maintaining a minimum pressure in the Distribution system of 20 PSI. The average pressure maintained is 60 PSI. During times of high-water demand, the District sometimes lowers its operating pressure to conserve water to 45 PSI.
- **Per Capita Usage:** NSID maintains one of the lowest per capita usages at 105 in the South Florida Area. This is established by having a lower operating PSI during times of high demand and a smart automatic hydrant flushing program.
- **Distribution System Loss:** NSID has a low Distribution system loss of about 3%. NSID adopted a smart meter system through its AMR (Automatic Meter Reading) project, which helps to monitor its Distribution losses.
- **Water Storage:** NSID complies with section 62-555.320(19) FAC by maintaining minimum storage requirements as outlined in the FAC.

3.4 POPULATION AND POTABLE WATER DEMAND PROJECTIONS

Population demands for NSID were projected based on population projections published by Broward County (Table 1) and the average per capita finished water use covering the years from 2014 to 2018 (105 gallons per capita per day (gpcd)), and the future anticipated efficiency of the Reverse Osmosis (RO) treatment process as it is phased into service over the next three years.

Thus, the projected average annual demand, in million gallons per day (MGD), was determined by first multiplying the projected population for the year 2020, 2025, 2030, 2035, and 2040 by the average per capita finished water usage. Multiply the result by 365 days per year. Divide the result by RO system efficiency. Lastly, divide the result by 1,000,000 gallons:

Example Year 2040:

$$((44,024 \text{ pop.} \times 105 \text{ gpcd}) / 0.80) / 1,000,000 \text{ gallons} = 5.78 \text{ MGD}$$

Although NSID registered per capita usage of 97 gpcd upon submitting the last renewal of Permit 06- 000274W, the rate has steadily climbed coincident with the end of the Great Recession and residential development of the “Wedge” properties occupying the north portion of the NSID service area. The Wedge area, located within the City of Parkland, has led to a large increase in population. However, the increased 105 gpcd average demand remains below the average usage rate within the South Florida Water Management District (District).

In 2018, NSID used 1,596 MG of raw water of the allotted 1,800 MG gallons per year. At full buildout in 2045, NSID estimates the raw water usage per year to be 2,115 MG per year.

To restore the shortfall in capacity, the South Florida Water Management District approved a minor modification (Application No. 180424-18) to Permit No. 06-00274-W allowing NSID to install up to three wells in the Biscayne Aquifer, along with aggressively rehabilitating the existing production wells. Installing the new wells will allow NSID’s production capacity to approach the average annual and maximum monthly allocation.

Year	Population Projection	Finished Water						Raw Water						
		Annual Use (MG)	Average Month (MG)	Maximum Month (MG)	Max Monthling Month	Average Day Demand (mgd)	Average Day Maximum Month (mgd)	Per Capita Demand, gpd	Annual	Average Month	Maximum Month (MG)	Average Day Demand, mgd	Average Day Maximum Month (mgd)	Per Capita Demand
2014	37,430	1463	121.91	140.92	1.19	4.01	4.63	107.08	1483	121.03	139.54	4.00	4.59	106.90
2015	37,827	1469	122.45	142.09	1.19	4.03	4.67	106.43	1489	122.06	140.65	4.13	4.62	109.11
2016	38,224	1469	121.98	134.65	1.10	4.00	4.43	104.59	1459	128.05	141.00	4.20	4.64	109.77
2017	38,622	1425	118.55	133.39	1.13	3.90	4.39	100.92	1425	118.27	143.63	4.27	4.72	110.47
2018	39,019	1487	123.88	142.25	1.15	4.07	4.68	104.38	1487	123.87	143.63	4.53	4.89	115.98
2019	39,416	1511	125.86	143.35	1.14	4.14	4.71	105.00	1578	139.87	155.40	4.90	5.44	117
2020	39,814	1526	127.15	144.80	1.14	4.18	4.76	105.00	1795	149.59	176.90	4.92	5.82	124
2021	40,211	1541	128.42	146.24	1.14	4.22	4.81	105.00	1928	160.50	189.83	5.28	6.24	131
2022	40,608	1556	129.69	147.69	1.14	4.26	4.86	105.00	1945	162.12	191.70	5.35	6.30	131
2023	41,006	1572	130.96	149.15	1.14	4.31	4.90	105.00	1964	163.70	193.58	5.39	6.36	131
2024	41,403	1587	132.23	150.58	1.14	4.35	4.95	105.00	1983	165.29	195.46	5.43	6.43	131
2025	41,800	1602	133.50	152.02	1.14	4.39	5.00	105.00	2002	166.87	197.33	5.49	6.49	131
2026	42,198	1617	134.77	153.47	1.14	4.43	5.05	105.00	2022	168.46	199.21	5.54	6.55	131
2027	42,595	1632	136.04	154.91	1.14	4.47	5.09	105.00	2041	170.05	201.08	5.59	6.61	131
2028	42,992	1648	137.31	156.36	1.14	4.51	5.14	105.00	2060	171.65	202.96	5.64	6.67	131
2029	43,389	1663	138.58	157.80	1.14	4.56	5.19	105.00	2079	173.22	204.83	5.69	6.73	131
2030	43,787	1678	139.84	159.25	1.14	4.60	5.24	105.00	2098	174.81	206.71	5.75	6.80	131
2031	43,811	1679	139.82	159.23	1.14	4.60	5.24	105.00	2099	174.90	206.82	5.75	6.80	131
2032	43,834	1680	140.00	159.42	1.14	4.60	5.24	105.00	2100	174.99	206.93	5.75	6.80	131
2033	43,858	1681	140.07	159.51	1.14	4.61	5.24	105.00	2101	175.08	207.05	5.76	6.81	131
2034	43,882	1682	140.15	159.59	1.14	4.61	5.25	105.00	2102	175.18	207.16	5.76	6.81	131
2035	43,905	1683	140.22	159.68	1.14	4.61	5.25	105.00	2103	175.26	207.27	5.76	6.81	131
2036	43,929	1684	140.30	159.76	1.14	4.61	5.25	105.00	2104	175.37	207.38	5.77	6.82	131
2037	43,953	1684	140.37	159.85	1.14	4.62	5.25	105.00	2106	175.47	207.49	5.77	6.82	131
2038	43,976	1685	140.45	159.94	1.14	4.62	5.25	105.00	2107	175.56	207.60	5.77	6.83	131
2039	44,000	1686	140.52	160.02	1.14	4.62	5.25	105.00	2108	175.66	207.72	5.78	6.83	131
2040	44,024	1687	140.60	160.11	1.14	4.62	5.25	105.00	2109	175.75	207.83	5.78	6.83	131
2041	44,047	1688	140.68	160.19	1.14	4.62	5.27	105.00	2110	175.85	207.94	5.79	6.84	131
2042	44,071	1689	140.75	160.28	1.14	4.63	5.27	105.00	2111	175.94	208.05	5.79	6.84	131
2043	44,095	1690	140.83	160.37	1.14	4.63	5.27	105.00	2112	176.03	208.16	5.79	6.84	131
2044	44,118	1691	140.90	160.45	1.14	4.63	5.28	105.00	2114	176.13	208.27	5.79	6.85	131
2045	44,142	1692	140.98	160.54	1.14	4.63	5.28	105.00	2115	176.22	208.36	5.79	6.85	131

Table 1- Population projections published by Broward County

3.5 WATER SUPPLY PROVIDED BY LOCAL GOVERNMENT

This section describes the water supply, treatment, storage and distribution infrastructure that is owned and operated by North Springs Improvement District.

- Water Use Permit (WUP) Information and Number (3.5.1)
- Raw Water Allocation Information (3.5.2)
- Existing Water Facilities (3.5.3)
- Distribution System Interconnects (3.5.4)
- Treatment Losses (3.5.5)
- Distribution System Losses (3.5.6)
- Wastewater Facilities (3.5.7)

3.5.1 WATER USE PERMIT INFORMATION AND NUMBER

North Springs Improvement District obtains all of its raw water supply from the surficial Biscayne Aquifer system via one well field. The South Florida Water Management District, under Consumptive Use Permit No. 06-00274-W, issued the well field permit. The permit was issued on November 30, 2010 with an expiration date of November 29, 2030.

3.5.2 RAW WATER ALLOCATION

The WUP allows withdrawal from the Biscayne Aquifer within the limitations presented in Table 2.

CATEGORY	LIMITATION (MILLION GALLONS)		
	Per Year	Per Month	Per Day
Biscayne Aquifer Annual Withdrawal	1,890	--	5.18
Biscayne Aquifer Max. Month Withdrawal	--	185.7	6.19

Table 2 - Biscayne Aquifer Withdrawal Limits from WUP 06-00274-W

The Water Treatment Plant (WTP) treats raw water from the Biscayne Aquifer using nine (9) raw water production wells. The total withdrawal capacity from the Biscayne Aquifer is 4,970 GPM or approximately 7.16 MGD.

AVERAGE ANNUAL DAILY AND MONTHLY ALLOCATIONS

According to NSID'S WUP No. 06-00274-W, issued by South Florida Water Management District (SFWMD) on November 29, 2010, the maximum-annual average raw water withdrawal allowed from the Biscayne Aquifer is 1,890 MG (or 5.18 MGD). Additionally, the maximum-month withdrawal from the Biscayne Aquifer is limited to 185.71 MG. The existing allocation was established under the requirements of the Water Availability Rule. The rule limits the maximum-day and maximum-month withdrawals to a base condition that is based on raw water usage from 2002-2006. The rule also requires alternative water supplies to be used to meet any additional demands.

3.5.3 EXISTING WATER FACILITIES

WATER TREATMENT PLANT

The WTP is comprised of three lime softening units (up-flow clarifiers) with a total treatment capability of 6.8 MGD. The water treatment process consists of aeration for removal of hydrogen sulfide from the raw water, lime softening for removal of calcium and magnesium hardness, filtration, and disinfection.

The raw water is first passed through the aerations trays, then softened by adding calcium oxide (lime) into the up-flow clarifiers (accelerators), followed by filtration into the multimedia gravity filters and finally disinfected (chloramination using ammonium sulfate and sodium hypochlorite) in the clearwell. The injection point for ammonium sulfate is located at the pre-clarifiers, while sodium hypochlorite is injected at the clearwell. The water from the clearwell is pumped into the two on-site concrete water storage tanks by five (5) transfer pumps. Four of the transfer pumps are 25 HP Floway model with a rated capacity of 2.7 MGD (1875 GPM) each. The fifth transfer pump is 15 HP Worthington model with a capacity of 1.26 MGD (875 GPM). Fluoride (as an aid to prevent tooth decay) is injected between the ground storage tanks and the high service pumps.

The water storage tanks and the High Service Pumps at the WTP are discussed in more detail in the following sections of this report.

NSID NANOFILTRATION TREATMENT PLANT

A newly built Nanofiltration Treatment Plant is located on the same site and is in operation simultaneously with the lime softening contact units, which soon will be retired. The

complete deactivation of the lime softening facilities is anticipated to be by the end of 2019.

The Nanofiltration Treatment Plant was placed into service the last quarter of 2017. The Nanofiltration Treatment Plant has a maximum installed finished water treatment capacity of 7.5 million gallons per day with all three units in service. The facility was designed to be expanded by the addition of one Reverse Osmosis (RO) train that would utilize the Floridan Aquifer. The total installed potable water production capacity at NSID's Nanofiltration Treatment Plant will be 10 million gallons per day with the addition of a fourth train that can either independently treat the Floridan Aquifer source water, or blend with the existing Biscayne Aquifer source, when constructed.

3.5.4 DISTRIBUTION SYSTEM INTERCONNECTS

In case of an emergency, NSID has interlocal agreements with two municipalities to supply water demands. The City of Coral Springs and NSID have two emergency water interconnects. Both Interconnects are 12" diameter pipes and can provide a total flow of 3.55 Million Gallons Daily. In 2017, NSID and Palm Beach County entered into an interlocal agreement to build an interconnect near University Drive and Loxahatchee Road. This capital project was a cost share contract where each entity constructed the necessary infrastructure to meet at the interconnect location. NSID paid a total of \$1.66 million dollars for the engineering and construction of the interconnect with Palm Beach County. The interconnect is set for completion in July 2019 and will be able to provide approximately 3.55 Million Gallons Daily. Therefore, the total water available for emergencies from other utilities is 7.1 MGD.

3.5.5 TREATMENT LOSSES

Currently, NSID has two types of treatment processes which includes the Conventional Lime Softening and the Nanofiltration Treatment Plant. The Conventional Lime Softening process has an average treatment loss of about 3%. The average daily demand is 4.25 Million Gallons Daily (MGD). Based on this demand, the daily system loss for the Lime Treatment Process would be approximately .127 MGD or 127,000 gallons daily. The Nanofiltration Treatment Plant has a daily treatment loss of about 10%. Based on the average flow rate, the daily treatment loss would be .425 MGD or 425,000 gallons daily. NSID will continue utilizing both treatment processes at about a 50% split until the lime softening plant is decommissioned in late 2019.

MINIMIZING TREATMENT RESIDUALS

Water Treatment Plant operations are a part of any water conservation program. The Water Treatment Plant operates a Reverse Osmosis (RO) process that inherently produces 10-20 percent high-salinity waste concentrate depending on source water quality. NSID regularly monitors the source water quality and works with chemical manufacturers to maximize the efficiency of the RO process. NSID operates the RO system at the maximum possible reliable efficiency ratio and makes use of feedwater blending to minimize the concentrate waste.

3.5.6 DISTRIBUTION SYSTEM LOSSES

NSID uses its total annual volume of raw water pumped, finished water pumped, billed authorized consumption, and unmetered authorized consumption to calculate a percentage representing the distribution losses in the system. Based on these observations, NSID has an average system loss of about 2.5% of the average daily demand of 4.25 MGD.

3.5.7 WASTEWATER FACILITIES

NSID is part of the Large User Agreement that is a regional wastewater transmission and treatment agreement with Broward County Florida. NSID currently owns and operates a wastewater collection system and transmits the wastewater to Broward County, Florida as part of the Large User Agreement. NSID is currently utilizing 2.7 Million Gallons Daily of its 3.5 MGD reserve capacity with the County. The current capacity allotted to NSID through the Large User Agreement is predicted to be enough to sustain future growth within the current NISD boundaries.

3.6 WATER CONSERVATION PLAN

North Springs Improvement District provides Water Treatment, Wastewater Collection and Stormwater Management to almost 40,000 residents in the cities of Coral Springs and Parkland, Broward County, Florida. NSID is committed to efficient water use within its jurisdiction and maintains per capita water use levels below the average within the South Florida Water Management District (District). This standard conservation plan establishes NSID conservation goals and measures to achieve anticipated savings.

3.6.1 CUSTOMER BASE AND WATER DEMANDS

NSID's customer base includes approximately eighty four percent residential customers (single-family and multi- family) with commercial and industrial customers comprising approximately thirteen percent of the total customers. As a percentage of annual use, the use by customer category is consistent with the number of customers per category. Apparent and real losses within NSID range between 3-5 percent.

The population within NSID grew by approximately 4 percent between 2014 and 2018, from approximately 37,430 to 39,019 persons, respectively. The annual water demand for both raw and finished water grew by approximately 2 percent during the same five-year period. Per capita water use for treated water reduced from approximately 107 gallons per capita per day (gpcd) to about 104.3 gpcd. Depending on the quality of groundwater source and the treatment required, raw water use is approximately 110 gpcd.

Based on projections from the 2017 Broward County and Municipal Population Forecast and Allocation Model (Table 1), the population is expected to grow by 13 percent by 2045 to approximately 44,142 persons. The mix of residential and commercial/industrial customers is not anticipated to substantially change from the current customer base. Per capita water use is expected to remain at approximately 105 gpcd for treated water; however, raw water use is expected to increase to approximately 131 gpcd due to lower groundwater quality from new wells.

3.6.2 WATER CONSERVATION

The per capita water use projections presented in the previous section do not include potential water use savings from "passive conservation." Passive conservation occurs as a result of more water-efficient technologies and fixtures being installed in new construction or retrofit in existing homes and businesses. Passive conservation is estimated to reduce per capita water use by approximately one gallon every five years. Potential savings from passive conservation are not included in the demand projections as a means to off-set potential per capita water use increases that could result from potential increases in water use that could result from additional non-residential customers during the planning period. NSID's Standard Conservation Plan consists of the elements included in this section.

3.6.3 WATER CONSERVATION PUBLIC EDUCATION PROGRAM

- Speakers from NSID appear at service and other clubs to make the public aware of necessary conservation.
- NSID has a film available on Water Conservation and schools along with the public are welcome to schedule time to watch the film.
- The City of Coral Springs has installed "Help Conserve Water" signs at the entrances to the City, which has helped in conservation. Additionally, the City has information on its website which NSID customers within the City can access.
- During periods of high-water demands caused by lack of rainfall, NSID customers receive special mailings requesting voluntary reduction in water use. These mailings result in reductions of approximately 8% of total water production for periods of several weeks, or until normal rainfall resumes.
- NSID partners with the City and utilizes the newspapers and radio to notify customers to drastically cut back consumption when mandated by South Florida Water Management District to reduce overall water withdrawal for drought conditions.
- NSID posts water conservation education literature and water loss troubleshooting tips to its website.

PUBLIC EDUCATION SCHOOL PROGRAMS

- Local schools arrange class tours to visit the Water Treatment Plant facilities. Certified operators explain the importance of water, how raw water is treated for consumption and why the water should be conserved.

3.6.4 OUTDOOR & INDOOR WATER USE CONSERVATION PROGRAM

OUTDOOR WATER CONSERVATION

- NSID does not have the authority to adopt building and subdivision codes or pass ordinances regarding landscape or irrigation system requirements for new

construction or irrigation watering schedules. However, NSID has adopted the Year-Round Landscape Irrigation Rule (Chapter 40E-24, F.A.C). The rule is a component of the South Florida Water Management District's Comprehensive Water Conservation Program established to encourage more responsible use of water resources throughout South Florida. The water conservation measure limits landscape irrigation to two days a week.

- NSID's Water Shortage Warning Notice posted on the official website, states that "no watering of lawns is allowed on Monday, Tuesday, and Friday. Residences and Businesses with odd-numbered street addresses may water lawns and landscapes on Wednesdays and/or Saturdays only before 10:00 AM or after 4 PM."
- NSID is promoting water conservation in new homes. Homes that have been or that will be constructed within the developing "wedge" service area located in Parkland are required to install automatic irrigation and are piped to accept reclaimed water when available from the County in 2025.
- NSID will also continue to promote the use of Florida-Friendly Landscaping by educating water users about how Florida-Friendly Landscaping can help decrease outdoor water use; the Florida-Friendly Landscape program is about placing the right plant in the right place. NSID will promote fertilizing appropriately by using methods that will prevent pollution, mulching to buffer soil temperature, retain soil moisture, and reduce stormwater runoff.
- NSID provides irrigation only meters and has adopted irrigation-only water rates.

INDOOR WATER CONSERVATION

As noted in the water demand section, approximately 85 percent of the finished water used within NSID is for residential water use. Nearly 90 percent of the housing stock in Broward County was built prior to passage of the U.S. Energy Policy Act of 19 which adopted federal standards for plumbing fixtures. The Policy suggests that conservation programs focused on indoor water use are an effective way to save water.

- To encourage water use efficiency within the residential water use sector, NSID has implemented a toilet replacement rebate program. NSID provides a rebate in the form of a water bill credit for residents that purchase and install a USEPA WaterSense ® labeled toilet. In the last six years, 276 rebates were approved, crediting customers more than \$27,000 for saving water.

- The City of Coral Springs also offers free low-flow water faucet aerators and shower heads to residential customers.
- Homes that have been or that will be constructed within the developing “wedge” service area located in Parkland are required to install low-flow fixtures.

CONSERVATION RATE STRUCTURE

NSID has adopted an inclining block rate structure to encourage conservation. NSID customer base is predominantly residential, NSID has focused its conservation efforts on residential users. Table 3 provides current water rate structure and Table 4 provides the current irrigation-only rate structure both adopted in Fiscal Year 2018.

Table 3 - NSID Water Rate Structure

Water Volume Charge	Water Rate FY18
<i>Water Residential, Commercial 1", 1.5", 2", 3", 4", 6", & 8", Ranches/ Magic</i>	
0-12,600 Gals	\$2.35
12,601-25,200 Gals	\$4.71
25,201 Gals and Over	\$7.06
<i>Water Med/ High Density Consumption</i>	
0-7,600 Gals	\$2.35
7,601-15,200 Gals	\$4.71
15,201 Gals and Over	\$7.06

Table 4 - NSID Irrigation Only Rates

Irrigation Minimum Charge	Rate FY 18
Residential Irrigation Minimum	\$24.34
Commercial 1.5" Irrigation Minimum	\$121.68
Residential 2" Irrigation Minimum	\$194.69
Irrigation Volume Charge	Rate FY 18
<i>Irrigation Residential, Commercial 1.5"& 2" Consumption</i>	
0-12,600 Gals	\$2.35
12,601-25,200 Gals	\$4.71
25,201 Gals and Over	\$7.06

3.6.5 LEAK DETECTION PROGRAM

NSID recently installed automated metering through the distribution system which improves the accuracy of tracking customer water use. Using monthly records of treated water entering the system and finished water, NSID calculates water loss through water line breaks and unauthorized construction water use (real water loss) and apparent water losses such as fire-fighting use and hydrant and water main flushing.

3.7 REUSE

NSID is currently undergoing capital improvements that will enable certain portions of the service area to implement Reuse Water Supply. The geographic area known as the "Wedge", which is a 1,949-acre wedge shaped property located between Hillsboro Blvd (Formerly County Line Road) and Loxahatchee Road will have 100% availability of water reuse supply. The developments that border the wedge parcels in the northern portion of NSID, will also have the capability for water reuse.

3.7.1 REGIONAL ISSUES

South Florida faces water supply shortages during the dry season throughout the year. According to South Florida Water Management District:

“Water reuse plays an important role in water resource, wastewater and ecosystem management in Florida. When reclaimed water is used, it eases the demand on traditional, often limited, sources of water. By recycling or reusing water, communities can still grow while minimizing or even reducing their impact on the water resources around them.

Water reuse involves using highly treated domestic wastewater for a new purpose. Reclaimed water systems are continually monitored to ensure the health and welfare of the public and the environment are protected. Using reclaimed water also reduces discharges to surface waters, recharges groundwater and postpones costly capital investments in the development of new, more costly water sources and supplies.”

NSID understands the importance of protecting its water supply by implementing reuse within its 10-Year Water Supply Facilities Work Plan. By incorporating reuse within NSID, it helps neighboring utilities and NSID from over pumping the shared water supply of the Biscayne Aquifer.

3.7.2 BROWARD COUNTY REUSE SUPPLY

NSID and Broward County entered into a settlement agreement on June 13, 2017 for Broward County to install reuse water lines at no cost to NSID to its jurisdictional boundaries. The agreement calls for Broward County to install these reuse lines no later than October 2020 as stipulated within the construction schedule. Broward County will provide up to 3 Million Gallons Daily (MGD) to NSID to resell to its customers at a retail rate.

The Reuse line will border the Northern Boundary of NSID and will connect to the County’s supply reuse line via Lox Road.

SECTION 4 CAPITAL IMPROVEMENTS

4.1 OVERVIEW

NSID has designed and begun several projects that will sustain its ability to meet current and future demands. The majority of these projects have already been procured and are currently under way. These projects are identified in section 4.2.

4.2 WORK PLAN PROJECTS

NSID has identified seven capital projects for its capital improvement facilities work plan within this 10-Year Water Supply Facilities Work Plan. NSID has financed these projects through excess revenues from its enterprise Water & Sewer Fund, impact fees, connection fees, and special assessment bonds.

4.2.1 REUSE LINES & BOOSTER PUMPS

NSID has installed several reuse lines within several developments within the Wedge and certain developments that border the Wedge's boundaries. These developments currently have surface water permits for irrigation lake withdrawals. These permits are issued by South Florida Water Management District. The withdrawal permits allow for the homeowner associations to withdrawal water from several lakes owned by NSID. Once the completion of NSID's reuse system is operational, the withdrawal permits will become null and void and will mandate the use of reuse. There is specific language within the withdrawal permits that prohibits lake withdraws once reuse is available.

There will be approximately 3,500 homes that will use the reuse water and several common areas for irrigation. Based on the reuse study conducted by NSID, there will be a reuse demand of about 2.1 MGD for the area that is served by reuse. The total capacity available for reuse is 3.0 MGD by the Broward County Supply Lines. Currently 100% of the reuse lines have been installed within NSID and are awaiting for Broward County to install the reuse main supply line to be completed by October 2020.

The total capital cost for the reuse lines were \$7.4 Million Dollars. The cost includes several mains and service lines to the residential units. NSID also constructed an inline booster pump on the main supply line after the County Meter to increase PSI. The NSID

reuse system will help meet irrigation and water demands for the present and for future growth.

4.2.2 FLORIDIAN WELL

In April of 2019, NSID began the drilling of a 2.0 MGD alternative water supply well from the Floridan Aquifer. This well will enable NSID to have redundancy in its water supply for the current demand and will be able to meet future growth. The cost for engineering and construction was \$2.9 Million Dollars. The well has a completion date of December 2019 and is located at the NSID main facility. NSID began the process early in 2019 to modify its consumption use permit by the State to permit the withdrawal of the Floridan Aquifer.

4.2.3 DEEP WELL INJECTION

In March of 2019, NSID was issued a permit from the Florida Department of Environmental Protection to drill a deep well to inject its concentrate wastewater from the nanofiltration water treatment process. The Deep well is rated at 3 MGD, but the average flow into the deep well will be 10% of its treated water supply with an average flow of 500 Thousand Gallons Daily (.5 MGD). The Deep Well will allow NSID to use its alternative water supply from the Floridan well, which produces extremely high waste concentrate. The project is set to begin in July 2019 with a total cost of \$8.2 Million Dollars.

4.2.4 NEW BISCAYNE WELL

In November of 2018, NSID modified its consumptive use permit to allow for the drilling of a new Biscayne Aquifer well. The well was needed for redundancy and did not increase the flow allocation in the NSID consumptive Use Permit. The new well will provide necessary water supply to meet demands. Many of NSID's wells were in need of rehabilitation because of decreased flow rates. The new well will allow older wells to be taken offline for maintenance while still meeting potable water demands. The well is set to be completed by August 2019 with a capital cost of \$800,000 Thousand Dollars.

4.2.5 NANOFILTRATION PLANT MODIFICATIONS

The Nanofiltration plant was designed for Biscayne Aquifer well water and certain modifications are under way to meet the needs to treat the Floridan well supply water, which is saltier and requires different treatment processes to enable the use for potable

water. The project is set to be started by August 2019 with a completion date of January 2020.

4.2.6 PALM BEACH COUNTY INTERCONNECT

On March 20, 2019 NSID and Palm Beach County entered into an interlocal agreement for Palm Beach County to provide emergency water services to NSID. The rated capacity is 3.55 MGD as discussed in section 3.5.4. The project and agreement also enabled NSID to reserve water capacity of 105,000 gallons per week (.420 MGD). The project interconnect is located on Lox Road with each respective party designing and installing their own infrastructure to enable the success and completion of this project. The project is complete and is going through final certification to begin implementation.

4.2.7 WELL REHABILITATION PROGRAM

NSID has completed an extensive well rehabilitation program over the past 3 years. The project goals involved rehabilitating the wells is to provide a reliable and sustainable wellfield yield for the feedwater needed for continuous 2-train operation, and future 3-train operation (2,100 gpm/train) with 2 wells out of service, making full use of the existing CUP allocation. By rehabilitating the wells which included new well heads, pumps and motors along with the installation of VFDs and new RTU panels to better optimize remote well control, the well production can be maintained for several years without well rehabilitation during moderate drought conditions.

Each of the nine (9) wells were individually taken out of service and rehabilitated to provide flows close to the flows when the wells were originally constructed. For each well a full performance rehabilitation program was conducted to include: video survey, brushing, dual jet high pressure cleaning, debris removal, two stage acidization, well development, step rate test, wells disinfection as per The American Water Works Association (AWWA standards).

4.3 CAPITAL IMPROVEMENTS ELEMENT SCHEDULE

The following Table (4) lists the capital projects discussed with their intended start and completion dates, capital costs, and implementation schedule.

Table 4 - Capital Improvement Element Schedule

CAPITAL PROJECT	START DATE	COMPLETION DATE	CAPITAL COST	SOURCE FUNDING
Reuse Lines	Jan. 2014	Oct. 2019	\$7.4 Million	Connection Fees/ Special Assessments
Floridan Well	Apr. 2019	Dec. 2019	\$2.9 Million	Connection Fees/ Revenue Enterprise Fund
Deep Well	July 2019	Jan. 2020	\$8.2 Million	Connection Fees
Biscayne Well	Nov. 2018	Aug. 2019	\$800,000	Revenue Enterprise Fund
Nano Plant Modifications	Aug 2019	Jan. 2020	\$1.2 Million	Revenue Enterprise Fund
PBC Interconnect	Mar 2019	June 2019	\$1.65 Million	Connection Fees
Well Rehab Program	Feb. 2015	June 2019	\$2.83 Million	Renewal & Replacement Fund

Note: Based on unforeseen circumstances dates and times are subject to change. Capital costs have been rounded for simplicity.

SECTION 5 GOALS, OBJECTIVES & POLICIES

5.1 OVERVIEW

NSID's goals are to ensure coordination with the future development of NSID as well as continue to coordinate with South Florida Water Management District to ensure NSID's plans and actions in the 10-Year Water Supply Facilities Work Plan follow the Lower East Coast Water Regional Supply Plan as outlined below:

NSID will continue to coordinate the Water Supply Plan with the local Cities and other Special Districts as well as Broward County, the State, South Florida Regional Planning Council, South Florida Water Management and the Broward County School District. NSID will negotiate or renew inter-local agreements with the City of Coral Springs and Palm Beach County to ensure the level of service is provided as needed.

NSID will continually review the demand calculations provided in the 10-Year Water Supply Facilities Work Plan and the population projections and adjustments will be made to the demand calculations based on any changes in the population projections. NSID will coordinate with the City of Parkland and the City of Coral Springs regarding water demands for future development and land use amendments.

NSID will work to ensure that there is adequate facility capacity available or will be available when needed to serve a new development through the implementation of capital improvement projects. Capital Improvement projects will be adequately funded as necessary to keep current facilities in good condition.

NSID will monitor water usage to maintain compliance with NSID's consumptive use permit.

NSID will strive to conserve potable water by continuing to implement water conservation practices described in section 3.6.2. and make sure reuse is used once it is available from Broward County.

SECTION 6 REGIONAL ISSUES

6.1 LOWER EAST COAST WATER SUPPLY PLAN

On January 11, 2019 South Florida Water Management’s governing Board approved the update to the Lower East Coast Water Supply Plan (LECWSP), which helps with interlocal cooperation and recommendations for utilities to meet water supply needs. NSID has several projects listed within the LECWSP and several revisions will be made to the information listed in the plan. NSID has reached a settlement with Broward County to supply reuse water and will not be building its own water reuse facility as listed within the LECWSP.

The Floridan well water supply listed within the report is currently a capital project of NSID, but only one well is planned at the moment.

SECTION 7 SUMMARY ANALYSIS NSID WATER SUPPLY

7.1 SUMMARY CONCLUSION

NSID has implemented many capital improvements that will enable NSID to meet its current and future needs of water supply. NSID is currently using 1,625 Million Gallons Annually as its current demand. It is predicted that in the year 2040 the demand will be 2,100 Million Gallons Annually within its current municipal boundaries. NSID has a current allocation of 1,890 Million Gallons Annually, which leaves a deficit of 210 Million Gallons. The capital projects listed in section 4.0 will generate an additional water supply of 1,378 Million Gallons Annually, which brings the total source water ability to 3,268 Million Gallons.

This includes the following sources:

Capital Improvement Project	Million Gallons Annually (MGD)
Biscayne Aquifer	1,890
Floridian Aquifer	630
Re-Use	730 (Dry Season)
PBC Interconnect	18
Total Water Supply	3,268 Million Gallons Annually

Based on the above analyses, NSID will have a surplus water supply of 1,168 Million Gallons Annually or 3.2 MGD. This analysis takes into consideration that reuse water supply is mostly beneficial during the dry season. Without the reuse supply, NSID would have a total water supply of 2,538 Million Gallons Annually or 438 Million Gallons surplus (1.2 MGD). This enables NSID to have some redundancy in its ability to perform well maintenance and other maintenance on its infrastructure without jeopardizing its ability to meet potable water demands.

In summary, NSID will have the ability to serve future demand as population and development grows.