permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

CITY OF HOLLYWOOD WTP
P O BOX 229045
HOLLYWOOD, FL 33022

7. Withdrawal facilities:

Groundwater - Proposed:

14 - 16" X 1300' X 1000 GPM Wells Cased To 900 Feet
1 - 16" X 1300' X 2040 GPM Well Cased To 900 Feet

Groundwater - Existing:

1 - 24" X 80' X 2100 GPM Well Cased To 60 Feet
1 - 32" X 144' X 2100 GPM Well Cased To 125 Feet
1 - 12" X 1185' X 1100 GPM Well Cased To 920 Feet
1 - 24" X 77' X 2100 GPM Well Cased To 60 Feet
1 - 32" X 145' X 2100 GPM Well Cased To 125 Feet
1 - 12" X 1185' X 1000 GPM Well Cased To 950 Feet
1 - 32" X 150' X 2100 GPM Well Cased To 128 Feet
1 - 24" X 86' X 2100 GPM Well Cased To 70 Feet
1 - 12" X 1185' X 800 GPM Well Cased To 960 Feet
1 - 12" X 1314' X 1000 GPM Well Cased To 926 Feet
1 - 32" X 155' X 2100 GPM Well Cased To 135 Feet
1 - 24" X 95' X 2100 GPM Well Cased To 60 Feet
1 - 16" X 1200' X 1000 GPM Well Cased To 990 Feet
3 - 16" X 1200' X 1000 GPM Wells Cased To 1005 Feet
1 - 24" X 80' X 2100 GPM Well Cased To 55 Feet
1 - 32" X 112' X 2100 GPM Well Cased To 90 Feet
2 - 10" X 75' X 2400 GPM Wells Cased To 60 Feet
1 - 24" X 90' X 2100 GPM Well Cased To 69 Feet
1 - 32" X 150' X 2100 GPM Well Cased To 139 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

   (A) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   (B) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:

   (A) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

   (B) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

   (C) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance.

When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(A) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(B) Reduction in water levels that harm the hydroperiod of wetlands,

(C) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(D) Harmful movement of contaminants in violation of state water quality standards, or

(E) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.

12. Authorized representatives of the District, with advance notice to the permittee, shall be permitted to enter, inspect, and observe the permitted system to determine compliance with permit conditions.

13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.

15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist - Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.

16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be

submitted as required by Chapter 40E-21, F.A.C.

17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

    In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.

20. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.

21. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

22. Every ten years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

    (A) The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within

timeframes proposed by the permittee and approved by the District.

(B) A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

23. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.

24. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.

25. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapter 40E-3, Florida Administrative Code.

26. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

27. The Permittee shall continue to submit monitoring data in accordance with the

approved saline water intrusion monitoring program for this project.

28. Entities that control, either directly or indirectly, a wastewater treatment plant, and which had determined, at the time of issuance of its consumptive use permit and pursuant to Section 403.064, F.S., that reuse of reclaimed water was not feasible must advise the District of any change in this determination that may occur during the term of the consumptive use permit. In the event the utility determines reuse has become feasible, then the District will require the utility to provide the information listed in Subsections 2.2.4.A and 5.2.1.H.1.

29. Permittee shall implement the following operating plan:
Construct and operate the necessary reverse osmosis treatment capacities and Floridan aquifer wells as outlined in Exhibit 4 of Application 200218-3 (previously Exhibits 8 and 8A in Application 070518-17) to meet future demands as described in this Staff report. Failure to timely implement this alternative water supply will result in modification to this permit. Permittee shall provide annual updates to the District regarding the status of implementation of all alternative water supply projects. The status report shall include work completed to date, expenditures, capacities and any changes in timelines.

NOTICE OF RIGHTS

As required by Chapter 120, Florida Statutes, the following provides notice of the opportunities which may be available for administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes, or judicial review pursuant to Section 120.68, Florida Statutes, when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Some of the legal proceedings detailed below may not be applicable or appropriate for your situation. You may wish to consult an attorney regarding your legal rights.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Florida Statutes. Persons seeking a hearing on a District decision which affects or may affect their substantial interests shall file a petition for hearing in accordance with the filing instructions set forth herein within 21 days of receipt of written notice of the decision unless one of the following shorter time periods apply: (1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Florida Statutes; or (2) within 14 days of service of an Administrative Order pursuant to Section 373.119(1), Florida Statutes. "Receipt of written notice of agency decision" means receipt of written notice through mail, electronic mail, posting, or publication that the District has taken or intends to take final agency action. Any person who receives written notice of a District decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

If the District takes final agency action that materially differs from the noticed intended agency decision, persons who may be substantially affected shall, unless otherwise provided by law, have an additional point of entry pursuant to Rule 28-106.111, Florida Administrative Code.

Any person to whom an emergency order is directed pursuant to Section 373.119(2), Florida Statutes, shall comply therewith immediately, but on petition to the board shall be afforded a hearing as soon as possible.

A person may file a request for an extension of time for filing a petition. The District may grant the request for good cause. Requests for extension of time must be filed with the District prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and whether the District and any other parties agree to or oppose the extension. A timely request for an extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

FILING INSTRUCTIONS

A petition for administrative hearing must be filed with the Office of the District Clerk. Filings with the Office of the District Clerk may be made by mail, hand-delivery, or e-mail. Filings by facsimile will not be accepted. A petition for administrative hearing or other document is deemed filed upon receipt during normal business hours by the Office of the District Clerk at the District's headquarters in West Palm Beach, Florida. The District's normal business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Any document received by the Office of the District Clerk after 5:00 p.m. shall be deemed filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the District Clerk, 3301 Gun Club Road, West Palm Beach, Florida 33406.

- Filings by hand-delivery must be delivered to the Office of the District Clerk. Delivery of a petition to the District's security desk does not constitute filing. It will be necessary to request that the District's security officer contact the Office of the District Clerk. An employee of the District's Clerk's office will receive and process the petition.
- Filings by e-mail must be transmitted to the Office of the District Clerk at clerk@sfwmd.gov. The filing date for a document transmitted by electronic mail shall be the date the Office of the District Clerk receives the complete document.

INITIATION OF AN ADMINISTRATIVE HEARING

Pursuant to Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Rules 28-106.201 and 28-106.301, Florida Administrative Code, initiation of an administrative hearing shall be made by written petition to the District in legible form and on 8 1/2 by 11 inch white paper. All petitions shall contain:

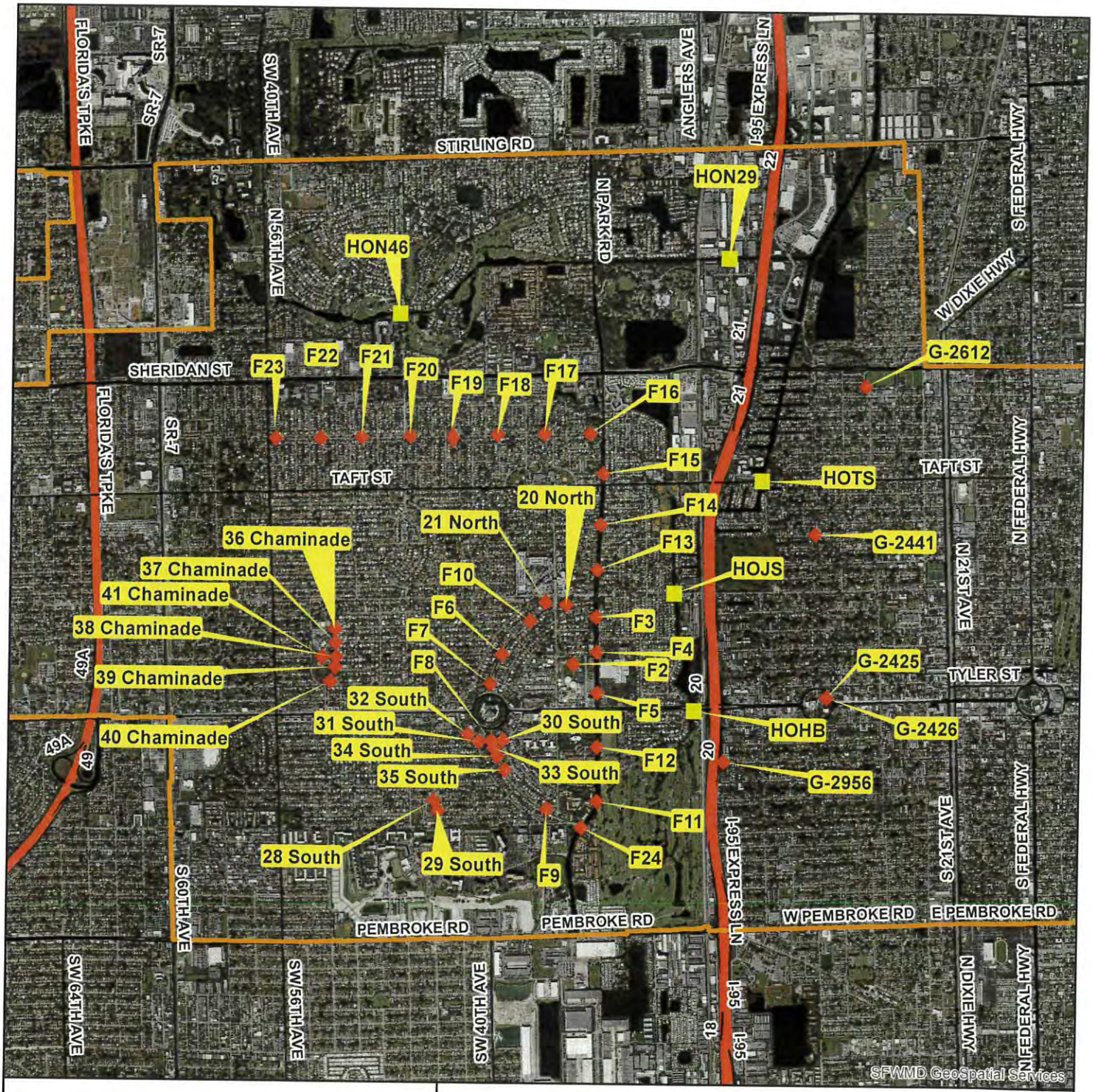
1. Identification of the action being contested, including the permit number, application number, District file number or any other District identification number, if known.
2. The name, address, any email address, any facsimile number, and telephone number of the petitioner, petitioner's attorney or qualified representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the District's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the District's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the District's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the District to take with respect to the District's proposed action.

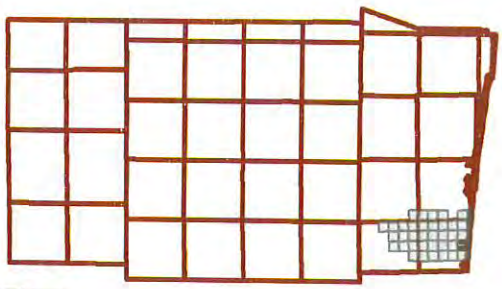
MEDIATION

The procedures for pursuing mediation are set forth in Section 120.573, Florida Statutes, and Rules 28-106.111 and 28-106.401–.405, Florida Administrative Code. The District is not proposing mediation for this agency action under Section 120.573, Florida Statutes, at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Section 120.68, Florida Statutes, and in accordance with Florida Rule of Appellate Procedure 9.110, a party who is adversely affected by final District action may seek judicial review of the District's final decision by filing a notice of appeal with the Office of the District Clerk in accordance with the filing instructions set forth herein within 30 days of rendition of the order to be reviewed, and by filing a copy of the notice with the appropriate district court of appeals via the Florida Courts E-Filing Portal.





BROWARD COUNTY, FLORIDA

Application

WELL

PUMP

Application No: 200218-3

Sec 1,2,3,10-15,24 / Twp 51 / Rge 41
Sec 1-24 / Twp 51 / Rge 42
Sec 35,36 / Twp 50 / Rge 42

Project Name: HOLLYWOOD WATER TREATMENT PLANT

N

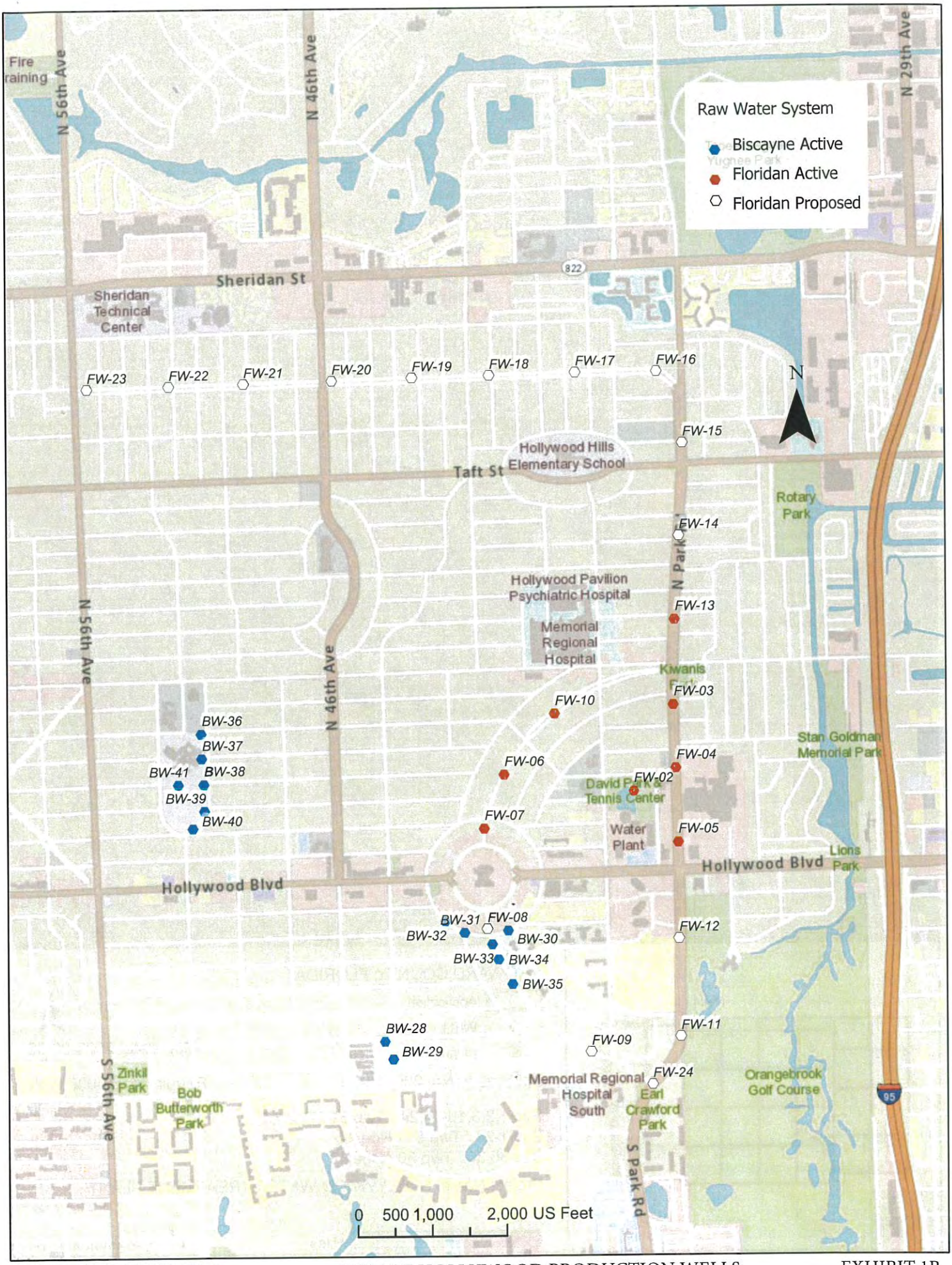
Map Date: 2020-03-06

Permit No: 06-00038-W

0 0.5 1

Miles

Exhibit No: 1A



APPLICATION 200218-3 CITY OF HOLLYWOOD PRODUCTION WELLS EXHIBIT 1B

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	29905	29889	29890	29891	29892	29893
Name	F2	F3	F4	F5	F6	F7
Map Designator	F2	F3	F4	F5	F6	F7
FLUWID Number						
Well Field	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	12	12	16	16
Total Depth(feet)	1314	1185	1185	1185	1200	1200
Cased Depth(feet)	926	950	960	920	1005	1005
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	100	100	100	100	100	100
Pump Capacity(GPM)	1000	1000	800	1100	1000	1000
Year Drilled						
Planar Location						
Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	926323	926871	926899	926925	924572	924301
Feet North	611522	612669	611824	610838	611751	611034
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Secondary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

Exhibit No: 2

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	219506	219511	219512	219513	219514	219515
Name	F8	F9	F10	F11	F12	F13
Map Designator	F8	F9	F10	F11	F12	F13
FLUWID Number						
Well Field	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield
Existing/Proposed	P	P	E	P	P	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	1300	1300	1200	1300	1300	1200
Cased Depth(feet)	900	900	990	900	900	1005
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	100	100	100	100	100	100
Pump Capacity(GPM)	1000	1000	1000	1000	1000	1000
Year Drilled						
Planar Location Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	924336	925725	925255	926946	926928	926891
Feet North	609672	608027	612558	608224	609529	613806
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

Exhibit No: 2

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	219516	219517	219518	219520	219521	219522
Name	F14	F15	F16	F17	F18	F19
Map Designator	F14	F15	F16	F17	F18	F19
FLUWID Number						
Well Field	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield
Existing/Proposed	P	P	P	P	P	P
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	1300	1300	1300	1300	1300	1300
Cased Depth(feet)	900	900	900	900	900	900
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	100	100	100	100	100	100
Pump Capacity(GPM)	1000	1000	1000	1000	1000	1000
Year Drilled						
Planar Location						
Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	926953	927008	926664	925557	924398	926137
Feet North	614894	616130	617084	617077	617044	612960
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

Exhibit No. 2

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	219523	219524	219525	219526	219544	29907
Name	F20	F21	F22	F23	F24	28 South
Map Designator	F20	F21	F22	F23	F24	28 South
FLUWID Number						
Well Field	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	Floridan Wellfield	South Wellfield
Existing/Proposed	P	P	P	P	P	E
Well Diameter(Inches)	16	16	16	16	16	10
Total Depth(feet)	1300	1300	1300	1300	1300	75
Cased Depth(feet)	900	900	900	900	900	60
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	100	100	100	100		53
Pump Capacity(GPM)	1000	1000	1000	1000	2040	2400
Year Drilled						
Planar Location						
Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	922277	921088	920083	918983	926563	922954
Feet North	616984	616951	616923	616895	607587	608209
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Biscayne Aquifer

Exhibit No: 2

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	29888	29900	29901	29902	29903	29904
Name	29 South	30 South	31 South	32 South	33 South	34 South
Map Designator	29 South	30 South	31 South	32 South	33 South	34 South
FLUWID Number						
Well Field	South Wellfield	South Wellfield	South Wellfield	South Wellfield	South Wellfield	South Wellfield
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	10	24	24	24	24	24
Total Depth(feet)	75	95	80	80	90	86
Cased Depth(feet)	60	60	60	55	69	70
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	-30	53	53	53	53	53
Pump Capacity(GPM)	2400	2100	2100	2100	2100	2100
Year Drilled						
Planar Location						
Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	923065	924619	924032	923774	924402	924490
Feet North	607972	609676	609650	609806	609495	609291
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 2

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	29937	29894	29895	29896	29897	29898
Name	35 South	36 Chaminade	37 Chaminade	38 Chaminade	39 Chaminade	40 Chaminade
Map Designator	35 South	36 Chaminade	37 Chaminade	38 Chaminade	39 Chaminade	40 Chaminade
FLUWID Number						
Well Field	South Wellfield	Chaminade Wellfield	Chaminade Wellfield	Chaminade Wellfield	Chaminade Wellfield	Chaminade Wellfield
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	24	32	32	32	32	32
Total Depth(feet)	77	112	144	150	155	145
Cased Depth(feet)	60	90	125	128	135	125
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	53	40	40	40	40	40
Pump Capacity(GPM)	2100	2100	2100	2100	2100	2100
Year Drilled						
Planar Location						
Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	924674	920501	920508	920535	920503	920388
Feet North	608961	612321	611993	611648	611404	611059
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 2

TABLE - A
Description Of Wells.

Application Number: 200218-3

Well ID	29899	138198	138199	138200	138201	158407
Name	41 Chaminade	G-2425	G-2426	G-2441	G-2612	G-2956
Map Designator	41 Chaminade	G-2425	G-2426	G-2441	G-2612	G-2956
FLUWID Number						
Well Field	Chaminade Wellfield					
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	32	2	2	2	2	2
Total Depth(feet)	150	203	91	181	273	175
Cased Depth(feet)	139	198	86	180	272	
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P					
Pump Type	Submersible	None	None	None	None	None
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	40					
Pump Capacity(GPM)	2100	0	0	0	0	0
Year Drilled						
Planar Location Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	920192	932535	932533	932219	933410	930038
Feet North	611645	610766	610773	614705	618288	609204
Accounting Method	Flow Meter	None	None	None	None	None
Use Status	Primary	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Public Water Supply Monitor	Monitor	Monitor	Monitor	Monitor	Monitor Water Shortage Monitoring Facility
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 2

TABLE - B

Description Of Surface Water Pumps

Application Number: **200218-3**

Pump ID	138206	138207	138208	138209	138210
Name	HOHB	HOJS	HON29	HON46	HOTS
Map Designator	HOHB	HOJS	HON29	HON46	HOTS
Facility Group					
Existing/Proposed	E	E	E	E	E
Pump Type	None	None	None	None	None
Diameter(Inches)					
Pump Capacity(GPM)	0	0	0	0	0
Pump Horse Power					
Two Way Pump ?					
Elevation (ft. NGVD)					
Planar Location					
Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	929294	928780	930033	921988	930907
Feet North	610428	613260	621335	619942	615989
Accounting Method	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor
Surface Water Body	SFWMD C-10 (Hollywood) Canal	SFWMD C-10 (Hollywood) Canal	SFWMD C-10 (Hollywood) Canal	SFWMD C-10 (Hollywood) Canal	SFWMD C-10 (Hollywood) Canal

City of Hollywood Water Treatment Plant
AWS Status Report

2019 Annual update and status of implementation of all alternative water supply projects:

Project	Substantial Completion	Capacity	Status	Expenditures ($)
Well F-6	11/30/2008	1250 gpm	Operational	**$1,899,955.00**
Well F-7	11/30/2008	1250 gpm	Operational	**$1,899,955.00**
Well F-10	2/19/2010	1400 gpm	Operational	**$2,036,046.33**
Well F-13	2/19/2010	1400 gpm	Operational	**$4,072,092.67**
R.O. Train C	3/7/2009	2 mgd	Operational	**$2,712,414.00**
R.O. Train D	4/1/2010	2 mgd	Operational	**$2,212,687.00**
R.O.Train E	2032-2040	2 mgd	Future	**TBD**
R.O.Train F	2032-2040	2 mgd	Future	**TBD**
R.O.Train G	2032-2040	2 mgd	Future	**TBD**
R.O.Train H	2032-2040	2 mgd	Future	**TBD**
R.O.Train Slot 8 MS	2032-2040	2 mgd	Future	**TBD**
R.O.Train Slot 9 MS	2032-2040	2 mgd	Future	**TBD**
R.O.Train Slot 10 MS	2032-2040	2 mgd	Future	**TBD**
Well F-8	2030-2040	1000 gpm	Future	**TBD**
Well F-9	2030-2040	1000 gpm	Future	**TBD**
Well F-11	2030-2040	1000 gpm	Future	**TBD**
Well F-12	2030-2040	1000 gpm	Future	**TBD**
Well F-14	2032-2040	1000 gpm	Future	**TBD**
Well F-15	2032-2040	1000 gpm	Future	**TBD**
Well F-16	2032-2040	1000 gpm	Future	**TBD**
Well F-17	2032-2040	1000 gpm	Future	**TBD**
Well F-18	2040-2050	1000 gpm	Future	**TBD**
Well F-19	2040-2050	1000 gpm	Future	**TBD**
Well F-20	2050-2060	1000 gpm	Future	**TBD**
Well F-21	2050-2060	1000 gpm	Future	**TBD**
Well F-22	2050-2060	1000 gpm	Future	**TBD**
Well F-23	2050-2060	1000 gpm	Future	**TBD**
Well F-24	2050-2060	1000 gpm	Future	**TBD**

No planned or scheduled construction changes are currently forecasted.

Requirement by Permit Condition Report

App No: 200218-3
Permit No: 06-00038-W
Project Name: HOLLYWOOD WATER TREATMENT PLANT

Permit Condition No: 17 **Permit Condition Code:** WUSTD021-8

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - F2	Calibration report for WELL F2	Every Five Years	Every Five Years	31-AUG-2020
WELL - F3	Calibration report for WELL F3	Every Five Years	Every Five Years	31-DEC-2020
WELL - F4	Calibration report for WELL F4	Every Five Years	Every Five Years	31-AUG-2020
WELL - F5	Calibration report for WELL F5	Every Five Years	Every Five Years	30-NOV-2023
WELL - F6	Calibration report for WELL F6	Every Five Years	Every Five Years	31-JAN-2025
WELL - F7	Calibration report for WELL F7	Every Five Years	Every Five Years	31-JAN-2025
WELL - F8	Calibration report for WELL F8	Every Five Years	Every Five Years	30-NOV-2020
WELL - F9	Calibration report for WELL F9	Every Five Years	Every Five Years	30-NOV-2020
WELL - F10	Calibration report for WELL F10	Every Five Years	Every Five Years	31-DEC-2024
WELL - F11	Calibration report for WELL F11	Every Five Years	Every Five Years	30-NOV-2020
WELL - F12	Calibration report for WELL F12	Every Five Years	Every Five Years	30-NOV-2020
WELL - F13	Calibration report for WELL F13	Every Five Years	Every Five Years	31-DEC-2024
WELL - F14	Calibration report for WELL F14	Every Five Years	Every Five Years	30-NOV-2020
WELL - F15	Calibration report for WELL F15	Every Five Years	Every Five Years	30-NOV-2020
WELL - F16	Calibration report for WELL F16	Every Five Years	Every Five Years	30-NOV-2020
WELL - F17	Calibration report for WELL F17	Every Five Years	Every Five Years	30-NOV-2020
WELL - F18	Calibration report for WELL F18	Every Five Years	Every Five Years	30-NOV-2020
WELL - F19	Calibration report for WELL F19	Every Five Years	Every Five Years	30-NOV-2020
WELL - F20	Calibration report for WELL F20	Every Five Years	Every Five Years	30-NOV-2020
WELL - F21	Calibration report for WELL F21	Every Five Years	Every Five Years	30-NOV-2020
WELL - F22	Calibration report for WELL F22	Every Five Years	Every Five Years	30-NOV-2020
WELL - F23	Calibration report for WELL F23	Every Five Years	Every Five Years	30-NOV-2020
WELL - F24	Calibration report for WELL F24	Every Five Years	Every Five Years	30-NOV-2020
WELL - 28 South	Calibration report for WELL 28 South	Every Five Years	Every Five Years	30-NOV-2020
WELL - 29 South	Calibration report for WELL 29 South	Every Five Years	Every Five Years	31-DEC-2020
WELL - 30 South	Calibration report for WELL 30 South	Every Five Years	Every Five Years	31-DEC-2020
WELL - 31 South	Calibration report for WELL 31 South	Every Five Years	Every Five Years	30-SEP-2021
WELL - 32 South	Calibration report for WELL 32 South	Every Five Years	Every Five Years	30-SEP-2021
WELL - 33 South	Calibration report for WELL 33 South	Every Five Years	Every Five Years	30-SEP-2021
WELL - 34 South	Calibration report for WELL 34 South	Every Five Years	Every Five Years	30-SEP-2021
WELL - 35 South	Calibration report for WELL 35 South	Every Five Years	Every Five Years	30-SEP-2021
WELL - 36 Chaminade	Calibration report for WELL 36 Chaminade	Every Five Years	Every Five Years	30-SEP-2021
WELL - 37 Chaminade	Calibration report for WELL 37	Every Five Years	Every Five Years	30-SEP-2021

Exhibit No: 5

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	Chaminade			
WELL - 38 Chaminade	Calibration report for WELL 38 Chaminade	Every Five Years	Every Five Years	30-SEP-2021
WELL - 39 Chaminade	Calibration report for WELL 39 Chaminade	Every Five Years	Every Five Years	30-SEP-2021
WELL - 40 Chaminade	Calibration report for WELL 40 Chaminade	Every Five Years	Every Five Years	30-SEP-2021
WELL - 41 Chaminade	Calibration report for WELL 41 Chaminade	Every Five Years	Every Five Years	31-MAY-2020

Permit Condition No: 18 **Permit Condition Code:** WUSTD022-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Water received from Piccolo Wellfield	Monthly	Quarterly	31-JUL-2020
WELL - F2	Monthly Withdrawal for Well F2	Monthly	Quarterly	31-JUL-2020
WELL - F3	Monthly Withdrawal for Well F3	Monthly	Quarterly	31-JUL-2020
WELL - F4	Monthly Withdrawal for Well F4	Monthly	Quarterly	31-JUL-2020
WELL - F5	Monthly Withdrawal for Well F5	Monthly	Quarterly	31-JUL-2020
WELL - F6	Monthly Withdrawal for Well F6	Monthly	Quarterly	31-JUL-2020
WELL - F7	Monthly Withdrawal for Well F7	Monthly	Quarterly	31-JUL-2020
WELL - F8	Monthly Withdrawal for Well F8	Monthly	Quarterly	31-JUL-2020
WELL - F9	Monthly Withdrawal for Well F9	Monthly	Quarterly	31-JUL-2020
WELL - F10	Monthly Withdrawal for Well F10	Monthly	Quarterly	31-JUL-2020
WELL - F11	Monthly Withdrawal for Well F11	Monthly	Quarterly	31-JUL-2020
WELL - F12	Monthly Withdrawal for Well F12	Monthly	Quarterly	31-JUL-2020
WELL - F13	Monthly Withdrawal for Well F13	Monthly	Quarterly	31-JUL-2020
WELL - F14	Monthly Withdrawal for Well F14	Monthly	Quarterly	31-JUL-2020
WELL - F15	Monthly Withdrawal for Well F15	Monthly	Quarterly	31-JUL-2020
WELL - F16	Monthly Withdrawal for Well F16	Monthly	Quarterly	31-JUL-2020
WELL - F17	Monthly Withdrawal for Well F17	Monthly	Quarterly	31-JUL-2020
WELL - F18	Monthly Withdrawal for Well F18	Monthly	Quarterly	31-JUL-2020
WELL - F19	Monthly Withdrawal for Well F19	Monthly	Quarterly	31-JUL-2020
WELL - F20	Monthly Withdrawal for Well F20	Monthly	Quarterly	31-JUL-2020
WELL - F21	Monthly Withdrawal for Well F21	Monthly	Quarterly	31-JUL-2020
WELL - F22	Monthly Withdrawal for Well F22	Monthly	Quarterly	31-JUL-2020
WELL - F23	Monthly Withdrawal for Well F23	Monthly	Quarterly	31-JUL-2020
WELL - F24	Monthly Withdrawal for Well F24	Monthly	Quarterly	31-JUL-2020
WELL - 28 South	Monthly Withdrawal for Well 28 South	Monthly	Quarterly	31-JUL-2020
WELL - 29 South	Monthly Withdrawal for Well 29 South	Monthly	Quarterly	31-JUL-2020
WELL - 30 South	Monthly Withdrawal for Well 30 South	Monthly	Quarterly	31-JUL-2020
WELL - 31 South	Monthly Withdrawal for Well 31 South	Monthly	Quarterly	31-JUL-2020
WELL - 32 South	Monthly Withdrawal for Well 32 South	Monthly	Quarterly	31-JUL-2020
WELL - 33 South	Monthly Withdrawal for Well 33 South	Monthly	Quarterly	31-JUL-2020

Exhibit No: 5

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 34 South	Monthly Withdrawal for Well 34 South	Monthly	Quarterly	31-JUL-2020
WELL - 35 South	Monthly Withdrawal for Well 35 South	Monthly	Quarterly	31-JUL-2020
WELL - 36 Chaminade	Monthly Withdrawal for Well 36 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 37 Chaminade	Monthly Withdrawal for Well 37 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 38 Chaminade	Monthly Withdrawal for Well 38 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 39 Chaminade	Monthly Withdrawal for Well 39 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 40 Chaminade	Monthly Withdrawal for Well 40 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 41 Chaminade	Monthly Withdrawal for Well 41 Chaminade	Monthly	Quarterly	31-JUL-2020

Permit Condition No: 20 **Permit Condition Code:** WUPWS003-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Unaccounted for Water Loss Report	Yearly	Yearly	30-APR-2020

Permit Condition No: 22 **Permit Condition Code:** WUPWS008-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Ten-Year Compliance Report	Every Ten Years	Every Ten Years	30-APR-2028

Permit Condition No: 26 **Permit Condition Code:** WUWC004-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - F8	Updated Table A for WELL F8	One time Only	One time Only	01-DEC-2020
WELL - F9	Updated Table A for WELL F9	One time Only	One time Only	01-DEC-2020
WELL - F11	Updated Table A for WELL F11	One time Only	One time Only	01-DEC-2020
WELL - F12	Updated Table A for WELL F12	One time Only	One time Only	01-DEC-2020
WELL - F14	Updated Table A for WELL F14	One time Only	One time Only	01-DEC-2020
WELL - F15	Updated Table A for WELL F15	One time Only	One time Only	01-DEC-2020
WELL - F16	Updated Table A for WELL F16	One time Only	One time Only	01-DEC-2020
WELL - F17	Updated Table A for WELL F17	One time Only	One time Only	01-DEC-2020
WELL - F18	Updated Table A for WELL F18	One time Only	One time Only	01-DEC-2020
WELL - F19	Updated Table A for WELL F19	One time Only	One time Only	01-DEC-2020
WELL - F20	Updated Table A for WELL F20	One time Only	One time Only	01-DEC-2020
WELL - F21	Updated Table A for WELL F21	One time Only	One time Only	01-DEC-2020
WELL - F22	Updated Table A for WELL F22	One time Only	One time Only	01-DEC-2020
WELL - F23	Updated Table A for WELL F23	One time Only	One time Only	01-DEC-2020
WELL - F24	Updated Table A for WELL F24	One time Only	One time Only	01-DEC-2020

Permit Condition No: 27 **Permit Condition Code:** WUSAT001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - F2	Chloride for Well F2	Monthly	Quarterly	31-JUL-2020
WELL - F3	Chloride for Well F3	Monthly	Quarterly	31-JUL-2020
WELL - F4	Chloride for Well F4	Monthly	Quarterly	31-JUL-2020
WELL - F5	Chloride for Well F5	Monthly	Quarterly	31-JUL-2020
WELL - F6	Chloride for Well F6	Monthly	Quarterly	31-JUL-2020
WELL - F7	Chloride for Well F7	Monthly	Quarterly	31-JUL-2020

Exhibit No: 5

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - F8	Chloride for Well F8	Monthly	Quarterly	31-JUL-2020
WELL - F9	Chloride for Well F9	Monthly	Quarterly	31-JUL-2020
WELL - F10	Chloride for Well F10	Monthly	Quarterly	31-JUL-2020
WELL - F11	Chloride for Well F11	Monthly	Quarterly	31-JUL-2020
WELL - F12	Chloride for Well F12	Monthly	Quarterly	31-JUL-2020
WELL - F13	Chloride for Well F13	Monthly	Quarterly	31-JUL-2020
WELL - F14	Chloride for Well F14	Monthly	Quarterly	31-JUL-2020
WELL - F15	Chloride for Well F15	Monthly	Quarterly	31-JUL-2020
WELL - F16	Chloride for WELL F16	Monthly	Quarterly	31-JUL-2020
WELL - F17	Chloride for Well F17	Monthly	Quarterly	31-JUL-2020
WELL - F18	Chloride for Well F18	Monthly	Quarterly	31-JUL-2020
WELL - F19	Chloride for Well F19	Monthly	Quarterly	31-JUL-2020
WELL - F20	Chloride for Well F 20	Monthly	Quarterly	31-JUL-2020
WELL - F21	Chloride for Well F21	Monthly	Quarterly	31-JUL-2020
WELL - F22	Chloride for Well F22	Monthly	Quarterly	31-JUL-2020
WELL - F23	Chloride for Well F23	Monthly	Quarterly	31-JUL-2020
WELL - F24	Chloride for Well F24	Monthly	Quarterly	31-JUL-2020
WELL - 28 South	Chloride for Well 28 South	Monthly	Quarterly	31-JUL-2020
WELL - 29 South	Chloride for Well 29 South	Monthly	Quarterly	31-JUL-2020
WELL - 30 South	Chloride for Well 30 South	Monthly	Quarterly	31-JUL-2020
WELL - 31 South	Chloride for Well 31 South	Monthly	Quarterly	31-JUL-2020
WELL - 32 South	Chloride for Well 32 South	Monthly	Quarterly	31-JUL-2020
WELL - 33 South	Chloride for Well 33 South	Monthly	Quarterly	31-JUL-2020
WELL - 34 South	Chloride for Well 34 South	Monthly	Quarterly	31-JUL-2020
WELL - 35 South	Chloride for Well 35 South	Monthly	Quarterly	31-JUL-2020
WELL - 36 Chaminade	Chloride for Well 36 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 37 Chaminade	Chloride for Well 37 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 38 Chaminade	Chloride for Well 38 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 39 Chaminade	Chloride for Well 39 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 40 Chaminade	Chloride for Well 40 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - 41 Chaminade	Chloride for Well 41 Chaminade	Monthly	Quarterly	31-JUL-2020
WELL - G-2425	Chloride for WELL G-2425	Quarterly	Quarterly	31-JUL-2020
WELL - G-2426	Chloride for WELL G-2426	Quarterly	Quarterly	31-JUL-2020
WELL - G-2441	Chloride for WELL G-2441	Quarterly	Quarterly	31-JUL-2020
WELL - G-2612	Chloride for WELL G-2612	Quarterly	Quarterly	31-JUL-2020
WELL - G-2956	Chloride for WELL G-2956	Quarterly	Quarterly	31-JUL-2020
PUMP - HOHB	Chloride for PUMP HOHB	Quarterly	Quarterly	31-JUL-2020
PUMP - HOJS	Chloride for PUMP HOJS	Quarterly	Quarterly	31-JUL-2020
PUMP - HON29	Chloride for PUMP HON29	Quarterly	Quarterly	31-JUL-2020
PUMP - HON46	Chloride for PUMP HON46	Quarterly	Quarterly	31-JUL-2020
PUMP - HOTS	Chloride for PUMP HOTS	Quarterly	Quarterly	31-JUL-2020
WELL - G-2956	ground water level for G2956	Quarterly	Quarterly	31-JUL-2020
WELL - G-2612	ground water level for G-2612	Quarterly	Quarterly	31-JUL-2020
WELL - G-2441	ground water level for G-2441	Quarterly	Quarterly	31-JUL-2020
WELL - G-2426	ground water level for G-2426	Quarterly	Quarterly	31-JUL-2020
WELL - G-2425	ground water level fo G-2425	Quarterly	Quarterly	31-JUL-2020

Exhibit No: 5

Requirement by Permit Condition Report

Permit Condition No: 29 **Permit Condition Code:** WUIND002-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	AWS Status Report	Yearly	Yearly	30-APR-2020

Exhibit No: 5

STAFF REPORT DISTRIBUTION LIST

HOLLYWOOD WATER TREATMENT PLANT

Application No: 200218-3

Permit No: 06-00038-W

INTERNAL DISTRIBUTION

X Stephanie Lancaster, P.G.

EXTERNAL DISTRIBUTION

X Permittee - City Of Hollywood
X Agent - City Of Hollywood

GOVERNMENT AGENCIES

X Broward County - Director, Water Mgmt Div
X Dept of Environmental Protection - West Palm Beach
X FDEP Div of Recreation and Park - District 5

OTHER INTERESTED PARTIES

X Natural Resources Defense Council

Exhibit No:6

APPENDIX B

INTERLOCAL AGREEMENT FOR THE BULK SALE OF POTABLE WATER BETWEEN BROWARD COUNTY AND THE CITY OF HOLLYWOOD

Revised 9/10/96

INTERLOCAL AGREEMENT FOR THE BULK SALE OF POTABLE WATER BETWEEN BROWARD COUNTY, FLORIDA AND THE CITY OF HOLLYWOOD, FLORIDA

This Agreement is made and entered into this 15th day of Oct, 1996, by and between the Board of County Commissioners, as the governing board of Broward County, a political subdivision of the State of Florida with its principal place of business at 115 South Andrews Avenue, Ft. Lauderdale, Florida 33301 (hereinafter referred to as "County"), and the City of Hollywood, a municipal corporation of the State of Florida, with its principal place of business at 2600 Hollywood Blvd., Hollywood, Florida 33020 (hereinafter referred to as "City").

RECITALS

WHEREAS, County is the owner and operator of a 6.2 million gallons per day (MGD) water treatment plant located at the intersection of Griffin Road and 40th Avenue; and

WHEREAS, the average daily demand for water service at this facility is 2.6 MGD; and

WHEREAS, unless County finds another source of potable water, County anticipates the need to invest monies to upgrade this facility to continue providing quality service to residents in the service area denoted as Broward County Service Area 3A, more particularly described herein in Exhibit A, attached hereto and made a part hereof; and

WHEREAS, instead of investing monies to upgrade its facility, County is desirous of purchasing potable water from City to serve Broward County Service Area 3A; and

WHEREAS, City is the owner and operator of a 37.5 MGD water treatment plant located at the intersection of Hollywood Boulevard and 35th Avenue; and

WHEREAS, City is currently upgrading its water treatment plant through the addition of membrane softening units and reverse osmosis units that will allow City to treat multiple sources of water; and

WHEREAS, the City and County have entered into an Agreement entitled "Large User Raw Water Agreement Between Broward County, Florida and City of Hollywood, Florida" which requires the County to deliver raw water from the County's South Regional Raw Water System to the City in accordance with the terms and conditions of said agreement; and

WHEREAS, the quality of water that will be produced by City's facility will be of a quality meeting all State and Federal regulatory standards; and

WHEREAS, the demand for service on City's facility by current City of Hollywood customers averages 18.5 MGD, with a peak demand of 25.4 MGD; and

WHEREAS, City has surplus capacity in its facility to provide bulk water to other area entities; and

WHEREAS, City is currently under contract with County to provide water service to areas known as Broward County Service Area 3B and 3C, more particularly described in Exhibit B, attached hereto and made a part hereof; and

WHEREAS, the Board of County Commissioners finds that the purchase of water from City is consistent with and furthers the goals of providing potable water service to the customers of Broward County Service Area 3A, (Exhibit A) along with the continuing provision of potable water service to Broward County Service Areas 3B and 3C, all three of which are hereinafter referred to collectively as "District 3"; and

WHEREAS, City is willing to provide potable water service to all of District 3; and

WHEREAS, the City Commission finds that the sale of potable water to County is of benefit to the citizens of City, as well as to the customers of District 3; and

WHEREAS, the parties hereto desire to enter into this agreement setting forth the mutual understandings, terms and conditions of the sale of bulk water by City to County; and

WHEREAS, City and County pledge their mutual cooperation towards the provision of cost effective and efficient potable water to those persons residing or working in District 3; and

WHEREAS, this Agreement and all the stipulations and covenants contained herein are subject to the approval of all the appropriate regulatory agencies,

including the South Florida Water Management District.

NOW THEREFORE, in consideration of the covenants contained in this Agreement, it is mutually agreed between the parties as follows:

1. RECITALS: The above recitals are true and correct, and are incorporated herein. Time is of the essence for all provisions herein.

2. OBLIGATIONS OF CITY/COUNTY FOR CONNECTIONS:

a. It shall be the City's obligation at its' sole cost and expense, to design and construct facilities to the 3A plant site Point of Connections (Exhibit Consolidated Water and Wastewater System). It shall be the obligation of County, at its sole cost and expense, to design, construct and install connections, appurtenances and master meters to physically connect County's system to City's regional water transmission system at locations shown on Exhibit C, attached hereto and made a part hereof, in accordance with plans, specifications and engineering data as prepared, certified and submitted by a registered professional engineer in the State of Florida, and as approved by the appropriate regulatory agencies and City's Public Utilities Director or authorized representative. As used in this Agreement, the term "Point of Connection" means any location(s) shown on Exhibit C where County's system is physically connected to the City's system by a master meter(s).

b. County shall, at its expense, retain the services of the same registered professional engineer who prepared the plans and specifications during construction for the purpose of providing the necessary inspections and supervision of the construction work, herein after referred to as "Work", for those facilities described in Exhibit C.

c. County agrees to require its engineer to provide shop drawings and catalog information of the materials and equipment to be installed as part of the connection to City's system, for City approval. No Work shall commence until the shop drawings, plans and specifications are approved in writing by City's Public Utilities Director or authorized representative. Review by the City shall be done within ten (10) working days.

d. A preconstruction meeting with City's Public Utilities Director or his authorized representative, County, County's engineer and contractor shall be held prior to commencement of the Work.

e. County agrees to grant City free access to the materials and the work site at all times for the purpose of inspecting same and to notify City before any

Work is begun or inspections made. Said notification shall be made in writing and shall be received by City at least forty-eight (48) hours in advance of the time Work will begin or inspections will be made.

f. At the time when periodic inspections are made, City's authorized representative, together with County's engineer, will be present to observe and jointly witness tests for determination of conformance to approved plans and specifications.

g. County shall require its contractor, during the warranty period, to promptly correct defective Work upon notification by City. Should County's contractor or the County fail to correct defects of the Work within ten (10) working days after written notification by the City, City may correct and remedy any such deficiency. All direct and indirect costs of City shall be charged to County.

h. County's obligation to perform and complete the Work in accordance with this Agreement shall be absolute. Neither any act of acceptance by City nor any failure to do so will constitute a release of County's obligation to comply with all requirements set forth in this Agreement.

i. City shall not be required to provide water service, except for construction water, unless installation of the Work has been completed, tested, certified, approved and accepted by City, and County's engineer has provided record drawings and related documentation. Should construction water be required, County shall pay at the established rate. All construction water shall be metered.

3. OBLIGATIONS OF COUNTY FOR CONVEYANCE OF NECESSARY APPURTENANCES: Upon completion, approval and acceptance of the Work required to be done on the City's side of the Point(s) of Connection shown on Exhibit C, County shall without cost to City:

a. Convey to City and its successors and assigns by good and sufficient easement deed, in a form satisfactory to City, a perpetual right, easement and privilege to operate, maintain, repair and replace all water mains, pipes, connections, pumps and meters within granted easements, in connection with supplying water service, and secure from each mortgagee and lienor a release of the interest of said mortgagee and lienor in the easement property and fixtures thereon for so long as the easement property is used for the operation, maintenance, repair or replacement of water mains, pipes, connections, pumps and meters within the easements.

b. Transfer to City by Bill of Sale Absolute all right, title and interest in and to all of the water mains, pumps, connection, pipes, valves, meters and equipment

installed within granted easements and rights-of-way as provided for in the plans and specifications to be prepared pursuant to Paragraph (2) above for the purpose of supplying water service. Said Bill of Sale Absolute shall be written in such a form as approved and accepted by City.

c. Furnish City with an affidavit that all persons, firms or corporations who furnished labor or material used directly or indirectly in the prosecution of the Work required to be performed by this Agreement have been paid. Said affidavit shall be written in such form as approved and accepted by City.

d. Furnish City with Releases Of Lien from all contractors and suppliers of materials and/or labor who might have acquired an interest in the installations through the supplying of materials and/or labor or otherwise.

e. Furnish City with all manufacturers' warranties which County might have received or is due to receive on any part of the Work.

f. Furnish City with a summary of the unit costs for the installations based on the invoices submitted by County's contractor as verified by County's engineer of record.

g. Provide record drawings of all installations and appurtenances on the Work. Said record drawings shall be of the completed works, on transparent mylar film, along with five sets of record prints made from the record film. Said record drawings shall be sealed by a professional engineer registered to do business in the State of Florida, and must show all pertinent information thereon, including but not limited to: current location of water mains, taps, meters valves, grade lines, and water main profiles. Said record drawing elevations shall be sealed by a registered land surveyor authorized to do business in the State of Florida.

4. CITY OBLIGATIONS TO MAINTAIN APPURTENANCES: Upon completion of the Work by County or County's/City's contractor, and acceptance of the Work by City, City shall thereafter, at its expense, own, operate, and maintain all facilities on the City's side of the Point of Connection(s) as shown on Exhibit C, which includes but is not limited to the master meter(s), connection piping and appurtenances within those easements granted to City for such purposes.

5. RETENTION OF RECORDED ENGINEERING INFORMATION: County shall require its engineer to keep all supporting documentation which reflects materials costs and all costs of construction (complete installation) of the Work. This documentation shall be available upon request at no charge to City's Public Utilities Director or authorized representative, for audit, inspection or copying for a minimum of five (5) years from City's formal acceptance of the Work.

6. RESERVE CAPACITY CHARGES DUE FROM ALL NEW COUNTY CUSTOMERS: All persons connecting to City's potable water system are required to pay the appropriate reserve capacity charges to City. The County is required to pay the appropriate reserve capacity charges for water treatment and transmission costs for all customers within District 3 who connect after the date of this agreement. These reserve capacity charges shall become payable by County at the time of application for a meter by those connecting to the potable water system in District 3. Said reserve capacity charges shall be remitted to City by County on a monthly basis. County will provide monthly a report of all reserve capacity charges due and payable.

The City Commission shall, from time to time, review the basis for said reserve capacity charges and adjust said reserve capacity charges when necessary as a result of a rate analysis conducted by a competent professional, after an appropriate public hearing, and after notice to County of any proposed changes. City shall provide the results of such rate analysis to County if requested. City shall maintain a separate accounting for the reserve capacity charges between water and wastewater.

7. COUNTY TO REQUIRE CONNECTION TO PUBLIC WATER SUPPLIES: County agrees to require all persons to whom potable water service is available to connect to the public potable water system in accordance with Chapter 34 of the Code of Broward County, as amended from time to time.

8. WATER QUALITY AND QUANTITY PROVIDED BY CITY: City shall make its best efforts to furnish water of the quantity and purity meeting the standards required by the Florida Department of Health and Rehabilitative Services, the Broward County Public Health Unit and any other regulatory agency having jurisdiction. City shall further make its best effort to supply, for the use of County at the Points of Connection to its water system, at all times, and at a more or less constant flow, quality of water at or above the pressure 60 psi, except at the 3A plant Point of Connection where 40 psi (at a more or less constant flow of 2800 gpm) will be satisfactory to provide service for domestic use on County's side of the meter.

9. COUNTY TO PAY FOR COST OF WATER SUPPLIED:

a. County shall pay City the prevailing City rate for bulk water service, as set from time to time by the City Commission after an appropriate public hearing, and after written notice to County of any proposed changes. Said water rate shall be based on the volume of water passing through the meter locations described in Exhibit C. The initial rate for bulk service shall be as follows:

1. Until October 1, 1996, the rate shall be $0.78 per one thousand gallons of water delivered through the meter locations indicated on Exhibit C.

2. Until April 1, 1997, or such time as the District 3A water treatment plant no longer treats water for potable purposes, whichever occurs last, the rate shall be $0.84 per one thousand gallons of water delivered through the meter locations indicated on Exhibit C.

3. At such time as the District 3A water treatment plant no longer treats water for potable purposes, or April 1, 1997 whichever occurs last, the rate shall be $0.92 per one thousand gallons of water delivered through the meter locations indicated on Exhibit C~~onsolidated Water and Wastewater System~~ (except as provided in (2) above).

No increase beyond $0.92 per one thousand gallons shall occur prior to October 15, 1997. Any increase in the usage rate charged to County thereafter shall not exceed the percentage of increase enacted for City's retail customers, and as deemed appropriate by a rate study conducted by a competent rate consulting professional. "The percentage of increase enacted for City's retail customers," as used to define any rate increases contemplated under this Agreement, shall be determined by the percentage difference found from a comparison of the total of all retail water revenues, projected over all retail water user classes, when identical volumetric, unit and meter bases are used. No increase shall be approved by City without 45 days' written notice to County of said proposed increase.

b. All said bulk water rates shall be nondiscriminatory and shall be the same for all like users on the system.

c. City shall bill County on a monthly basis for the amount of water used on the meters. The bill shall be considered delinquent if unpaid within 45 days after rendering to County by City.

d. The sale of water by City to County shall occur on County's side of the meters, at the Points of Connection, to be located as shown in Exhibit C.

10. CITY TO HAVE EXCLUSIVE RIGHT TO PROVIDE SERVICE: City shall have the exclusive right to furnish water service to county customers within the areas covered by this Agreement (see Exhibits A and B). County shall have the right to sell any portion of District 3, but only to the municipality within which the portion exists. Consummation of such a sale shall terminate this Agreement for the area purchased only, provided that the parties hereto agree to review and amend this Agreement to reflect the revised service area and flow projections.

11. COUNTY TO MAINTAIN SYSTEM CONDITION: County shall maintain its water distribution facilities and appurtenances in District 3 in accordance with standard utility practice.

12. CITY NOT LIABLE FOR COUNTY PIPELINES: City shall not be liable or responsible for maintenance or operation of any pipes, pipelines, valves, fixtures or equipment on any of the properties of the customers or users in District 3 downstream from the Points of Connection.

13. ALANDCO WATER SERVICE: City and County agree that City will continue to provide water service to the Alandco properties, more particularly described in Exhibit E, which is attached hereto and made apart hereof, via County's transmission lines. Given that the water metered at the Alandco properties will be from City's potable water system, City shall deduct from any bill to County, the amount of water usage indicated on the Alandco meter or meters.

City and County agree to a $0.04 per 1000 gallons charge for transmission system usage to be paid by City to County to serve the Alandco area. City shall deduct the transmission system user charge from the bill to be rendered to County. Any increase in costs of transmission charged to City shall not exceed the percentage of increase enacted for County's retail customers. "The percentage of increase enacted for County's retail customers," as used to define any rate increases contemplated under this Agreement, shall be determined by the percentage difference found from a comparison of the total of all retail water revenues, projected over all retail water user classes, when identical volumetric, unit and meter bases are used.

City and County further agree that the previous agreements entitled "Large User Wastewater Transmission Agreement and Finished Water For Resale Agreement" (collectively known as the "Alandco Agreements"), dated May 16, 1989, as amended from time to time, are hereby superseded in their entirety by this Agreement, and the prior Agreements are hereby deemed null and void.

14. TRANSFER OF SERVICE AREAS: City and County agree that if in the future, through an exchange of service areas, certain properties in District 3 that are currently retail customers of County become retail customers of City, or certain properties that are currently retail customers of City become retail customers of County, those properties currently receiving water service shall not be charged a reserve capacity charge or impact fee by City or County, whichever receives the customers, due to the transfer.

15. WATER QUALITY TESTING: City and County shall make their best efforts to cooperate jointly in complying with federal, state and local water quality monitoring evaluations. District 3 shall be deemed a consecutive system under the Florida Administrative Code. This designation encourages consolidation of water

quality analysis requirements. Specifically Chapter 62-551, Florida Administrative Code, denotes requirements for lead and copper sampling, testing, monitoring, treatment and reporting requirements. These requirements shall be performed by City in lieu of County additionally testing the same water. To this end, and to monitor water quality to the residents of District 3, each party agrees to provide the other with copies of any water quality analyses it performs to assist each other with information to improve service. Each party shall advise the other of any water quality problems it encounters in the water distribution system in District 3. County shall retain responsibility for the quality of water from the Points of Connection.

16. METER TESTING: City shall maintain and test all meters semiannually and shall have a test conducted by a representative of the manufacturer or other competent entity. A copy of the semiannual report on meter inspections shall be furnished to County. County may from time to time request permission to have a meter test conducted. County shall submit such requests at least forty-eight (48) hours in advance of the test, not including any weekends or holidays. In the event that any meter tested is not accurate within the manufacturer's recommended range, City shall pay the costs of the test and make appropriate adjustments or repairs to the meter to bring it within the manufacturer's recommended range. County may be present to observe any meter test conducted by City.

Should the metering equipment be found to be inaccurate beyond the manufacturer's range of accuracy, the meter will be assumed to be inaccurate since midway between the previous meter check and the discovered inaccuracy or for a period of three months, whichever time should be less, and the following month's billing will be adjusted to show a credit or additional charge to County for that period based on the average daily flow of the thirty (30) day period prior to the previous meter check. An additional adjustment shall be made after the meter inaccuracy has been corrected. Said additional adjustment shall show a credit or additional charge to County for that period based on the average daily flow of the thirty (30) day period prior to the previous meter check and immediately after the period of inaccurate operation.

17. METER FAILURE: County agrees that if at any time the metering system shall be inoperative or in any way fails to provide information with respect to the quantity of flow into County's water system, County shall pay City a daily amount equal to the average daily flow of the monthly billing period immediately prior to the date the meter became inoperative, prorated over the number of days the meter was inoperative. City shall promptly repair or replace said defective or inoperative meter.

18. COUNTY FLOWS: County expects water demands for District 3 to be as shown on Exhibit D, attached hereto and made a part hereof. City agrees

to provide water in such quantities to meet these demands at a more or less constant rate of flow. County agrees to maintain adequate storage facilities to meet peak demands for District 3. Maximum daily demands on the system shall not exceed 1.34 times the maximum daily demands shown on Exhibit D, without permission of City. Should County consistently exceed these amounts, City may impose a surcharge of up to twenty-five (25) percent on the excess water utilized, if directed by the City Commission.

19. WATER CONSERVATION: City and County acknowledge that from time to time there will be water resource restrictions imposed by regulatory agencies. County agrees to conform with any water conservation efforts or mandates imposed by regulatory agencies, including but not limited to use restrictions and reductions of water distribution system pressures imposed by the South Florida Water Management District. In the event of a water resource restriction due to failure of City's facilities, County agrees to conform with necessary water conservation efforts, including a reduction of water distribution system pressures, to prevent further damage to City's or County's water system and to prevent the creation of a hardship for any other party. City and County agree that no reductions in service that will provide insufficient service or insufficient fire service will be required of either party by the other.

20. TERMINATION OF AGREEMENT: Except as provided in paragraph (10), City and County agree that this Agreement shall not be terminated on any condition other than City's purchase of the entire District 3 water and sewer service area, or by a mutual cancellation agreement between the parties hereto, which shall be a written document executed with the same formality and of equal dignity herewith.

21. COOPERATION BETWEEN CITY AND COUNTY: City and County agree to cooperate toward the development of a computer model of City's water distribution system and the District 3 water distribution system, to cooperate on engineering and field work to facilitate a beneficial and amicable working relationship, and to expedite those matters that may impact each other's service areas or distribution facilities.

22. CITY TO SUPPLY WATER TO COUNTY: City agrees to make every effort to provide water to County in the quantities specified in Exhibit D and in a manner similar to that of its retail customers.

23. EMERGENCY INTERCONNECTS: No water from CITY's water system is to be used or disbursed by COUNTY or its agents outside the indicated service area to be served as shown in EXHIBIT "A" , attached hereto and made a part hereof except as provided by emergency interconnects with neighboring public

systems not to be activated without the prior concurrence of CITY. CITY shall not be responsible for providing adequate pressure or flow through COUNTY's emergency interconnects to other public systems.

24. FORCE MAJEURE: Any temporary cessation or interruption of the furnishing of water services provided in this Agreement, at any time caused by an act of God, fire, strike, casualty, accident, power failure, necessary maintenance work, breakdown, damage to equipment or mains, civil or military authority, riot or other cause beyond the control of City or County shall not constitute a breach of the provisions contained herein or impose liability upon City or County, its successors and assigns.

25. JURISDICTION OF OTHER AGENCIES: Both parties agree that certain federal, state, and local agencies have some jurisdiction and control over water supply matters and should any such agency, excluding the Board of County Commissioners of Broward County, Florida, issue legally enforceable laws, regulations, mandates, or orders that may alter any of the terms and conditions of this Agreement, there shall be no liability on either party because of such action, provided that City shall not be precluded from making necessary adjustment to the fees, rates, and charges. It is further agreed that if any such agency shall request a change in the provisions of this Agreement that both parties will, by mutual agreement, make every effort to comply with such request. However, the terms of this Section shall not preclude administrative or judicial challenge, or both, of such order by either or both parties hereto. This provision shall not be construed so as to permit County to terminate this Agreement.

26. NOTICES: Whenever either party desires to give notice unto the other, it must be given by written notice, sent by certified United States mail, with return receipt requested, addressed to the party for whom it is intended, at the place specified as the place for giving of notice; the place for giving of notice shall remain as such until it shall have been changed by written notice in compliance with the provisions of this paragraph. For the present, the parties designate the following as the respective places for the giving of notice, to wit:

FOR CITY:
Utilities Director
Public Utilities Department
City of Hollywood
P.O. Box 229045
Hollywood, Florida 33022-9045

with copy to:

City Attorney's Office
2600 Hollywood Boulevard
Hollywood, FL 33022

FOR COUNTY:

Director
Broward County Office of Environmental Services
2555 West Copans Road
Pompano Beach, FL 33069

with copy to:

County Attorney's Office
115 South Andrews Avenue
Ft. Lauderdale, FL 33301

Notice so addressed and sent by certified mail, with return receipt requested, shall be deemed given when it is received by the other party.

26. AGREEMENT SUPERSEDES ALL PRIOR AGREEMENTS: This Agreement shall supersede all previous agreements for potable water service, including, but not limited to, the agreements for potable water service to Broward County Service areas 3B and 3C, and the Alandco agreement.

27. MODIFICATIONS TO THIS AGREEMENT: This Agreement shall be modified or amended only by written amendment approved and executed in the same manner as this Agreement.

28. ASSIGNMENT OF THIS AGREEMENT: This Agreement shall not be assigned in whole or in part by either party, and any attempt by either party to assign shall be void ad initio.

29. RECORDATION OF THIS AGREEMENT: This Agreement shall be recorded in the Official Records of Broward County, Florida within fourteen (14) days after execution of this Agreement by both parties.

30. INJUNCTIVE RELIEF: Any party to this Agreement shall have the ability to file an action for injunctive relief in the Circuit Court of Broward County to enforce the terms of this Agreement, said remedy being cumulative with any and all remedies available to the parties for enforcement of this Agreement.

31. TERM: The term of this Agreement shall be twenty five (25) years. This Agreement may be renewed thereafter for ten (10) year intervals no less than five (5) years in advance of the end of the next term, via mutual agreement between the parties hereto, which shall be a written document executed with the same formality and of equal dignity herewith.

32. AGREEMENT SUBJECT TO THE LAWS OF THE STATE OF FLORIDA: This Agreement shall be controlled by the laws of the State of Florida.

IN WITNESS WHEREOF, the parties have made and executed this Agreement on the respective dates under each signature: BROWARD COUNTY through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Chair or Vice Chair, authorized to execute same by Board action on the 15th day of Oct., 1996, and signing by and the City of Hollywood, Florida, signing by and through its Mayor duly authorized to execute same.

ATTEST:

County Administrator and
Ex-officio Clerk of the
Board of County Commissioners
of Broward County, Florida

COUNTY:
BROWARD COUNTY, through its
BOARD OF COUNTY COMMISSIONERS

By: _____, Chair

15th day of October, 1996

Approved as to form by
Office of County Attorney
Broward County, Florida
John J. Copelan, Jr., County Attorney
Government Center, Suite 423
115 South Andrews Avenue
Ft. Lauderdale, Florida 33301
Telephone (305) 357-7600
Telecopier (305) 357-7641

By: _____
Assistant County Attorney

ATTEST:

Patricia A. Cerny
City Clerk

THE CITY OF HOLLYWOOD, A
MUNICIPAL CORPORATION OF THE
STATE OF FLORIDA

By: _____
Mara Giulianti, Mayor

Approved as to form and legality
for the use and reliance of the
City of Hollywood, Florida only:

Jamie Alan Cole, City Attorney

EXHIBIT B

RESOLUTION NO. R-93-294

RESOLUTION TO AUTHORIZE EXECUTION OF AGREEMENT WITH BROWARD COUNTY TO PURCHASE WATER FROM BRIAN PICCOLO WELLFIELD, TO SECURE WATER FROM THIS SOURCE FOR THE CITY OF HOLLYWOOD'S USE.

WHEREAS, due to possible salt water intrusion, the South Florida Water Management District has limited the amount of water that can be withdrawn from the Hollywood Wellfield to 22.47 million gallons a day; and

WHEREAS, it is estimated that in the next five years additional sources of water will be necessary to supplement the City's own sources and provide for the needs of the residents of the City of Hollywood; and

WHEREAS, Broward County has developed a Regional Water Supply Strategy and a South Regional Wellfield is to be developed at Brian Piccolo Park; and

WHEREAS, the City of Hollywood's Plan for Water Management includes obtaining water from the Biscayne Aquifer, the Floridan Aquifer and the Brian Piccolo Wellfield; and

WHEREAS, raw water from this wellfield could be purchased from the County to supplement the City's supply; and

WHEREAS, the Brian Piccolo Wellfield has water available to provide to the City an additional six million gallons a day annual average daily flow and eight million gallons a day peak daily flow; and

WHEREAS, the current water quality will be maintained while being supplemented by the Floridan Aquifer and the Brian Piccolo Wellfield water; and

WHEREAS, the Director of Utilities with Utilities Department input has negotiated a Large User Agreement with Broward County; and

CERTIFICATION

I certify this to be a true and correct copy of the record in my office.
WITNESSETH my hand and official seal of the City of Hollywood, Florida, this the 26th day of January 1994

City Clerk.

WHEREAS, the Hollywood City Commission requested staff to renegotiate with Broward County; and

WHEREAS, as a result of renegotiations with Broward County, modifications will be included; and

WHEREAS, the following modifications to be included in the final Agreement:

1. In lieu of placing a "cap" on the agreement, since actual costs are unknown at present, language will be added to allow the City to determine whether or not to remain party to the Agreement in three to five year intervals. Should the City decide it is in its' best interest to withdraw from the Agreement, a 180 day notice would be required.

2. Item 2.1 a of the Agreement will be amended to define the actual location and scope of the County Facilities being funded for purposes of extracting water from the BrianPiccolo Wellfield. Once defined, operation and maintenance costs will be limited to this location and facility.

3. Additionally, an addendum will be included in reference to defining estimated cost for operation and maintenance of the Brian Piccolo Wellfield, without pretreatment (to be in the range of $0.10 $/Kgals to $0.14 $/Kgals).

and

WHEREAS, the Utilities staff has received from Broward County a final draft and is working with the Acting City Attorney to finalize this Agreement as to form and legality; and

WHEREAS, the City Attorney and the Utilities Director recommend approval of this agreement with Broward County; and

NOW, THEREFORE, Be It Resolved By The Hollywood City Commission to authorize entering into An Agreement With Broward County, authorizing staff to prepare a final Agreement to purchase water from the Brian Piccolo Wellfield.

PASSED AND ADOPTED THIS 1st DAY OF September 1993.

Mara Giulianti
MARA GIULIANTI, MAYOR

ATTESTED:

Martha S. Lambos
MARTHA S. LAMBOS, CITY CLERK

ENDORSED AS TO FORM AND LEGALITY:

Pamela S. Terranova
PAMELA S. TERRANOVA
ACTING CITY ATTORNEY

EXHIBIT C

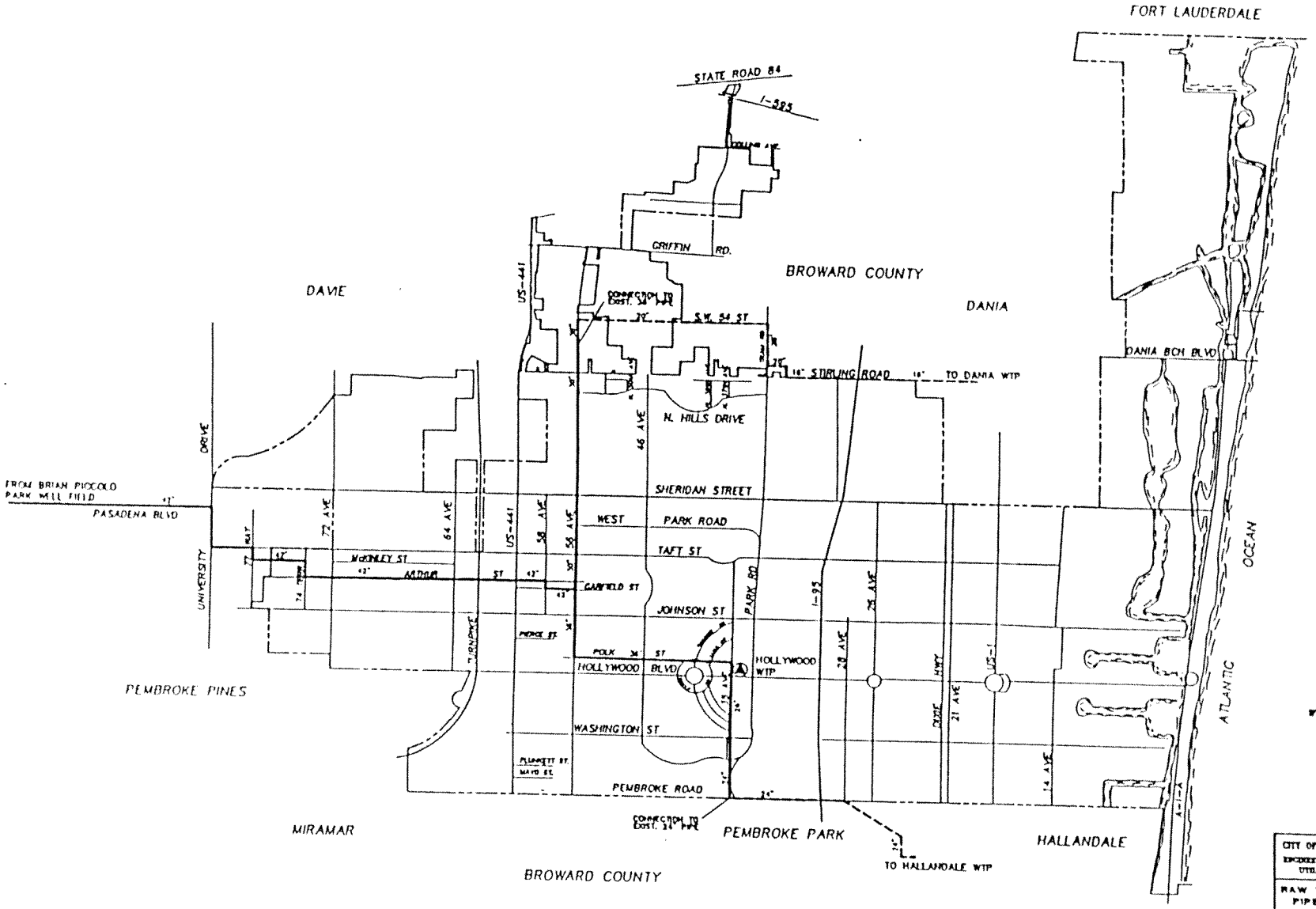
RAW WATER AGREEMENT - HOLLYWOOD

The City of Hollywood understands that although the cost of raw water from the Brian Piccolo wellfield can not be determined at this time, the cost is anticipated to be between the present cost of treating Biscayne Aquifer water and the cost of treating Floridan Aquifer water by reverse osmosis.

Summary Operation and Maintenance Cost

Source	Estimated Cost
Biscayne Aquifer	$0.38/1000 gals (present cost)
Brian Piccolo	Greater than $0.38/1000 gallons but less than $0.80/1000 gallons (Based on $0.10 to $0.14/1000 gallons County O/M plus present cost plus pretreatment costs).
Floridan Aquifer	$0.80/1,000 (future R.O.)

COUNTY FACILITIES FOR
PROVIDING RAW WATER
(SOUTHERN HALF)



CITY OF HOLLYWOOD, FLORIDA
ENGINEERING DIVISION
UTILITIES DEPARTMENT

RAW WATER TRANSMISSION
PIPELINE ROUTE FROM
BRIAN PICCOLO PARK WELL FIELD

DWG. NO. 1 OF 1

SECTION 1

SUMMARY

James M. Montgomery, Consulting Engineers, Inc. was authorized in January 1992 to commence design of wellfields and raw water transmission mains for the Broward County Regional Water Supply Project. The purpose of this report is to update and finalize design criteria and component sizing established in the Preliminary Design Report (PDR) completed in March 1990 for the raw water system facilities. System components include raw water wells, transmission pipelines, collection pipelines, power supply and SCADA system.

One of the initial steps for the design of the wellfields and transmission mains include a hydraulic analysis which was performed for both the North System and South System to determine and select pipeline sizes for projected buildout demands. Recommended transmission pipeline sizes based on the results from the hydraulic analysis for both the North and South Systems are shown in Figures 2-1 and 3-1 respectively, and are summarized as follows:

	Pipeline Reach	Recommended Pipe Size (in)
North System	1	48
	2	42
	3	54 (Existing pipeline)
	4	20 (Future pipeline)
	5	24
	6	48
	7	42
South System	1	42
	2	36
	3	24
	4	24 (Existing pipeline)
	5	30
	6	16 (Existing pipeline)
	7	20
	8	16 (Existing pipeline)

The pipelines were conservatively sized with a design velocity of five to six feet per second. Analysis has shown that these design velocities optimize the capital and operating costs over the design life of the system. If in the future the County desires to increase the capacity of the pipelines, the flow velocity may be increased seven to ten feet per second by utilizing a booster pump station to increase the pipeline capacity approximately 50 percent. At the higher velocities, the operating efficiency of the system will decrease. Another option for increasing system capacity is to upsize the transmission mains from the recommended pipe sizes. The additional capital cost to upsize the transmission mains by one pipe size was determined to be approximately 20 percent.

Design standards and criteria are established for the transmission pipelines, collection pipelines, wells, power supply and flow control and metering structures in the report. Significant design changes from the PDR besides pipeline sizing, rerouting, and an overall reduction in the capacity of the system include the following:

- Prestressed concrete cylinder pipe (PCCP) is not recommended as a pipe alternative for this project.
- Utilizing submersible pumps mounted in a below grade vault due to the Florida Department of Environmental Regulation (FDER) requirements.

Estimated probable construction costs for the North and South System bid packages are summarized as follows:

Bid Package	Project	Probable Construction Cost ($)
3	South System Transmission Main-A	9,155,000
4	South System Transmission Main-B	3,160,000
5	South System Regional Wellfield	3,371,000
6	SCADA System	1,126,000
7	North System Transmission Main - A	4,642,000
8	North System Transmission Main - B	2,920,500
9	North System Transmission Main - C	1,475,500
10	North System Transmission Main - D	913,000
11	North East Regional Wellfield	3,195,000
	Total (3rd Quarter, 1992 Dollars)	$29,958,000

The project implementation schedule for the South System assumes a six month design period for the major components of the project, a six month period for permitting, bidding and award, and an eight month construction period. Based on these assumptions, the project should be ready to deliver new water in late 1993 or early 1994. The project implementation schedule for the North System assumes a six month design period for the major components of the project, a five month period for permitting, bidding and award, and a seven month construction period. Based on these assumptions, the project should be ready to deliver new water following construction of the North East Regional Wellfield and the North System Transmission Main - A by early 1994.

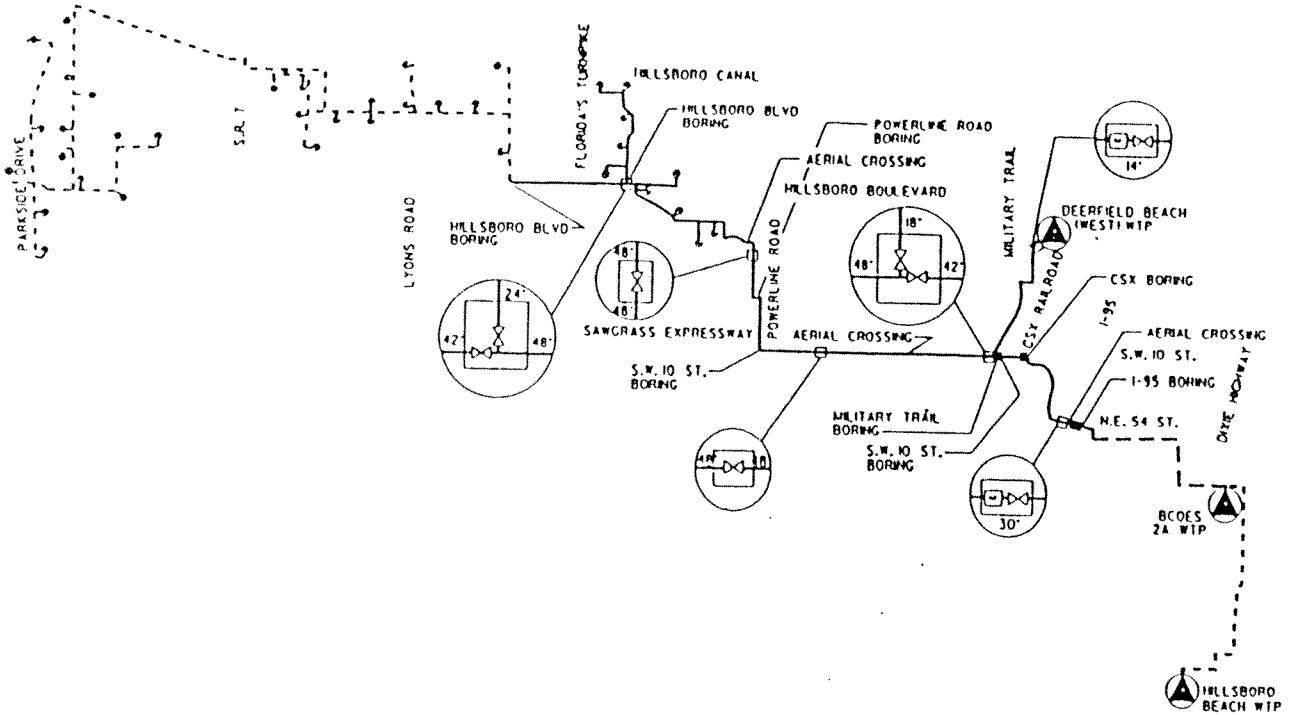
Items which may potentially delay the project schedule include: upconing study results requiring reconfiguration of the wellsites, Large User coordination, easement and well site acquisition, bid protests, permitting delays, and delivery of long lead project materials.

A preliminary design report (PDR) was completed in March 1990 for all Regional Water Supply system facilities. The report analyzed design criteria, various transmission pipeline corridors, pipeline sizes, various pumping schematics, system capacity, system reliability, power supply, project costs and project implementation. Recommendations were made to the County with regard to the final design criteria in the PDR.

Summary

Since completion of the PDR some factors have changed which will impact final design criteria and implementation of the project. These factors include Consumptive Use Permit restrictions, Large User Agreements differing from those anticipated in the PDR, and project delays.

The purpose of this report is to update design criteria and component sizing based on recent restrictions and changes to the project. The report also includes a list of major equipment manufacturers, permits and approvals required, technical specifications necessary for the project, estimated project costs, and a project implementation schedule.



LEGEND

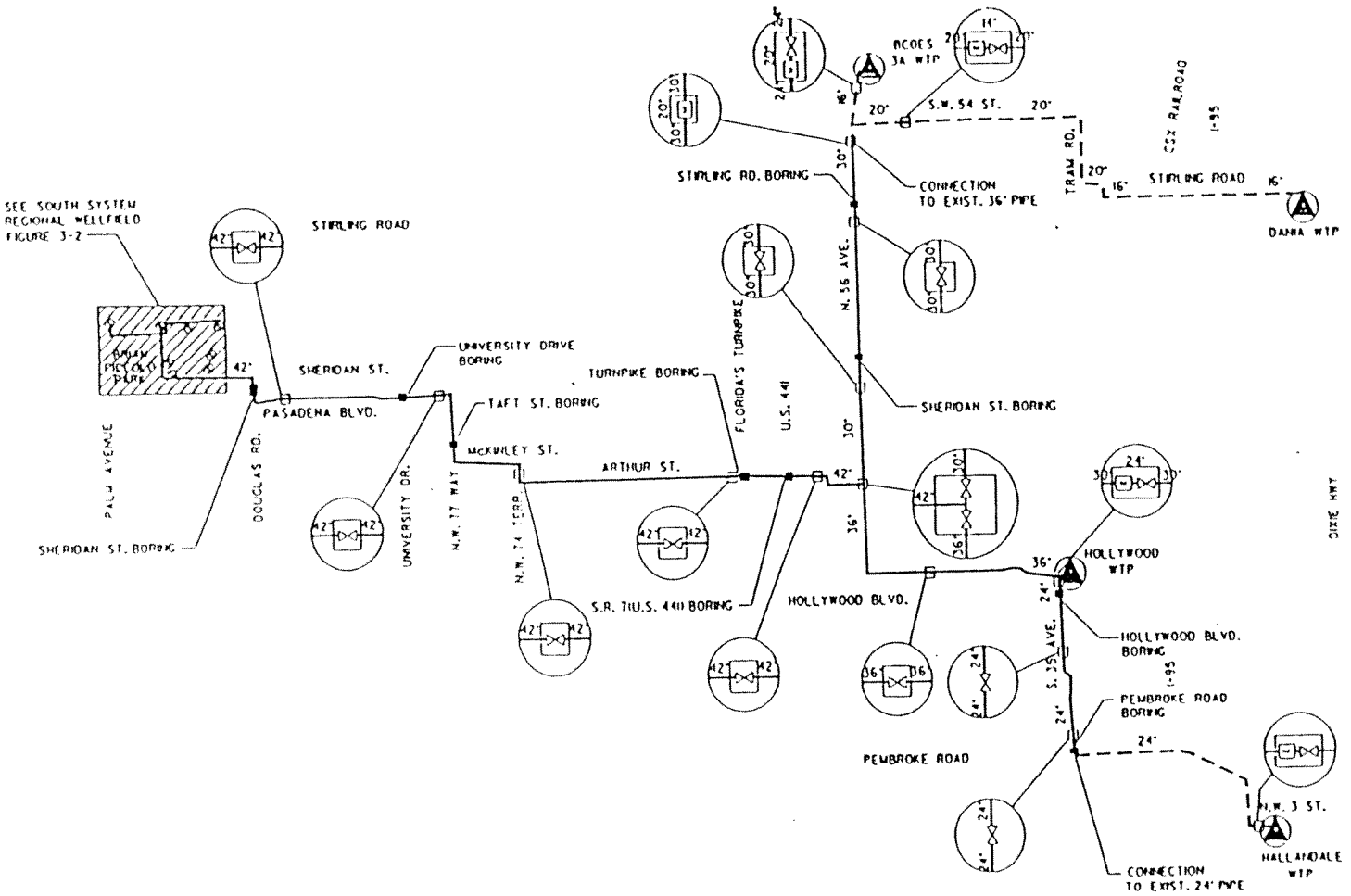
- PROPOSED NEW TRANSMISSION PIPELINE
- EXISTING TRANSMISSION PIPELINE
- PROPOSED FUTURE TRANSMISSION PIPELINE
- JACK AND BORE CROSSING
- WELLFIELD
- STRUCTURE
- VALVE
- METER
- WATER TREATMENT PLANT (WTP)

N

FEET
0 2000 4000 6000 8000

PRELIMINARY DESIGN PLAN
FOR
RAW WATER
TRANSMISSION PIPELINE
NORTH SYSTEM
FIGURE 2-1

JMM



LEGEND

- PROPOSED NEW TRANSMISSION PIPELINE
- EXISTING TRANSMISSION PIPELINE
- JACK AND BORE CROSSING
- WELLFIELD
- STRUCTURE
- VALVE
- METER
- WATER TREATMENT PLANT (WTP)

N

FEET

0 2000 4000 6000 8000

PRELIMINARY DESIGN PLAN
FOR
RAW WATER
TRANSMISSION PIPELINE
SOUTH SYSTEM

FIGURE 3-1

JMM

ATTACHMENT TO BRIAN PICCOLO AGREEMENT
EXAMPLE CALCULATION OF EXCESSIVE FLOW CHARGES

Date	Flow (1,000 gal)	% Over AMDF	2x% Over AMDF	Charge ($0.10/1000 gal)	Notes: (AMDF = Annual Maximum Daily Flow) (AMDF = 8,000,000 gal/day)
1	6,000	0.00%	0%	$600	
2	9,000	12.50%	25%	$900	First day over AMDF **
3	6,000	0.00%	0%	$600	
4	9,000	12.50%	25%	$900	Second successive day over AMDF **
5	10,000	25.00%	50%	$1,000	First day of penalty
6	12,000	50.00%	100%	$1,200	
7	11,000	37.50%	75%	$1,100	
8	10,000	25.00%	50%	$1,000	
9	9,000	12.50%	25%	$900	Last day of overage
10	7,000	0.00%	0%	$700	
11	6,000	0.00%	0%	$600	
12	5,000	0.00%	0%	$500	
13	5,000	0.00%	0%	$500	
14	5,000	0.00%	0%	$500	
15	5,000	0.00%	0%	$500	
16	5,000	0.00%	0%	$500	
17	5,000	0.00%	0%	$500	
18	5,000	0.00%	0%	$500	
19	5,000	0.00%	0%	$500	
20	5,000	0.00%	0%	$500	
21	5,000	0.00%	0%	$500	
22	5,000	0.00%	0%	$500	
23	5,000	0.00%	0%	$500	
24	5,000	0.00%	0%	$500	
25	5,000	0.00%	0%	$500	
26	5,000	0.00%	0%	$500	
27	6,000	0.00%	0%	$600	
28	8,000	0.00%	0%	$800	
29	8,000	0.00%	0%	$800	
30	8,000	0.00%	0%	$800	
1	7,000	0.00%	0%	$700	**$20,000 Monthly charge**
2	7,000	0.00%	0%	$700	**10% Average 2 x Overage ** **
3	8,000	0.00%	0%	$800	**$2,000 Penalty ** **
4	8,000	0.00%	0%	$800	**$22,000 Monthly charge with penalty**
5	8,000	0.00%	0%	$800	
6	8,000	0.00%	0%	$800	** Excludes first two days.
7	8,000	0.00%	0%	$800	
8	8,000	0.00%	0%	$800	
9	8,000	0.00%	0%	$800	
10	8,000	0.00%	0%	$800	30 consecutive days without overage
11	10,000	25.00%	50%	$1,000	First day over AMDF
12	8,000	0.00%	0%	$800	
13	10,000	25.00%	50%	$1,000	Second successive day over AMDF
14	9,000	12.50%	25%	$900	First day of penalty
15	9,000	12.50%	25%	$900	...

PENALTY.XLS

JGM 11/11/93

ACKNOWLEDGMENT

STATE OF FLORIDA)
COUNTY OF BROWARD)

The foregoing instrument was acknowledged before me this _____ day of _____, 199___, by _____, Chair of the Board of County Commissioners of Broward County, a political subdivision of the State of Florida, on behalf of the County. He/she is personally known to me or who has produced _____ as identification.

_____
Notary Public

_____
Name Typed, Printed or Stamped
Commission No. _____
My Commission Expires:

STATE OF FLORIDA)
COUNTY OF BROWARD)

The foregoing instrument was acknowledged before me this _____ day of _____, 199___, by Mara Giulianti, Mayor of the City of Hollywood, a municipal corporation of the State of Florida, on behalf of the corporation. He/she is personally known to me or who has produced _____ as identification.

_____
Notary Public

_____
Name Typed, Printed or Stamped
Commission No. _____
My Commission Expires:

EXHIBIT A

3A Service Area

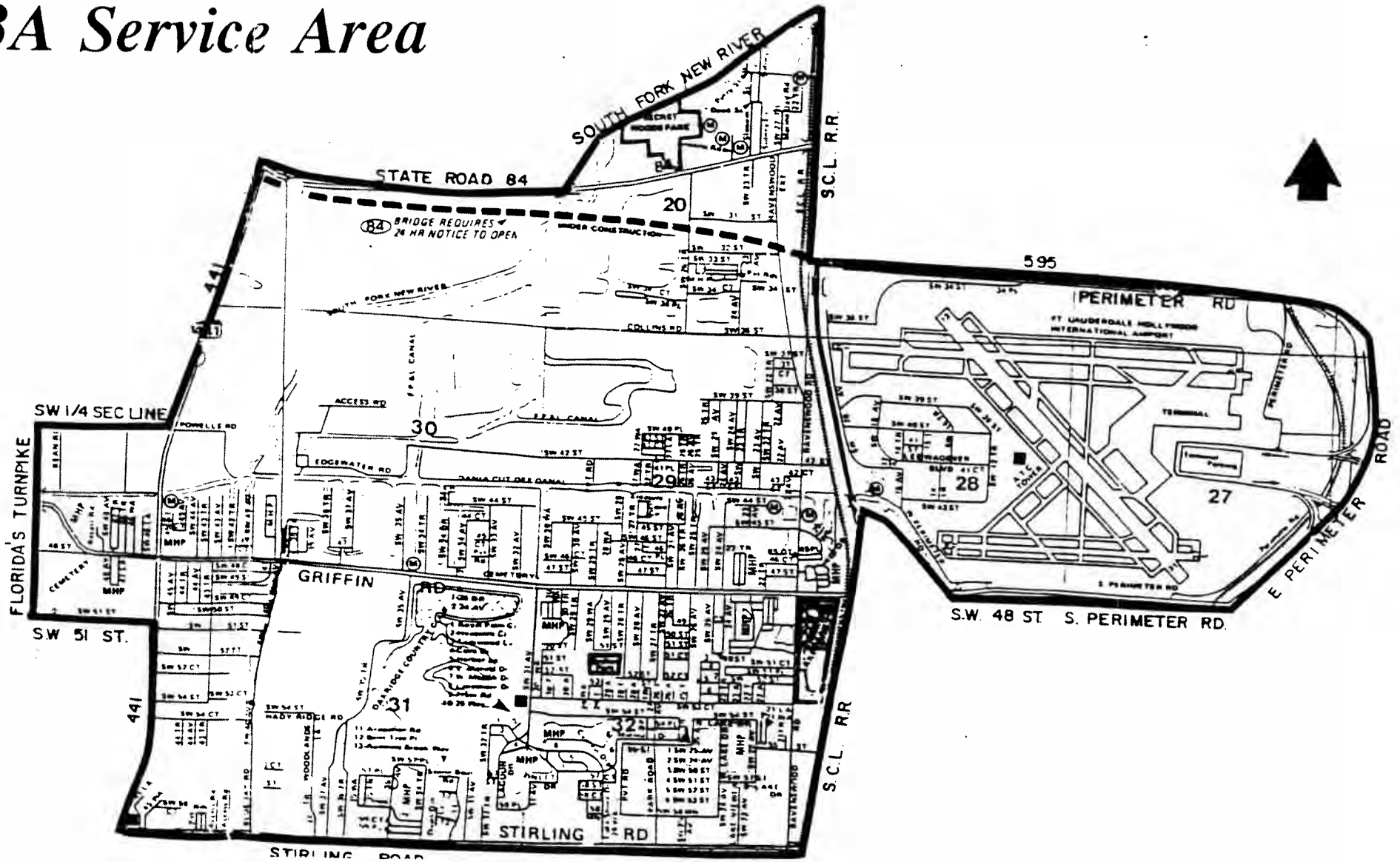
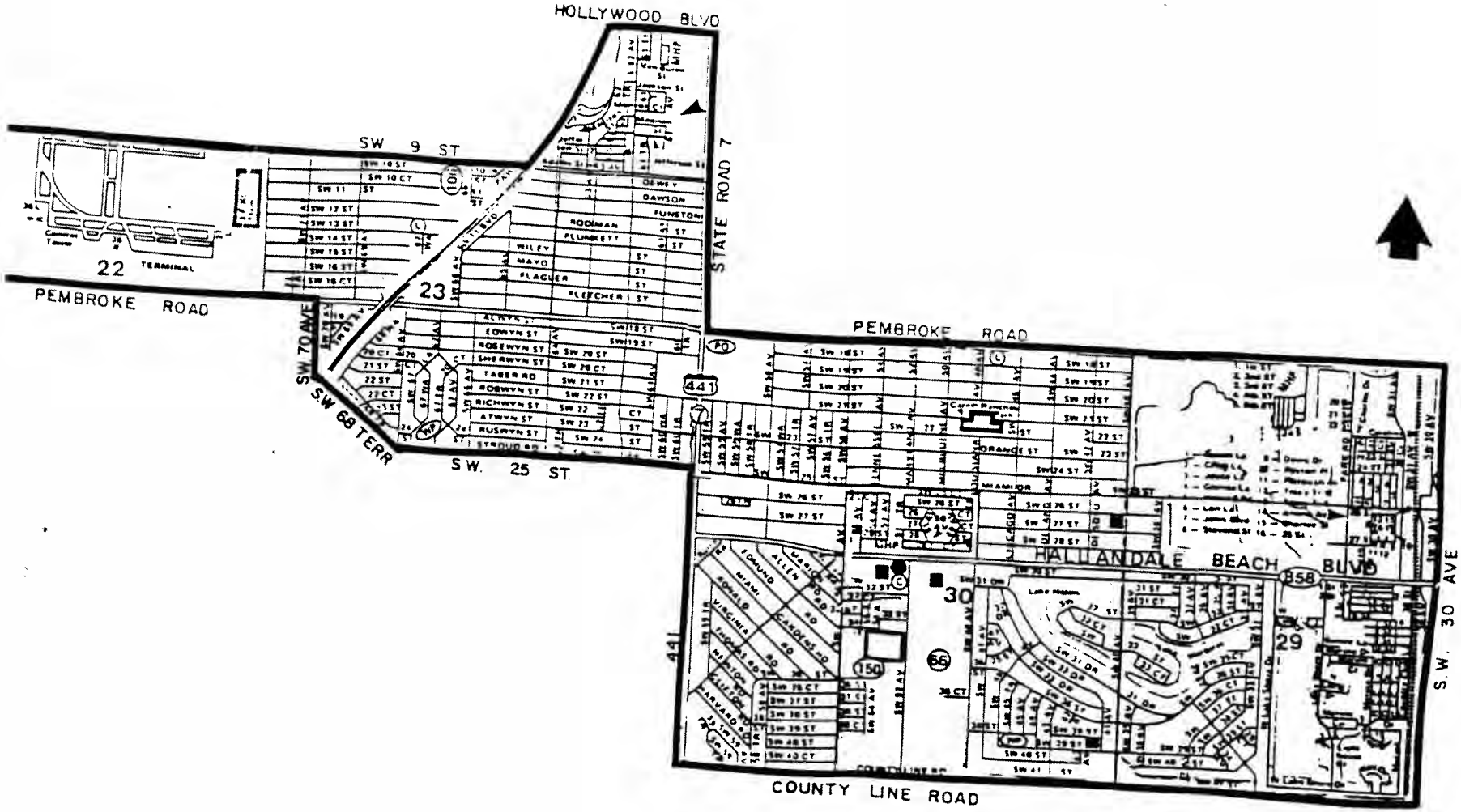
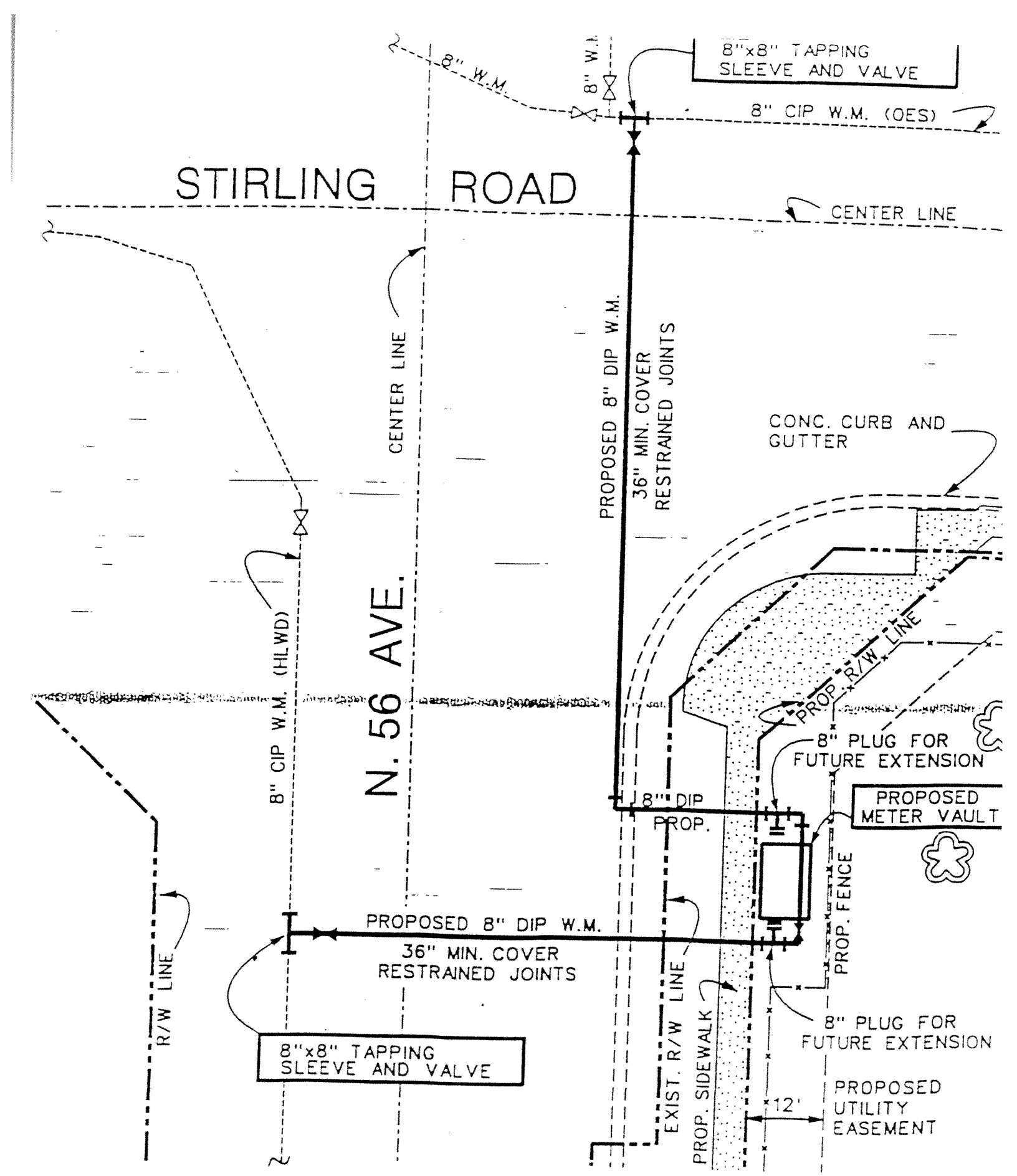


EXHIBIT B

3B/3C Service Area

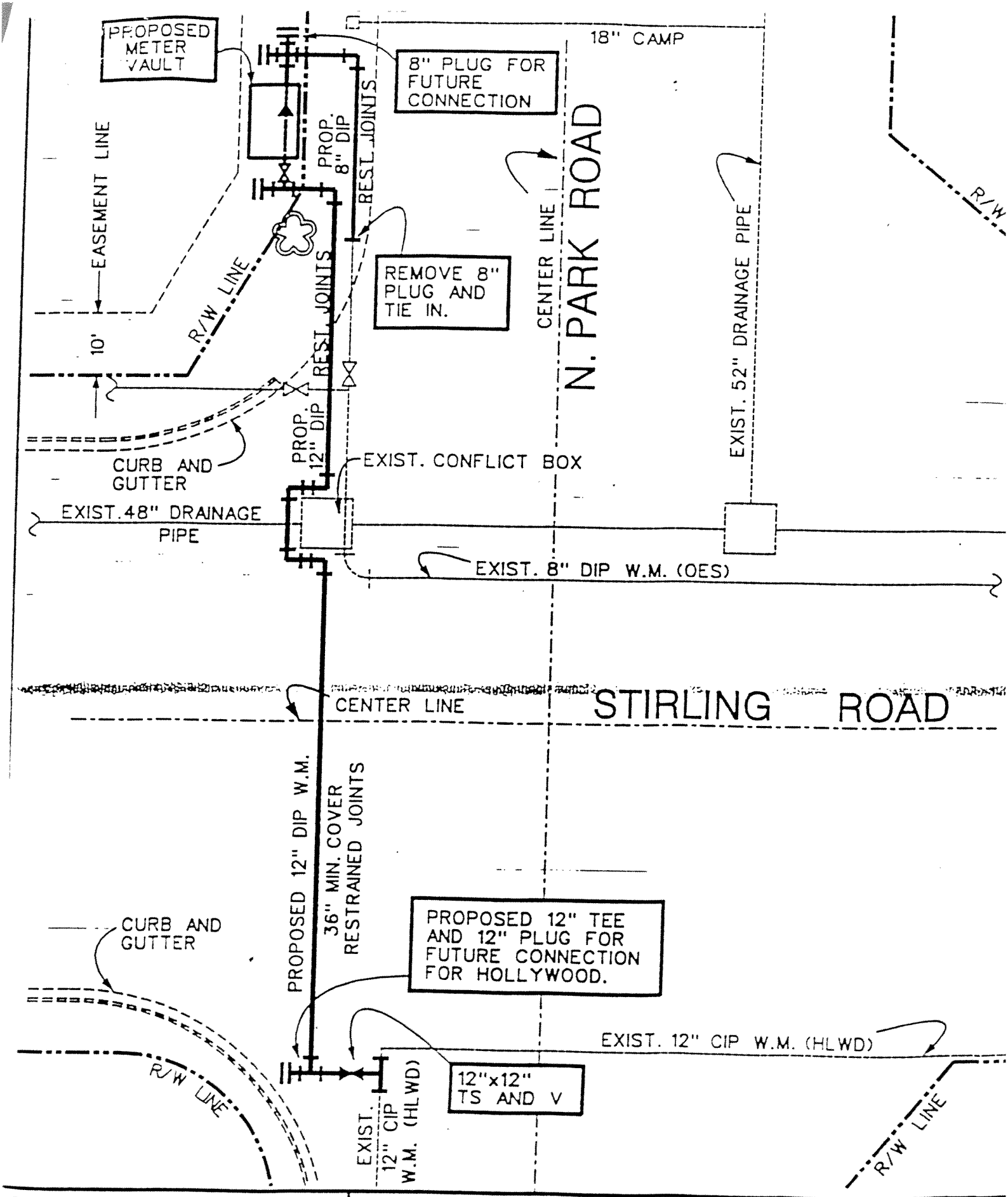




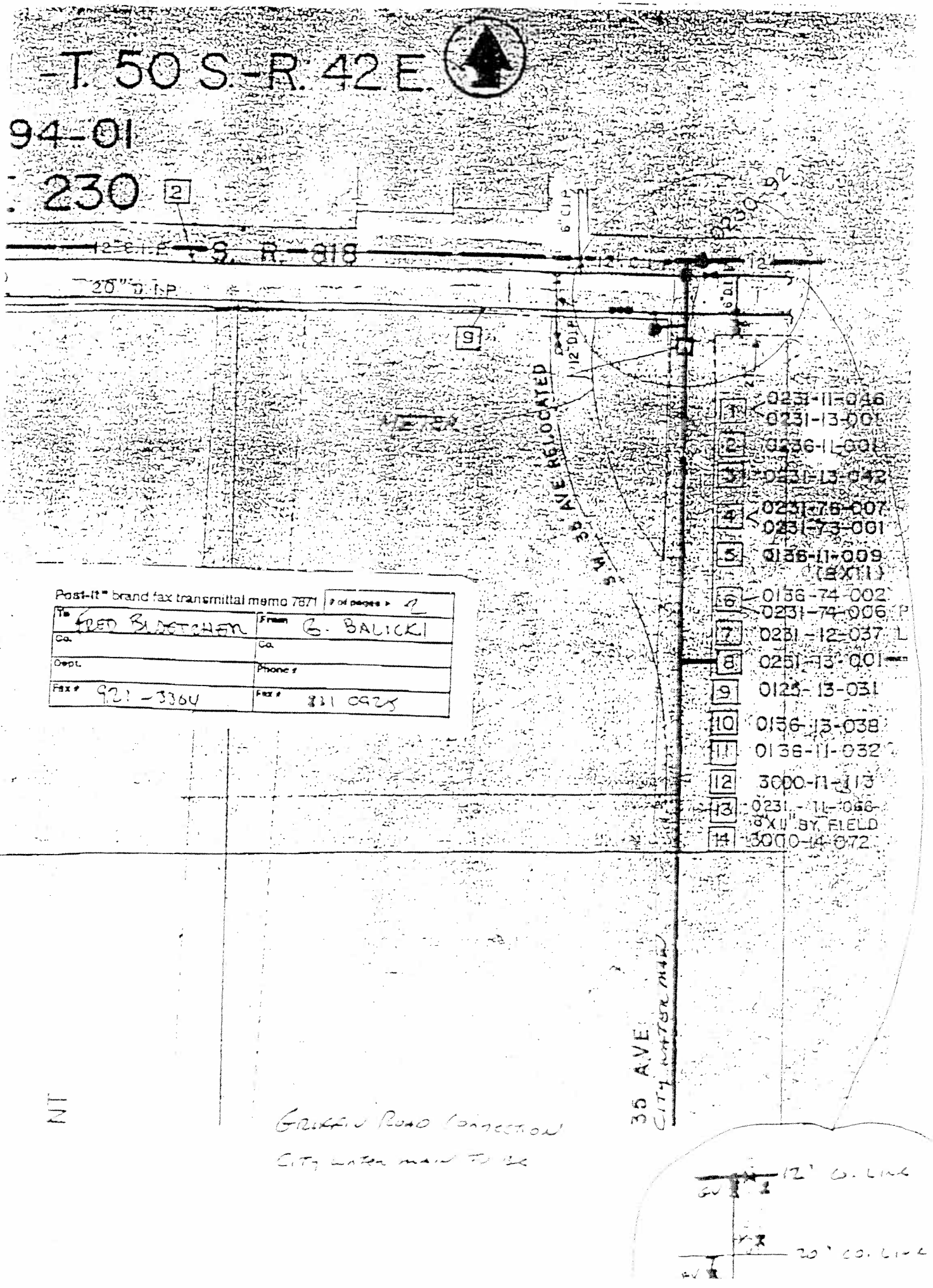
Date:	Jul. 11, 1995
Scale:	1" = 20'
Drawn By:	E.A. Jackson

EXHIBIT C 1 of 2

WATER MASTER METER LOCATION NO.1
(EAST SIDE OF N. 56 AVE. AND STIRLING ROAD)



Date: Jul. 11, 1995	EXHIBIT C 2 of 2
Scale: 1"=20'	WATER MASTER METER LOCATION NO.2
Drawn By: E.A. Jackson	(WEST SIDE OF N. PARK ROAD
BROWARD COUNTY (O. F. 2	AND STIRLING ROAD)



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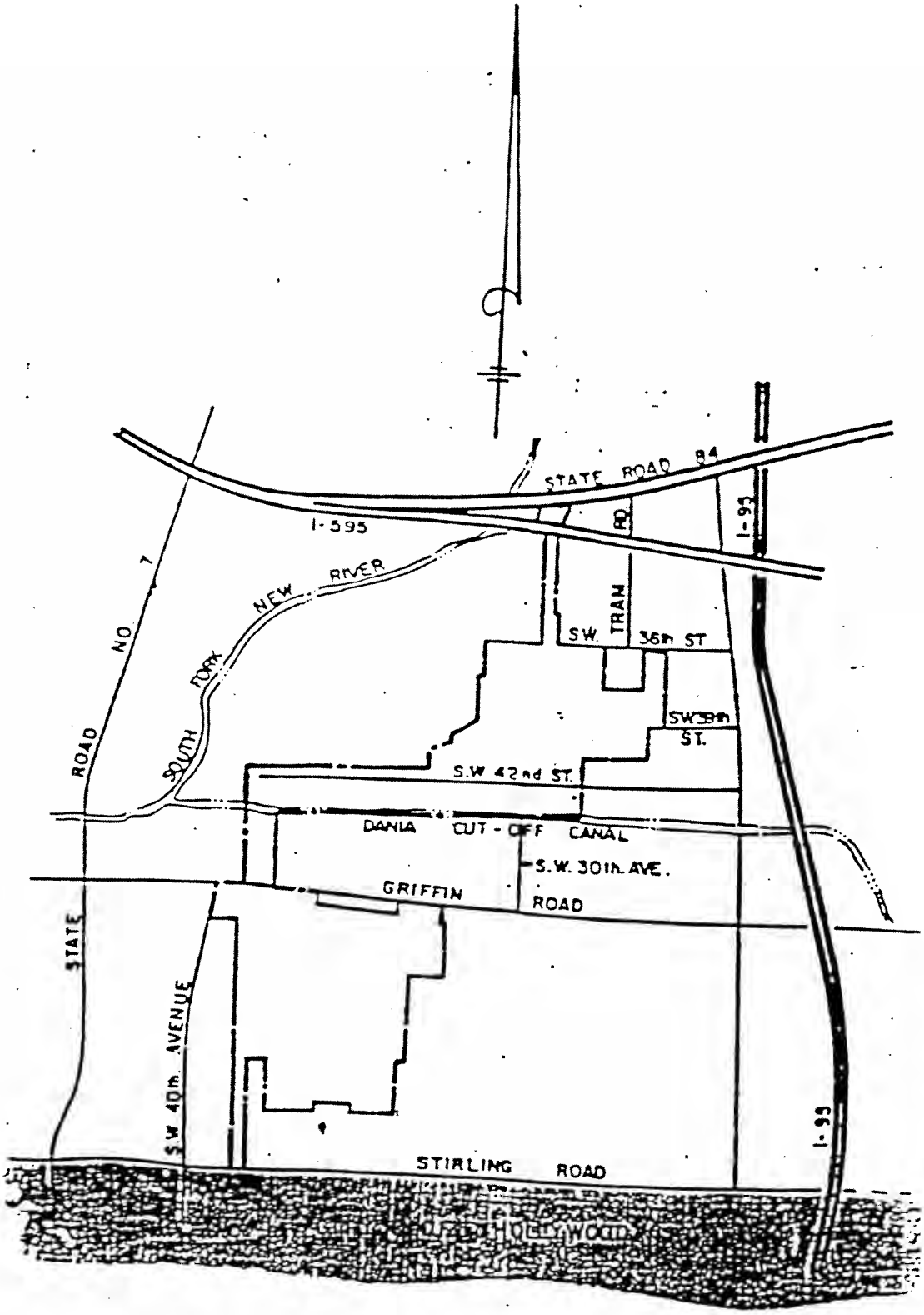
To FRED BLEICHER	From G. BALICKI
Co.	Co.
Dept.	Phone #
Fax # 921-3364	Fax # 831 0925


STATE ROAD 84
I-595
I-95
NEW RIVER
SOUTH FORK
NO 7
ROAD
SW TRAN
SW 36th ST
SW 39th ST.
S.W 42nd ST.
DANIA CUT - OFF CANAL
S.W. 30th. AVE.
GRIFFIN ROAD
STATE
S.W 40th. AVENUE
STIRLING ROAD
I-95
HOLLYWOOD

All of Lots 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, less the North 253.0 feet of Lots 4, 5, 6, 7, 8 and 9, of Block 1; the Southeast quarter of Block 2; all of Lots 3, 4, 5 and 6, of Block 3; all of Lots 6, 7, 8 and 9, together with Lot 10, less the South four acres thereof, Block 4, Section 31, Township 50 South, Range 42 East, according to the Plat thereof, recorded in Plat Book 2, Page 32, of the Public Records of Dade County, Florida.

TOGETHER WITH lots 3, 4, 5, 6, 7, 8 and the N. 609.9' feet of lot 9, lots 13, 14 of Block 2, lots 8 and 13, Block 3, Section 31, Township 50 south Range 42 East, according to the plat thereof, recorded in Plat Book 2, page 32 of the public records of Dade County, Florida.

TOGETHER WITH all of Block 1; Block 2, less the West 454 feet thereof, of DONNA SUBDIVISION, according to the Plat thereof, recorded in Plat Book 55, Page 24, of the Public Records of Broward County, Florida.

TOGETHER WITH:

A parcel of land situate, lying and being in the Southwest quarter (S. W. 1/4) of Section 30, Township 50 South, Range 42 East. And more particularly described

as follows: Beginning at a point on the South line of said Section 30, 3018.11 feet Westerly of the SE corner of said Section 30; thence Northerly along the West boundary of Davis Isles, a subdivision recorded in the Public Records of Broward County in Plat Book 29, Page 19, to the South boundary of the Dania cut-off Canal; thence Westerly along the South bank of the Dania cut-off Canal for a distance of 505 feet to a point; thence Southerly along a line 505 feet West of and parallel to the West boundary of said Davis Isles to a point on the South line of said Section 30; thence Easterly along the South line of said Section 30 to the point of beginning.

TOGETHER WITH the East 900.00 feet of Northeast one-quarter (N.E. 1/4) of the Southwest one-quarter (S.W. 1/4) of Section 30, Township 50, south Range 42 East lying north of the south right-of-way line of the Dania cut-off Canal.

TOGETHER WITH a portion of Section 20, Township 50 South, Range 42 East, and a portion of Section 29, of the Plat of Sections 28, 29, 31 and 32, Township 50 South, Range 42 East, according to the Plat thereof, as recorded in Plat Book 2, Page 32 of the Public records of Dade County, Florida, and also being a portion of Section 30, Township 50 South, Range 42 East, According to the Plat thereof, as recorded in Plat Book 14, Page 37 of the Public Records of Broward County, Florida and being more particularly described as follows:

Commencing at the Southwest corner of the Northwest one-quarter (N.W. 1/4) of said Section 20; thence north 03°32'19" west, along the west line of the Northwest one-quarter (N.W. 1/4) of said Section 20, a distance of 44.64 feet to a point on the south right-of-way line of State Road No. 84 as shown on the Florida Department of Transportation Right-Of-Way Map, Section 86095-2404, Sheet 3 of 8 Sheets; thence North 82°29'59" East, a distance of 1143.12 feet to the POINT OF BEGINNING of this description, thence continue North 82°29'59" East, a distance of 229.91 feet to the point of curvature of a circular curve, concave Northwesterly; thence Northeasterly along the arc of said curve, having a radius of 5829.65 feet, a central angle of 03°23'07" and an arc distance of 344.44 feet, the last three

described courses being along the said south right-of-way line of State Road No. 84; thence South 01°54'32" East, along a line not radial to the last described curve, a distance of 180.18 feet; thence South 32°58'54" West, a distance of 420.07 feet to a point on the north right-of-way line of I-595 as shown on the aforesaid Florida Department of Transportation Right-Of-Way Map; thence North 83 30'21" West, a distance of 50.00 feet to a point, said point hereinafter to be known as Point "A"; thence continue North 83°30'21" West, a distance of 102.53 feet; thence North 84°13'41" West, a distance of 294.84 feet to a point, said point bearing North 06°10'39" East from the radius point of the next described curve; thence northwesterly along the arc of said curve, having a radius of 11587.68 feet, a central angle of 00°18'13" and an arc distance of 61.31 feet, the last four described courses being along the said North right-of-way line of I-595; thence North 42°50'02" East, along a line not radial to the last described curve, a distance of 32.08 feet to the point of curvature of a circular curve, concave Northwesterly; thence Northeasterly and Northerly along the arc of said curve, having a radius of 520.50 feet, a central angle of 44°41'09" and an arc distance of 405.94 feet to the point of beginning.

TOGETHER WITH:

Commencing at the aforesaid point "A"; thence South 01°51'24" East, a distance of 228.01 feet to the point of beginning of this description, said point being on the South right-of-way line of said I-595; thence continue South 01°51'24" East, a distance of 6.53 feet; thence South 06 24'101" East, a distance of 179.38 feet to a point on the North line of the South three-quarters (S. 3/4) of the Southwest one-quarter (S.W. 1/4) of said Section 20; thence South 89°20'02" West, along the said North line of the South three-quarter (S. 3/4) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 44.20 feet; thence South 02°51'05" East, a distance of 15.01 feet; thence South 00°58'17" East, a distance of 388.12 feet; thence South 02°43'26" East, along a line parallel with and 40.00 feet East of as mesured at right angles to the West line of the East one-half (E. 1/2) of the said Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 672.30 feet; thence

South 89°34'05" West, along a line parallel with and 60.00 feet South as measured at right angles to the North line of the South one-half (S. 1/2) of the North one-half (N. 1/2) of the Southeast one-quarter (S.E. 1/4) of the said Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 40.03 feet to a point on the said West line of the East one-half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20; thence South 02°43'26" East, along the said West line of the East one half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 280.77 feet to a point on the North line of the South one-half (S. 1/2) of the South one-half (S. 1/2) of said Southwest one-quarter (S.W. 1/4) of Section 20; thence North 89°38'51" East, along the said North line of the South one-half (S. 1/2) of the South one-half (S. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 100.09 feet; thence South 02°43'26" East, along a line parallel with and 100.00 feet East of as measured at right angles to the said West line of the East one half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 648.89 feet; thence South 89°48'27" West, along a line parallel with and 35.00 feet North of as measured at right angles to the South line of the said Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 100.10 feet to a point on said West line of the East one-half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20; thence South 02°43'26" East, along the said West line of the East one-half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 35.03 feet to the Southwest corner of the Southeast one-quarter (S.E. 1/4) of the said Southwest one-quarter (S.W. 1/4) of Section 20; thence North 89°48'27" East, along the said South line of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 965.68 feet to the northwest corner of the West one-half (W. 1/2) of Lot 4, Block 2, of said Plat of Section 29; thence South 01°29'09" East, along the East line of the said West one-half (W. 1/2) of Lot 4 and a portion of the East line of the West one-half (W. 1/2) of lot 3, both of said block 2, a distance of 742.81 feet to a point on the top of bank of that certain lake lying in said Lots 3 and 4, and also lying in Lots 8 and 10, block 1, of said Plat of Section 29; thence South 54°37'54" West, a distance of 7.21 feet; thence South 45°20'04" West, a distance of 17.63 feet, thence South 37°47'08" West, a distance of 18.19 feet; thence South 31°04'38" East, a

distance of 12.50 feet; thence South 15°47'42" West a distance of 43.97 feet the last five (5) courses and distances being along the meandering westerly top of bank of said lake; thence South 76°44'01" East, a distance of 24.62 feet; thence South 88° 58'16" East, a distance of 268.89 feet, the last two (2) courses and distances being along the wandering southerly top of bank of said lake; thence North 32°17'02" East, a distance of 30.90 feet; thence North 54°36'05" East, a distance of 27.21 feet; thence North 81°38'15" East, a distance of 44.26 feet; thence North 72°24'51" East, distance of 24.06 feet; thence North 84°42'20" East, a distance of 44.10 feet to a point, said point being 100.00 feet South of as measured at right angles to the North line of said Lot 10; thence North 88°25'05" East, along a line parallel with and 100.00 feet South of as measured at right angles to the said North lineof Lot 10, a distance of 577.84 feet to a point on the West line of Lot 8, of said Block 1; thence North 01°26'55" West, along a portion of the said West line of Lot 8, a distance of 767.08 feet to the North line of the Northeast one-quarter (N.E. 1/4) of said Section 29; thence North 88°18'55" East, along a portion of the said North line of the Northeast one-quarter (N.E. 1/4) of Section 29, also being the North line of said Lot 8, a distance of 329.14 feet to the Northeast corner of said Lot 8; thence South 01 27'08" East, along the East line of Lot 8, a distance of 1335.34 feet to the Southeast corner of said Lot 8; thence South 88°30'48" West, along the South line of said Lot 8, a distance of 329.03 feet to the Northeast corner of Lot 11, of said Block 1; thence South 01°27'29" East, along the East line of said Lot 11, a distance of 667.14 feet to the Southeast corner of said Lot 11; thence South 88°36'56" West, along the South line of said Lot 11, a distance of 657.97 feet to the Southwest corner of said Lot 11; thence South 88°59'26" West, along the South line of Lot 2, of said Block 2, a distance of 642.02 feet to the Southwest corner of said Lot 2; thence South 01°31'25" East, along the West line of Lot 1, of said Block 2, a distance of 669.03 feet to the Southwest corner of said Lot 1; thence South along a portion of the West line of Lot 4, Block 3, of said Plat of Section 29, to the south right-of-way line of the Dania cut-off Canal, thence westerly along said South right-of-way line to a point on the west line of the Southeast one-quarter S.E. (1/4) of said Section 30, thence North 01°41'18" West, along a portion of the said West line

of the Southeast one-quarter (S.E. 1/4) of Section 30, to a point of the South line of that certain 100 foot by 200 foot parcel as described in a Deed recorded in Deed Book 548, Page 259 of the Public Records of Broward County, Florida; thence North 89°09'16" East, along the said South line of that certain 100 foot by 200 foot parcel, a distance of 100.01 feet; thence North 01°41'18" West, along a portion of the East line of said 100 foot by 200 foot parcel, a distance of 50.01 feet to a point, said point being on the southerly line of that certain 100 foot canal easement as recorded in Deed Book 534, Page 64 of the Public Records of Broward County, Florida; thence North 89°09'16" East, along a portion of the said southerly line of that certain 100 foot canal easement, a distance of 138.70 feet to a point, said point being 40.00 feet North of as measured at right angles to the North line of the said Southeast one-quarter (S.E. 1/4) of Section 30; thence South 88°12'52" East, along a line parallel with 40.00 feet North of as measured at right angles to the said North line of the Southeast one-quarter (S.E. 1/4) of Section 30, a distance of 1137.74 feet; thence North 01°41'18" West, along a line parallel with and 1374.33 feet East of as measured at right angles to the west line of the Northeast one-quarter (N.E. 1/4) of said Section 30, a distance of 494.15 feet to a point on a Southerly line of that certain tract of land as described in Official Records Book 11773, Page 319 of the Public Records of Broward County, florida, thence North 87°10'50" East, a distance of 146.05 feet to a point on a Northerly line of said 100 foot canal easement; thence north 64°25'31" East, a distance of 250.00 feet to the point of curvature of a circular curve, concave Southeasterly; thence Northeasterly and Easterly along the arc of said curve, having a radius of 300.00 feet, a central angle of 24°35'20" and an arc distance of 128.75 feet to a point of tangency; thence North 89°00'51" East, a distance of 150.00 feet, the last three (3) courses and distances being along a portion of the said Northerly line of that certain 100 foot canal easement; thence North 00°59'09" West, a distance of 150.00 feet; thence north 58°55'51" East, a distance of 513.52 feet to a point, said point being 100.00 feet West of as measured at right angles to the West line of the Northwest one-quarter (N.W. 1/4) of said Section 29; thence North 01°41'35" West, along a line parallel with 100.00 feet West of as measured at right angles to the said West line of the

Northwest one-quarter (N.W. 1/4) of Section 29, a distance of 900.00 feet; thence North 89°34'28" East, a distance of 100.02 feet to the Southwest corner of lot 9, of said Block 2; thence North 01°41'35" West along the West line of said Lot 9, a distance of 678.23 feet to the Northwest corner of said Lot 9, said corner also being the Northwest corner of said Section 29, the last nine (9) courses being along the southeasterly line of said Tract of land described in official Records Book 11773, Page 319; thence North 89°48'27" East, along a portion of the said South line of the Southwest one-quarter (S.W. 1/4) of said Section 20, a distance of 1153.70 feet to a point, said point being 133.72 feet West of as measured at right angles to the said West line of the East one-half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20; thence North 02°43'26" West, along a line parallel with 133.72 feet West of as measured at right angles to the said West line of the East one half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 681.27 feet to a point on the said North line of the South one-half (S. 1/2) of the South one-half (S. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20; thence North 89°38'50" East, along the said North line of the South one-half (S. 1/2) of the South one-half (S. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 0.48 feet; thence North 03°59'55" East, a distance of 798.52 feet; thence North 02°43'26" West, along a line parallel with and 40.00 feet West of as measured at right angles to the said West line of the East one-half (E. 1/2) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 568.16 feet to a point on the said North line of the South three-quarters (S. 3/4) of the Southwest one-quarter (S.W. 1/4) of Section 20; thence South 89°20'02" West, along the said North line of the South three-quarters (S. 3/4) of the Southwest one-quarter (S.W. 1/4) of Section 20, a distance of 42.39 feet; thence North 02°43'29" West, a distance of 209.61 feet to a point on the said South right-of-way line of I-595, said point bearing North 07°29'14" East from the radius point of the next herein described curve; thence Southeasterly, along the arc of said curve, having a radius of 11350.58 feet, a central angle of 0°09'09" and an arc distance of 30.23 feet to the point of tangency; thence South 82°21'36" East, a distance of 139.51 feet to the point of beginning, the last two (2) courses being along the said South right-of-way line of I-595.

TOGETHER WITH Stirling Road, Griffin Road, and all public rights-of ways adjoining or lying between the above described parcels of land.

Said lands situate, lying and being in Broward County, Florida.

Said lands containing 700 acres more or less.

APPENDIX C

2004 AMENDMENT TO THE INTERLOCAL AGREEMENT FOR THE BULK SALE OF POTABLE WATER BETWEEN BROWARD COUNTY AND THE CITY OF HOLLYWOOD

R-2004-08

FIRST AMENDMENT TO INTERLOCAL AGREEMENT

FOR THE BULK SALE OF POTABLE WATER

BETWEEN

BROWARD COUNTY, FLORIDA

AND

THE CITY OF HOLLYWOOD, FLORIDA

FIRST AMENDMENT TO INTERLOCAL AGREEMENT
FOR THE BULK SALE OF POTABLE WATER BETWEEN
BROWARD COUNTY, FLORIDA AND
THE CITY OF HOLLYWOOD, FLORIDA

This is a First Amendment to the Interlocal Agreement for the Bulk Sale of Potable Water between BROWARD COUNTY, a political subdivision of the state of Florida, its successors and assigns, hereinafter referred to as "COUNTY," through its Board of County Commissioners,

AND

CITY OF HOLLYWOOD, a municipal corporation located in Broward County, Florida, and organized and existing under the laws of the state of Florida, its successors and assigns, hereinafter referred to as "CITY";

WHEREAS, COUNTY and CITY entered into an Interlocal Agreement for the Bulk Sale of Potable Water, dated October 15, 1996, for the Bulk Sale of Potable Water; and

WHEREAS, the Agreement provided for the purchase of water at different price levels which were to begin at the occurrence of certain events. Many of the events did not occur at the times originally contemplated by the parties. In addition, the Agreement specified amounts of water to be purchased by COUNTY through the year 2000 but not beyond. All of which has caused administrative disagreements as to the rights and obligations of the parties under the original terms of the Agreement; and

WHEREAS, the Parties have engaged in negotiations and discussions in an effort to resolve all claims and matters which have arisen since the inception of this Agreement and have agreed to release the other from any and all claims, demands, damages, causes of action, actions and losses of every kind and nature; NOW THEREFORE

IN CONSIDERATION of the mutual terms and conditions, promises, covenants and payments hereinafter set forth, COUNTY and CITY agree as follows:

1. Each and every Whereas clause set forth above is a true and correct recital and representation and is incorporated herein as if set forth fully.

2. Section 2, OBLIGATIONS OF CITY/COUNTY FOR CONNECTIONS, is hereby amended to read as follows:

a. It shall be the City's obligation at its sole cost and expense, to design and construct facilities to the 3A plant site Point of Connection (Exhibit ~~Consolidated Water and Wastewater System~~ "C-1"). It shall be the obligation of County, at its

sole cost and expense, to design, construct and install connection, appurtenances and master meters to physically connect County's system to City's regional water transmissions system at locations shown on Exhibit ~~C~~ "C-1", attached hereto and made a part hereof, in accordance with plans, specifications and engineering data as prepared, certified and submitted by a registered professional engineer in the State of Florida, and as approved by the appropriate regulatory agencies and the City's Public Utilities Director or authorized representative. As used in this Agreement, the term "Point of Connection" means any location(s) shown on Exhibit ~~C~~ "C-1" where County's system is physically connected to the City's system by a master meter(s).

b. County shall at its expense retain the services of the same registered professional engineer who prepared the plans and specifications during construction for the purpose of providing the necessary inspections and supervision of the construction work, hereinafter referred to as "Work" for those facilities described in Exhibit ~~C~~ "C-1".

. . .

3. Section 4, CITY OBLIGATIONS TO MAINTAIN APPURTENANCES, is hereby amended as follows:

4. CITY OBLIGATIONS TO MAINTAIN APPURTENANCES: Upon completion of the Work by County or County's contractor, and acceptance of the Work by City, City shall thereafter, at its expense, own, operate, and maintain all facilities on the City's side of the Point of Connection (s) as shown on Exhibit ~~C~~ "C-1", which includes but is not limited to the master meter(s), connection piping and appurtenances within those easements granted to City for such purposes.

4. Section 9, COUNTY TO PAY FOR COST OF WATER SUPPLIED, is hereby amended as follows:

9. COUNTY TO PAY FOR COST OF WATER SUPPLIED:

a. County shall pay City the prevailing City rate for bulk water service, as set from time to time by the City Commission after an appropriate public hearing, and after written notice to County of any proposed changes. Said water rate shall be based on the volume of water passing through the meter locations described in Exhibit C. The initial rate for bulk service shall be as follows:

1. Until October 1, 1996, the rate shall be $0.78 per one thousand gallons of water delivered through the meter locations indicated on Exhibit C.

2. Until April 1, 1997, or such time as the District 3A water treatment plant no longer treats water for potable purposes, whichever occurs last, the rate shall be $0.84 per one thousand gallons of water delivered through the meter locations indicated on Exhibit C.

3. At such time as the District 3A water treatment plant no longer treats water for potable purposes, or April 1, 1997 whichever occurs last, the rate shall be $0.92 per one thousand gallons of water delivered through the meter locations indicated on Exhibit C (except as provided in (2) above).

4. From January 1, 2003 through December 31, 2003, the rate shall be $0.97 per one thousand gallons of water delivered through the meter locations indicated on Exhibit "C-1".

b. Thereafter, beginning after December 31, 2003, the rate payable by COUNTY, per one thousand (1,000) gallons of potable water delivered through the meters located in Exhibit "C-1", shall be based upon a formula of a Base Rate plus the Rate charged for Large Users of the County's Regional Raw Water System (including the Improvement, Repair and Replacement surcharge), and any Annual Adjustment subsequently attributed to the Regional Raw Water Rate. The Base Rate shall be set and shall only be adjusted as follows:

1. Upon the execution of this Agreement by County, the Base Rate shall be Zero and 99/100 Dollars ($0.99).

2. On October 1, 2004, the Base Rate shall be One and 01/100 Dollars ($1.01).

3. Beginning on October 1, 2005, and annually thereafter, City may increase the Base Rate by an amount not to exceed the percentage of increase enacted for City's retail customers, which increase shall be deemed appropriate by a competent rate consulting professional. The "percentage of increase enacted for City's retail customers," phrase shall be determined by the percentage difference found from a comparison of the total of all retail water revenues, projected over all retail water user classes, when identical volumetric, unit and meter bases are used. All such increases enacted by City under this paragraph shall not be approved by City unless Forty-five (45) days written notice of such proposed change has been provided to County.

~~No Increase beyond $0.92 per one thousand gallons shall occur Prior to October 15, 1997. Any increase in the usage rate charged to County thereafter shall not exceed the percentage of increase enacted for City's retail customers, and as~~

~~deemed appropriate by a rate study conducted by a competent rate consulting professional. "The percentage of increase enacted for City's retail customers," as used to define any rate increases contemplated under this Agreement, shall be determined by the percentage difference found from a comparison of the total of all retail water revenues, projected over all retail water user classes, when identical volumetric, unit and meter bases are used. No increase shall be approved by City without 45 days' written notice to County of said proposed increase.~~

~~b~~c. All said bulk water rates shall be nondiscriminatory and shall be the same for all like users on the system.

~~c~~d. City shall bill County on a monthly basis for the amount of water used on the meters. The bill shall be considered delinquent if unpaid within 45 days after rendering to County by City.

~~d~~e. The sale of water by City to County shall occur on County's side of the meters, at the Points of Connection, to be located as shown in Exhibit C.

5. Section 10, CITY TO HAVE EXCLUSIVE RIGHT TO PROVIDE SERVICE, is hereby amended as follows:

10. CITY TO HAVE EXCLUSIVE RIGHT TO PROVIDE SERVICE: City shall have the exclusive right to furnish water service to County customers within the areas covered by this Agreement (see Exhibits ~~A~~ "A-1," and ~~B~~ "B-1"). However, City's exclusive right to furnish water to District 3 customers shall not include customers at the North Perry Airport. From time to time County and City may modify the exclusive right to serve certain customers through the mutual agreement of the City's and County's contract administrators. Notification as set forth in Section 26 "NOTICES" will be given by either party to initiate modification, and if no exception is taken within 30 days, the noted exceptions shall become permanent. County shall have the right to sell any portion of District 3, but only to the municipality within which the portion exists. Consummation of such a sale shall terminate this Agreement for the area purchased only, provided that the parties hereto agree to review and amend this Agreement to reflect the revised service area and flow projections.

6. Section 18, COUNTY FLOWS, is hereby amended as follows:

18. COUNTY FLOWS: Until December 31, 2003, County expects water demands for District 3 to be as shown on Exhibits D and "D-1", attached hereto and made a part hereof. Thereafter, as of January 1, 2004, COUNTY shall annually review its needs for potable water demands and project its future needs expressed in both average daily flow and maximum daily flow, to the best of its knowledge and ability.

The projections shall be made on an annual basis. These projections shall serve as a reasonable estimate of the future needs of the COUNTY. CITY shall use these annual projections for purposes of this Agreement and for planning, expansion, construction, modification, or alteration of CITY facilities. COUNTY will furnish each annual projection to CITY no later than the first day of June each year.

City agrees to provide water in such quantities to meet these demands at a more or less constant rate of flow. County agrees to maintain adequate storage facilities to meet peak demands for District 3. Maximum daily demands on the system shall not exceed 1.34 times the maximum daily demands shown on Exhibit D, "D-1" and thereafter as projected by County as specified above , without permission of City. Should County consistently exceed these amounts, City may impose a surcharge of up to twenty-five (25) percent on the excess water utilized, if directed by the City Commission.

7. Section 22, CITY TO SUPPLY WATER TO COUNTY, is hereby amended as follows:

22. CITY TO SUPPLY WATER TO COUNTY: City agrees to make every effort to provide water to County in the quantities specified in Exhibit D and "D-1", and as thereafter projected by County as specified in Section 18, in a manner similar to that of its retail customers.

8. Section 23, EMERGENCY INTERCONNECTS, is hereby amended as follows:

23. EMERGENCY INTERCONNECTS: No water from CITY's water system is to be used or disbursed by COUNTY or its agents outside the indicated service area to be served as shown in EXHIBITS ~~"A"~~ "A-1 and "B-1", attached hereto and made a part hereof except as provided by emergency interconnects with neighboring public systems not to be activated without the prior concurrence of CITY. CITY shall not be responsible for providing adequate pressure or flow through COUNTY's emergency interconnects to other public systems. From time to time, through County's and City's contract administrator, either may initiate modification of the emergency interconnects by providing written notification as set forth in Section 26 "NOTICES" and if no exception is taken within 30 days the noted modification shall become permanent.

9. The Parties do respectively release each other from all claims, demands, damages, causes of action, actions and losses of every kind and nature, whether known or unknown arising out of or related to this Agreement from the inception of this Agreement until the date of execution of this First Amendment. Further, the Parties mutually release and forever discharge each other and acknowledge, agree, and covenant for each of themselves and their respective successors and assigns, and irrevocably bind themselves

IN WITNESS WHEREOF, the parties hereto have made and executed this First Amendment to Agreement on the respective dates under each signature: BROWARD COUNTY through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice Mayor, authorized to execute same and CITY OF HOLLYWOOD, signing by and through its Mayor, duly authorized to execute same.

COUNTY

ATTEST:

Broward County Administrator, as
Ex-officio Clerk of the Broward
County Board of County Commissioners

COUNTY COMMISSIONERS CREATED OCT. 1ST 1915 BROWARD COUNTY FLORIDA

Approved as to Insurance
Requirements by
RISK MANAGEMENT DIVISION

By Mary M. Meister by D Stellenc 1/21/04
Director

BROWARD COUNTY, by and through its
BOARD OF COUNTY COMMISSIONERS

By Jane Liebman
Mayor

3rd day of February, 2004.

Approved as to form by
Office of County Attorney
Broward County, Florida
Edward A. Dion, County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By 1-15-104
Pamela M. Kane
Assistant County Attorney

FIRST AMENDMENT TO INTERLOCAL AGREEMENT FOR THE BULK SALE OF POTABLE WATER BETWEEN BROWARD COUNTY, FLORIDA AND THE CITY OF HOLLYWOOD, FLORIDA

WITNESSES:

CITY OF HOLLYWOOD

By _____
Mayor

_____ day of _____, 2004.

ATTEST:

By _____
City Clerk

_____
City Manager

_____ day of _____, 2004.

(CORPORATE SEAL)

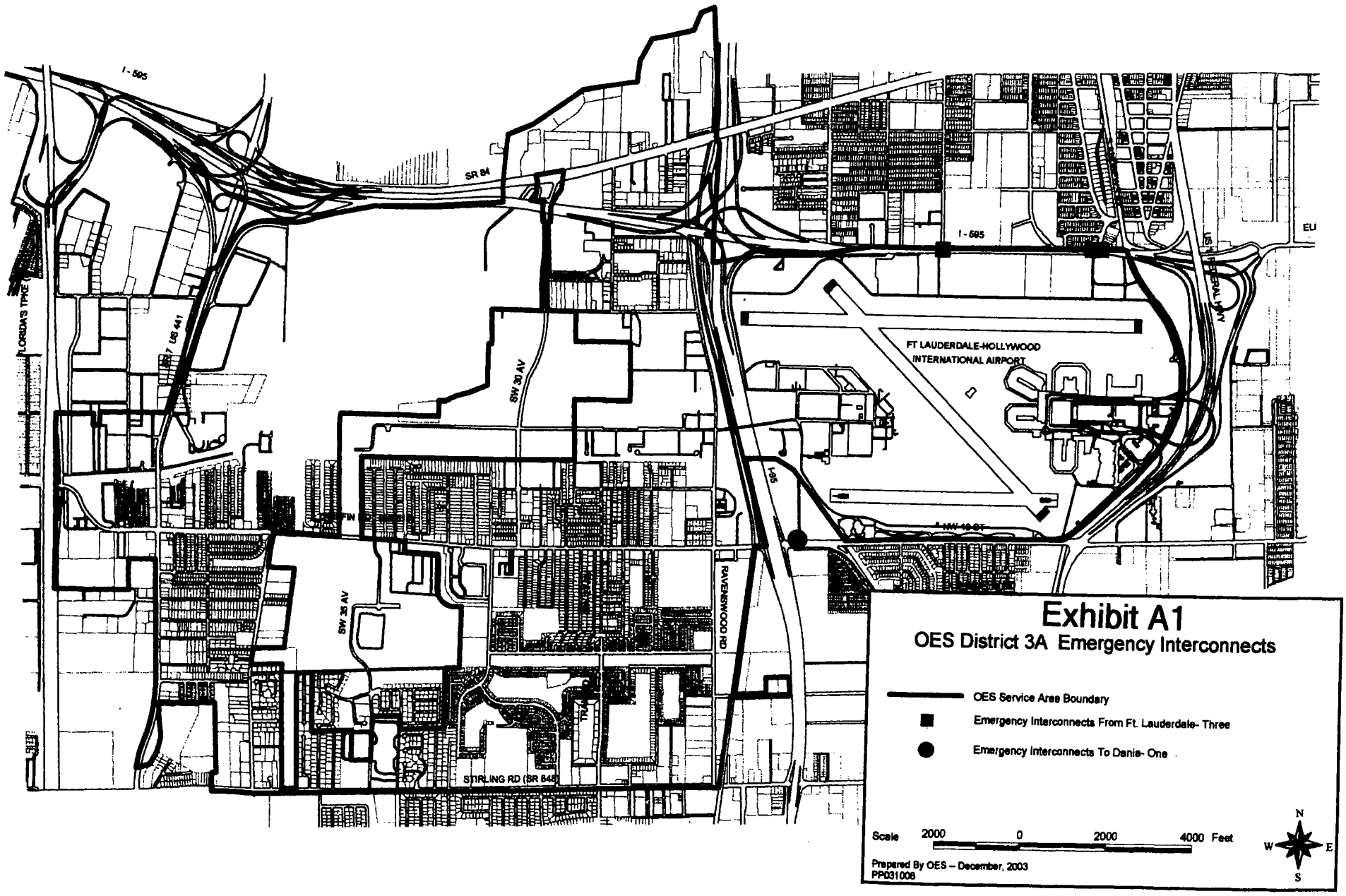
APPROVED AS TO FORM:

By _____
City Attorney

APPROVED AS TO FORM AND LEGALITY
FOR THE USE AND RELIANCE OF THE
CITY OF HOLLYWOOD, FLORIDA, ONLY.

BY: _____
DANIEL L. ABBOTT
CITY ATTORNEY

PMK
December 15, 2003
G:\DIV2\PMK\PMK03\AGREEMEN\HLWDPot.am1.WPD


I - 595
SR 84
I - 595
FT LAUDERDALE-HOLLYWOOD
INTERNATIONAL AIRPORT
SW 30 AV
SW 35 AV
I-95
RAVENSWOOD RD
STIRLING RD (SR 848)
Exhibit A1
OES District 3A Emergency Interconnects
OES Service Area Boundary
Emergency Interconnects From Ft. Lauderdale- Three
Emergency Interconnects To Dania- One
Scale 2000 0 2000 4000 Feet
N
W
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S
Prepared By OES – December, 2003
PP031008

Exhibit B1 (pg 1)

OES District 3BC Water Service Area Map and Points of Connection

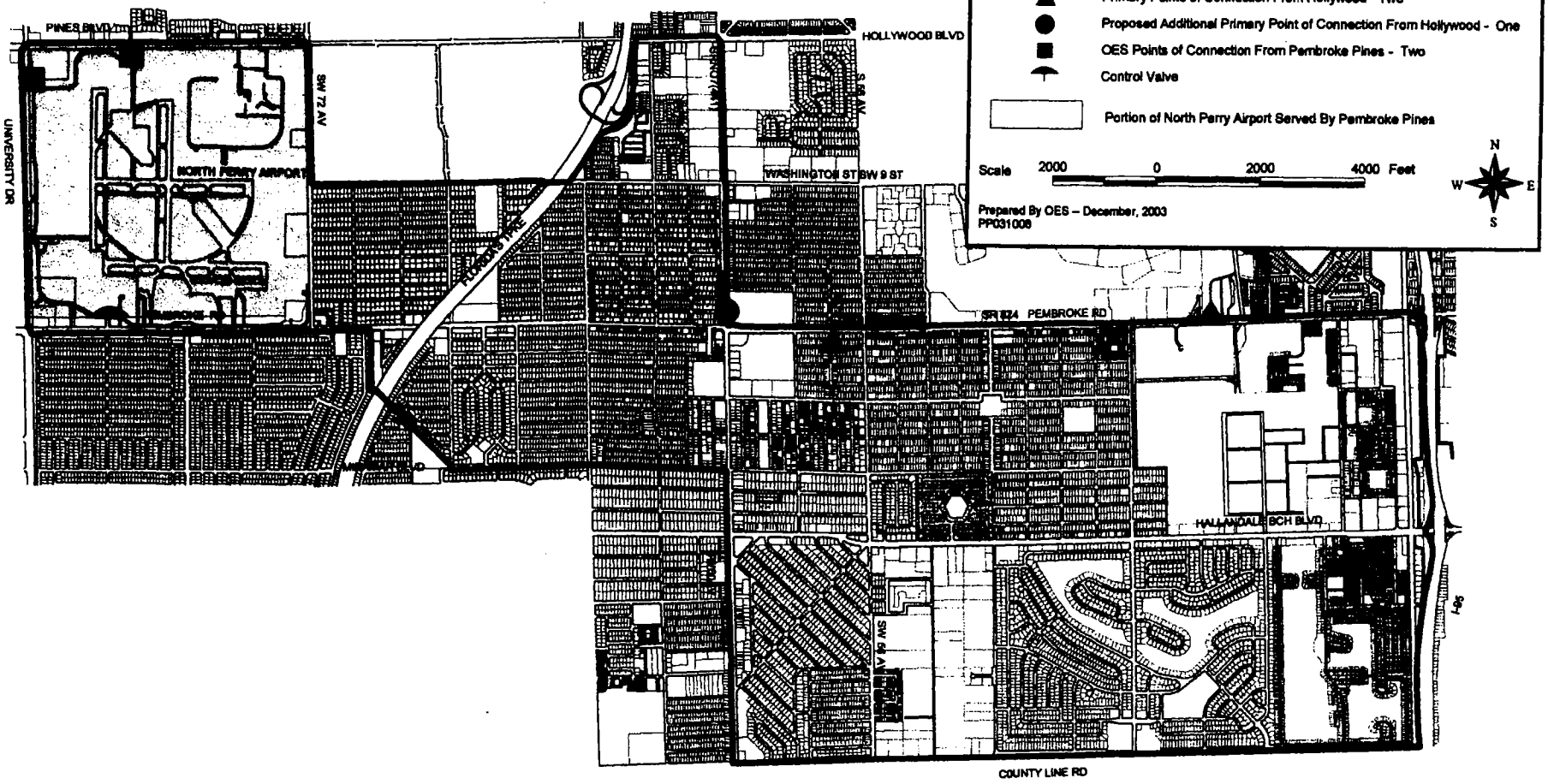


Exhibit B1 (pg 2)

OES District 3BC Emergency Interconnects

OES Service Area Boundary

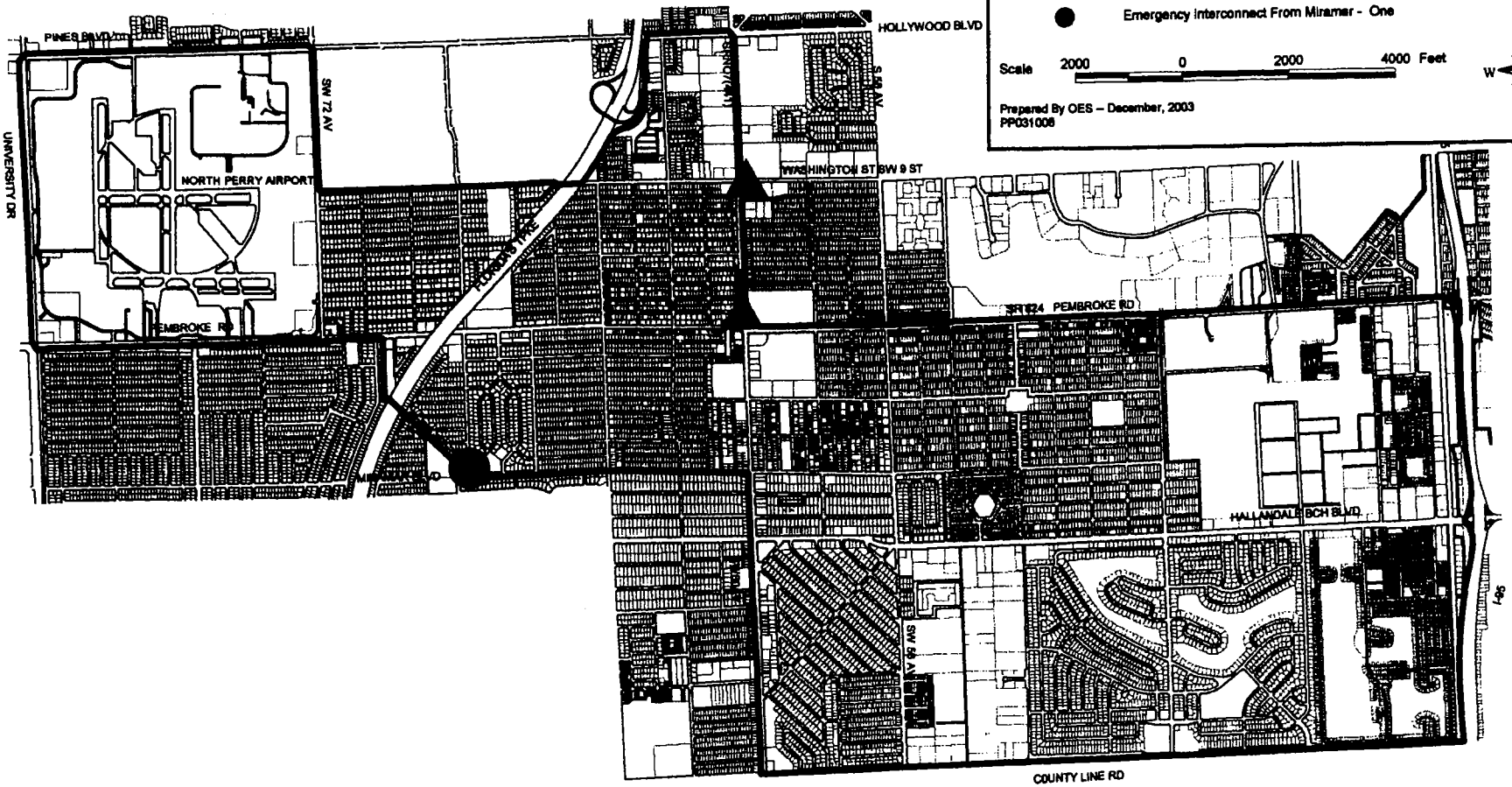
Emergency Interconnects From Hollywood - Two

Emergency Interconnect From Miramar - One

Scale 2000 0 2000 4000 Feet

N W E S

Prepared By OES – December, 2003
PP031008



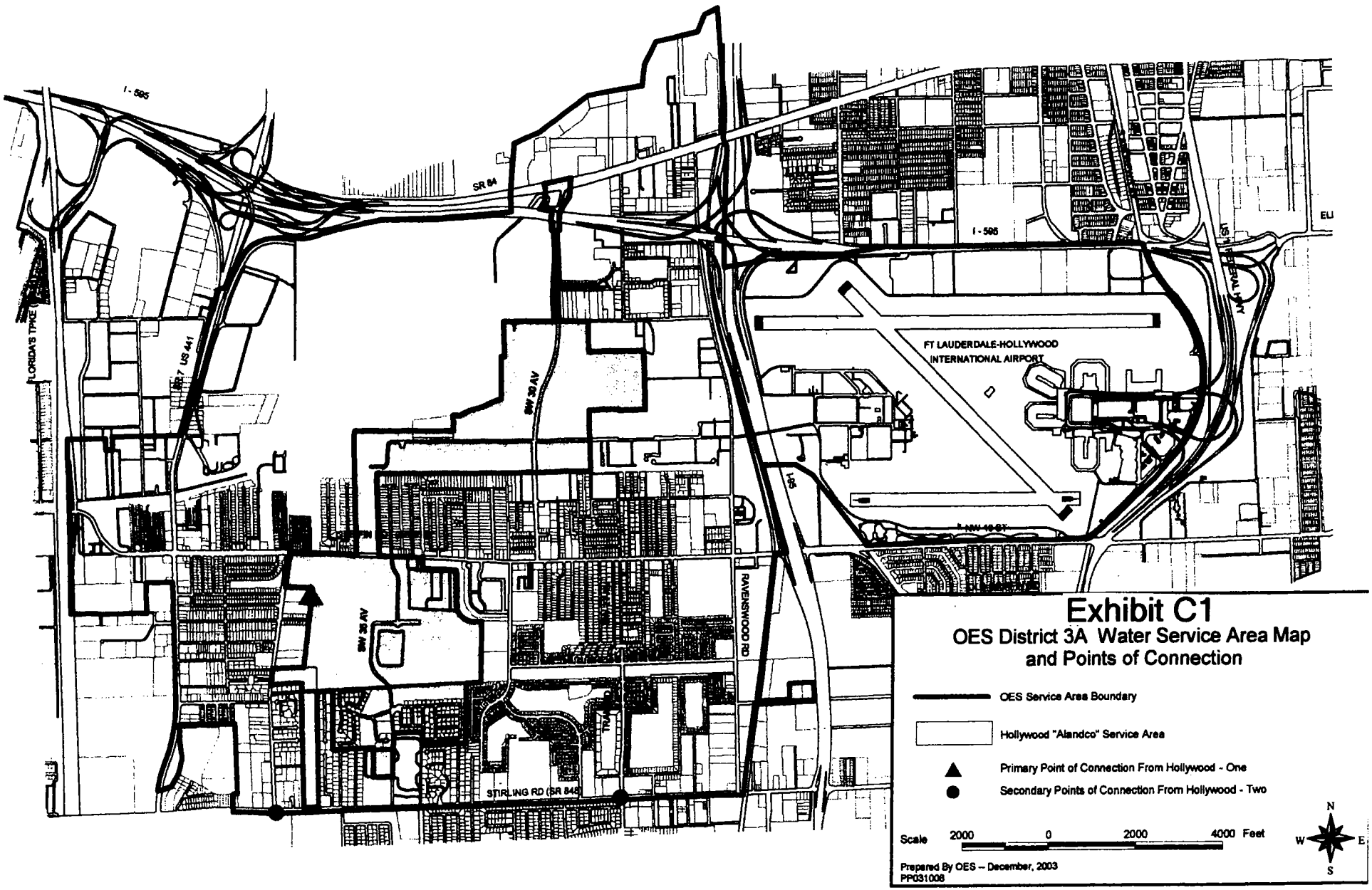


Exhibit C1

OES District 3A Water Service Area Map and Points of Connection

OES Service Area Boundary

Hollywood "Alandco" Service Area

Primary Point of Connection From Hollywood - One

Secondary Points of Connection From Hollywood - Two

Scale 2000 0 2000 4000 Feet

N W E S

Prepared By OES -- December, 2003
PP031006

Exhibit D-1

FUTURE FLOWS

Year	District 3A		District 3BC		Total	
	ADF	MDF	ADF	MDF	ADF	MDF
2005	3.6	4.8	3.9	5.6	7.5	10.4
2010	4.1	5.4	4.1	5.9	8.2	11.3
2015	4.7	6.2	4.6	6.6	9.3	12.8
2020	5.6	7.4	5.0	7.2	10.6	14.6
2025	6.6	8.7	5.3	7.6	11.9	16.3

ADF is average day flow in million gallons per day

MDF is maximum day flow in million gallons per day

District 3A does not include flow for Alandco.

APPENDIX D

LARGE USER RAW WATER AGREEMENT BETWEEN BROWARD COUNTY AND THE CITY OF HOLLYWOOD

LARGE USER RAW WATER AGREEMENT

BETWEEN

BROWARD COUNTY, FLORIDA

AND

CITY OF HOLLYWOOD, FLORIDA

LARGE USER RAW WATER AGREEMENT
BETWEEN
BROWARD COUNTY, FLORIDA
AND
CITY OF HOLLYWOOD, FLORIDA

KNOW ALL PERSONS BY THESE PRESENTS: This Agreement is made and entered into in Broward County, Florida, between Broward County, Florida, a political subdivision of the State of Florida, hereinafter referred to as "COUNTY," through its Board of County Commissioners, which term shall include its successors and assigns, and the City of Hollywood, Florida, hereinafter referred to as "CUSTOMER," which term shall include its successors and assigns.

WITNESSETH, that for and in consideration of the mutual terms and conditions, promises, covenants, and payments hereinafter set forth, COUNTY and CUSTOMER hereby agree as follows:

ARTICLE 1

PREAMBLE

In order to establish the background, context, and frame of reference for this Agreement and to generally express the objectives and intention's of the respective parties herein, the following statements, representations, and explanations shall be accepted as predicates for the undertakings and commitments included within the provisions which follow and may be relied upon by the parties as essential elements of the mutual considerations upon which this Agreement is based.

1.1 The Board of County Commissioners, through the enactment of Broward County Ordinance Number 84-40, created a Water Supply Advisory Board in November 1984, which was amended in September 1992, Broward County Ordinance Number 92-27, and renamed the Water Supply Advisory Board to the Water Advisory Board, hereinafter referred to as "WAB." The purpose of WAB is to assist in the development of a countywide water supply plan to assure future water supply needs.

1.2 COUNTY seeks to establish RAW WATER delivery systems to deliver RAW WATER from centralized wellfields to the LARGE USERS, as defined hereinafter, and related actions necessary for protection of the wellfields. The capital funding, as approved and defined by the Board of County Commissioners, for the Water Supply Program, hereinafter referred to as "PROGRAM", will be by COUNTY. Operation and maintenance charges and other necessary non-capital charges (renewal and replacement and administrative costs) associated with the system will be borne by the LARGE USERS.

1.3 To the best of its ability, COUNTY will have sufficient RAW WATER transmission and well capacity from the PROGRAM to furnish the RESERVED CAPACITY needs of CUSTOMER during the entire term of this Agreement.

1.4 CUSTOMER agrees to purchase RAW WATER from COUNTY in accordance with the terms and conditions set forth in this Agreement.

1.5 The authority of this Agreement on behalf of COUNTY is by action of the Broward County Board of County Commissioners.

1.6 COUNTY'S PROGRAM for future water supply is defined in Study of Water Supply and the Selection of Future Wellfield Sites in Broward County, June, 1986, as approved by the County Commission, including any and all approved amendments. Amendments must be approved by WAB and the County Commission in the same manner as initial approval of the PROGRAM.

1.7 It is recognized that any existing public water utility, by showing a demonstrated need to join the raw water supply system, may make application to WAB for inclusion in the system.

1.8 It is recognized and agreed CUSTOMER is entering into the Agreement to supplement its own existing and planned principal source of RAW WATER.

1.9 It is recognized that presently CUSTOMER is undertaking a program to construct wells from the Floridan Aquifer and construction of a membrane softening treatment plant, as well as wells from the Biscayne Aquifer and that it will utilize these and the existing facilities.

1.10 Notwithstanding any introduction with the Agreement, COUNTY agrees to use best efforts to cooperate with CUSTOMER to obtain approval from the South Florida Water Management District for the construction and operation of any planned or new wells.

ARTICLE 2

DEFINITIONS

Unless the context specifically indicates otherwise, the following words and phrases used in this Agreement shall have the following meanings:

2.1 Words and terms related to water and wastewater shall have the definitions listed in the Glossary - Water and Wastewater Control Engineering, 1981, published by AWWA.

a. COUNTY FACILITIES

This term shall mean those facilities owned or operated, or both, by COUNTY and approved by WAB as a part of the PROGRAM and ratified by COUNTY for the purpose of providing for RAW WATER from the Biscayne Aquifer (wells) and transmitting RAW WATER from these wells through the POINT OF CONNECTION to CUSTOMER.

b. CUSTOMER'S SYSTEM

This term shall mean the entire water supply system of CUSTOMER including wells, RAW WATER mains, treatment facilities, storage, transmission and distribution mains, services, and all appurtenances thereto downstream of the POINT OF CONNECTION.

c. LARGE USER

This term shall include all users including COUNTY, any municipality or other public entity which operates water treatment and distribution facilities which connect into COUNTY FACILITIES for the purpose of receiving RAW WATER and who have entered into a Large User Agreement with COUNTY. For the purposes of each Large User Agreement an individual LARGE USER shall be designated as CUSTOMER.

d. LARGE USER ADVISORY BOARD ("LUAB")

This term shall mean the Board that is established and composed of representatives of LARGE USERS receiving RAW WATER from COUNTY FACILITIES, whose function is to serve in an advisory capacity to COUNTY regarding rates, modification t o COUNTY FACILITIES and to perform other advisory tasks related to the use of COUNTY FACILITIES. Each LARGE USER shall be entitled to one representative on LUAB.

e. OPERATION AND MAINTENANCE CHARGES

This term shall mean COUNTY'S reasonable and necessary expenses of maintenance, repair, and operation of COUNTY FACILITIES, and shall include, without limiting the generality of the foregoing, all ordinary and usual expenses of maintenance and repair, which may include expenses not annually recurring, COUNTY administrative expenses properly charged to the RAW WATER system, and any reasonable charges for pension or retirement funds properly chargeable to the RAW WATER system, insurance premiums; engineering expenses expenses relating to maintenance, repair and operation; RAW WATER sampling cost; legal expenses, any taxes which may be lawfully imposed on the income or operations and reserves for such taxes, and any other expenses required to be paid by COUNTY, all in accordance with the accrual method of accounting, but shall not include any deposits or transfers to renewal or replacement funds, except as provided for herein, or any deposits or transfers to the credit of the Sinking Fund, Loan Repayment Fund, and the General Reserve Fund. Each CUSTOMER shall pay a percentage of the expenses proportional to their consumption divided by the total consumption of COUNTY FACILITIES as defined herein.

f. POINT OF CONNECTION

This term shall mean the point where CUSTOMER'S SYSTEM connects to COUNTY FACILITIES for the purpose of receiving RAW WATER.

g. POTABLE WATER

This term shall mean water that does not contain objectional pollution, contamination, minerals, or infective agents and is considered satisfactory for domestic consumption.

h. RAW WATER

This term shall mean the untreated water extracted from the Biscayne Aquifer.

i. RENEWAL AND REPLACEMENT FUND ("R&R FUND")

The R&R Fund shall be used, when necessary, for the purpose of paying the cost of upgrading or improvements to, or the significant replacement or renewal of capital assets of COUNTY FACILITIES, or extraordinary repairs of said COUNTY FACILITIES. Except as provided below, any amounts collected by COUNTY shall be used only for upgrading, repair, renewal, and replacement to COUNTY FACILITIES. In the event that the amount of the R&R Fund exceeds the amount necessary for the purposes of the R&R Fund as certified by a consulting engineer, or as provided in Section 5.1.2. such amount in excess thereof shall be used to offset OPERATION AND MAINTENANCE CHARGES.

j. RESERVED CAPACITY

This term shall mean CUSTOMER'S Annual Average Daily Flow, Peak Daily Flow, and Peak Hourly Flow of RAW WATER in millions of gallons per day (mgd) provided in Section 3.5 hereof.

k. STUDY

The Study of Water Supply and the Selection of Future Wellfield Sites in Broward County, Florida, and approved amendments thereto.

1. TECHNICAL ADVISORY COMMITTEE

The WAB may establish a Technical Advisory Committee consisting of members with technical and operation expertise. Such Technical Advisory Committee members would typically be a city engineer, utilities director, public works director, or of similar level and background. The WAB may also add other public agency representatives to the Technical Advisory Committee as may be prudent and beneficial. Such members could be from South Florida Water Management District, United States Geologic Service, Florida Department of Environmental Regulation, or of similar regulatory or public agency.

m. WATER ADVISORY BOARD ("WAB")

As defined in Broward County's Ordinance 92-27.

n. WATER SUPPLY PROGRAM ("PROGRAM")

This term shall mean the implemented recommendations for supply of RAW WATER from COUNTY to LARGE USERS in the STUDY including amendments approved by WAB and approved by COUNTY.

ARTICLE 3

PROVISIONS PERTAINING TO CONNECTION

TO THE COUNTY RAW WATER TRANSMISSION SYSTEM

3.1 POINT OF CONNECTION

The POINT OF CONNECTION and meter location shall be as indicated in the attached Exhibit "A".

3.2 TRANSFER OF LAND AT POINT OF CONNECTION

COUNTY may locate the POINT OF CONNECTION and meter location and necessary transmission facilities on property now being used by CUSTOMER for RAW WATER transmission or treatment facilities. CUSTOMER will convey at no cost to COUNTY either the fee simple title or appropriate easement to the property needed by COUNTY for the POINT OF CONNECTION, meter location, pump stations, transmission facilities, and such interest in property as is necessary to provide ingress and egress to COUNTY to said POINT OF CONNECTION. Such property shall be of sufficient magnitude to allow for future projected expansion. Such POINT OF CONNECTION location shall be mutually acceptable and be provided by acceptable legal instrument in a form approved by both COUNTY and CUSTOMER.

3.3 MAINTENANCE OF CUSTOMER'S SYSTEM

Except as provided elsewhere herein, CUSTOMER agrees to construct where necessary, and to operate and properly maintain at its own cost and expense, all water mains, treatment facilities and other required appurtenances related and directly attributable to the acceptance of COUNTY-delivered RAW WATER downstream of the POINT OF CONNECTION that are necessary to properly accept RAW WATER from the POINT OF CONNECTION to CUSTOMER'S SYSTEM at such elevation, pressure, and not-to-exceed flow rates as described in Sections 3.5 and 3.6 herein.

3.4 RESALE OF RAW WATER

The RAW WATER provided to CUSTOMER pursuant to this Agreement shall not be resold nor provided to any other party by CUSTOMER. However, CUSTOMER shall not be precluded from selling the RAW WATER provided by this Agreement once said RAW WATER has been treated and converted to POTABLE WATER. In addition, COUNTY shall not preclude CUSTOMER from participating in pretreatment of the RAW WATER at the POINT OF CONNECTION sufficient to produce acceptable RAW WATER for the purpose of further treatment. Moreover, COUNTY agrees to evaluate the feasibility of pretreatment of the RAW WATER within COUNTY FACILITIES, and COUNTY and CUSTOMER shall execute a letter agreement setting forth the terms and conditions regarding the aforementioned pretreatment no later than ninety (90) days from the execution of this Agreement.

3.5 RESERVED CAPACITY

COUNTY'S obligation to furnish service to CUSTOMER under this Agreement shall not exceed an Annual Average Daily Flow of six (6.0) mgd, an Annual Maximum Daily Flow of eight (8.0) mgd, and a Peak Hourly Flow of nine and six-tenths *(9.6)* mgd. CUSTOMER may review their RESERVED CAPACITY and may request in writing a modification to their RESERVED CAPACITY. Such modification requires approval by both parties.

3.6 PRESSURES AT POINT OF CONNECTION

COUNTY agrees that, under all operating conditions, except as provided in Section 7.6 of this Agreement, the minimum pressure in COUNTY transmission main at the POINT OF CONNECTION shall be adequate to provide the RESERVED CAPACITY to CUSTOMER'S POINT OF CONNECTION; however, such pressure shall not exceed thirty (30) pounds per square inch. The pressure shall be agreed to by CUSTOMER and COUNTY to fit the technical situation that exists at and downstream of the POINT OF CONNECTION.

EQUALIZATION OF DEMAND

CUSTOMER agrees, through the use of generally acceptable utility methods, to receive a RAW WATER flow from COUNTY FACILITIES through the POINT OF CONNECTION, not to exceed the RESERVED CAPACITY. In the event CUSTOMER exceeds the RESERVED CAPACITY as set forth in Section 3.5, then COUNTY may impose a compensatory charge to the monthly billing to CUSTOMER as provided in Section 5.2, except as established in Section 7.4.

3.8 COUNTY TO INSTALL AND MAINTAIN METERS

COUNTY shall furnish, install, and maintain a RAW WATER metering device, housing, accessories and appurtenances of a type and design selected by COUNTY sufficient to meet CUSTOMER'S needs and to be located at the site or sites as defined in Exhibit "A" attached hereto. COUNTY shall retain ownership of the metering device, together with the housing, accessories, and appurtenances thereto. In the event the capacity of the metering device becomes inadequate for the amount of flow delivered, COUNTY shall replace the meter or install such additional metering device or devices as may be necessary.

3.8.1. COUNTY TO INSPECT METER

COUNTY shall have an annual inspection and report prepared (by a representative of the manufacturer or other competent entity) regarding the condition and accuracy of the metering device. A copy of the annual report shall be furnished to CUSTOMER. CUSTOMER shall have the right to make its own meter inspection, or to have an independent meter manufacturer authorized company inspect the metering equipment at any time during normal business hours provided, however, no such inspection shall be made unless CUSTOMER shall first give COUNTY written notice of its intent to have the inspection made nor shall any such inspection be made prior to forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, subsequent to the receipt of said notice by COUNTY. All cost and expense of CUSTOMER'S interim inspection shall be

borne by CUSTOMER unless the meter is found to be inaccurate beyond the manufacturer's guaranteed range of accuracy, in which case the cost and expense of such interim inspection shall be borne out of OPERATION AND MAINTENANCE CHARGES. All results of interim meter inspections shall be provided to COUNTY. Notwithstanding the foregoing, if a meter inaccuracy occurs, billing may be done using an alternate meter if mutually agreed upon by the parties.

3.8.2 PAYMENT IN CASE OF METER INACCURACY

Both parties agree that, should the metering equipment be found to be inaccurate beyond the manufacturer's range of accuracy, the meter will be assumed to be inaccurate since midway between the previous meter check and the discovered inaccuracy or for a period of three months, whichever time should be less, and that the following month's billing will be adjusted to show a credit or additional charge to CUSTOMER for that period based on the average daily flow of the thirty (30) day period prior to the previous meter check. An additional adjustment shall be made after the meter inaccuracy has been corrected. Said additional adjustment shall show a credit or additional charge to CUSTOMER for that period based on the average daily flow of the thirty (30) day period prior to the previous meter check and immediately after the period of inaccurate operation.

3.8.3 PAYMENT IN CASE OF METER FAILURE

Both parties agree that, if at any time the metering system shall be inoperative or in any way fails to provide information with respect to the quantity of flow from COUNTY FACILITIES, CUSTOMER shall pay to COUNTY a per day amount using the average flow of the thirty (30) day period immediately prior to the period the meter was inoperative.

ARTICLE 4

PROVISIONS RELATING TO RAW WATER QUALITY

4.1 RAW WATER QUALITY

COUNTY does not guarantee the quality of RAW WATER supplies, but agrees to supply RAW WATER of reasonable treatable quality. If through changing finished water quality standards, decreasing RAW WATER quality, or other causes, the RAW WATER is no longer or may no longer be reasonably treatable, an engineering study may be commissioned by the WAB, and approved by COUNTY, as a cost to the system, to determine the most economical method of achieving finished water quality standards.

CUSTOMER shall have the right to terminate this Agreement, at no penalty to CUSTOMER, if the quality of the RAW WATER supplied to CUSTOMER by COUNTY is such that either of the following conditions are met and confirmed. "Confirmed" shall mean an independent evaluation of the situations (a) or (b) below by a professional consulting engineer or public agency acceptable to COUNTY and CUSTOMER, approved by the WAB and COUNTY. All confirmation costs are to be borne by CUSTOMER.

a. CUSTOMER can purchase treated potable water meeting all standards imposed by local, state and federal authorities at thirty percent (30%) less cost than the total cost to CUSTOMER to purchase RAW WATER from COUNTY under this Agreement and to treat said RAW WATER in CUSTOMER'S water treatment plant to meet the current standards of water quality required by local, state, and federal authorities.

b. CUSTOMER can supply or have supplied RAW WATER from another permitted source and can treat said RAW WATER at such cost that the combined cost of RAW WATER supply and treatment to meet all then current required water quality standards of local, state and federal authorities is thirty percent (30%) less than the combined cost of RAW WATER purchase water to

meet all current required water quality standards of local, state, and federal authorities.

4.2 RAW WATER SAMPLING

COUNTY shall be entirely responsible for having all RAW WATER sampling tests required by statutory authorities performed at the well sites and in the transmission mains up to the POINT OF CONNECTION. CUSTOMER and COUNTY shall establish a sampling point at a mutually agreeable location at or near the POINT OF CONNECTION so that both parties may obtain samples of the RAW WATER delivered by COUNTY to CUSTOMER.

COUNTY agrees to provide for such right-of-way or privilege upon properties within its control as may be necessary to allow CUSTOMER access to the sampling point. CUSTOMER shall have the right to obtain RAW WATER samples during normal business hours provided, however, no such inspection shall be made until CUSTOMER shall first give COUNTY written notice of its intent to obtain samples and type of analysis or test proposed, nor shall any such samples be obtained within forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, subsequent to the receipt of said notice by COUNTY. All costs of collecting and testing CUSTOMER requested samples shall be borne by CUSTOMER. COUNTY reserves the right to collect duplicate samples with CUSTOMER. The costs of said duplicate samples shall be part of the OPERATION AND MAINTENANCE CHARGES.

ARTICLE 5

PROVISIONS PERTAINING TO CHARGES

5.1 BASIS OF CHARGES

Both parties agree that COUNTY shall provide RAW WATER supply services to CUSTOMER at fees, rates, and charges constituting the full cost, not to include capital cost, of such services, which shall include OPERATION AND MAINTENANCE CHARGES. OPERATION AND MAINTENANCE CHARGES shall be limited to those costs arising out of those functions necessary to provide RAW WATER from COUNTY FACILITIES to LARGE USERS and those costs arising from satisfying conditions imposed by regulatory organizations governing the permitting and delivery of said RAW WATER. Such fees, rates, and charges shall be just and equitable, and COUNTY shall set the same fees, rates, and charges for all LARGE USERS that are within the PROGRAM. Such fees, rates, and charges shall be adopted by COUNTY, and it shall consider recommendations of the individual CUSTOMERS and the LUAB. COUNTY shall hold public hearings on adjustments to the rates and charges in the manner provided by law and after thirty (30) days' written notice to CUSTOMER of such public hearing. The initial rate for OPERATION AND MAINTENANCE CHARGES is estimated to be in the range of $0.10 per 1,000 gallons to $0.14 per 1,000 gallons.

CUSTOMER shall pay a monthly charge to COUNTY for RAW WATER supply services provided by COUNTY. Such charges shall include the items provided in Section 5.1.1 and 5.1.2.

5.1.1 OPERATION AND MAINTENANCE CHARGES

OPERATION AND MAINTENANCE CHARGES are applicable to COUNTY FACILITIES. The portion of CUSTOMER'S monthly charge attributable to such OPERATION AND MAINTENANCE CHARGE shall be based upon the actual flow used by CUSTOMER during the billing period. Such monthly charge shall be computed as a charge per 1000 gallons passing through the meter or meters serving CUSTOMER. The rate for such per 1000 gallons charge shall be

computed by dividing the budgeted annual total OPERATION AND MAINTENANCE CHARGES for each of COUNTY'S ensuing fiscal years ending September 30 by the number of thousands of gallons of RAW WATER which is estimated to be delivered to all the LARGE USERS for that year. After the close of the fiscal year, an annual adjustment will be computed which will be based upon the actual OPERATION AND MAINTENANCE CHARGES recorded for COUNTY FACILITIES for that fiscal year divided by the actual number of thousands of gallons of RAW WATER provided through the system for that fiscal year. Such adjustment will be made subject to final verification of OPERATION AND MAINTENANCE CHARGES by annual audit performed by a certified public accountant. If the annual adjustment shows that an underpayment was made by CUSTOMER, the amount due and owing shall be paid by CUSTOMER in twelve (12) equal monthly payments and shown as a separate item on the monthly bills during the next twelve (12) months after the adjustment has been made. If the annual adjustment shows that an overpayment was made by CUSTOMER, the amount due and owing CUSTOMER shall be credited to CUSTOMER in twelve (12) equal monthly installments and shown separately on the monthly bills during the next twelve (12) months after the adjustment has been determined.

5.1.2 RENEWAL AND REPLACEMENT FUND ("R&R FUND")

A charge representing a contribution to the R&R Fund maintained by COUNTY shall be a surcharge of up to ten percent (10%) on each monthly bill, with such sum being deposited in the R&R Fund, with the surcharge such that the R&R Fund will be maintained at a level not to exceed five percent (5%) of the replacement cost of COUNTY FACILITIES based upon an annual report. Any amounts collected by COUNTY shall be used only for upgrading, repair, renewal and replacements to COUNTY FACILITIES. Interest accruing and any gains realized from investment of R&R FUND shall be credited to the R&R FUND.

5.2 CHARGE FOR EXCESSIVE FLOW

In the event that a CUSTOMER'S Daily Flow in any month exceeds CUSTOMER'S Annual Maximum Daily Flow as provided in Section **3.5** for two **(2)** successive days then the monthly charge to CUSTOMER shall be increased by twice (2X) the percentage that CUSTOMER exceeds its commitment for each day thereafter that its flow exceeds Annual Maximum Daily Flow as provided in Section **3.5.** In the event that CUSTOMER'S Peak Hourly Flow for any day of the month exceeds CUSTOMER'S Peak Hourly Flow as provided in Section **3.5** for two **(2)** successive days then the monthly charge to CUSTOMER shall be increased by twice (2X) the percentage that CUSTOMER exceeds its Peak Hourly Flow commitment for each day thereafter that its flow exceeds CUSTOMER'S Peak Hourly Flow as provided in Section **3.5.** If both Peak Hourly Flow and Annual Maximum Daily Flow are violated within the same month only the higher charge of the two shall apply. The additional charges referenced shall herein continue to be charged to CUSTOMER until CUSTOMER'S Peak Daily Flow and Peak Hourly Flow do not exceed the flows provided in Section 3.5 for a consecutive thirty (30) day period.

Nothing in this Section shall be construed to waive or rescind any rights that COUNTY shall have pursuant to Section 3.5 relating to the limitation of COUNTY'S obligation to provide RAW WATER to CUSTOMER only up to CUSTOMER'S reserved capacity.

5.3 REVIEWS

COUNTY shall review the cost of providing RAW WATER supply services annually, based on COUNTY'S fiscal year. The fees, rates, and charges which will be effective during the succeeding fiscal year for all LARGE USERS will be developed by COUNTY following such annual review. In developing such fees, rates, and charges for the succeeding fiscal year, the cost of providing RAW WATER supply services during the current fiscal year, the audited costs for the preceding fiscal year, and the anticipated

changes in costs in the succeeding fiscal year, will be the preliminary basis for establishing the fees, rates, and charges for the succeeding fiscal year.

5.4 PAYMENT AND INTEREST FOR NONPAYMENT

Both parties agree that COUNTY shall bill CUSTOMER for RAW WATER supply services on a monthly basis in accordance with its standard billing procedures, CUSTOMER shall pay such billings within forty-five (45) days of the date of mailing the monthly bill. Should CUSTOMER not pay, within the forty-five (45) day period, CUSTOMER shall pay interest on the unpaid balance at the maximum rate allowed by state statute. Should a billing or a portion of a billing be outstanding for a period of more than sixty (60) days from the date of the original billing, then CUSTOMER shall be considered in default and COUNTY, in addition to all other rights and remedies, shall have the right and power, by suit, action, mandamus or other such proceedings at law or in equity, to protect, enforce, and compel performance by CUSTOMER and any of the officers, officials, agents, or employees of said CUSTOMER to perform and carry out its and their duties and obligations under this Agreement or applicable law.

5.5 CUSTOMER ACCESS TO COUNTY RECORDS

COUNTY agrees to maintain accounting records for COUNTY FACILITIES, and to have said records audited annually. COUNTY will furnish to CUSTOMER a copy of COUNTY'S annual audit, and the most recently adopted annual budget for review. COUNTY agrees to maintain information in sufficient detail to permit CUSTOMER to ascertain the cost, as defined in Section 5.7 of RAW WATER supply services, separate and apart from the cost of other services of COUNTY. Upon reasonable notice given by CUSTOMER, COUNTY will make available to CUSTOMER, at COUNTY offices, its books and records regarding operation of the RAW WATER facilities.

5.6 COUNTY TO HAVE JURISDICTION

Both parties agree that COUNTY has sole and exclusive authority and jurisdiction as to administration, operation, and maintenance of COUNTY FACILITIES; establishing the annual budget, establishing and amending service fees, rates, and other charges as provided in the Broward County Code; for efficient operation and maintenance of COUNTY FACILITIES. However, with the exception of challenges to charges, COUNTY agrees to evaluate and consider implementation of the recommendations that it receives from LUAB and TECHNICAL ADVISORY COMMITTEE before making decisions in areas in which the LARGE USERS and LUAB have an interest. Both CUSTOMER and COUNTY agree that any LARGE USER or LUAB may challenge the propriety of expenses charged to the operation and maintenance of COUNTY FACILITIES through normal COUNTY budget process. However, if unsatisfied with results via the normal budget process, LUAB may present their challenge to WAB for their action at a public meeting and the WAB recommendation to COUNTY.

5.7 ANNUAL AUDIT AND ENGINEERING ESTIMATES

COUNTY shall provide RAW WATER service to CUSTOMER at fees, rates, and charges constituting the full cost, set forth herein, direct or indirect, of such services. Such cost shall include, but not be limited to, labor, material, equipment, fuel, utilities, chemicals, transportation and travel expenses, administrative expenses (including interdepartmental service costs, such as amounts attributable to services of the Finance Division, Purchasing Division, County Attorney, etc.), billing expenses, supplies, rent, insurance, employee benefits, liability and workers compensation, outside services, and any other costs of operation, maintenance, and repair to said COUNTY FACILITIES. Such fees, rates, and charges shall be adopted or amended by COUNTY only after public hearing in the manner provided by law.

It is intended that fees, rates, and charges to CUSTOMER shall be based on the most recent actual or anticipated costs; however, from time to time as costs change, and as actual costs replace estimated costs, COUNTY intends to annually review the basis upon which the prevailing fees, rates, and charges have been determined.

Subsequent reviews of the cost of providing RAW WATER supply services shall be made annually, not later than ninety (90) days prior to the end of the current fiscal year. The fees, rates, and charges which will be effective during the succeeding fiscal year to CUSTOMER and LARGE USERS will be developed by COUNTY following such annual review. In developing such fees, rates, and charges for the succeeding fiscal year, the costs, as defined herein, during the current fiscal year, and the anticipated changes in costs in the succeeding fiscal year, will be the preliminary basis for establishing the fees, rates, and charges for the succeeding fiscal year. COUNTY shall give CUSTOMER at least thirty (30) days' notice prior to the effective date of any changes in such fees, rates, or other charges. COUNTY agrees to provide CUSTOMER with a copy of the annual audit, the Annual Report of Consulting Engineers and estimates, and the most recently approved annual budget for COUNTY FACILITIES for review as soon as possible after completion. Upon reasonable notice given by CUSTOMER, COUNTY will make available to CUSTOMER at COUNTY offices, its books and records regarding operation of COUNTY FACILITIES.

ARTICLE 6

PROVISIONS PERTAINING TO ADDITIONAL OBLIGATIONS OF BOTH PARIES UNDER THIS AGREEMENT

6.1 CUSTOMER TO RECEIVE RAW WATER RESERVED

CUSTOMER agrees, during the term of this Agreement, to receive up to the RAW WATER provided in Section 3.5 first, prior to utilizing any other sources, with the exception of CUSTOMER'S own **wellfield(s)** existing or to be constructed during the term of this Agreement. RAW WATER flow shall not exceed amounts set forth in Section **3.5;** and COUNTY agrees to deliver to the best of its ability such RAW WATER not exceeding amounts set forth in Section **3.5.** It shall be incumbent upon CUSTOMER to utilize COUNTY FACILITIES to accept RAW WATER up to the reserved capacity as set forth in Section **3.5.** CUSTOMER shall accept or pay for a minimum flow on an annual average basis of 1.2 mgd. Should CUSTOMER'S Annual Average Flow be less than **1.2** mgd, CUSTOMER shall be obligated to pay charges and fees as though an Annual Average Flow of 1.2 mgd was actually provided. Said payment for minimum flow shall be considered as an underpayment and shall be paid by CUSTOMER as provided in Section **5.1.1.**

6.2 CUSTOMER AGREES TO PAY

CUSTOMER agrees to establish and maintain service charges or other means of obtaining funds within its CUSTOMER'S service area sufficient to provide monthly payments to COUNTY for RAW WATER supply services, and that such means shall be revised as may be required from time to time to provide sufficient funds to pay any sums due COUNTY under the terms of this Agreement.

6.3 GRANT INFORMATION

CUSTOMER and COUNTY agree to provide each other with all necessary information pertinent to CUSTOMER'S SYSTEM and CUSTOMER'S service area or COUNTY FACILITIES which any federal, state, or local agencies shall require in an application for

financial assistance in the construction of COUNTY FACILITIES or CUSTOMER'S SYSTEM. Further, CUSTOMER and COUNTY agree to adopt such regulations, execute such Agreements and do such work as said federal, state, or local agencies may require as part of COUNTY'S or CUSTOMER'S application for funds.

ARTICLE **7**

PROVISIONS PERTAINING TO VIOLATIONS AND EXCEPTIONS TO THE TERMS OF THIS AGREEMENT

7.1 TERM

Except as provided for herein in Section **4.1** or by a mutual cancellation agreement between the parties hereto, which will be a written document executed with the same formality and of equal dignity herewith, this Agreement shall remain in full force and effect commencing on execution by both parties and ending four **(4)** years from commencement date, and shall be automatically renewed for successive four **(4)** year terms unless terminated by either party upon written notice to the other party not less than one hundred eighty (180) days prior to the end of any four **(4)** year term.

7.2 NOTICE OF VIOLATION

COUNTY shall serve CUSTOMER with written notice stating the nature of any violation of this Agreement by CUSTOMER. Except as otherwise provided, said notice shall provide a reasonable time for the satisfactory correction thereof. CUSTOMER shall, within the period of time stated in such notice, permanently cease or correct all violations. CUSTOMER shall take necessary corrective action in accordance with the provisions of this Agreement and standard operating and administrative procedures. CUSTOMER shall serve COUNTY with written notice of any violation of this Agreement by COUNTY. Except as otherwise provided, said notice shall provide a reasonable time for the satisfactory correction thereof. COUNTY shall, within the period of time stated in such notice, permanently cease or correct all violations. COUNTY shall take necessary corrective action in accordance with the provisions of this Agreement and standard operating procedures.

If at any time CUSTOMER shall create any condition which COUNTY should determine destructive or damaging to any part of COUNTY FACILITIES, COUNTY shall give ten **(10)** days' written notice to

CUSTOMER to discontinue such harmful operation or practice, within which period **CUSTOMER** agrees to comply. If any damages result to **COUNTY FACILITIES** the entire cost of such damages, judgments or both, resulting therefrom shall be paid by **CUSTOMER.** In any event, proper, thorough, demonstrable proof of condition and damage must be provided by **COUNTY** to **CUSTOMER** in said written notice.

If at any time **COUNTY** shall create any condition which **CUSTOMER** should determine destructive or damaging to any part of **CUSTOMER'S SYSTEM, CUSTOMER** shall give ten (10) days' written notice to **COUNTY** to discontinue such harmful operation or practice, within which period **COUNTY** agrees to comply. **If** any damages result to **CUSTOMER SYSTEM,** the entire cost of such damages, judgments or both, resulting therefrom shall be paid by **COUNTY.** In any event, proper, thorough, demonstrable proof of condition and damage must be provided by **CUSTOMER** to **COUNTY** in said written notice.

Both parties agree that no provisions contained herein shall be construed as preventing any agreement or arrangement between **COUNTY** and **CUSTOMER** whereby an unusual or uncharacteristic situation may be addressed by **CUSTOMER** and **COUNTY.**

7.3 **DISPUTE OVER CHARGES**

CUSTOMER agrees that, in the event of any continuing violations or disputes, or if the parties do not agree within thirty (30) days from the billing date upon the amount invoiced, or if the matter or a dispute continues unresolved for thirty (30) days from the billing date, **CUSTOMER** shall automatically deliver to **COUNTY** the amount billed. However, the amount of the bill that is legitimately in dispute shall be deposited for the payment of the invoice or invoices in escrow in an interest-bearing bank account in a banking institution designated by **COUNTY** during such continuing claimed violation or dispute.

7.4 FORCE MAJEURE

Both parties agree that any restriction of RAW WATER supply services, including COUNTY ability to supply and the ability of CUSTOMER to accept, resulting from an act of God, fire, strikes, accidents, casualty, breakdown of or injury to machinery, pumps or pipe lines, insurrection or riot, or civil or military authority, shall not constitute a breach of this Agreement on the part of COUNTY or CUSTOMER and neither COUNTY nor CUSTOMER shall be liable to the other for any damages resulting from such restriction.

Both parties agree that any increase in CUSTOMER demand for RAW WATER supply services resulting from an act of God, fire, strikes, casualty, breakdown of or injury to machinery, pumps or pipe lines, insurrection or riot, or civil or military authority, shall not constitute a breach of this Agreement on the part of COUNTY or CUSTOMER and neither COUNTY nor CUSTOMER shall be liable to the other for any penalties or damage resulting from such demand increase until a written notice to the contrary may be received from federal, state, or local agencies.

7.5 JURISDICTION OF OTHER AGENCIES

Both parties agree that certain federal, state, and local agencies have some jurisdiction and control over water supply matters and should any such agency, excluding the Board of County Commissioners of Broward County, Florida, issue legally enforceable laws, regulations, mandates, or orders that may alter any of the terms and conditions of this Agreement, there shall be no liability on either party because of such action, provided that COUNTY shall not be precluded from making a necessary adjustment to the fees, rates, and charges. It is further agreed that if any such agency shall request a change in the provisions of this Agreement that both parties will, by mutual agreement, make every effort to comply with such request. However, the terms of this Section shall not preclude administrative or

judicial challenge, or both, of such order by either or both parties hereto. This provision shall not be construed so as to permit CUSTOMER to terminate this Agreement.

7.6 CUSTOMER WATER CONSERVATION PROGRAM

CUSTOMER agrees to participate in any regulation by WAB and approved by COUNTY or any governmental agency including but not limited to South Florida Water Management District as deemed necessary for the conservation of water.

Should COUNTY be requested or mandated to reduce volume and/or pressure of RAW WATER supply in response to official regulatory requests or mandates, COUNTY may do so without constituting a violation of this Agreement. Also, no surcharging of fees as provided in Section 5.2 nor payment of fees for failure to accept minimum flows shall apply to CUSTOMER as a result of said regulatory requests or mandates. Each CUSTOMER shall respond to said official regulatory requests and mandates in proportion to the flow volumes prevailing at the time of said request or mandate.

Should CUSTOMER not respond to mandated reduction in flows per official regulatory requirements, COUNTY shall charge said CUSTOMER a surcharge to the entire flow volume. Said flow volume will be evaluated on a weekly basis and said charges shall be applied on a weekly basis. Said surcharge shall be triple (3X) the degree to which CUSTOMER fails to adhere to the mandated cutback. For example, if a fifteen percent (15%) cutback is mandated by South Florida Water Management District and CUSTOMER'S demand is reduced by only five percent (5%), a surcharge of (15%-5%)(3) = 30 percent (30%) would be applied to the entire flow volume taken by CUSTOMER.

The disposition of such surcharge revenue shall be: first, to offset OPERATION AND MAINTENANCE CHARGES to those CUSTOMERS who

have met said mandated reduction in flows; second, only in the case where no LARGE USER meets said mandated reduction in flows, said surcharge funds shall go to offset operation and maintenance costs of COUNTY.

ARTICLE 8
PROVISIONS PERTAINING TO THE ADMINISTRATION OF THIS AGREEMENT

8.1 DATE OF BEGINNING

Both parties agree to be bound by this Agreement as of the date of its execution. COUNTY agrees that COUNTY FACILITIES from which CUSTOMER will receive RAW WATER pursuantto this Agreement shall be operational within a reasonable period of time. Should CUSTOMER, through no fault of COUNTY, not avail itself of COUNTY FACILITIES when such FACILITIES are available, it shall pay the applicable standby charges, as defined and described in Section 8.1.2 below.

8.1.1 DATE OF CUSTOMER CONNECTING TO COUNTY FACILITIES

COUNTY will keep CUSTOMER informed as to the construction schedules of those FACILITIES necessary to serve CUSTOMER. COUNTY shall give CUSTOMER notice of the completion date as certified by its engineer of the construction of all COUNTY FACILITIES necessary to serve CUSTOMER and CUSTOMER shall be prepared to connect CUSTOMER SYSTEM to the POINT OF CONNECTION on this completion date or within sixty (60) days of the date of this notice, whichever date is later. If construction is completed at the time of execution of this Agreement, COUNTY shall be given written notice thereof to CUSTOMER who shall connect to the system within thirty (30) days of receipt of written notice. Notwithstanding whether CUSTOMER accepts its allotment of RAW WATER, it shall pay standby charges which shall commence no later than sixty (60) days from the date of notice that RAW WATER is available to CUSTOMER.

8.1.2 BASIS OF STANDBY CHARGES

Should CUSTOMER fail to begin to accept its allotment of RAW WATER on the date above agreed upon, then COUNTY will bill and CUSTOMER will pay the monthly charges set forth in Article 5

hereof as if CUSTOMER was receiving seventy-five percent (75%) of its Annual Average Daily Flow as provided in Section 3.5. These revenues will remain in the appropriate fund.

8.2 INVALIDITY OF AGREEMENT

The invalidity of any section, clause, sentence, or provision of this Agreement shall not affect the validity of any other part of this Agreement which can be given effect without such invalid part or parts.

8.3 BINDING ON SUCCESSORS

This Agreement shall be binding upon the successors and assigns of the parties hereto and may be enforced by appropriate action in court, or courts, of competent jurisdiction.

8.4 LEGAL REQUIREMENTS

All legal requirements for execution of this Agreement have been performed, and each party hereto agrees to exchange with the other certified copies of the official records of its governing body which authorize the execution of this Agreement.

8.6 GIVING OF NOTICE

Any notice required to be given hereunder shall be considered to have been properly given if the same has been set in writing by certified or registered mail to the following:

COUNTY:	Board of County Commissioners Broward County Governmental Center 115 South Andrews Avenue Fort Lauderdale, Florida **33301**
COUNTY AGENCY:	Office of Environmental Services 2555 West Copans Road Pompano Beach, Florida 33069
CUSTOMER:	City of Hollywood Utilities Division 1715 North 21st Avenue Hollywood, Florida **33020**

8.7 ALL PRIOR AGREEMENTS SUPERSEDED

This document supersedes all prior negotiations, correspondence, conversations, agreements, or understandings applicable to the matters contained herein and the parties agreed that there are no commitments, agreements, or understanding concerning the subject matter of this Agreement that are not contained in this document. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written. It is further agreed that no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity.

8.8 EXECUTION

This Agreement shall be executed in five (5) copies, each of which shall be deemed an original. CUSTOMER shall provide COUNTY with a copy of CUSTOMER'S Resolution or evidence of other action authorizing CUSTOMER to execute this Agreement, which Resolution or other document shall be attached hereto as Exhibit "B" and made a part hereof.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement on the respective dates under each signature: BROWARD COUNTY through its .BOARD OF COUNTY COMMISSIONERS, signing by and through its Chair or Vice Chair, authorized to execute same by Board action on the 29 day of March, 1994, and signing by and the City of Hollywood, Florida, signing by and through the Mayor, duly authorized to execute same.

COUNTY

ATTEST:

Eileene Blume

County Administrator and Ex-Officio Clerk of the Board of County Commissioners of Broward County, Florida

COUNTY COMMISSIONERS CREATED OCT. 1ST 1915 BROWARD COUNTY FLORIDA

BROWARD COUNTY through its BOARD OF COUNTY COMMISSIONERS

By Sylvia Poitier
Chair

29 day of March, 1994

Approved as to form by Office of County Attorney, Broward County, Florida, JOHN J. COPELAN, JR., County Attorney, Governmental Center, Suite 423, 115 South Andrews Avenue, Fort Lauderdale, Florida 33301, Telephone (305) 357-7600, Telecopier (305) 357-7641.

By
Assistant County Attorney

CITY

WITNESSES:

Gail S. Kasha

Irene Gowan

By _____
Mara Giulianti, **Mayor**

25 **day of** Feb., 19 94

By _____
Samuel A. Finz, City Manager

25 **day of** Feb., 19 94

ATTEST:

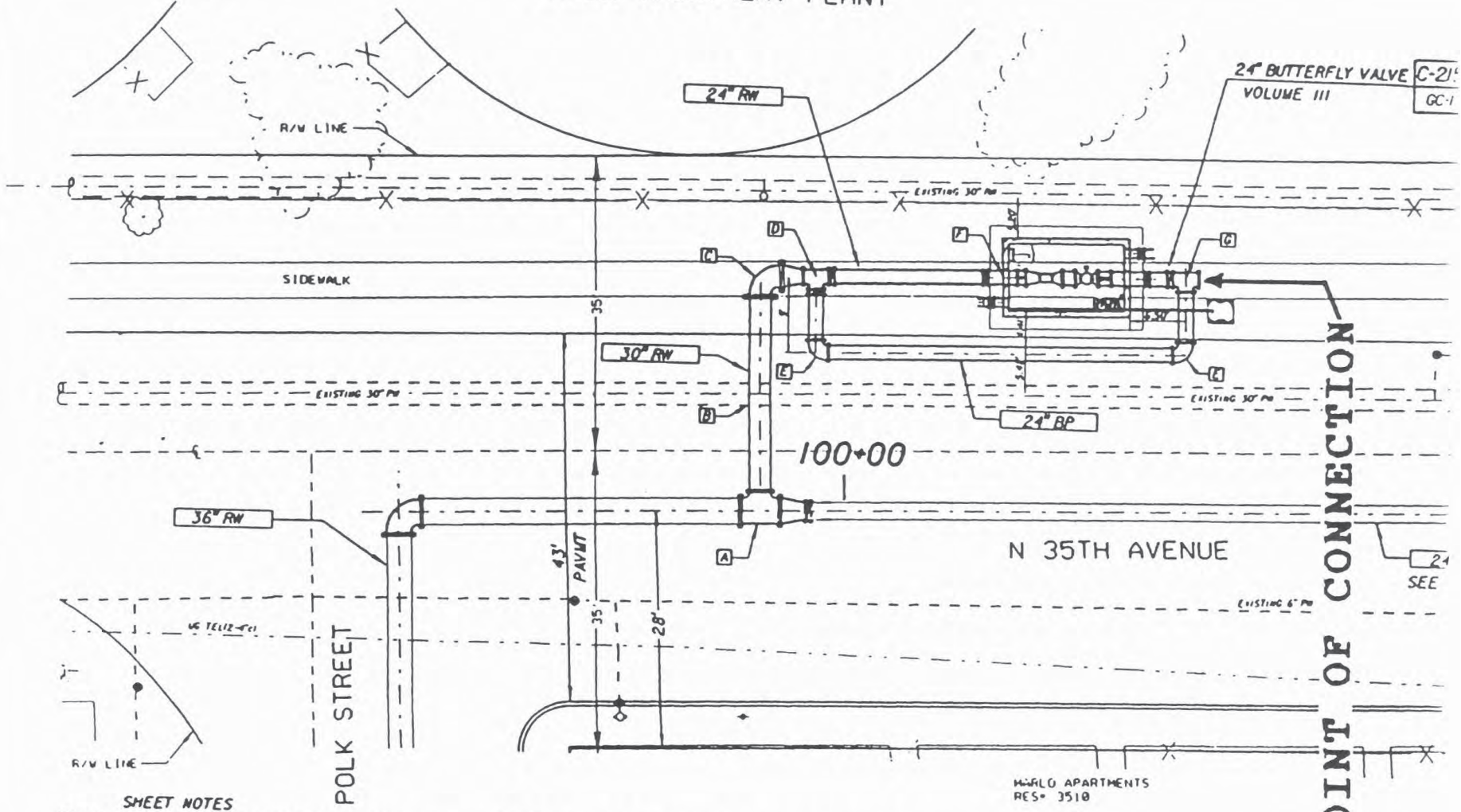
_____
City Clerk

(S E A L)

Approved as to form:

By _____
Jeffrey Sheffel
Acting City Attorney

CITY OF HOLLYWOOD
WATER TREATMENT PLANT



SHEET NOTES

[A] 36"X30" TEE, 36"X24" REDUCER AND 24" BUTTERFLY VALVE. STA. 99+90.00 (N 610857.84, E 769676.42) SEE VOLUME III, C-215/GC-1

[B] RESTRAIN ALL JOINTS INCLUDING BYPASS PIPING. STA. 0+00.00 TO STA. 0+77.00

[C] Δ 90°AT. AND 30"X24" REDUCER, STA.0+27.00 (N 610858.61, E 769703.97)

[D] 24"X24" TEE AND 2-24" BUTTERFLY VALVES, STA. 0+37.10 (N 769704.15, E 610852.12) SEE VOLUME III,C-215/GC-1

[E] Δ 90°LT. (N 610851.84, E 769695.00) & (N 610808.56, E 769696.22)

[F] METER VAULT, STA. 0+56.00 SEE A/M-2

[G] 24"X24" TEE, 24" BUTTERFLY VALVE AND 24" PLUG, STA. 0+77.00 NOTE: CONNECTION @ STA. 0+77.35 (N 610808.82, E 769705.37) TO BE MADE BY OTHERS

RESOLUTION NO. R-93-294

RESOLUTION TO AUTHORIZE EXECUTION OF AGREEMENT WITH BROWARD COUNTY TO PURCHASE WATER FROM BRIAN PICCOLO WELLFIELD, TO SECURE WATER FROM THIS SOURCE FOR THE CITY OF HOLLYWOOD'S USE.

WHEREAS, due to possible salt water intrusion, the South Florida Water Management District has limited the amount of water that can be withdrawn from the Hollywood Wellfield to 22.47 million gallons a day; and

WHEREAS, it is estimated that in the next five years additional sources of water will be necessary to supplement the City's own sources and provide for the needs of the residents of the City of Hollywood; and

WHEREAS, Broward County has developed a Regional Water Supply Strategy and a South Regional Wellfield is to be developed at Brian Piccolo Park; and

WHEREAS, the City of Hollywood's Plan for Water Management includes obtaining water from the Biscayne Aquifer, the Floridan Aquifer and the Brian Piccolo Wellfield; and

WHEREAS, raw water from this wellfield could be purchased from the County to supplement the City's supply; and

WHEREAS, the Brian Piccolo Wellfield has water available to provide to the City an additional six million gallons a day annual average daily flow and eight million gallons a day peak daily flow; and

WHEREAS, the current water quality will be maintained while being supplemented by the Floridan Aquifer and the Brian Piccolo Wellfield water; and

WHEREAS, the Director of Utilities with Utilities Department input has negotiared a Large User Agreement with Broward County; and

CERTIFICATION

I certify this to be a true and correct copy of the record in my office.
WITNESSETH my hand and official seal of the City of Hollywood, Florida, this the 26 day of January 19 94

City Clerk

WHEREAS, the Hollywood City Commission requested staff to renegotiate with Broward County; and

WHEREAS, as a result of renegotiations with Broward County, modifications will be included; and

WHEREAS, the following modifications to be included in the final Agreement:

1. In lieu of placing a "cap" on the agreement, since actual costs are unknown at present, language will be added to allow the City to determine whether or not to remain party to the Agreement in three to five year intervals. Should the City decide it is in its' best interest to withdraw from the Agreement, a 180 day notice would be required.

2. Item 2.1 a of the Agreement will be amended to define the actual location and scope of the County Facilities being funded for purposes of extracting water from the Brian Piccolo Wellfield. Once defined, operation and maintenance costs will be limited to this location and facility.

3. Additionally, an addendum will be included in reference to defining estimated cost for operation and maintenance of the Brian Piccolo Wellfield, without pretreatment (to be in the range of $0.10 $/Kgals to $0.14 $/Kgals).

and

WHEREAS, the Utilities staff has received from Broward County a final draft and is working with the Acting City Attorney to finalize this Agreement as to form and legality; and

WHEREAS, the City Attorney and the Utilities Director recommend approval of this agreement with Broward County; and

NOW, THEREFORE, Be It Resolved By The Hollywood City Commission to authorize entering into An Agreement With Broward County, authorizing staff to prepare a final Agreement to purchase water from the Brian Piccolo Wellfield.

PASSED AND ADOPTED **THIS** 1st **DAY OF** September **1993.**

MARA GIULIANTI, MAYOR

ATTESTED:

MARTHA S. LAMBOS, CITY CLERK

ENDORSED **AS TO FORM AND LEGALITY:**

PAMELA S. TERRANOVA
ACTING CITY ATTORNEY

EXHIBIT **C**

RAW WATER AGREEMENT - HOLLYWOOD

The City of Hollywood understands that although the cost of raw water from the Brian Piccolo wellfield can not be determined at this time, the cost is anticipated to be between the present cost of treating Biscayne Aquifer water and the cost of treating Floridan Aquifer water by reverse osmosis.

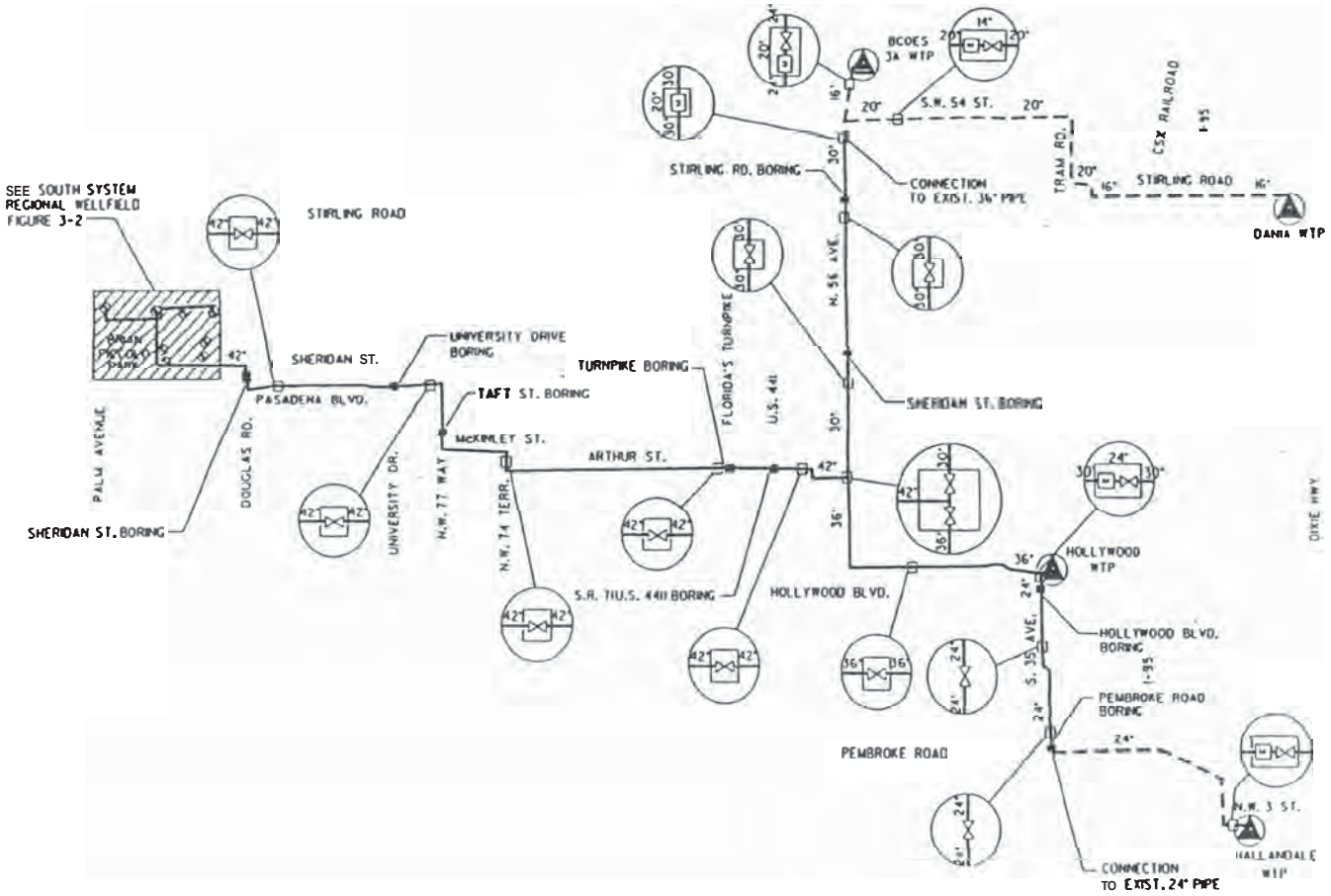
Summary Operation and Maintenance Cost

Source	Estimated Cost
Biscayne Aquifer	$0.38/1000 gals (present cost)
Brian Piccolo	Greater than $0.38/1000 gallons but less than $0.80/1000 gallons (Based on $0.10 to $0.14/1000 gallons County O/M plus present cost plus pretreatment costs).
Floridan Aquifer	$0.80/1,000 (future R.O.)

Summary

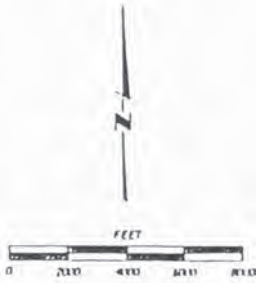
Since completiop of the **PDR** some factors have changed which will impact final design criteria and implementation of the project. These factors include Consumptive Use Permit restrictions, Large User Agreements differing from those anticipated in the PDR, and project delays.

The purpose of this report is to update design criteria and component sizing based on recent restrictions and changes to the project. The report also includes a list of major equipment manufacturers, **permits** and approvals required, technical specifications necessary for the project, estimated project costs, and a project implementation schedule.



LEGEND

- PROPOSED NEW. TRANSMISSION PIPELINE
- EXISTING TRANSMISSION PIPELINE
- JACK AND BORE CROSSING
- WELLFIELD
- STRUCTURE
- VALVE
- METER
- @ WATER TREATMENT PLANT (WTP)



PRELIMINARY DESIGN PLAN
FOR
RAW WATER
TRANSMISSION PIPELINE
SOUTH SYSTEM

FIGURE 3-1

ATTACHMENT TO BRIAN PICCOLO AGREEMENT
EXAMPLE CALCULATION OF EXCESSIVE FLOW CHARGES

Date	Flow (1,000 gal)	% Over AMDF	2x% Over AMDF	Charge ($0.10/1000 gal)	Notes: (AMDF = Annual Maximum Daily Flow) (AMDF = 8,000,000 gal/day)
1	6,000	0.00%	0%	$600	
2	9,000	12.50%	25%	$900	First day over AMDF **
3	6,000	0.00%	0%	$600	
4	9,000	12.50%	25%	$900	Second successive day over AMDF **
5	10,000	25.00%	50%	$1,000	First day of penalty
6	12,000	50.00%	100%	$1,200	
7	11,000	37.50%	75%	$1,100	
8	10,000	25.00%	50%	$1,000	
9	9,000	12.50%	25%	$900	Last day of overage
10	7,000	0.00%	0%	$700	
11	6,000	0.00%	0%	$600	
12	5,000	0.00%	0%	$500	
13	5,000	0.00%	0%	$500	
14	5,000	0.00%	0%	$500	
15	5,000	0.00%	0%	$500	
16	5,000	0.00%	0%	$500	
17	5,000	0.00%	0%	$500	
18	5,000	0.00%	0%	$500	
19	5,000	0.00%	0%	$500	
20	5,000	0.00%	0%	$500	
21	5,000	0.00%	0%	$500	
22	5,000	0.00%	0%	$500	
23	5,000	0.00%	0%	$500	
24	5,000	0.00%	0%	$500	
25	5,000	0.00%	0%	$500	
26	5,000	0.00%	0%	$500	
27	6,000	0.00%	0%	$600	
28	8,000	0.00%	0%	$800	
29	8,000	0.00%	0%	$800	
30	8,000	0.00%	0%	$800	**$20,000 Monthly charge**
1	7,000	0.00%	0%	$700	**10% Average 2 x Overage ****
2	7,000	0.00%	0%	$700	**$2,000 Penalty ****
3	8,000	0.00%	0%	$800	**$22,000 Monthly charge with penalty**
4	8,000	0.00%	0%	$800	
5	8,000	0.00%	0%	$800	** Excludes first two days.
6	8,000	0.00%	0%	$800	
7	8,000	0.00%	0%	$800	
8	8,000	0.00%	0%	$800	
9	8,000	0.00%	0%	$800	30 consecutive days without overage
10	8,000	0.00%	0%	$800	
11	10,000	25.00%	50%	$1,000	First day over AMDF
12	8,000	0.00%	0%	$800	
13	10,000	25.00%	50%	$1,000	Second successive day over AMDF
14	9,000	12.50%	25%	$900	First day of penalty
15	9,000	12.50%	25%	$900	

APPENDIX E

2004 AMENDMENT TO THE LARGE USER RAW WATER AGREEMENT BETWEEN BROWARD COUNTY AND THE CITY OF HOLLYWOOD

FIRST AMENDMENT TO LARGE USER RAW WATER AGREEMENT
BETWEEN BROWARD COUNTY FLORIDA
AND CITY OF HOLLYWOOD FLORIDA

This is a First Amendment to the Large User Raw Water Agreement between: BROWARD COUNTY, a political subdivision of the state of Florida, its successors and assigns, hereinafter referred to as "COUNTY," through its Board of County Commissioners,

AND

CITY OF HOLLYWOOD, a municipal corporation located in Broward County, Florida, and organized and existing under the laws of the state of Florida, its successors and assigns, hereinafter referred to as "CITY";

WHEREAS, COUNTY and CITY entered into a Large User Raw Water Agreement, dated March 29, 1994, and

WHEREAS, the Agreement provided for the purchase of Raw Water with a certain specified annual minimum flow; and

WHEREAS, the parties recognize the need to increase the amount of the annual minimum flow and resolve differences which have arisen since the inception of this Agreement;

WHEREAS, the Parties have engaged in negotiations and discussions in an effort to resolve all claims and matters which have arisen since the inception of this Agreement and have agreed to release the other from any and all claims, demands, damages, causes of action, actions and losses of every kind and nature; NOW THEREFORE;

IN CONSIDERATION of the mutual terms and conditions, promises, covenants and payments hereinafter set forth, COUNTY and CITY agree as follows:

1. Each and every Whereas clause set forth above is a true and correct recital and representation and is incorporated herein as if set forth fully.

2. Section 6.1, CITY to Receive Raw Water Reserved, is amended as follows:

6.1 CITY TO RECEIVE RAW WATER RESERVED
CITY agrees, during the term of this Agreement, to receive up to the RAW WATER provided in Section 3.5 first, prior to utilizing any other sources, with the exception of CITY's own well field(s) existing or to be constructed during the term of this Agreement. RAW WATER flow shall not exceed amount set forth in Section 3.5;

and COUNTY agrees to deliver to the best of its ability such RAW WATER not exceeding amounts set forth in Section 3.5. It shall be incumbent upon CITY to utilize COUNTY FACILITIES to accept RAW WATER up to the reserved capacity as set forth in Section 3.5. CITY shall accept or pay for a minimum flow on an annual average basis of ~~1.2~~ 4.0 mgd. Should CITY's Annual Average Flow be less than ~~1.2~~ 4.0 mgd, CITY shall be obligated to pay charges and fees as though an Annual Average Flow of ~~1.2~~ 4.0 mgd was actually provided. Said payment for minimum flow shall be paid by CITY as provided in Section 5.1.1 unless the shortage results from causes beyond CITY's control.

3. The Parties do respectively release each other from all claims, demands, damages, causes of action, actions and losses of every kind and nature, whether known or unknown arising out of or related to this Agreement from the inception of this Agreement until the date of execution of this First Amendment. Further, the Parties mutually release and forever discharge each other and acknowledge, agree, and covenant for each of themselves and their respective successors and assigns, and irrevocably bind themselves from making any claim or demand or to commence, cause, or permit to be prosecuted any claim or action in law or in equity against the other or any of them on account of or in any way relating to the this Agreement from the inception of the Agreement until the date of execution of this First Amendment. The Parties acknowledge and agree that each is releasing certain rights and assuming certain duties and obligations which, but for this First Amendment to the Agreement, would not have been released or assumed. Accordingly, the Parties agree that this First Amendment to the Agreement is fully and adequately supported by consideration and is fair and reasonable, that the Parties have had the opportunity to consult with and have in fact consulted with such experts of their choice as they may have desired, and that they have had the opportunity to discuss this matter with counsel of their choice.

4. Except as otherwise specifically amended herein, the terms and conditions of the Agreement shall remain unchanged and in full force and effect and shall govern all rights and obligations of the parties. In the event of any conflict between the terms of this First Amendment and the Agreement, the parties hereby agree that this document shall control.

THIS SPACE INTENTIONALLY LEFT BLANK.

IN WITNESS WHEREOF, the parties hereto have made and executed this First Amendment to Large User Raw Water Agreement on the respective dates under each signature: BROWARD COUNTY through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice Mayor, authorized to execute same and CITY OF HOLLYWOOD, signing by and through its Mayor, duly authorized to execute same.

ATTEST:

Broward County Administrator, as
Ex-officio Clerk of the Broward
County Board of County Commissioners

Approved as to Insurance
Requirements by
RISK MANAGEMENT DIVISION

By Mary M. Meisterling
Director
D Hlenge 1/2/04

BROWARD COUNTY, by and through its
BOARD OF COUNTY COMMISSIONERS

By Gene Lubelmer
Mayor

3rd day of January, 2004.

Approved as to form by
Office of County Attorney
Broward County, Florida
Edward A. Dion, County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By Pkane 1-15-04
Pamela M. Kane
Assistant County Attorney

FIRST AMENDMENT TO LARGE USER RAW WATER AGREEMENT BETWEEN BROWARD COUNTY, FLORIDA AND THE CITY OF HOLLYWOOD, FLORIDA

WITNESSES:

CITY OF HOLLYWOOD

By _____
Mayor

_____ day of _____, 2004.

ATTEST:

By _____
City Clerk

_____
City Manager

_____ day of _____, 2004.

(CORPORATE SEAL)

APPROVED AS TO FORM:

By _____
City Attorney

APPROVED AS TO FORM AND LEGALITY
FOR THE USE AND RELIANCE OF THE
CITY OF HOLLYWOOD, FLORIDA, ONLY.

BY: _____
DANIEL L. ABBOTT
CITY ATTORNEY

PMK
December 15, 2003
G:\DIV2\PMK\PMK03\AGREEMEN\HLWDRaw.am1.WPD

APPENDIX F

BROWARD COUNTY'S WATER SUPPLY FACILITIES WORK PLAN 2020

BROWARD COUNTY
FLORIDA

Water Supply Facilities Work Plan

The associated BrowardNEXT2.0 Comprehensive Plan was adopted on March 28, 2019 (Ordinance No. 2019-11) by the Board of County Commissioners.

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LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

ASR	Aquifer Storage and Recovery
AWS	Alternative Water Supply
BCWWS	Broward County Water and Wastewater Services
BCPDMD	Broward County Planning and Development Management Division
BEBR	Bureau of Economic and Business Research
BMP	Best Management Practice
BMSD	Broward County Municipal Services Districts
CADA	Central Aquifer Drainage Assessment
CEPP	Central Everglades Planning Project
CERP	Comprehensive Everglades Restoration Plan
CIE	Capital Improvements Element
CUP	Consumptive Use Permit
DSS	Domestic Self Supply
EPA	Environmental Protection Agency
EPGMD	Environmental Protection and Growth Management Department
EPCRD	Environmental Planning and Community Resilience Division
FDEP	Florida Department of Environmental Protection
FPL	Florida Power and Light Corporation
F.S.	Florida Statutes
GOP	Goals, Objectives, and Policies
gpcd	Gallons Per Capita Per Day
IWRP	Integrated Water Resources Plan
LEC	Lower East Coast
LECWSP	Lower East Coast Water Supply Plan
LORS	Lake Okeechobee Regulation Schedule
LOS	Level of Service
LOSS	Level of Service Standard
LOSOM	Lake Okeechobee System Operating Manual
MFL	Minimum Flow and Minimum Water Level
MG	Million Gallons
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
MGM	Million Gallons Per Month
NADA	North Aquifer Drainage Assessment
NCA	National Climate Assessment
NIS	NatureScape Irrigation Services
PFAM	Population Forecast and Allocation Model
ppb	Parts per billion

RCAP	Regional Climate Action Plan
RO	Reverse Osmosis
SADA	South Aquifer Drainage Assessment
SAS	Surficial Aquifer System
SEFRCCC	Southeast Florida Regional Climate Change Compact
SFWMD	South Florida Water Management District
SRW	South Regional Wellfield
STA	Stormwater Treatment Area
SWR	Surface Water Routing
TAZ	Traffic Analysis Zones
TIP	Transportation Improvement Program
UAZ	Utility Analysis Zones
URO	Urban Runoff
USACE	U.S. Army Corps of Engineers
USGCRP	United States Global Change Research Program
USGS	United States Geological Survey
WCA	Water Conservation Areas
WPA	Water Preserve Areas
WRRDA	Water Resources Reform and Development Act
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Water Supply Facilities Work Plan

EXECUTIVE SUMMARY

This Broward County Water Supply Facilities Work Plan (2020 Work Plan) addresses traditional and alternative water supply (AWS) source development and management strategies to meet existing and projected water use demand. The 2020 Work Plan primarily focuses on Broward County's Public Works Water and Wastewater Services (BCWWS) service areas and unincorporated Broward County neighborhoods entitled the Broward County Municipal Services Districts (BMSD). It also contains updates about the implementation of the urban water resource management strategies, including water conservation programs, prioritized at the 2019 Broward Countywide Integrated Water Resources Plan (IWRP), coordinated by Broward County Environmental Planning and Community Resilience Division (EPCRD). Overall, approximately 240,000 people receive water and wastewater services in these areas and the population is expected to be 281,000 by 2040. The BMSD's water and wastewater services are provided by BCWWS and the City of Fort Lauderdale's utilities. BCWWS' southernmost service area receives potable water through connections with the City of Hollywood.

Florida Law (Section 163.3177(6)(c)3., Florida Statutes [F.S.]) requires local governments to adopt water supply facilities work plans into their comprehensive plans within eighteen months after the South Florida Water Management District (SFWMD) approves a regional water supply plan update. The SFWMD approved the 2018 Lower East Coast Water Supply Plan Update (LECWSP, SFWMD, 2018) on November 8, 2018, with final administrative order on January 11, 2019. The 2020 Work Plan is Broward County's required update based on that plan's adoption. In addition, Broward County integrated its comprehensive plan's water resources elements and the new version is included in the 2020 Work Plan.

Like most Southeast Florida water utilities, BCWWS' primary public water supply source water is the Surficial Aquifer System (SAS) located from ground surface to approximately 240 feet underground. BCWWS' groundwater withdrawal wells range between 75 to 130 feet below ground. Broward County's primary SAS feature is the Biscayne Aquifer and it provides the vast majority of BCWWS and BMSD populations' water supply needs.

However, the Biscayne Aquifer is considered a finite water resource by the SFWMD. In 2007, the SFWMD mandated through a Regional Water Availability Rule that AWS will be used to serve future population growth (SFWMD, 2007). For example, the brackish Upper Floridan Aquifer (approximately to 1000 – 1700 feet underground) can be withdrawn and treated with more complex processes than used for the Biscayne Aquifer water. Other AWS options include, but are not limited to, water conservation, water reuse, and surface water storage development. The 2020 Work Plan outlines future BCWWS AWS projects to serve future populations as well as projects that maintain and optimize BCWWS' current systems. Similar projects are covered for the City of Fort Lauderdale and the City of Hollywood.

The regional C-51 Reservoir project is the primary BCWWS AWS project to meet future population growth demands. Located in Central Palm Beach County, the C-51 Reservoir project is a public-private partnership to construct 60,000 acre-feet (equal to almost 20 billion gallons) of surface water storage. Captured stormwater from the C-51 watershed will be stored in the reservoir and moved across the region via canal systems to recharge local aquifers. BCWWS is planning to use up to six million gallons a day from the C-51 Reservoir project.

The Broward County and Palm Beach County water reuse partnership is another important regional AWS initiative. This beneficial reuse water project is BCWWS' strategy to comply with Florida's Ocean Outfall Law (Section 403.086(9), F.S). The project also provides beneficial water reuse supply to the Southern Palm Beach County region as well as portions of the North Springs Improvement District, Coconut Creek, Deerfield Beach, and Pompano Beach. BCWWS is currently increasing its water reuse production capacity to twenty-six million gallons a day from the current ten million gallons a day to implement this project.

Additional regional drivers for Broward County's water supply include regional climate impacts such as sea level rise, saltwater intrusion, and extreme weather events. Sea level rise threatens future South Florida water conveyance that could negatively impact aquifer recharge and flood control management practices. Due in large part to a porous aquifer, future sea level rise also will increase saltwater intrusion's negative effect on public water supplies. Saltwater intrusion from the ocean will likely move further inward and pose contamination risk for freshwater aquifers. Future extreme weather events may include longer dry weather patterns that could decrease public water supply levels and, may also increase saltwater intrusion's landward extent.

Broward County, together with its municipal and regional partners, supports and facilitates water supply and climate change planning integration and implementation including:

- The Broward County Climate Action Plan's water supply actions (Broward County, 2015) to maintain adequate water supply through conservation and adaptation, and integrated water resource management.
- The Southeast Florida Regional Climate Change Compact's (SEFRCCC) Southeast Florida Regional Climate Action Plan's (RCAP) critical water supply planning components (SEFRCCC, 2017).
- The goals of the Resilient Utility Coalition - an outgrowth from the Compact –to "operationalize resilience" in common water utility practices.

A major regional plan to restore Florida's Everglades – the Comprehensive Everglades Restoration Plan (CERP) – will also change future water resource conditions. CERP will construct additional water storage systems to capture wet season flow volumes and provide critical natural system water needs as well as maintain public water supply. CERP features within Broward County and in other SFWMD regions should collectively benefit local water supply sustainability throughout South Florida.

The 2019 IWRP Update provides key planning, assessment and coordination tools to optimally manage water resources. Its five main objectives are to:

- Make the most of local water resources, so that Broward's long-term water supply needs are met;
- Coordinate a diverse water management community, ensuring the efficient and effective management of Broward's water resources;
- Match up local water sources and users to ensure that water supplies are available when and where they're needed;
- Diversify water supplies so that the needs of urban and natural systems are met under wet and dry conditions; and,
- Promote water resource resiliency by evaluating future conditions, including potential climate impacts and adopt strategies, to mitigate, adapt, and prevent disruptions to our overall goal of more efficient and effective water management.

Additionally, the IWRP program developed, and continues to develop, several numerical hydrologic models used in decision making and to assist sustainable investments. Optimizing integrated secondary canal management is one hallmark success for the IWRP modeling. Broward County's Water Reuse Master Plan was developed to facilitate more projects Countywide and its implementation is greatly assisted with the IWRP's AWS grant investments.

Water conservation remains a critical AWS strategy in the 2020 Work Plan. In 2010, the Broward County Board of County Commissioners passed an irrigation ordinance adopting year-round irrigation restrictions limiting landscape watering to two days per week. In addition, Broward

County implements a broad set of water conservation programs that are designed to produce long-term demand reductions along with water quality improvements. These programs, targeted at various user groups, including Broward Water Partnership Conservation Pays, NatureScape Irrigation Services (NIS), NatureScape Broward, Know the Flow, Water Matters Day, and the NatureScape Broward School Board Environmental Partnership Agreement. The current IWRP goal of Broward County's water conservation programs combined is 10 gallons per day per capita reduction in water use Countywide by 2028.

Finally, the 2020 Work Plan data analysis demonstrates BCWWS will continue to meet its "Retail Potable Water Level of Service Standards". Special recommendations and a ten-year work plan outline the major C-51 Reservoir Project (27.6 million dollars) and Palm Beach County Reuse Partnership (104 million dollars) investments and components. In addition, water treatment plant (WTP) upgrades and water conservation projects are described. BCWWS' robust 5-year Capital Improvement Program is scheduled to spend over 123 million dollars on over sixty components to maintain and optimize the current system as well as build new features. All the 2020 Work Plan projects contribute towards BCWWS successfully managing future challenges to provide excellent water and wastewater services for its service areas.

INTRODUCTION

Broward County is located on the Southeastern coast of Florida and is adjacent to the Atlantic Ocean to the east, Miami-Dade County to the south, Collier County to the west and Palm Beach County to the north as shown in Figure WS1 below. This Broward County Water Supply Facilities Work Plan Update (2020 Work Plan) identifies water supply sources, availability and facilities needed to serve existing and new development within the local government's jurisdiction. Chapter 163, Part II, 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 update. The 2018 Lower East Coast Water Supply Plan (LECWSP) Update was adopted by the SFWMD's Governing Board on November 8, 2018. Therefore, local governments within the Lower East Coast (LEC) region are required to amend their comprehensive plans and include an updated Water Supply Facilities Work Plan and related planning elements by May 8, 2020.

BCWWS produces potable water for its northern and central service areas. BCWWS' southernmost service area receives potable water through connections, with the City of Hollywood. BMSD areas receive water and wastewater services from BCWWS and the city of Fort Lauderdale's utilities. BCWWS and both cities are responsible for ensuring enough capacity is available for existing and future customers.

This 2020 Work Plan will reference the initiatives already identified to ensure adequate water supply for BCWWS and BMSD. According to state guidelines, the work plan and comprehensive plan must address the development of traditional and alternative water supplies, service delivery and conservation and reuse programs necessary to serve existing and new development for at least a 10-year planning period. The work plan will have a planning time schedule consistent with the comprehensive plan and the 2018 LECWSP update. The Broward County 2020 Work Plan is divided into seven sections:

Section 1 – Introduction
Section 2 – Regional Issues
Section 3 – Broward County
Section 4 – Data and Analysis
Section 5 – Special Recommendations and Actions
Section 6 – BCWWS Capital Improvements
Section 7 – Goals, Objectives and Policies

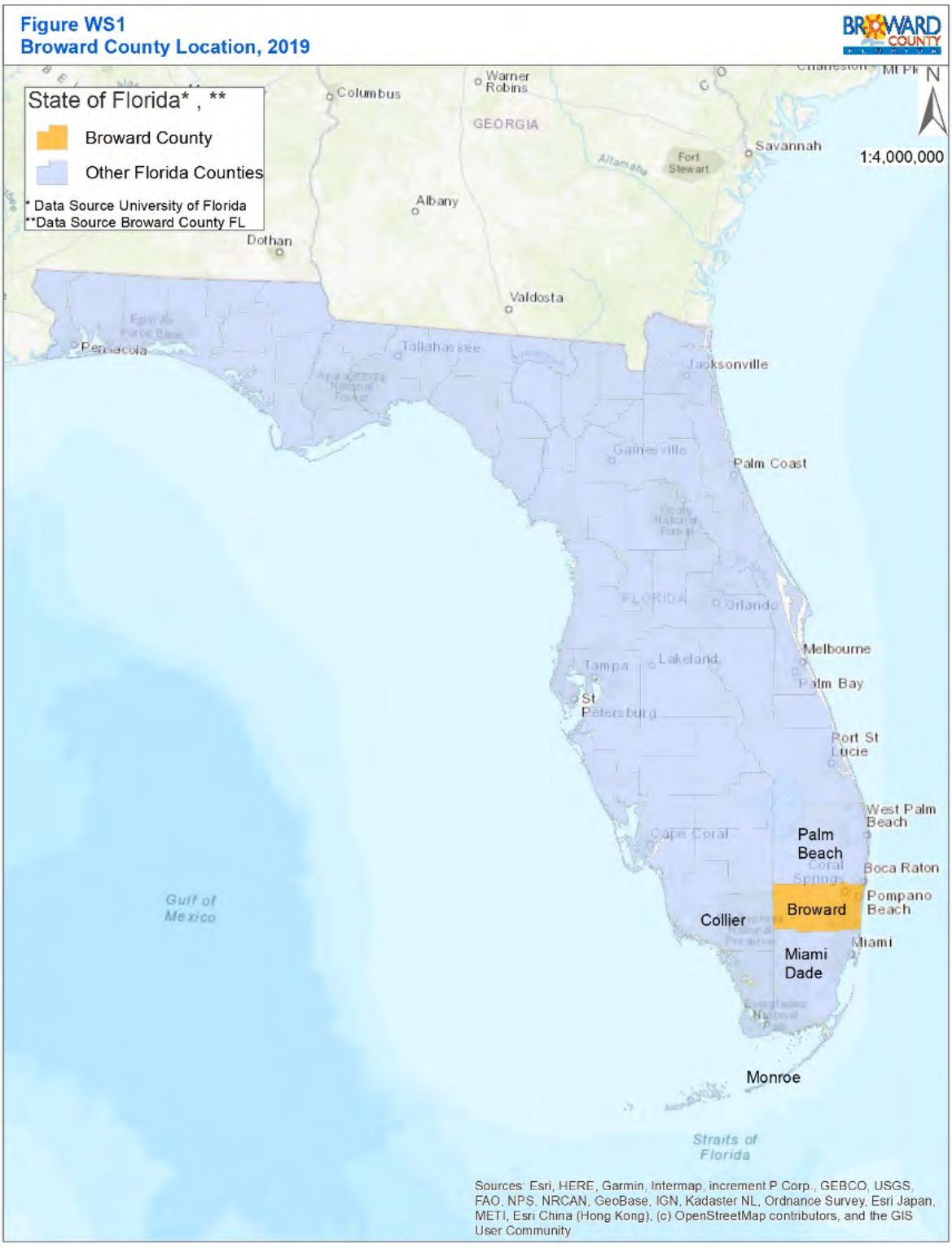

Figure WS1 Broward County Location

A. Statutory History

The Florida Legislature enacted bills in the 2002, 2004, 2005, 2011, 2012, 2015 and 2016 sessions to address the state's water supply needs. Two of these bills, 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 and water supply planning.

B. Statutory Requirements

Broward County has considered the following statutory provision in updates to this 2020 Work Plan.

1. Coordinate appropriate aspects of its comprehensive plan with the LECWSP [Section 163.3177(4)(a), F.S.].
2. Ensure the future land use plan is based upon availability of adequate water supplies and public facilities and services [Section 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 must accompany all proposed Future Land Use Map amendments submitted for review.
3. Ensure 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 and consult 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 [Section 163.3180(2), F.S.].
4. For local governments subject to a regional water supply plan, revise 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, to:
    a. Identify and incorporate the AWS project(s) selected by the local government from projects identified in the LECWSP, or alternative projects(s) proposed by the local government under Section 373.709(8)(b), F.S. [Section 163.3177(6)(c), F.S.];
    b. Identify the traditional and AWS projects and the conservation and reuse programs necessary to meet water needs identified in the LECWSP [Section 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 [Section 163.3177(6)(c) 3, F.S.].

5. Revise 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 [Section 163.3177 (3)(a)4, F.S.].
6. To the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the LECWSP, as well as applicable consumptive use permit(s) [Section 163.3177(6)(d), F.S.]. The plan must address 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 [Section 163.3167(9), F.S.].
7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the LECWSP [Section 163.3177(6)(h) 1, F.S.].
8. While an Evaluation and Appraisal Report is not required, local governments are encouraged to comprehensively evaluate and, as necessary, update comprehensive plans to reflect changes in local conditions. The evaluation could address the extent to which the local government has implemented the need to update its work plan, including the development of alternative water supplies, and determine whether the identified AWS projects, traditional water supply projects and conservation and reuse programs are meeting local water use demands [Section 163.3191(3), F.S.].

REGIONAL ISSUES

The regional issues impacting Broward County include:

1. Climate Impacts and Future Water Supply Conditions: Climate impacts and future water supply conditions need to be integrated into water resources resilience planning efforts;
2. Water Use Limitation: Limitation of fresh surface water and groundwater use by the SFWMD's Regional Water Availability Rule and Everglades and Lake Okeechobee Minimum Flow and Minimum Water Levels (MFL);
3. Alternative Water Supply: The need to develop diverse water sources to meet current and future water needs, including C-51 Reservoir Project, Floridan Aquifer, and reuse as mandated by the Ocean Outfall law; and,
4. CERP Implementation: Construction of additional storage systems (e.g. CERP's reservoirs, aquifer storage, and recovery systems) to capture wet season flow volumes will be necessary to increase water availability during dry conditions and attenuate damaging peak flow events from Lake Okeechobee.

A. Climate Impacts and Future Water Supply Conditions

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of different rainfall patterns and more frequent and severe drought, increases in tidal and storm-related flooding, and the loss of coastal wellfield capacity due to saltwater contamination. In the absence of proactive planning, these impacts will present liabilities for coastal and inland communities with implications for urban water supplies, water and wastewater infrastructure, and both regional and local drainage/flood control systems.

Broward County, together with its municipal and regional partners, understands that it is imperative that local governments and water utilities begin to formalize the integration of water supply and climate change considerations as part of their coordinated planning efforts. Water resource resilience can be achieved with relevant updates to Water Supply Facilities Work Plans and focused, actionable enhancements to comprehensive planning Goals, Objectives, and Policies (GOP). Key considerations for communities within the Southeast Florida planning areas include: 1) sea level rise, 2) saltwater intrusion, 3) extreme weather, and 4) infrastructure investments to support diversification and sustainability of water supply sources, and adaptive stormwater and wastewater systems.

The 2019 IWRP Report states that it is necessary to understand future conditions, particularly as related to potential climate impacts including extreme droughts and rainfall events, along

with sea level rise and related saltwater intrusion, in order to ensure that Broward's water resources will be sustainable and promote more effective and efficient water resources management. The Broward County water management community works with many groups, including the state and federal government, academia, and the private sector to study the impacts that a changing climate brings and to develop plans for mitigation and adaptation.

Among 2019 IWRP objectives, there is: "to promote water resources resiliency by evaluating future conditions, including potential climate impacts and adopt strategies to mitigate, adapt, and prevent disruptions to Broward's overall goal of more efficient and effective water management."

In addition, the Water Supply Actions within the Broward County Climate Action Plan (2015) are intended to maintain adequate water supply through conservation and adaptation, development of decision support tools necessary to build community resilience and increase the resilience of natural systems through integrated water resource management. The 11 actions that are proposed include:

- Continue local water conservation programs
- Include climate change in updates of LECWSP
- Investigate regionalization of water supply
- Monitor and protect wellfields
- Develop AWS strategies
- Model the sustainable use of the aquifer
- Evaluate impacts of flooding of contaminated sites
- Evaluate reuse water interaction with and impacts to the natural systems
- Implement reuse strategies
- Evaluate reuse considering sea level rise
- Increase percentage of pervious areas

Both the 2019 IWRP Update and Broward's Climate Action Plan support the work of the Southeast Florida Regional Climate Change Compact (SEFRCCC) to develop the Regional Climate Action Plan (RCAP) (SEFRCCC 2017), which is the four-County Southeast Florida Regional Climate Compact's guiding tool for coordinated climate action in Southeast Florida. Broward County has taken a lead role as a compact partner in organizing the water section of the Water Goal of the document, which is designed to "advance the water management strategies and infrastructure improvements needed, in parallel with existing water conservation efforts, to mitigate the potential adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems, inclusive of regional canal networks, pumps, control structures, and

operations." Twenty-one actions are included within this goal. Compact documents produced to assist policymakers, administrators, and program staff include "Integrating Climate Change and Water Supply Planning in Southeast Florida" and "Regional Impacts of Climate Change and Issues for Stormwater Management" (SEFRCCC, 2019).

Sea Level Rise

Sea level rise has significant implications for water management and water supply planning in Southeast Florida, the rate of which is accelerating. During the previous century, the global rate of sea level rise averaged approximately 1.6 mm per year. The rate of rise increased to an average of 1.7 mm per year during the second half of the last century, followed by a more significant increase to 3.3 mm per year measured during the last decade. This trend of rising sea level is reinforced by local tide data which documents an increase in regional sea level of about 9 inches during the last 100 years. While there continues to be uncertainty about the overall extent of sea level rise that might be realized in the coming century, the Fourth National Climate Assessment (NCA, USGCRP, 2018) report presents a probable range of 1 to 6 feet by 2100. In Southeast Florida, partner counties in the Southeast Florida Regional Climate Change Compact, inclusive of Broward, Palm Beach, Miami-Dade, and Monroe counties, have collectively agreed to use modified guidance developed by the U.S. Army Corps of Engineers (USACE) and a planning scenario of 9 to 24 inches additional sea level rise by 2060, consistent with projections presented in the 2014 NCA, Figure WS2 below. This unified sea level rise projection has been formally adopted by Palm Beach, Broward, Miami-Dade and Monroe Counties and is now being used to inform planning processes and project design throughout the region. As the impacts of historic sea level rise are already being realized and acceleration of the rate of rise is expected to compound local impacts and vulnerabilities, it is prudent that planning processes begin to formally reflect consideration of sea level rise as a future condition with recognized implications for near-term and longer-term planning decisions.

Sea level rise produces varied challenges with the respect to water resources sustainability, water management, and water/wastewater facilities and infrastructure. Impacts include saltwater contamination of coastal wellfields, infiltration of groundwater with chloride levels into wastewater collection systems, impairing normal operations and maintenance, as well as opportunities for beneficial use of reclaimed water as an AWS. Water management systems are also at risk with systems constrained by rising groundwater and tail water elevations which reduce soil storage and discharge capacity, with increased potential for both inland and coastal flooding and less opportunity for long-term storage of stormwater for beneficial reuse.

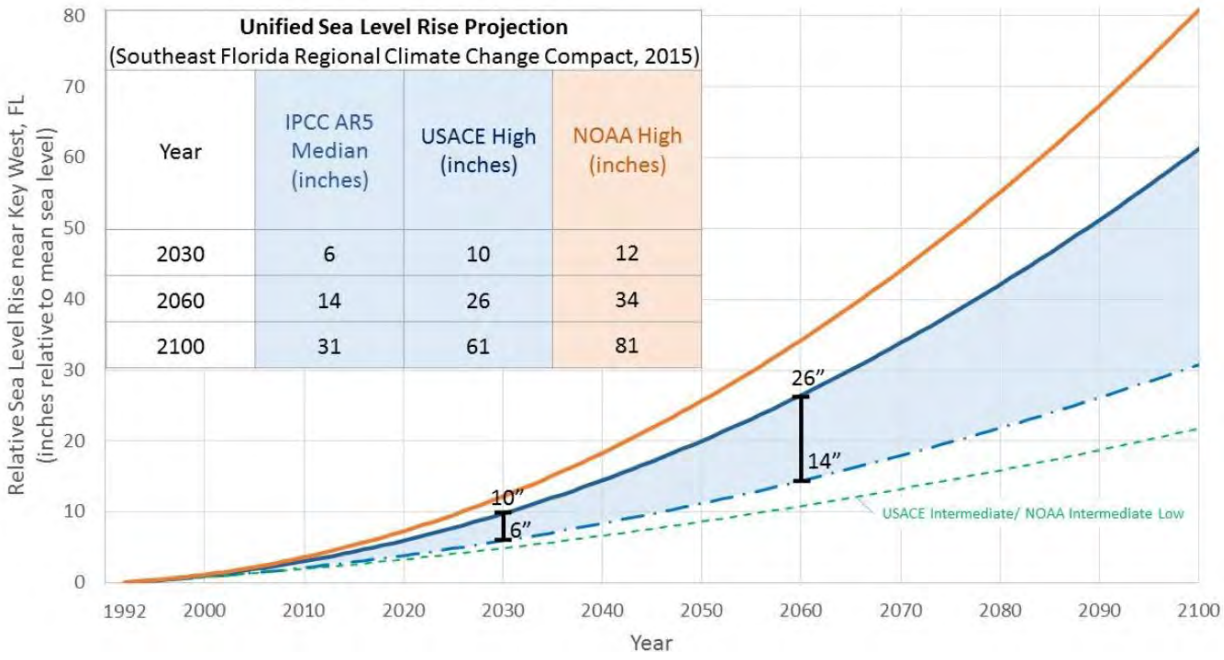

Figure WS2 Southeast Florida Regional Climate Change Compact Unified Sea Level Rise Projection[1]

These realities necessitate consideration of plans and investments that may be needed to compensate for loss of existing water supplies through relocation of wellfields and the development of AWS sources, while also seeking opportunities to expand regional water storage opportunities. These investments and considerations are in addition to concurrency planning for population growth and water demands that are typical requirements for water supply planning.

Saltwater Intrusion

Along the coast of Southeast Florida, and several miles inland, groundwater supplies and potable wells are vulnerable to saltwater contamination. The Biscayne Aquifer, which serves as the regional's primary water supply, is a shallow, surficial aquifer characterized by limestone karst geology, which is highly porous and transmissive. As a result, coastal saltwater intrusion of the aquifer has begun to restrict coastal water supplies and necessitated the development of western wellfields, changes in wellfield in water management operations, and investments in reclaimed water projects to enhance aquifer recharge. At the toe of the saltwater front, chloride concentrations exceed drinking water

[1] The unified sea level rise projection is updated every 5 years, having its next one anticipated to be released at the Southeast Florida Regional Climate Change Compact Summit, in December 2019. Link to current 2015 version shown above: https://southeastfloridaclimatecompact.org/wp-content/uploads/2015/10/2015-Compact-Unified-Sea-Level-Rise-Projection.pdf

standards of 250 milligrams per liter (mg/L) and thus restrict and/or require abandonment of wellheads located east of the saltwater intrusion line.

While impacts and planning efforts have historically focused on the most at risk utilities and wellfield, the accelerated rate of sea level rise and advancements in modeling and planning tools provide support and justification for a more holistic review of anticipated trends and necessary responses on both a local and regional scale.

As early as the 2000 LECWSP, these impacted water supply entities were classified as:

- Utilities at Risk – Utilities with wellfields near the saltwater interface that do not have an inland wellfield, have not developed adequate alternative sources of water, and have limited ability to meet user needs through interconnects with other utilities; and
- Utilities of Concern – Utilities having wellfields near the saltwater interface, the ability to shift pumpages to an inland wellfield, or an alternative source that is not impacted by the drought.

Technical assessments have further identified changes in land use, drainage of the Everglades, wellfield operations, and sea level rise as contributing factors to the historical movement and current location of the saltwater front within the productive layer of the aquifer.

Hydrologic modeling has revealed that sea level rise, when combined with coastal wellfield pumping, has accelerated the movement of the front, doubling the rate at which the front has progressed during the last several decades at certain locations. It is expected that sea level rise will constitute an increasingly significant influence on the rate of saltwater migration during the decades to come and that critical wellfield capacity will be lost with an additional 2-foot increase in sea level, the extent of which will vary along the coast. Conditions will be further influenced by temporal hydrologic conditions and responses in water management operations. It is therefore prudent for water utilities throughout the region (both inland and coastal) to consider adaptation plans that might include wellfield relocation or expansion of western wellfields as part of planned efforts to meet shared regional water demands. Continuation of groundwater monitoring and modeling efforts will be critical to predicting the movement of the front under sea level rise scenarios anticipated over the next several decades and adaptation efforts should continue to be refined in accordance with predicted and realized trends. Regional and local data will be important in informing decision-making.

In 2006, Broward County's EPCRD contracted with the United States Geological Survey (USGS) to develop a numerical model to evaluate various influencing factors on the saltwater movement within the Biscayne Aquifer in the northern third of the County. This tool was proven to be effective in representing historic and future conditions and was demonstrated to have utility as a planning tool for future water resources projects and development of resilience strategies. This modeling effort was subsequently expanded to the central and southern portions of the County to simulate historic saltwater intrusion and to test the extent to which wellfield pumpage, surface water management, and sea level rise contribute to and influence the movement of saltwater and how the aquifer can be expected to respond to future climate conditions. The tool will also investigate the implications on the viability of water supplies and be used to identify and test possible adaptive strategies. This model was published and publicly released in March 2016.

The County is also enhancing this investment with concurrent development of a Climate Vulnerability/Inundation model focused on coupled hydrologic impacts of saltwater intrusion, surface water/groundwater elevations, and stormwater inundation. This model, also developed in cooperation with USGS, builds upon the County's Variable Density Model to assess the influence of changing climatic conditions on urban water resources and infrastructure. The current initial effort integrates bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model that will be used for predictions Countywide. Refinements such as Surface Water Routing (SWR) and Urban Runoff (URO) components offer more detailed conceptualization of the surface water/groundwater interactions that can be then used to assess the predictive scenarios and comparison of alternative water resource strategies in a smaller study area of the County. This model was published and publicly released in February 2019. Initial results of the implementation of the SWR and URO packages in the study area were successful and, as such, expansion of the two packages throughout the entire urban extents of the County are currently underway.

In the recent restudy of Flood Insurance Rate Maps completed in 2014 by FEMA, the County's MIKE SHE/MIKE 11 model was utilized and updated. The County is updating this map to anticipate 100-year flood elevations that are expected to occur by 2060-2070, accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use updates, roughness coefficient improvements, addition of detention storage and ponded drainage routines, and incorporation of future tide levels. It is anticipated the Future Conditions 100-Year Flood Elevation Map will be completed in Fall of 2019, when approval process will be initiated.

The mapping of the current saltwater intrusion front is elaborated based on the end of dry season data available at 93 monitoring stations supported by local governments throughout the region, the USGS, and the SFWMD. The current Saltwater Intrusion Line for Broward County, Figure WS3 was last updated in 2014 and the SFWMD is currently working to advance, with an anticipated publishing date of December 2019.

Extreme Weather Events

As extreme events increase in frequency and severity, comprehensive planning should consider impacts and risks associated with drought, water shortages and reduced groundwater tables, all of which can hasten saltwater intrusion and exacerbate water supply impacts. Conversely, more intense rainfall will cause flooding, increased runoff, impacts to the natural systems and provide less recharge potential for wellfields. Integrated water resource management strategies will help to mitigate for these impacts, particularly those projects that can serve to provide additional long-term storage of stormwater runoff and redistribution of excess rainfall during dry periods and drought. Regional surface water reservoirs and below ground aquifer storage and recovery (ASR) systems are potentially viable AWS projects and climate adaptation strategies.

Infrastructure Development

With increasing climate disruptions, there is a need to diversify water supply sources, improve treatment technologies and to support the development of adaptive stormwater and wastewater infrastructure design criteria to ensure long-term sustainability of key facilities. Conversely, alternative water treatment technologies generally have a high energy demand and carbon footprint that can exacerbate climate change impacts. Strategic infrastructure planning should incorporate these constraints and work within with the GOP of the Comprehensive Planning process and Water Supply Facilities Work Plans to provide for long-term sustainability and a balanced approach to future development.

Increases in groundwater deviations, as both direct and indirect response to sea level, will challenge the function of drainage systems and is expected to exacerbate flooding, for even mild storm events. Conditions will be more severe with extreme rainfall events increasing damage to low-lying utility infrastructure and contribution to prolonged surface water flooding. Planning for the combined influences of storm events, high tides and sea level rise on drainage system functions and other public infrastructure is a critical need as is the assessment of viable water supplies and impacts to the natural systems from prolonged droughts.

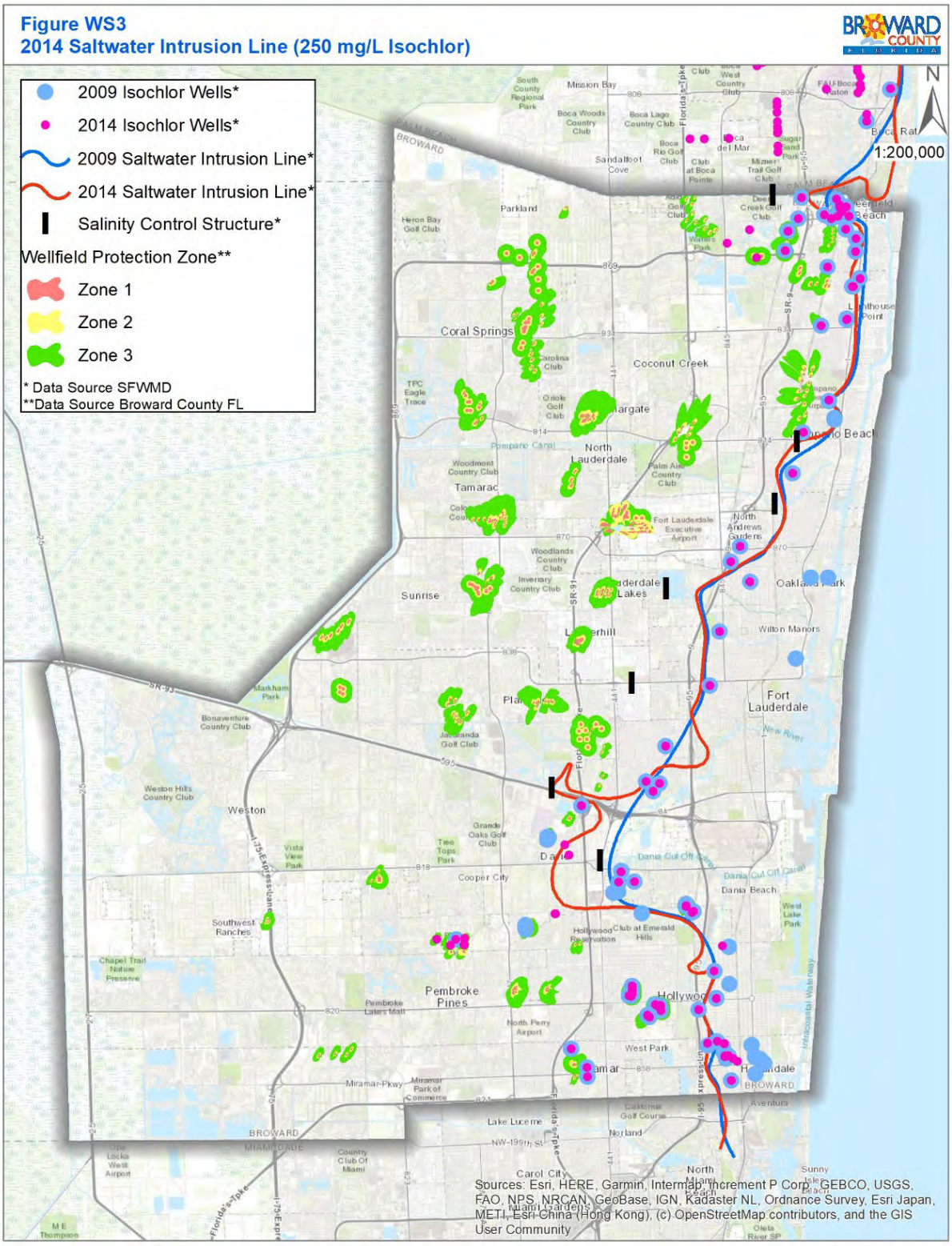

Figure WS3 Saltwater Intrusion Line (2014 SFWMD Isochlor Line – 250mg/L) for Broward County

Options that provide for a diversification of water projects and protection of resources will be fundamental and may include: regional water storage such as the C-51 Reservoir Project; ASR; the development and use of highly treated wastewater (reverse osmosis - RO) for recharge as hydrodynamic barriers; the relocation and/or regionalization of wellfields and treatment facilities away from low-lying areas; and enhancing operational flexibility.

B. Water Use Limitation

The MFLs outlined in the Florida State Statutes are defined as the "limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area" (Section 373.042(1), F.S.). They serve to protect the SAS from saltwater intrusion, ensure adequate groundwater levels for maintenance of natural systems, and prevent excessive groundwater seepage or surface water flows from the regional (Everglades) system.

As part of the establishment of MFLs, the regional water management district must determine whether the existing flow or level in the water body is below or projected to fall below the MFL criteria within the next 20 years. If so, then the district must develop a recovery or prevention strategy and, when appropriate, include development of additional water supplies, water conservation, and other efficiency measures consistent with the provisions in Sections 373.0421 and 373.709, F.S., and provide the information and timelines for these strategies within the regional water supply plans. The 2005-2006 LECWSP Update (2005-2006, LECWSP) included MFLs for the Everglades and Biscayne aquifer identifying key water resource development projects in the CERP as recovery and prevention strategies to meet MFL criteria.

In 2001, an MFL was adopted for the Biscayne Aquifer, which exists beneath south eastern Florida. The MFL was based on the relationship between Everglades surface water and groundwater levels and their ability to inhibit the movement of saline water inland from the Atlantic Ocean. The primary MFL study (SFWMD 2000c) concluded that groundwater levels in the Biscayne were not endangered by present nor future year 2020 conditions. However, since the Biscayne aquifer and Everglades are supported by surface water from the Regional System and, since Everglades MFL is under recovery strategies, it was determined that any projected increase in allocations from the Biscayne would cause the Everglades MFL to be unobtainable. Additionally, the regional system was designated by the SFWMD in 2003 as a source of limited availability, leading to the limitation of consumptive use allocations in both the Everglades and Loxahatchee River Watersheds in 2006 under the Regional Water Availability Rule. The Regional Water Availability Rule is codified in the Applicant's Handbook for Water Supply Permitting within the South Florida Water Management District (SFWMD, 2015) in Section 3.2.1.E.3. Due to the limitation of

groundwater from the Biscayne aquifer in order to maintain MFL, Broward County is required to meet additional demands with alternative water supplies.

After the approval of the 2005-2006 LECWSP, continued concern over the safety of Lake Okeechobee's dike and ecological impacts warranted that the USACE set a new regulation schedule for lake water releases. The Lake had historically provided water supplies directly to a few rural utilities, irrigation water for the Everglades agricultural area, and backup water source for urban users in the coastal basins during droughts and dry times as 'pass through' water to the Water Conservation Areas (WCAs). With the 2008 Lake Okeechobee Regulation Schedule and lower stage levels, an average loss of approximately 430,000 acre-feet of storage diminished the level of certainty for existing legal users (SFWMD, 2013). This mandated that a prevention and recovery strategy be implemented with water resources strategies identified to meet the MFL criteria, as was done for the Everglades and Biscayne MFL. Therefore, in August 2008 the 2005-2006 LECWSP, Appendix J was amended to include a recovery strategy for the Lake Okeechobee MFL and, as with the other MFLs, the Lake MFL recovery strategy relies upon key CERP projects to be completed in addition to the completion of the Herbert Hoover Dike repairs.

In 2019, USACE initiated the development of the new Lake Okeechobee System Operating Manual (LOSOM) with the purpose to reevaluate and define operations for the Lake Okeechobee regulation schedule that to account for additional infrastructure that will soon be operational. The additional infrastructure that are being taken into consideration include the Herbert Hoover Dike rehabilitation, Kissimmee River Restoration Project, as well as the CERP C-43 West Basin Storage Reservoir and C-44 Reservoir and Stormwater Treatment Area.

The SAS in the Southeastern Florida peninsula, which includes the Biscayne Aquifer, is one of the most productive aquifers in the world and is currently the primary source of freshwater to residents of Broward County, Miami-Dade County, and Southeastern Palm Beach County. In 1979, it was designated a sole source aquifer by U.S. Environmental Protection Agency (EPA), under the Safe Drinking Water Act (1974). The SFWMD is the state agency responsible for water supply planning in the LEC planning area, which includes all of Broward County.

Withdrawals from the SAS are managed by the SFWMD through the issuance of Consumptive Use Permits (CUPs). In order to secure and maintain a CUP, applicants, consisting of water utilities, developers, agricultural operations, and water control districts, must meet the permitting criteria of: 1) being a reasonable and beneficial use of the resource; 2) demonstration of no adverse impact to other existing legal uses of water; and 3) assurance

that the use of the requested quantity of water is necessary for economic and efficient use and is both reasonable and consistent with the public interest.

These uses must include compliance with the MFLs established for surface water and groundwater sources, Chapter 373, F.S. In the implementation of prevention strategy for the Everglades, Lake Okeechobee and Biscayne aquifer MFLs, the Governing Board of the SFWMD adopted Restricted Allocation Areas in 2007 and 2008. For the LEC planning region, this mandated that new water demands requiring recharge from the Everglades regional system be met through the development of AWS. The numerous (115) AWS projects that were recommended as part of the 2005-2006 LECWSP Update were driven largely by these Restricted Allocation Areas and the concurrent consumptive use restriction for future water supply withdrawals from the surficial aquifer to historic levels (prior to April 1, 2006).

Opportunities for assistance for these AWS projects occurred in 2005 with the passage of Senate Bill 444, creating a funding and incentives program to encourage the development of alternative water projects as defined in Section 373.019, F.S. The projects were defined as from the following sources: saltwater; brackish water; surface water captured during wet-weather flows; sources made available through the addition of new storage capacity for surface or groundwater; water that has been reclaimed after one or more public water supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reclaimed water; stormwater; and any other water supply source that is designated as nontraditional for a water supply region in the applicable water supply plan.

This program funding has since been severely limited within the LEC region and has directly impacted the ability of local water supply entities to advance the development of AWS projects through their own individual efforts.

C. Alternative Water Supply

Reclaimed Water

In 2008, the Florida Legislature enacted an ocean outfall statute (Section 403.086(9), F.S.). This requires the elimination of the use of six ocean outfalls in Southeastern Florida as the primary means for disposal of treated domestic wastewater, two of which are in Broward County, one of which is operated by Broward County Water and Wastewater Services. The affected wastewater utilities must reuse at least 60 percent of the historic outfall flows by 2025. The objectives of this statute are to reduce nutrient loadings to the environment and to achieve the more efficient use of water for water supply needs. South Florida utilities are working to advance reuse projects to meet the requirements.

Upper Floridan Aquifer

On occasions when local utilities seek use of the Floridan Aquifer to supplement their Biscayne Aquifer-sourced water, they are faced with higher energy costs associated with treatment of the Floridan Aquifer water in South Florida, which has elevated chloride concentrations above those that are found elsewhere in Northern and Central Florida. Typically, the utilities in Broward County that utilize the Floridan Aquifer mix that water with Biscayne water supplies, thereby diluting the chlorides and subsequently providing a finished water requiring less treatment than water that is derived solely from the Floridan Aquifer.

C-51 Reservoir Project

The C-51 Reservoir project is a public-private partnership for the construction of 60,000 acre-feet of storage for use as an AWS source in Southeastern Florida. Diversion and improved management of freshwater flows was formally identified as a priority restoration strategy for the Lake Worth Lagoon dating to the 1992 Restudy of the C & SF Flood Control Project. Coordination between Broward and Palm Beach water utilities and Counties was initiated in 2006. The C-51 Reservoir Project is presented at the 2018 LECWSP as an AWS source to meet with regional projected 2040 water demands. Beyond water supply, the reservoir will contribute to capture excess flows and enhance stormwater management, reduce harmful discharges and associated nutrient loads to Lake Worth Lagoon. It should also mitigate saltwater intrusion by maintaining higher canal stages and recharging coastal wellfields along the LEC. These potential environmental enhancements are being studied as part of the Phase 2 feasibility analysis currently underway.

D. Comprehensive Everglades Restoration Plan Implementation

The CERP is the blueprint for refitting the region's outdated water management infrastructure. By addressing the needs of the natural system with those of the urban areas and agriculture, the plan provides considerable benefits throughout the system and is a first step towards a sustainable South Florida. The CERP is designed to capture, store, or convey water now discharged to tide, making it available for all users and yielding benefits for both the regional system and local partners. The USACE and the SFWMD are partners in the re-plumbing of the Everglades with the objective of "getting the water right". This watershed plan is linked to the SFWMD's LECWSP, which addresses water supply issues in Miami-Dade, Broward, and Palm Beach Counties over the next twenty years.

In October 2011, the South Florida Ecosystem Restoration Task Force endorsed a state-federal initiative to speed up planning for key restoration projects in the heart of the Everglades. The Central Everglades Planning Project (CEPP) incorporates updated science

and technical information gained over the last decade to allow more water to be directed south to the central Everglades, Everglades National Park, and Florida Bay while protecting coastal estuaries. The USACE led the CEPP planning effort in partnership with the SFWMD.

The Broward County Water Preserve Areas (WPA) project, part of CERP, was authorized by Congress as part of the 2014 Water Resources Reform and Development Act (WRRDA). The two primary functions of the project is to reduce seepage losses from the WCA 3A/3B to the C-11 and C-9 basins and to capture, store, and distribute surface water runoff from the western C-11 basin that has discharged into the WCA 3A/3B. Indirectly this will help to buffer the local water system against drought. The stormwater that was previously discharged via the S-9 pump station westward to the WCA will now be stored in the C-11 impoundment and slowly released into the canal system to be discharged via the S-9A structure eastward. Maintaining those canals at the control elevation will help maintain recharge to the aquifer and wellfields such as the Broward County South Regional in the area.

BROWARD COUNTY

This section identifies the future water supply needs of those areas serviced by either BCWWS or other BMSD water suppliers to ensure that water supply allocations and projects will be enough to meet projected demands. The role of the EPCRD and BCWWS are to identify the future water supply needs and available supplies of the BCWWS service area (see Data and Analysis Section) as well as for those served within the BMSD. Currently, water service is provided by BCWWS to the BMSD areas of Broadview Park and Hillsboro Pines. The City of Fort Lauderdale utility serves the BMSD areas of Washington Park, Franklin Park, Boulevard Gardens, and Roosevelt Gardens. In coordination with the Fort Lauderdale's Planning and Zoning Department and Water utilities, the EPCRD has identified current and future water supply needs and water supplies as detailed below.

A. Broward County Settings

Broward County (County) is located along the lower east coast of Florida, between Miami-Dade County to the south, Palm Beach County to the north, and Collier and Hendry Counties to the west. The County was formed from parts of Palm Beach and Dade Counties in 1915. At that time, the population was 4,763 (Florida State Census). In 2010, the Census estimated the population of the County to be 1,748,066 making it the second most populated county in the State after Miami-Dade (2010 Census Data). The University of Florida's Bureau of Economic and Business Research (BEBR), 2018 estimate lists the County's population at 1,873,970.

In land size, the County contains more than 1,225 square miles, however, only the eastern third of the County (approximately 422 square miles) is urbanized. The remaining two-thirds of the County is composed of wetlands that constitute a large part of the Everglades WCAs. This portion of the County is actively undergoing the planning and construction related to restoration of the Everglades, the largest natural system restoration effort in the world. With a population of nearly 1.8 million living on approximately 422 square miles of relatively low-lying developable urban land, the population density of the County is approximately 4,200 people per square mile.

Balancing Everglades restoration efforts and climate change impacts with our growing communities presents the County with significant water resource planning challenges. However, Broward has long recognized that water is a shared regional resource and that effective and efficient water management requires Countywide and regional coordination. To this end, the County is a founding member of the Southeast Florida Regional Climate

Change Compact and board member of the Resilient Utility Coalition to ensure sustainability of the water resources in our region.

Southeast Florida is widely considered one of the most vulnerable regions with respect to the impacts of climate change and sea level rise. This is largely the result of several unique geographic characteristics, which include low land elevations, flat topography, a porous geology, and dense coastal development. In combination, climate change and sea level rise are expected to present significant challenges relating to water resource planning, management, and infrastructure for communities throughout the region, which includes Palm Beach, Broward, Miami-Dade, and Monroe Counties. These communities have agreed to partner in regionally-coordinated climate mitigation and adaptation strategies as part of the Southeast Florida Regional Climate Change Compact (SEFRCCC) and have jointly developed and adopted a Regional Climate Action Plan (RCAP 2.0), including 142 recommendations in twelve primary focal areas, with 21 specific to the focal area of "Water", Table WS1 below. These recommendations are intended to meet the goals of advancing water management strategies and infrastructure improvements needed to mitigate for adverse impacts of climate change and sea level rise on water supplies. Recommendations are incorporated throughout this 2020 Work Plan and related comprehensive planning element updates.

Table WS1 **Water Supply Recommendations from the Regional Climate Action Plan 2.0** [1]

[1]WS-1	Develop and share new water management information, methods, technical capabilities, and trends addressing key climate variability and sea level rise concerns through the Compact's collaborations with state and federal agency partners and academic institutions, as well as through the RCAP. Establish a method for a periodic exchange of ideas between water resource managers, policymakers, stakeholders, scientists, and researchers in collaboration with the Compact, the South Florida Water Management District, and local academic partners.
WS-2	Ensure all water resource policy, planning, and management decisions in the Lower East Coast Water Supply Planning Area are consistently aligned with: a) the latest Southeast Florida unified sea level rise projections; b) regional climate scenarios for planning (e.g., storm surge, design storm events); and, c) hydrologic models used in adaptation planning, from local to regional scales. Ensure all water resource policies consider regional water management issues, including flooding and water variability. For flooding, use impact assessments for observed and predicted climate variability on the frequency, duration, and intensity of flooding connected to sea level rise, extreme tidal excursions, storm surges, and 100-year rainfall events. Use impact assessments to determine where impacts will likely be greatest. For water availability, examine the effects of climate change and sea level rise on water availability and groundwater vulnerability to saltwater intrusion, based on potential changes in precipitation and evapotranspiration patterns and associated extreme drought and flood events.
WS-3	Encourage the South Florida Water Management District to integrate potential future climate conditions, sea level rise scenarios, and potential impacts to water quality and supply into the regional water management models used to support the Lower East Coast Water Supply Plan, environmental resource permitting, and consumptive use permitting.

WS-4	Ensure consistency in efforts to map saltwater intrusion across the region to create better information and improve management decisions for protecting regional freshwater aquifers. Coordinate the methodology and schedule for the saltwater intrusion mapping used to maintain and update the regional saltwater intrusion baseline mapping conducted by the South Florida Water Management District and the U.S. Geological Survey, at a minimum of every five years. Utilize saltwater intrusion models and validated data to identify wellfields and underground infrastructure at risk of contamination or infiltration by saltwater due to rising sea levels.
WS-5	Coordinate among city and county government public works agencies, water utilities, and other operators of water infrastructure to develop and maintain local and regional inventories of existing potable water supply wellfields, treatment and distribution systems, wastewater treatment and collection infrastructure, and septic tanks and drain fields. Assess the potential for climate change impacts on each component of water infrastructure under different climate change scenarios and develop adaptation strategies for affected systems, including infrastructure that may require replacement, reinforcement, or relocation to ensure the long-term viability of the system.
WS-6	Track the climate resilience projects for water infrastructure being designed and built by local governments and utility districts across Southeast Florida to aid local peer learning. Develop a regionally coordinated geodatabase to illustrate and catalog local and regional resilience projects, planning tools, and infrastructure investments, and a formal data management strategy for water infrastructure projects that could be scaled in the future to include other infrastructure (e.g., communications, transportation, and energy).
WS-7	Modernize permitting, planning, and design standards for development and infrastructure improvements to drainage systems, surface water management systems, and finished floor elevations based on updates to groundwater table maps, flood elevation maps, and tidal elevations. Prioritize design standards that maintain project compatibility, infrastructure connectivity, and level of service under potential future climate conditions.
WS-8	Coordinate with the South Florida Water Management District and local public officials to request a comprehensive assessment of the Central and South Florida flood control system by the U.S. Army Corps of Engineers. Determine the regional flood control system's performance under potential future climate conditions based on the U.S. Army Corps of Engineers' comprehensive assessment. Develop a resilience strategy that will ensure existing levels of service are maintained or improved under future conditions.
WS-9	Advocate for an update of the Florida Department of Environmental Protection's Stormwater Management Rule, "SFWMD Environmental Resource Permit Applicant's Handbook – Volume II," through the Southeast Florida Regional Climate Collaborative Policy advocacy process. Advocate for rule changes that integrate potential future climate conditions and stormwater harvesting initiatives in permitting criteria at all levels, including average wet season groundwater elevations; unified sea level rise projections; and intensity, duration, and frequency curves.
WS-10	Continue to utilize a combination of inundation maps and stormwater models to identify areas and infrastructure at increased risk of flooding. Evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems (including septic systems, wastewater collection, and conveyance and storage systems), with consideration of water quantity and quality (including public health-related metrics). Use the results of the above-stated analyses as the basis for site planning and regulation, and for identifying and prioritizing adaptation needs and strategies.

WS-11	Promote the development of green infrastructure and alternative, net-zero greenhouse gas emission strategies for water supply, stormwater, and wastewater management focused on achieving a balance between water availability and consumption, limiting energy use to the amount produced on-site via renewable energy, and eliminating solid waste sent to landfills. Create comprehensive strategies to advance the multiple benefits and sustainability of services provided by net-zero practices.
WS-12	Coordinate across regional, state, and federal agencies to develop and apply appropriate hydrologic and hydraulic models to further evaluate the efficacy of existing water management systems and flood control and drainage infrastructure under variable climate conditions. Quantify the capacity and interconnectivity of the surface water control network and develop feasible adaptation strategies. Develop common data standards and database protocol for maintaining water management system components.
WS-13	Convene forums to promote a joint assessment and planning strategy involving local water utilities, wastewater service providers, water managers, and partners to the Southeast Florida Regional Climate Change Compact for coordinated consideration of: a) stormwater use and disposal; b) rainfall-derived inflow and infiltration; c) traditional and alternative water supplies; d) wastewater disposal; e) expansion of reuse and water conservation measures (e.g., maintaining adequate aquifer levels and minimizing the use of potable water for irrigation purposes); and, f) amendments to applicable development codes and regulations. Develop local integrated water management plans based on joint assessment and planning strategies.
WS-14	Undertake a comprehensive evaluation of stormwater improvements necessary to expand surface water storage, enhance water quality treatment, and reduce stormwater discharges in the delivery of flood protection needs and environmental priorities for the Everglades and estuarine and coastal ecosystems. Improve stormwater management through distributed storage, integrated stormwater systems, and additional best management practices.
WS-15	Encourage collaborative programs with local universities—including the Compact's partnership with the Florida Climate Institute—to improve community and stakeholder communication and education efforts regarding potential local and regional climate change impacts. Build partnerships and technology exchanges with public, private, academic, domestic, and international partners to bring additional experience and innovation to resilience planning, projects, and decision support. Continue to encourage, foster, and support collaborative investigative work and scientific research that improves water resource management, including: a) downscaling global climate models to represent precipitation patterns at the regional and local scale and to develop standardized precipitation scenarios for the region; b) identifying and targeting gaps in monitoring and data availability (e.g., light detection and ranging, environmental and water quality data, or data supporting regional climate indicators) to improve the quantification of the hydrologic system and its response to climate change (e.g., evapotranspiration, surface and groundwater levels, water quality, precipitation, and local sea level) through local program efforts, agency collaborations, and advocacy for additional state and/or federal resources, as needed; and c) developing integrated risk-based decision-support tools and processes for application in the analysis and selection of infrastructure design, water resource management, natural systems management, and hazard mitigation alternatives. Tools should facilitate the consideration of the potential economic costs of comparative planning scenarios, management decisions, and infrastructure investments, as well as the evaluation of potential trade-offs.

WS-16	Cultivate partnerships with regional, federal, and state agencies and professional associations with expertise in integrated water resource planning as sources of important research, including: a) the U.S. Army Corps of Engineers Institute for Water Resources; b) the United States Geological Survey; c) the Environmental Protection Agency; d) the National Oceanic and Atmospheric Administration; and, e) water foundations..
WS-17	Identify, incorporate, and prioritize preferred climate adaptation improvement projects pertaining to water supply, wastewater systems, stormwater management, and flood protection as part of capital improvement plans. Develop projects, pursue funding options (including independent funding mechanisms), and implement projects.
WS-18	Coordinate the implementation of innovative water management technologies across multiple jurisdictions as part of piloted solutions to foster shared investments. Facilitate knowledge sharing about the results, costs, and savings from management technologies. Scale successful cross-jurisdictional technologies to reduce the potential for redundant investments and achieve economies-of-scale while fairly distributing costs and benefits across multiple project beneficiaries.
WS-19	Identify existing underperforming infrastructure and implement adaptable infrastructure strategies that facilitate targeted investments, allow managed performance, and achieve greater flexibility in system operations.
WS-20	Continue to support the Comprehensive Everglades Restoration Plan (CERP) and its updated versions as fundamental to Everglades restoration. Contribute to the ongoing implementation of CERP and updates to implementation plans (such as the Integrated Delivery Schedule) through the South Florida Ecosystem Restoration Task Force and relevant working groups. Publicize the role of CERP as a regional climate resilience strategy, particularly as a way to increase freshwater flows to the Everglades system, which improves water quality, maximizes regional freshwater storage and aquifer recharge, and creates the potential to abate saltwater intrusion, an increasingly important effort under variable climate conditions and in the face of sea level rise.
WS-21	Develop new and combine existing land acquisition priorities in a regional setting to protect, preserve, and enhance water storage. Develop regional and distributed surface water storage (e.g., C-51 Reservoir Project and interconnected urban systems) to increase the potential for stormwater capture and reuse for water supply, aquifer recharge, flood management, and environmental benefits.

1. Source: Water Supply Recommendations from the Regional Climate Action Plan 2.0 https://southeastfloridaclimatecompact.org/recommendation-category/ws/)

The Resilient Utility Coalition established in 2016 seeks to advance utility infrastructure resiliency efforts and provide essential value to its members and partners. The Resilient Utility Coalition provides leadership in assessing and adapting utility operations to address risks and improve water management decision-making in the face of climate uncertainty. In its strategic plan, it has also prioritized the concept of One Water including the development of the One Water Academy.

Recognizing that water is a shared resource, the One Water approach, promoted by the U.S. Water Alliance, is essentially an expanded version of integrated water resources planning and envisions managing all water in an integrated, inclusive, and sustainable manner to secure a bright, prosperous future for our children, our communities, and our

country. One Water approaches are progressing in multiple arenas: from using advanced technologies to recover nutrients and energy from wastewater; to using green stormwater techniques to mitigate flooding while beautifying neighborhoods; to undertaking watershed-level planning and collaboration to address water quality issues; to implementing innovative financing and partnership models.

B. Broward County-Wide Integrated Water Resource Plan

In 1997, Broward County initiated its IWRP to improve the effectiveness and efficiency of local water management. The principle of the IWRP is that water should be viewed as a regional resource, independent of municipal and utility service area boundaries.

Broward's IWRP, approved by the County Commission in 2010, has four main objectives:

- To make the most of local water resources, so that Broward's long-term water supply needs are met;
- To coordinate a diverse water management community, ensuring the efficient and effective management of Broward's water resources;
- To match up local water sources and users to ensure that water supplies are available when and where they're needed; and
- To diversify water supplies so that the needs of urban and natural systems are met under wet and dry conditions.

A fifth objective was added in the 2019 IWRP Update: Promote water resources resiliency by evaluating future conditions, including potential climate impacts, and adopt strategies to mitigate, adapt, and prevent disruptions to our overall goal of more efficient and effective water management.

Successful implementation of the plan requires coordination amongst a diversity of stakeholders including water managers, utility directors, drainage districts, and state and local government entities. The water management community in Broward County consists of 27 water providers, 23 special districts and 15 wastewater providers across 31 municipalities, Table WS2 below.

Table WS2 Lists of Municipalities, Utilities, and Districts in Broward County

Broward County Municipalities (https://en.wikipedia.org/wiki/Broward_County,_Florida)				
City of Coconut Creek	City of Cooper City	City of Coral Springs	City of Dania Beach	Town of Davie
City of Deerfield Beach	City of Fort Lauderdale	City of Hallandale Beach	Town of Hillsboro Beach	City of Hollywood
City of Lauderdale Lakes	Town of Lauderdale-by-the-Sea	City of Lauderhill	Village of Lazy Lake Village	City of Lighthouse Point

City of Margate	City of Miramar	City of North Lauderdale	City of Oakland Park	City of Parkland
Town of Pembroke Park	City of Pembroke Pines	City of Plantation	City of Pompano Beach	Village of Sea Ranch Lakes
Town of Southwest Ranches	City of Sunrise	City of Tamarac	City of Weston	City of West Park
City of Wilton Manors				
Potable Water Providers (SFWMD 2018 LEC Update-Appendix A)				
Broward County-District 1	Broward County District 2	Broward County District 3	Cooper City	Coral Springs
Coral Springs Improvement District	Dania Beach	Davie	Deerfield Beach	Fort Lauderdale
Hallandale	Hillsboro Beach	Hollywood	Lauderhill	Margate
Miramar	North Lauderdale	North Springs Improvement District	Oakland Park	Parkland Utilities, Inc.
Pembroke Pines	Plantation	Pompano Beach	Royal Utility	Seminole Tribe of Florida
Sunrise	Tamarac	Tindall Hammock Irrigation and Soil Conservation District		
Drainage / Water Control Districts				
Bonaventure Development District	Broward County Water Control District #2	Broward County Water Control District #3	Broward County Water Control District #4	Central Broward Water Control District
Cocomar Water Control District	Coral Bay Community Development District	Cypress Cove Community Development District	Indian Trace Development District	Lauderdale Isles Water Management District
North Lauderdale Water Control District	North Springs Improvement District	Oakridge Community Development District	Old Plantation Water Control District	Pine Tree Water Control District
Plantation Acres Improvement District	South Broward Drainage District	Sunshine Water Control District	Tindall Hammock Irrigation and Soil Conservation District	Turtle Run Community Development District
Twin Lakes Water Control District	West Lake Community Development District			
Wastewater Providers				
Broward County North Regional	Cooper City	Coral Springs Improvement District	Town of Davie	Ferncrest
Fort Lauderdale – G.T. Lohmeyer	Hollywood	Margate	City of Miramar	City of Pembroke Pines
Plantation Regional	Sunrise No. 1 (Springtree)	Sunrise No. 3 (Sawgrass)	Sunrise Southwest	

The work of the Water Resources Assessment Program within Broward County's EPCRD provides vital information and guidance that support the programs in the Broward County IWRP and the development of AWS sources such as water reuse, harvesting of excess

stormwater (C-51 Reservoir Project), the use of the Upper Floridan Aquifer, ASR, and secondary canal integration. Among these urban water strategies, Broward County has prioritized water conservation as the least costly effort to offset future water demands. The technical assessment of these projects and planning for future mitigation strategies against climate change are investigated through several robust hydrologic models, developed over many years and with significant municipal partner support.

Water Reuse in Broward

Broward County has focused on the advancement of beneficial reuse and, in 2014, developed the Regional Reuse Master Plan in coordination with its regional partners. This effort included the active participation of local municipalities, water managers, water and wastewater utilities, local planning agencies, Florida Department of Transportation, and other state and regional agencies. This plan sets the foundation for the long-term implementation strategy to further regional reclaimed water development through several innovative and dynamic planning tools. The plan data was updated in 2018 and report design was modernized from a paper document to digitally interactive. The plan is now delivered to our regional partners in the new interactive online format. The Regional Reuse Master Plan and Implementation Strategy support a cost-effective, regional approach for the development of beneficial reuse throughout the County's water and wastewater providers.

The objective is to advance cost-effective development of reclaimed water initiatives through coordinated planning and implementation. The Plan is designed to:

1. Provide coordination and support among Broward County, state agencies, water and wastewater treatment providers, and municipalities to deliver, update, and maintain a comprehensive database of existing and planned reclaimed water infrastructure.
2. Coordinate the installation of reclaimed water lines for recommended projects with public works projects such as transportation improvements, stormwater and other wastewater improvement projects that may be necessitated through local, state, and federal permitting requirements.

To support this strategy, IWRP grant funds provide preferential funding consideration for those projects that are contained within and are consistent with the Reuse Master Plan. Feasibility and design projects as well as construction projects are granted bi-annually as available funds allow. Permitting incentives include the potential reuse credit that the SFWMD could allow as an offset to increase traditional water sources withdrawals in a CUP.

Additional financial incentives may be available through state funding as indicated in Section 373.1961(3)(f)(6), F.S., that provides encouragement for projects in which the construction and delivery to end users of reuse water is a major component. This statute requires governing boards to give such projects significant weight when selecting AWS projects for funding under Section 403.89, F.S.; Water Protection and Sustainability Program (Florida Department of Environmental Protection [FDEP], 2016).

Requirements of the outfall program include a functioning reuse system that reuses a minimum of 60 percent of the facility's actual flow on an annual basis installed no later than December 31, 2025. State or the SFWMD funding assistance must give first consideration to water supply development projects that replace existing sources or implement reuse projects to eliminate ocean outfalls. Broward County is planning to meet the 60 percent reuse requirement by expanding its public access irrigation in Northern Broward and Southern Palm Beach Counties, including expanding reuse systems in the Cities of Pompano Beach and Coconut Creek and North Springs Improvement District which is described in more detail below under the Data and Analysis section of this report.

C-51 Reservoir Project

Over the past decade, the SFWMD, Lake Worth Drainage District, Palm Beach Aggregates, local governments, water managers, and public water supply utilities from Broward and Palm Beach County jointly investigated the feasibility of a regional reservoir to capture and store excess surface water runoff discharged to Lake Worth Lagoon, primarily during wet weather conditions, and release into the C-51 Canal during dry periods to meet water demands.

The C-51 Reservoir project is a public-private partnership for the construction of 60,000 acre-feet of storage for use as an AWS source in Southeastern Florida. Diversion and improved management of freshwater flows was formally identified as a priority restoration strategy for the Lake Worth Lagoon dating to the 1992 Restudy of the C & SF Flood Control Project. C-51 Reservoir Project is presented at the 2018 LECWSP as an AWS source to meet with regional projected 2040 water demands.

C-51 Reservoir Project location is adjacent to the SFWMD's existing L-8 Flow Equalization Basin in Palm Beach County and is expected to share the same impermeable geologic formation that provides for significant inground ground storage capacity with limited seepage losses or additional construction requirements. The initial intended purpose was to capture excess stormwater discharged to the Lake Worth Lagoon via the C-51 Canal. Currently, the benefits of this proposed project include:

- Reduces harmful water quality and quantity discharges to the Lake Worth Lagoon via the S-155 structure.
- Supports water quality improvements in the Everglades Protected Areas by offering additional storage and, in conjunction with the L-8 Flow Equalization Basin, optimizing flows to the Stormwater Treatment Areas (STAs).
- Operated in conjunction with the L8 Flow Equalization Basin, could aid the SFWMD in meeting objectives of the Loxahatchee River Watershed Restoration Project.
- Opportunity to improve water quality delivered to the STAs via blending with the L8 Flow Equalization Basin water.
- Mitigates stormwater impacts and flooding for Western and Central Palm Beach County.
- Mitigates for saltwater intrusion and protects wellfields in coastal communities.
- Serves as a regional AWS source.
- Supports water resource protection and potential adaptations strategies considering sea level rise and during drought.

Among economic benefits, there are:

- Provides "Economies-of-Scale" as a regional water resource development project providing diverse benefits to the region.
- Capitalizes on the current construction and engineering work on the existing L-8 Flow Equalization Basin, including the use of the L-8 Flow Equalization Basin's intake structure and pumping facilities.
- The SFWMD will operate and maintain the C-51 Reservoir Project in conjunction with the L-8 Flow Equalization Basin, resulting in operational coordination and reduced costs.
- Provides a cost-competitive solution relative end-of-pipe water quality treatment, environmental degradation and economic losses, impacts of flooding, and the costs of alternative water supplies and treatment technologies.
- Capitalizes on current mining activities and construction of rock pit.
- Relies largely upon existing conveyance infrastructure.
- Reduces longer-term need for new water infrastructure and energy-intensive treatment technologies.

Hydrologic modeling indicates the ability to capture enough basin runoff to reduce excess stormwater flows from the western C-51 Basin flows to the Lake Worth Lagoon by approximately 40% with a concomitant reduction in associated nutrient loads. Excess stormwater capture in the C-51 Reservoir Project can be later redistributed through the

existing canal network for the benefit of providing aquifer recharge and helping to sustain regional water resources. The C-51 Reservoir Project is modeled to support approximately 150 million gallons per day (MGD) in stormwater reuse for beneficial purposes while achieving critical water quality improvements in the Lake Worth Lagoon.

In January 2017, the SFWMD designated the C-51 Reservoir Project Phase 1 as a pilot AWS development project, pursuant to Section 373.037, F.S. public water supply utilities have executed agreements with the property owners to purchase capacity as part of total reservoir storage. The utilities have received or are processing modifications to their water use permits to reflect this AWS source as a means for meeting future demands.

The mining operation for Phase 1 is complete and designed to store an estimated 14,000 acre-feet of surface water and provide 35 MGD of canal/SAS recharge near public water supply withdrawals. The FDEP has issued a diversion and impoundment consumptive use permit and an environmental resource permit for construction and operation of Phase 1. Phase 2 of the project could provide an additional 46,000 acre-feet of storage, most likely for natural systems [Section 373.4598, F.S.]. The FDEP has issued a conceptual environmental resource permit for Phase 2.

Additionally, water routed south to the Hillsboro Canal could be redistributed to recharge local canals and drainage districts in Broward County, pursuant to an operations and maintenance agreement between the SFWMD and Palm Beach Aggregates and implemented through an operating plan with the SFWMD (under development) or other local water control districts.

To date, agreements have been executed for 20 MGD of storage capacity out of the available 35 MGD of storage capacity in Phase 1: Broward County (6 MGD); Sunrise (5 MGD); Hallandale Beach (1 MGD), Dania Beach (1 MGD), Margate (2 MGD), Fort Lauderdale (3 MGD) and Pompano Beach (2 MGD). Palm Beach Aggregates has indicated that construction financing will move forward based on the signed agreements for 20 MGD of storage capacity. Construction financing is anticipated to be available by August 31, 2020 with construction completed within approximately 24 months following financing. Permitting for each of these participants is in various stages but not yet complete. In 2017, the Florida Legislature approved the project as a priority water supply project under enabling legislation Senate Bill 10. Phase 2 would expand the project area to include 46,000 acre-feet of storage and potentially another 115 MGD, which is envisioned for environmental purposes. Senate Bill 92 (2019) clarified language and the intent of the project and allowed the SFWMD to negotiate for any portion of the project not already committed to partners for water supply.

Floridan Aquifer

As an AWS, the expanded use of the Floridan Aquifer system is currently being investigated with respect to its long-term viability as a water supply resource through additional

modeling and studies. Broward County has, in cooperation with USGS, completed Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. Using borehole and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional component of the project was to complete seismic profiling along approximately 14 miles of the Hillsboro Canal, which resulted in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

The results offer better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage options, such as ASR. Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425-square mile study area. In addition, many unconformities that might identify faults that are either near-vertical reverse faults or karst collapse structures throughout the County. Water utilities in these areas may consider further studies around these features when planning project near their vicinities.

The SFWMD also completed limited water supply modeling of the Floridan aquifer as part of the 2018 LEC plan update. The model included an allocation of 3.0 MGD for BC 2A/NR by the year 2040. This pumping stress and other pumping in the region resulted in a drop of 5.1-10 ft in groundwater levels over 2016 levels but no impact to water quality (chloride levels) in the Upper Floridan region where the wells would be placed. Although initially positive for Floridan development, model results would have to be rerun with current planned rates and well sites should BC go forward with the utilization of the Floridan which is not necessary at this time.

District 2A Aquifer Storage & Recovery (ASR)

In 1993, a permit to construct an ASR well at Broward County District 2A WTP was submitted to FDEP. The system was designed to inject treated water into the upper Floridan aquifer at approximately 1,100 feet below land surface. Water Quality Criteria Exemptions for color, iron and total dissolved solids were obtained. Five testing cycles were completed as shown in Table WS3 beginning in 1998 and completing six years later. Cycle test results provided

in Table WS4 are varied but, generally average around 30 percent in the larger cycles (Hazen & Sawyer, 2004).

Table WS3 District 2A ASR Cycle Testing [1]

Cycle	Recharge (days)	Storage (days)	Recovery (days)
Cycle 1: July 9, 1998 to July 21, 1998	11	0	1.5
Cycle 2: July 27, 1998 to November 12, 1998	91	0	17
Cycle 3: November 13, 1998 to	87	9	21
Cycle 4: November 12, 2003 to December 31, 2003	30	0	20
Cycle 5: January 1, 2004 to March 3, 2004	33	0	29

1. Source: Hazen & Sawyer Technical Memorandum Broward County Office of Environmental Services 2A Water Treatment Plan – Aquifer Storage and Recovery, dated October 6, 2004.

Table WS4 District 2A ASR Cycle Testing Results [1]

Cycle	Rate In (MGD)	Volume In (MG)	Rate Out (MGD)	Volume Out (MG)	Percent Recovery (%)
1	2.01	22.13	1.00	1.50	6.8
2	2.15	195.84	2.16	36.65	18.7
3	2.14	185.94	2.98	56.62	30.5
4	1.79	53.74	0.61	12.18	22.7
5	1.85	61.19	0.59	18.27	29.9

1. Source: Hazen & Sawyer Technical Memorandum Broward County Office of Environmental Services 2A Water Treatment Plan – Aquifer Storage and Recovery, dated October 6, 2004.

According to the Hazen & Sawyer 2004 Technical Memorandum, percent recoveries of between 75 and 90 percent are needed for an ASR well to be viable for use. The memorandum cites the casing setting depth as one of the possible causes for low recovery percentages during cycle testing. Additionally, the District 2A ASR well was limited by the Broward County Health Department to an initial recovery chloride concentration of 225 milligrams per liter (mg/L) which limited the recovery volume significantly. The chloride limitation was later increased to 1,000 mg/L but, the well was no longer in use. When the well came up for Class V permitting with FDEP in 2013, Broward County made the decision based on the ASR well percent recovery and permitting costs to abandon the ASR well.

Site 1 Hillsboro ASR

ASR is a recognized AWS technology and can serve as an effective component of an integrated water management system. The Site 1 Hillsboro Aquifer ASR project was originally designed, constructed, and tested over an 18-year period as a potential component of CERP. The project required the collaboration of a multiagency, multidisciplinary team of hydrogeologists, engineers, and environmental scientists. The Hillsboro ASR system was built to capture excess surface water from the Hillsboro Canal, store it in the Upper Floridan Aquifer, and recover stored water back into the Hillsboro Canal when surface water levels are low. The ASR well was constructed in 1999/2000 and consisted of a 24-inch diameter casing completed to a depth of 1,015 feet below land surface in the Upper Floridan Aquifer. The surface facilities were constructed between 2006 and 2007 and consisted of an intake/discharge structure, screen filters, UltraViolet disinfection units, pumps, piping, valves, electrical controls, and meters. The well was designed to recharge and recover approximately 5 MGD of surface water.

Initial background water quality was collected and analyzed in 2008 prior to cycle testing. Cycles 1, 2, and 3 were performed between 2010 and 2012. The well remained inactive between 2012 and 2016. A second background water quality sampling was performed in 2016 and Cycle Test 4 (SFWMD 2018) was completed in 2017. The below is a summary of the testing conclusions.

- During recovery, the ASR well was to flow freely back to the Hillsboro Canal under artesian pressure at a flow rate of 2 MGD.
- The recovery efficiency for Cycle 4 was approximately 60 percent, greater than previous cycles.
- Water quality data indicated that recharge water mixed and diffused with Upper Floridan Aquifer groundwater at distances of 330 and 1,010 feet away from the ASR well.
- Recovered water had an initial arsenic concentration of 25 parts per billion (ppb), which decreased to less than 10 ppb after 3 weeks.
- Arsenic was not detected at distance from the ASR well during the recovery period.

The SFWMD approached BCWWS following the completion of Cycle 4 to suggest a limited operation of the well facilities to support urban water supply demands. Due to the age and required maintenance of the surface facilities, the permit requirements, and the need to continue building a storage zone with hope of improving the well recovery efficiency, BCWWS declined the offer of limited operation.

Secondary Canal Integration

Secondary canal integration remains a relatively attractive urban water management strategy given the vast network of canals that exist in Broward County and the relatively inexpensive infrastructure (culverts, pumps, etc.) required to implement greater integration of the system. Although progress has been made on the Northern Broward County Recharge System, it has not yet been completed. There are three identified projects that need to be completed to integrate the system:

- The C-1/C-2 Interconnect near Sample Road and the CSX Railroad. The project has been designed and construction funding is being sought.
- The study of a potential C-4 Interconnect between north and south Tradewinds Park was completed and it was determined that the environmentally friendly directional drilling project is not financially feasible at the present time.
- The C-7 Interconnect just north of Sample Road in the Coconut Creek Main Street Project will coincide with development of the area. The basin divide control structure is being constructed with the development of the parcel just to the north of Sample Road. The interconnect will be complete when the final canal segment is built with the development of the remaining farmland.

Depending upon the final routing of water deliveries associated with development of the C-51 reservoir project, additional construction may be required in the central and southern parts of the County to further integrate the system.

Water Use Efficiency/Conservation

The County has implemented diverse water conservation initiatives to protect the quantity and quality of Broward's existing and future water resources to help meet our current and projected demands. Consistent with this objective, the County has implemented a broad set of water conservation programs under the "Water Matters" campaign which are designed to produce long-term demand reductions along with improvements in water quality. These programs, targeted at various user groups, include: NatureScape Broward, Know the Flow, Water Matters Day, Conservation Pays, NIS, and the NatureScape Broward School Board Environmental Partnership Agreement. The overall goal of the Water Matters programs is to reach a sustained minimum 10% reduction in water use Countywide over 20 years. Further support for water conservation is found in other conservation-oriented measures, including changes to the Florida Building Code for cooling towers and high efficiency plumbing devices, year-round irrigation measures, model irrigation codes, Go Green Sustainability Programs, and other water conservation policies and regulations. The water conservation initiatives are listed below.

- Conservation Pays Program. This effort was launched in 2011 in collaboration with 18 partners to provide a coordinated regional campaign focused on water conservation and the distribution of rebates and other incentives. Rebate dollars are used for the replacement of older, wasteful toilets in addition to the distribution of other water efficient fixtures and devices such as aerators and commercial pre-rinse spray valves. A consistent marketing and media campaign advances water conservation efforts as part of the Commission's value of encouraging investments in renewable energy, sustainable practices, and environmental protection. Additional Commission support is promoted by the goal to increase water quality protection efforts and lead creative approaches to water storage and aquifer recharge, as well as diversification of water supplies regionally. To date, the program has saved more than two billion gallons of water.
- NatureScape Irrigation Services. Launched in 2005, the NIS is implemented by the EPCRD with cost-share provided by BCWWS and 18 local water utilities. The program targets large water users, including government facilities, parks, schools, and homeowner associations, where the greatest potential exists for significant water savings. To date, water savings exceed one and a half billion gallons with over 3,000 irrigation system evaluations. Best management practices that encourage the 'right plant in the right place' and smart irrigation help to promote water conservation messaging that adds to long-term water savings.
- NatureScape Broward Program. Launched in 2003, the NatureScape Broward program promotes water conservation, water quality protection, and the creation of wildlife habitat through Florida-friendly landscape practices that encourage the prudent use of water resources, and the planting of native, non-invasive and other drought-tolerant plants in Broward County. Broward County was the first county in the U.S. to be certified under the Community Wildlife Habitat program. In addition, there are 14 certified and 9 registered County municipalities and over 4,500 landscapes that have been certified to date.

Technical Water Resources Assessment

The numerical hydrologic models developed within the IWRP program provide for informed decisions and sustainable investments essential for comprehensive and integrated water resource management strategies throughout Broward County and the LEC planning region.

In 2006, Broward County's EPCRD contracted with the USGS to develop a numerical model to evaluate to various influencing factors on the saltwater movement within the Biscayne Aquifer in the northern third of the County. This tool was proven to be effective in

representing historic and future conditions and was demonstrated to have utility as a planning tool for future water resources projects and development of resilience strategies. This modeling effort was subsequently expended to the central and southern portions of the County to simulate historic saltwater intrusion and to test the extent to which wellfield pumpage, surface water management and sea level rise contribute to and influence the movement of saltwater and how the aquifer can be expected to respond to future climate conditions. The tool also investigates the implications on the viability of water supplies and can be used to identify and test possible adaptive strategies.

The County is also enhancing this investment with concurrent development of an Inundation Climate vulnerability model focused on coupled hydrologic impacts of saltwater intrusion, surface and groundwater elevations, and stormwater inundation. This model, developed in cooperation with USGS, builds upon the County's Variable Density Model to assess the influence of changing climatic conditions on urban water resources and infrastructure. The initial effort integrated bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model for predictions Countywide. A smaller study of the County was later refined using SWR and URO components that offered more detailed conceptualization of the surface/groundwater interactions, used to assess the predictive scenarios and comparison of alternative water resource strategies. Based on the successful implementation of the SWR and URO packages, Broward County is currently partnering with USGS to advance the expansion of the two packages throughout the entire urban extent of the County.

In February 2017, Broward County approved the creation of a Future Conditions Map Series in the Broward County Code of Ordinances and, effective July 01, 2017, adopted the first regulatory map of the series, the Future Conditions Average Wet Season Groundwater Elevations Map. The approved map ensures that future climate conditions are accounted for in the design and construction of local surface water management systems and that future investments will deliver the necessary level of flood protection and water quality treatment necessary for the duration of the expected useful life of both public and private investments. This map provides an important basis for advancing the resiliency standards and investments needed across our entire region, as it provides a model for the establishment and application of modernized standards based on the integration of science and technology in policy and planning and community buy-in achieved through a comprehensive public process.

The calculated average groundwater elevation is based on model outputs for the wet season months of May through October over a ten-year period of 2060-2069. The models used to simulate average future conditions were the Broward County Inundation Model

and the Broward County Northern Variable Density model, both developed in cooperation with the USGS. The future conditions applied in the modeling process consist of both precipitation and sea level rise. The future precipitation pattern is based on the Center for Ocean-Atmospheric Prediction Studies downscaled Community Climate System Model global model and represents an increase of 9.1% rainfall from the base case of 1990-1999 (53.4 inches/year to 58.2 inches/year). Sea level rise was based on the USACE National Research Council Curve 3, which equates to an increase of 26.6 to 33.9 inches to the future period from 1992 levels.

In the recent restudy of Flood Insurance Rate Maps completed in 2014 by FEMA, the County's MIKE SHE/MIKE 11 model was utilized and updated. The MIKE SHE platform was originally developed to look at surface water groundwater interaction issues beginning with the North Aquifer Drainage Assessment (NADA), which was then extended to the Central Aquifer Drainage Assessment (CADA [2000-2002]) and South Aquifer Drainage Assessment (SADA [2003-2005]). The County then combined the NADA, CADA, and SADA to form the Consolidated Broward County MIKE SHE model. As part of the 2011 Integrated Water Resources Master Management Plan, the consolidated model was updated to run additional water recharge projects to test whether demands for future population projections could be sustained without adverse conditions to the Biscayne Aquifer. In 2018, Broward County began using the results of the FEMA study to calculate 100-year flood elevations that are anticipated to occur in 2070, accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use update, addition of detention storage and ponded drainage routine, model calibration to a recent flooding storm event, and incorporation of future tide levels and a 100-year rainstorm event. It is anticipated the modeling will be completed in the Fall of 2019 and, once approved, will be formalized as the second map of the Future Conditions Map Series.

C. Comprehensive Everglades Restoration Plan

Among the over 60 CERP components, the Central Everglades Planning Project, Broward Water Preserve Areas (WPAs), and Secondary Canal Interconnect.

Central Everglades Planning Project

The USACE states that CEPP "will identify and plan for projects on land already in public ownership to allow more water to be directed south to the central Everglades, Everglades National Park, and Florida Bay." The full project's design will send an approximately 210,000 acre-feet of water south from Lake Okeechobee each year. The WCAs are a major resource affected by this future project. Thus, this regional CERP project is very important locally to

Broward County as its water supply is critically linked to the WCAs. The CEPP was authorized in the 2016 Water Resources Development Act 2016. Currently, the USACE is working on a validation study to implement Phase 1 in the southernmost area that will increase flows to Everglades National Park.

(http://discover.pbcgov.org/wrtf/PDF/Documents/LOSOM_Broward_scoping_comments_17Apr2019.pdf)

Water Preserve Areas

The WPAs are a series of marshes, reservoirs, and groundwater recharge areas along the eastern side of the WCAs in Broward, Palm Beach, and Miami-Dade Counties. In Broward County, the WPA extends along the western urban limits, adjacent to Levees 37 and 68A. The projects within the WPAs are intended to serve multiple uses such as increasing the spatial extent of wetlands, reducing seepage losses from the WCAs, improving water supply and quality, and establishing a buffer between the Everglades and developed areas. The benefits to the County's urban area include: the storage of stormwater runoff; groundwater recharge; management of saltwater intrusion; and increased urban water supplies. The WPAs are in the CERP and were authorized in the 2014 Water Resources Reform and Development Act. The current USACE schedule projects the C-11 component to be constructed by 2023.

(https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/2552

The USACE forecasts the WPAs' remaining construction timelines beyond 2023.

Secondary Canal Improvement Project

The Broward County Secondary Canal Improvement Project, as part of the CERP, is a water management project to optimize the integration and operation of the County's secondary canal system and support Everglades restoration by reducing the County's reliance on water from the regional system.

Authorized and to be funded by the U.S. Congress, State of Florida, and local government, the goals of the Broward County Secondary Canal Improvement Project are to capture as much annual rainfall as possible for storage and recharge of the Biscayne Aquifer, to maintain water levels in wetlands, and to stabilize saltwater intrusion. Additionally, through more efficient management of the local water resources, urban demand on the regional system is expected to be reduced, as well as seepage losses from the WCAs, as the project has the potential to raise groundwater levels on the east side of the levee.

DATA AND ANALYSIS

The following section provides information in support of the requirements of Section 163.3177(1)(f), F.S., as outlined:

- All mandatory and optional elements of the comprehensive plan and plan amendments must be based upon relevant and appropriate data and an analysis by the local government that may include, but not be limited to, surveys, studies, community goals and vision, and other data available at the time of adoption of the comprehensive plan or plan amendment. (Section 163.3177(1)(f), F.S.).
- Data must be taken from professionally accepted sources (Section 163.3177(1)(f)2., F.S.) and reacted to in an appropriate way, to the extent necessary as indicated by the data available on that subject at the time of adoption of the plan or plan amendment at issue. (Section 163.3177(1)(f), F.S.).

The planning horizon for the 2020 Work Plan spans 20 years, covering 2020 to 2040.

A. County-Wide Population Analysis

This 2020 Work Plan identifies and analyzes the future water supply needs for the BMSD areas of Broward County, and those areas serviced by BCWWS. The role of the EPCRD is to identify the future water supply needs of BMSD areas of Broward County and to present regional strategies supporting Countywide water supply needs and water resource management. The role of BCWWS is to identify the future water supply needs of their service areas, which include both BMSD areas and incorporated areas, and to determine strategies to meet any unmet demands.

Several of the BMSD areas Figure WS4 are provided water service by BCWWS; hence these areas were included in the BCWWS analysis. For the remaining BMSD neighborhoods, the City of Fort Lauderdale is the largest of the water utility providers while the City of Sunrise is only providing for six residential units. EPCRD has coordinated with the Fort Lauderdale Planning and Zoning Department and the water utility in identifying the current and future water supply needs within their water utility's service area.

Needs assessments were developed based on current utility operations and the existing customer base, compared to population projections through 2040. The population modeling was performed by Broward County Planning and Development Management Division (BCPDMD) using the Broward County Traffic Analysis Zones (TAZ) and municipal forecasts updated in 2017 to develop the projected populations based on the University of Florida's BEBR Bulletin 175, "Detailed Population Projections by Age, Sex, Race, and Hispanic

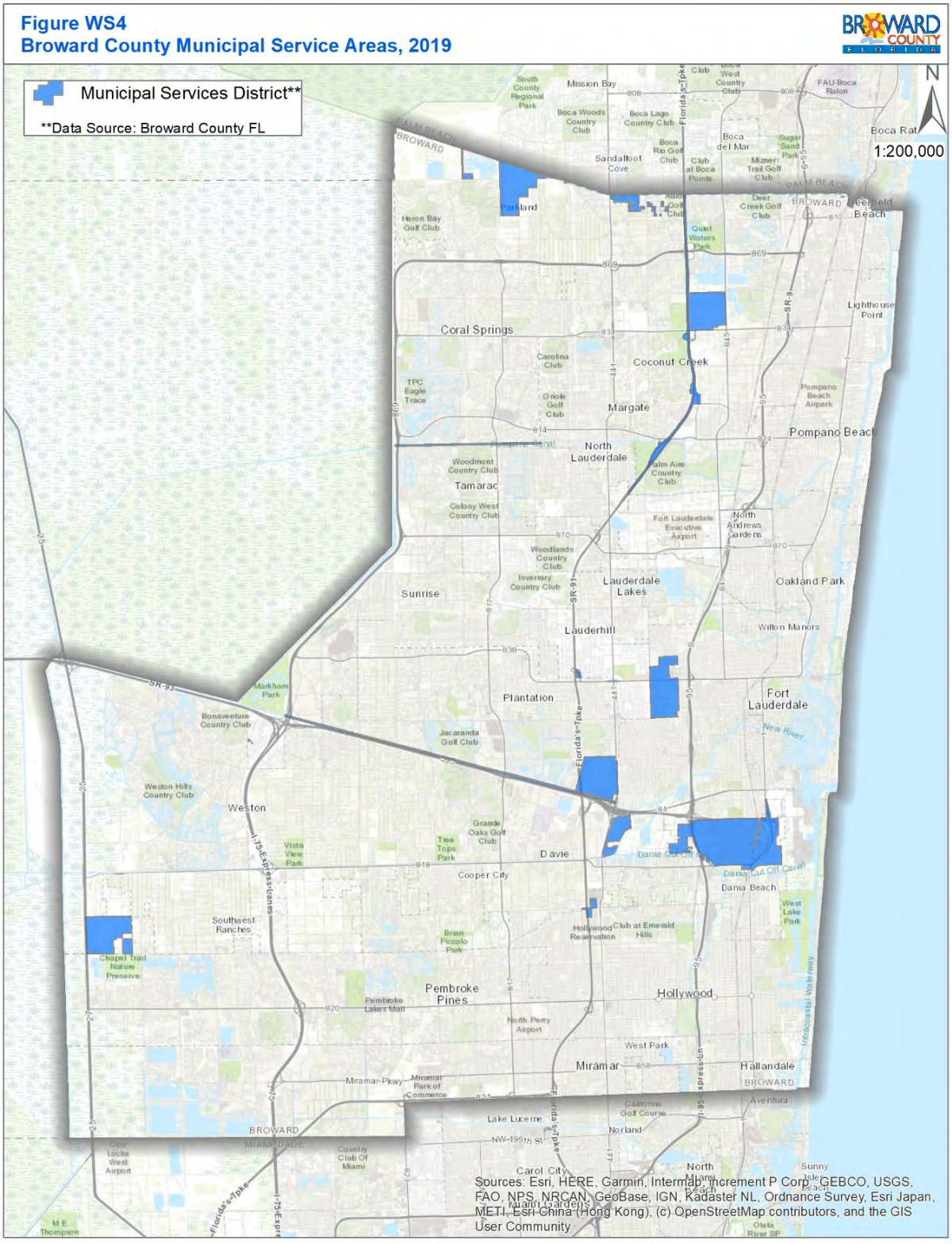

Figure WS4 **Broward County Municipal Service Areas**

Origin, for Florida and Its Counties, 2020-2045, With Estimates for 2015" to Broward County's 2017 Traffic analysis Zones (TAZ) and municipalities. The demographic forecast model update is detailed in, "Broward County and Municipal Population Forecast and Allocation Model (PFAM), 2017 (BCPDMD, 2017) based on the original PFAM developed in 2012 and updated in 2014.

This 2020 Work Plan includes analysis of existing water facilities, current and projected water demands versus water availability and the presentation of the water supply plan for the Fort Lauderdale water utility. Future water demands prepared for this analysis are compared to projected demands presented in the 2018 LECWSP Update, with discussion of any deviations.

BCPDMD is responsible for providing updated population forecasts throughout the County. The Broward County PFAM 2017 update was used to develop County population by jurisdiction. Updated population projections from University of Florida's BEBR Bulletin 178 and the Broward County PFAM 2017 update are summarized below in 5-year increments through 2040, Table WS5 below.

Table WS5 **Broward County Population Projections 2020-2040**

Year	BEBR Population Estimates [1]	BCPDMD Population Estimates [2]	SFWMD Population Estimates [3]
2020	1,914,498	1,894,285	1,931,057
2025	1,989,753	1,990,171	2,029,704
2030	2,052,432	2,051,056	2,109,543
2035	2,111,652	2,110,602	2,175,718
2040	2,158,080	2,156,835	2,232,397

1. BEBR Medium Populations from "Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and its Counties 2020-2045, with Estimates for 2015, June 2016," 2016
2. BCPDMD Broward County and Municipal Population Forecast and Allocation Model, 2017
3. SFWMD, Lower East Coast Water Supply Plan, November 2018

The percent difference between the BEBR and the BCPDMD projections is no more than one percent. The percent difference between the BCPDMD and the SFWMD projections ranges between 2 and 3 percent from 2020 through 2040. The PFAM is structured using 953 TAZ within 31 municipalities in the County. The BEBR forecasts by age are converted to household using a weighted average of the households by age group data from the 2000 and 2010 Census. The household forecasts are then assigned to TAZ based on: (1) the change in household size distribution; (2) TAZ level distribution of households; and (3) the capacity of each TAZ to absorb additional housing units. BCPDMD also obtained input from the local planning and service delivery entities and referenced the Broward County Land Use Plan to estimated household distributions within TAZ and municipal boundaries (BCPDMD, 2017).

B. Current and Future Served Areas

The current and future served areas for BCWWS and the Cities of Fort Lauderdale and Hollywood are described in the sections below.

BCWWS

BCWWS is one of 25 utilities that provide potable water service within the urbanized area of the County. The utility was created on January 31, 1962, with the County's purchase of a small, investor-owned water and wastewater utility. Between 1962 and 1975, the County acquired several investor-owned systems. Under the County Code of Ordinances, the Broward County Board of County Commissioners exercises exclusive jurisdiction, control, and supervision of the utility system. BCWWS is the County organizational unit directly responsible for the utility.

The water utility delivers potable water to customers in service areas in north, mid, and south County and to one bulk water user. The water utility has grown to serve a population of approximately 239,000. The bulk water user, City of Coconut Creek, accounts for a population of approximately 56,000. Including the City of Coconut Creek, the utility serves about 12 percent of the County's total population. For the year 2017, treated water sold to retail customers equaled about 19 MGD on an annual average basis. Metered water sales to Coconut Creek equaled an additional 5 MGD. Notably, finished water production (treated water at point of delivery) has decreased in recent years. This may be attributable to a downturn in the economy, slowdown in population growth, and the County's water conservation efforts, including year-round irrigation conservation measures. Water conservation became increasingly important following a series of significant drought years, coupled with limitations to the County's traditional water source, and remains a critical initiative.

BCWWS also operates two regional wellfields that provide bulk raw Biscayne aquifer water to Deerfield Beach in north county and Dania Beach, Hallandale Beach, Hollywood and Florida Power and Light in south county through large user agreements.

BCWWS operates three service districts known as District 1, District 2, and District 3. These service districts are shown on Figure WS5 below and cover about 43 square miles. The three service districts are operated as independent entities, but are supported by BCWWS Operations as a single entity:

- District 1 service area contains all of Lauderdale Lakes and portions of the Cities of Fort Lauderdale, Lauderhill, North Lauderdale, Oakland Park, Plantation, Pompano Beach, and Tamarac;

- District 2 service area contains portions of the Cities of Deerfield Beach, Lighthouse Point, and Pompano Beach and provides water to portions of the City of Coconut Creek as described below; and
- District 3 service area contains portions of the Cities of Dania Beach, Davie, Fort Lauderdale, Miramar, West Park, Pembroke Park, Pembroke Pines, and Hollywood and provides water to the Fort Lauderdale-Hollywood International Airport.

All three service districts also include some small BMSD as highlighted on previously shown Figure WS4. Within these BMSD areas, some domestic self-supply (DSS) exists accounting for half of one present of the total County population. Based on the 2018 LEC Water Supply Plan Update, "All permanent residents outside of PWS [Public Water Supply] utility service area boundaries were considered DSS population." Current raw water usage for the estimated DSS population is approximately 1 MGD and is expected to decrease by 2040 to approximately 0.5 MGD (SFWMD, 2018). There are no immediate plans for BMSD neighborhoods like Hillsboro Ranches which consists of 23 single family homes on domestic self-supply to be provided potable water service by WWS.

BCWWS supplies water primarily to retail customers, but also provides water to the City of Coconut Creek under a bulk water resale agreement. Without prior approval from the County, the City is prohibited from buying or otherwise providing water within its service area from any source other than the County.

To plan and coordinate water supply utility activities within its three service areas, BCWWS uses utility analysis zones (UAZ) which divide service districts into smaller units by UAZ. Pulling TAZ information into UAZ involves allocating populations based on the split in residential units between the TAZ-UAZ subsections using the Broward County Property Appraiser parcel shapefile. The parcel shapefile permits the calculation of single-family and multi-family units within each TAZ-UAZ subsection.

A TAZ-UAZ subsection is a portion of a UAZ sits within a TAZ. The calculation method sums up the total residential units (single family and multi-family) within each TAZ-UAZ subsection. The population is allocated based on the percent of residential units in a TAZ-UAZ subsection out of the total TAZ dwelling units count. The projected BCWWS populations by district are shown in Table WS6 below and populations within Districts 1, 2, 3A and 3BC by municipality served are shown in Tables WS7, WS8, WS9 and WS10, respectively. are based on the results of an update to the AWS Conceptual Master Plan produced by Brown and Caldwell (Brown & Caldwell, 2019).

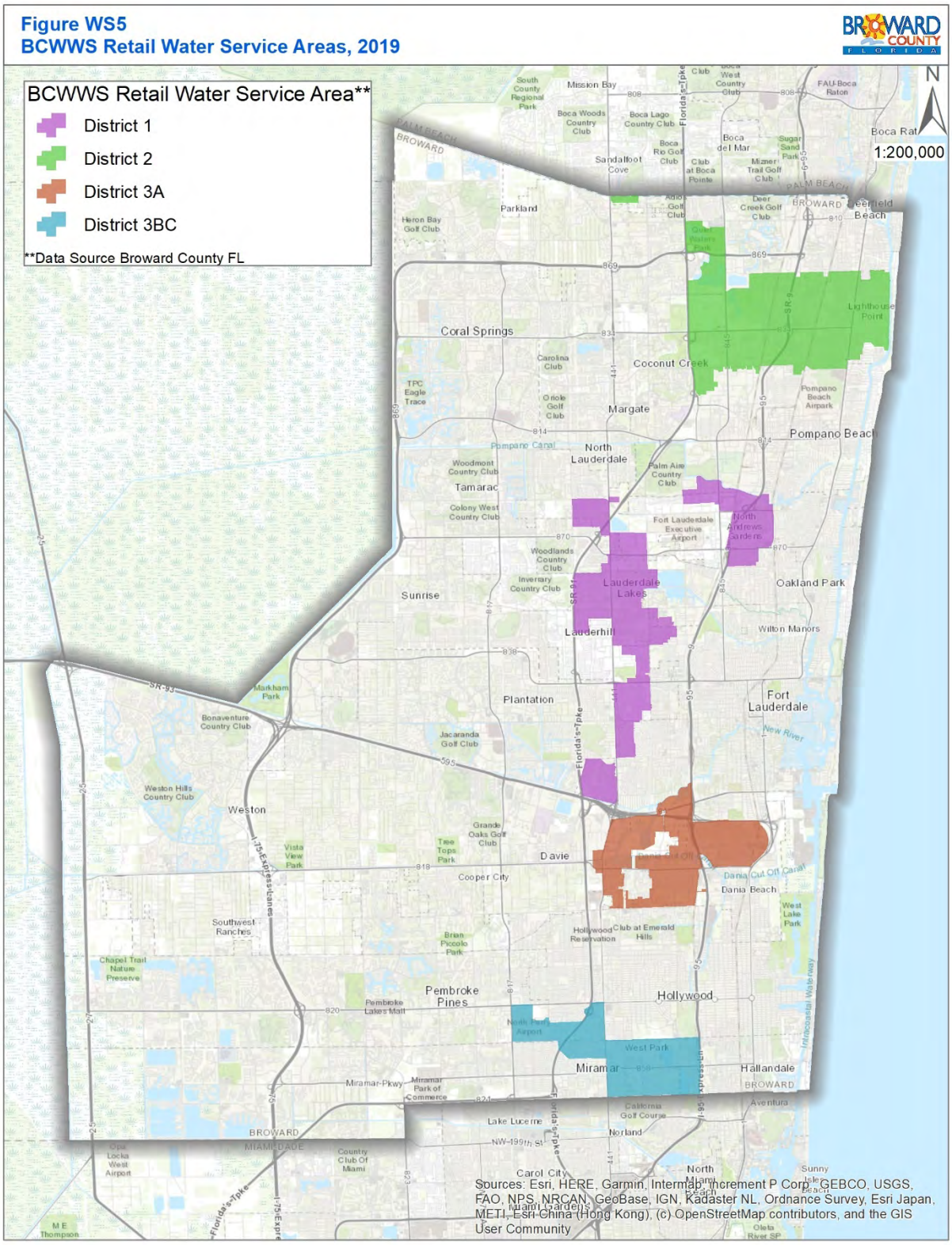

Figure WS5 BCWWS Retail Water Service Areas

Table WS6 BCWWS Service Area Population Projections 2015-2040[1]

BCWWS Service Area	2015	2020	2025	2030	2035	2040
District 1	75,931	78,718	84,292	89,479	92,895	95,299
District 2 Total	110,278	113,023	114,814	119,226	121,410	122,631
D2	55,052	54,510	55,702	57,779	58,493	58,672
Coconut Creek	55,226	58,513	59,112	61,447	62,917	63,959
District 3A	16,321	16,908	18,083	19,075	19,686	20,109
District 3BC	36,263	37,486	38,889	41,146	42,639	43,625
BCWWS Total	238,793	246,135	256,078	267,859	276,630	281,278

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS7 District 1 - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 1 TOTAL	75,931	78,718	84,292	89,479	92,895	95,299	97,665
FORT LAUDERDALE	7,306	7,856	8,830	9,311	9,670	9,962	10,293
LAUDERHILL	8,376	8,237	9,116	10,714	11,664	12,411	13,180
LAUDERDALE LAKES	31,928	32,479	33,305	35,327	36,650	37,554	38,398
NORTH LAUDERDALE	6,844	6,719	8,213	8,236	8,358	8,350	8,325
OAKLAND PARK	12,113	13,109	12,914	13,374	13,545	13,639	13,680
POMPANO BEACH	521	561	586	632	660	682	705
PLANTATION	184	263	591	803	973	1,133	1,315
TAMARAC	1,423	2,382	2,444	2,508	2,604	2,662	2,709
BMSD	7,236	7,112	8,293	8,574	8,771	8,906	9,060

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS8 District 2 - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 2 TOTAL	55,052	54,510	55,702	57,779	58,493	58,672	58,677
COCONUT CREEK	66	65	65	66	66	65	64
DEERFIELD BEACH	22,823	22,467	23,085	24,193	24,617	24,820	24,925
LIGHTHOUSE POINT	8,970	8,871	8,743	8,908	8,969	8,981	8,956
POMPANO BEACH	23,193	23,107	23,809	24,612	24,841	24,806	24,732

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS9 District 3A - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 3A TOTAL	16,321	16,908	18,083	19,075	19,686	20,109	20,504
DANIA BEACH	15,307	15,888	16,808	17,379	17,680	17,824	17,950
DAVIE	60	60	325	538	710	874	1,033
FORT LAUDERDALE	721	713	705	906	1,044	1,161	1,271
HOLLYWOOD	233	247	245	252	252	250	250

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS10 District 3BC - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 3ABC TOTAL	52,584	54,394	56,972	60,221	62,325	63,734	65,235
DANIA BEACH	15,307	15,888	16,808	17,379	17,680	17,824	17,950
DAVIE	60	60	325	538	710	874	1,033
FORT LAUDERDALE	721	713	705	906	1,044	1,161	1,271
HOLLYWOOD	4,698	4,922	5,266	5,603	5,840	6,036	6,250
MIRAMAR	6,615	6,623	7,359	8,291	8,858	9,310	9,832
PEMBROKE PINES	4,040	4,384	4,334	4,294	4,417	4,477	4,520
PEMBROKE PARK	6,940	6,922	6,792	7,127	7,292	7,355	7,412
WEST PARK	14,203	14,882	15,383	16,083	16,484	16,697	16,967

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

City of Fort Lauderdale

Broward County works closely with the City of Fort Lauderdale through involvement in the County Commission's Water Advisory Board and its Technical Advisory Committee, Southeast Florida Utility Council, Broward Water Partnership and other area technical and policy groups. The City's populations were obtained from the City's DRAFT Water Supply Facility Work Plan 2020 Update. The municipal utility owned and operated by the City of Fort Lauderdale is one of the largest purveyors of potable water in Broward County in terms of total water delivery, providing service to approximately 240,000 customers in 2017. The utility's service area, shown in Figure WS6, encompasses a total area of 43 square miles, approximately one-tenth the total area of urban Broward County. Customers include residential, commercial and industrial properties within the Cities of Fort Lauderdale, Lauderdale Lakes, North Lauderdale, Oakland Park, and Wilton Manors; portions of BMSD and the Cities of Tamarac, and Lauderhill; Port Everglades; Towns of Lauderdale-By-The-Sea and Davie; and Villages of Lazy Lake and Sea Ranch Lakes. Emergency potable water interconnections are maintained with the Cities of Dania Beach, Pompano Beach, and

Plantation and BCWWS service area. The population of Fort Lauderdale and the other municipalities in the water service area was forecasted based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by EPCRD using 2018 SFWMD LECWSP Service Area Boundaries. The City of Fort Lauderdale Utility Service Area population projections for 2015-2040 are shown in Table WS11 and were obtained from the City's Draft Water Supply Facilities Work Plan Update for 2020.

Table WS11 **City of Fort Lauderdale Utility Service Area Population by Jurisdiction, Actual 2015 and Forecasted 2020 to 2040**

Jurisdiction	2015	2020	2025	2030	2035	2040
TOTAL	235,840	241,454	274,470	292,768	304,918	315,109
Fort Lauderdale	175,228	179,997	208,747	222,915	232,419	240,134
Lauderdale by The Sea	4,147	3,689	3,996	3,940	3,890	3,850
Sea Ranch Lakes	700	693	680	715	734	746
BMSD	6,457	7,060	7,854	8,561	8,854	9,486
Davie	529	526	700	821	919	1,016
Lauderdale Lakes	381	383	378	386	386	390
Lauderhill	2,917	2,862	3,085	3,306	3,450	3,571
Lazy Lake	26	25	27	29	30	31
North Lauderdale	358	352	1,145	1,145	1,133	1,123
Oakland Park	31,111	31,852	32,719	34,693	36,114	37,145
Tamarac	2,054	2,037	2,007	2,032	2,054	2,041
Wilton Manors	11,932	11,878	13,132	14,225	14,935	15,576
Port Everglades	Population is included in BMSD					

Source: City of Fort Lauderdale Draft Water Supply Facilities Work Plan Update for 2020 - Based on BEBR data.

City of Hollywood

Broward County works closely with the City of Fort Lauderdale through involvement in the County Commission's Water Advisory Board and its Technical Advisory Committee, Southeast Florida Utility Council, Broward Water Partnership and other area technical and policy groups. The City's populations were obtained from the City's DRAFT Water Supply Facility Work Plan 2020 Update. The City of Hollywood's service area includes population projection of approximately 230,000 in year 2040, Table WS12 below. Through the bulk sales agreements with BCWWS, the City of Hollywood provides treated water to BCWWS

to serve its southernmost service areas (District 3A, 3B/C). The City of Hollywood utility service area include the Cities of Hollywood and West Park, portions of the City of Dania Beach, Town of Davie, City of Fort Lauderdale, and Seminole Tribe of Florida Hollywood Reservation. No population breakdown by municipality was available when this plan was written.

Table WS12 City of Hollywood Utility Service Area Population Projections 2015-2040

Service Area	2015	2020	2025	2030	2035	2040
TOTAL Hollywood	194,411	200,574	207,352	216,861	223,595	228,166
City of Hollywood Retail	141,827	146,180	150,380	156,640	161,270	164,432
BCWWS District 3A Wholesale	16,321	16,908	18,083	19,075	19,686	20,109
BCWWS District 3B/C Wholesale	36,263	37,486	38,889	41,146	42,639	43,625

Source: City of Hollywood 2015 Water Supply Plan Potable Water Sub-Element, January 2015. Table 2-3 and Broward County Water Supply Facilities Work Plan 2020.

C. Potable Water Level of Service Standard

The potable water level of service standards for BCWWS and the Cities of Fort Lauderdale and Hollywood are detailed in the sections below.

BCWWS

BCWWS has the responsibility to determine if it can adequately serve existing and potential customers. To that end, BCWWS has set a potable water level of service in gallons per person per day or gallons per capita day (gpcd) to a maximum of 150 gpcd. Table WS13 summarizes the five-year average (2013-2017) gallons per capita day for each WWS utility service area that is used to project water use into the future. Annually calculated values of gallons per capita day will fluctuate based on environmental, socioeconomical, physical, operational and other service area characteristics or changes.

The following is the current available information.

Table WS13 BCWWS Retail Potable Water Level of Service Standards [1]

District of BCWWS	Finished Water Level of Service (gpcd)
District 1	96
District 2	112
District 3A and 3BC	127

1. Based on demand development in Section D - Water Supply Provided by Local Governments of this plan.

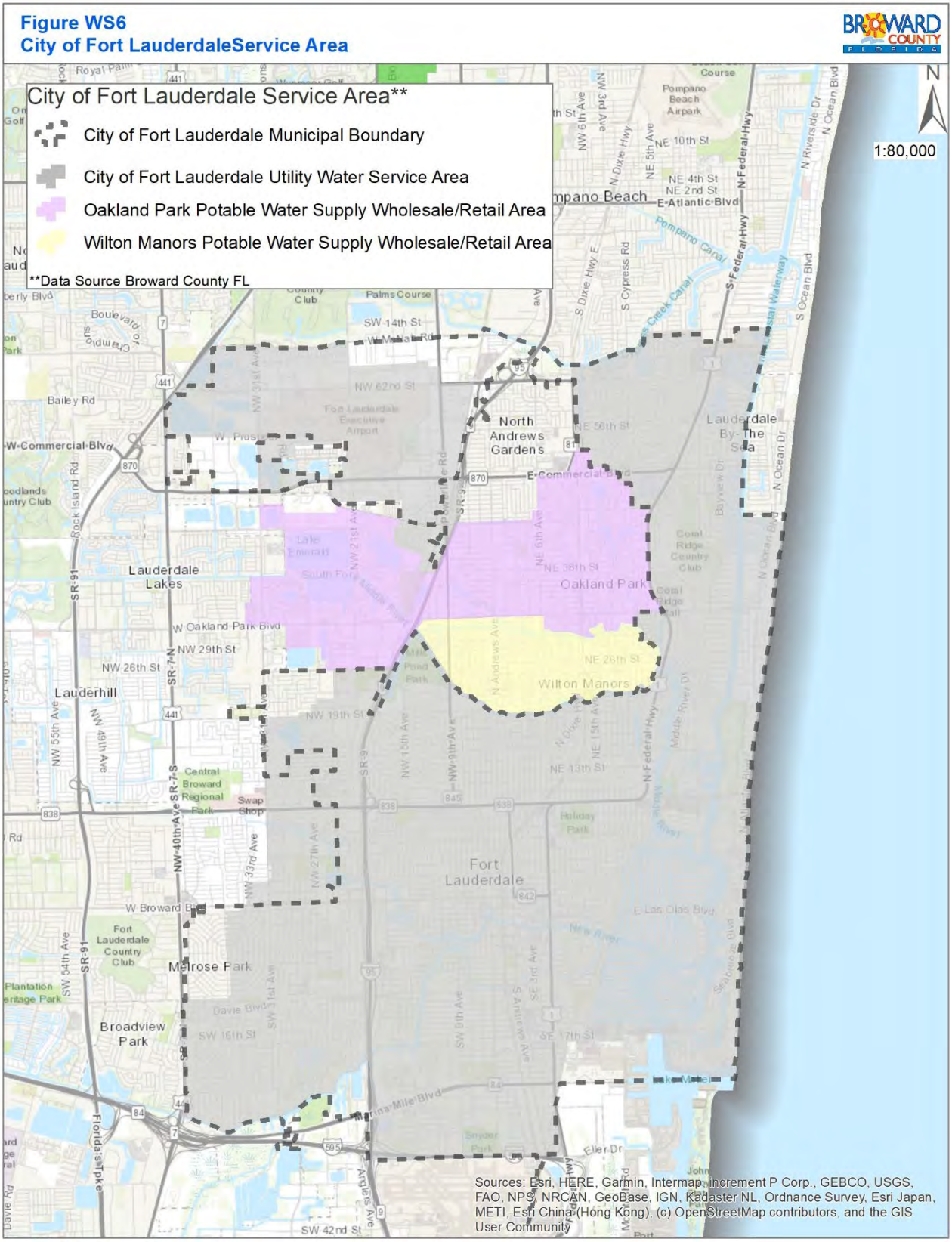

Figure WS6 City of Fort Lauderdale Service Area

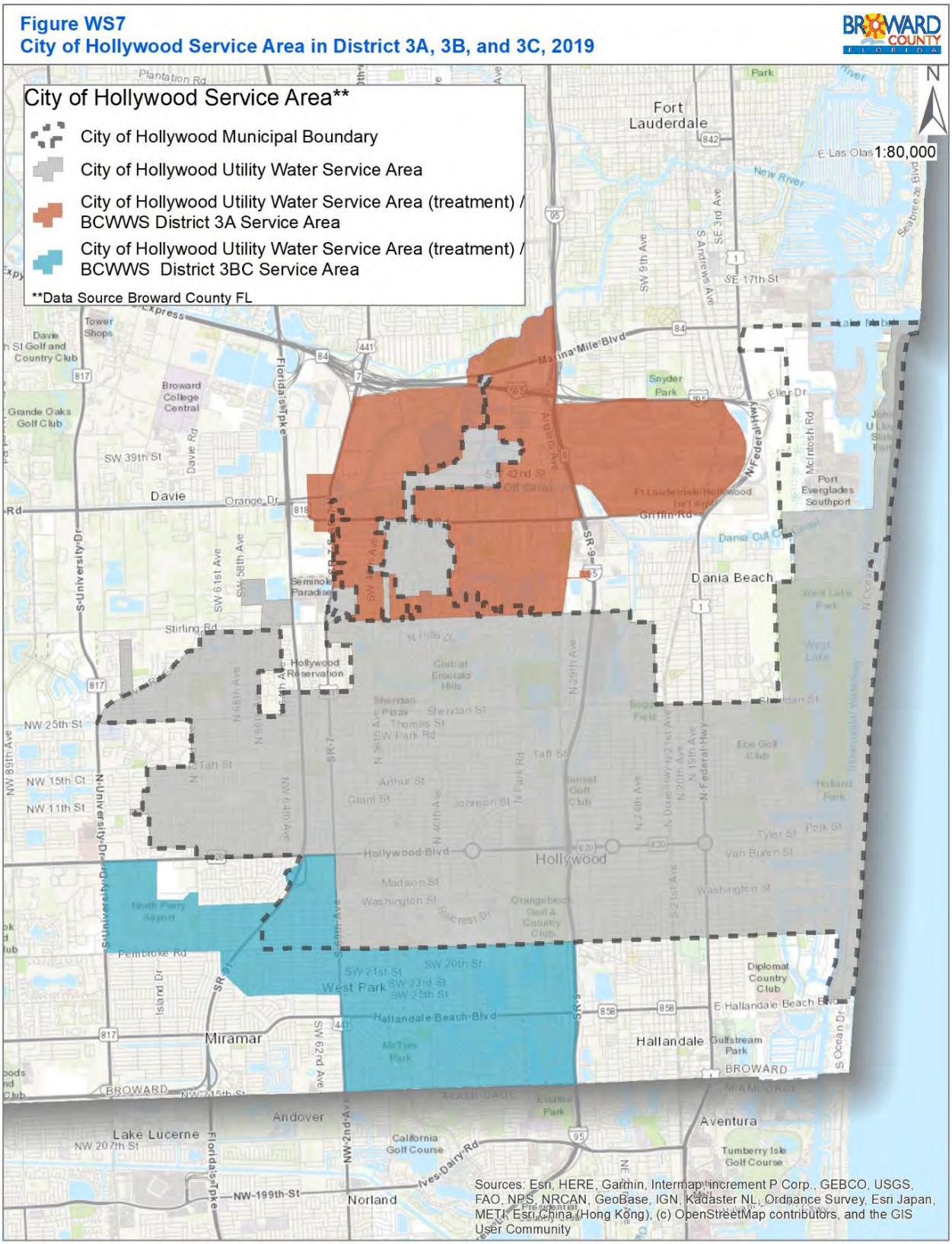

Figure WS7 City of Hollywood Service Area in District 3A, 3B, and 3C

City of Fort Lauderdale

The City of Fort Lauderdale has the responsibility to determine if it can adequately serve existing and potential customers. To that end, Fort Lauderdale has adopted their level of service for finished water at 170 gallons per day finished water per person (SFWMD LECWSP, 2018). In 2016, the average day demand throughout their service area was 41.4 MGD. The finished water per capita demand averaged 173 gallons per person per day from 2013 to 2016.

City of Hollywood

The City of Hollywood has the responsibility to determine if it can adequately serve the existing and potential customers within their service areas. To that end, Hollywood has adopted a level of service of 116 gallons per day finished water per person (2016). In 2016, the average day demand throughout their service area was 22.79 MGD. The finished water per capita demand averaged 113 gallons per person per day from 2013 to 2016.

D. Water Supply Provided by Local Governments

Water supply provided by local governments is summarized in the sections below.

BCWWS District 1

District 1 has a combined service area of 11.9 square miles with 248 miles of water distribution and transmission mains. BCWWS maintains water system interconnections with the City of Fort Lauderdale, the City of Tamarac, the City of Plantation, and the City of Lauderhill to provide for emergency water supply. In District 1, raw water is treated at the District 1 WTP located in the City of Lauderdale Lakes prior to distribution to retail customers. The plant was expanded in 1994 to its current capacity of 16.0 MGD to treat Biscayne Aquifer raw water using lime softening treatment. Figure WS8 shows the location of the District 1 WTP, storage tanks, and finished water distribution pipe 12-inches and larger within the District 1 service area.

The District 1 wellfield is in the area surrounding the WTP and is comprised of nine Biscayne Aquifer wells, all of which are currently in service. The total design capacity of the wellfield is approximately 23.5 MGD. Two Floridan Aquifer test wells were completed in 2014; one well is located on the WTP site and one is in an easement northeast of the WTP. Test results from the Floridan well construction revealed that upper Floridan Aquifer production zone chloride concentrations are approximately 4,000 mg/L and total dissolved solids concentrations are 7,500 mg/L (MWH, 2013). Based on the water quality test results, water produced from the

well will likely require high pressure RO treatment. Currently, BCWWS has no plans to build a RO WTP at the District 1 site nor to convert the Floridan test wells to production wells.

BCWWS was issued a SFWMD CUP (No. 06-00146-W) in April 2008 for a 20-year permit duration to withdraw water from the Biscayne Aquifer and Floridan Aquifer. The permit allocates an annual withdrawal from the Biscayne Aquifer of 3,664 million gallons (MG) with a maximum month of 333 MG and an annual withdrawal from the Floridan Aquifer of 1,410 MG with a maximum month of 128 MG. Water use demand projections are presented in Table WS14 below for finished water and Table WS15 for raw water through year 2040. Finished water projections are also shown by municipality within the District 1 service area. Municipal demand projections were estimated based on the actual 2015 use and the 5-year historic gallons per capita day of 96 gpcd was applied to 2020 through 2040 populations to calculate demand. Demand estimates are shown in Table WS16 below. The projected raw water use accounts for 56 percent of the WTP capacity in year 2040.

Table WS14 **District 1 Actual and Projected Finished Water Demands**

Planning Year	Population (UAZ Estimate)	Finished Water Demands		
		Annual (MG)	Average Day (MGD)	Per Capita Use
Actual Water Use [1]				
2010	75,091	2,596	7.11	95
2011	75,259	2,677	7.33	97
2012	75,427	2,669	7.31	97
2013	75,595	2,606	7.14	94
2014	75,763	2,617	7.17	95
2015	75,931	2,740	7.51	99
2016	76,488	2,681	7.35	96
2017	77,046	2,686	7.36	96
Projected Water Use [2]				
2020	78,718	2,755	7.55	96
2025	84,292	2,950	8.08	96
2030	89,479	3,132	8.58	96
2035	92,895	3,252	8.91	96
2040	95,299	3,336	9.14	96

1. BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 96 gallons per capita day

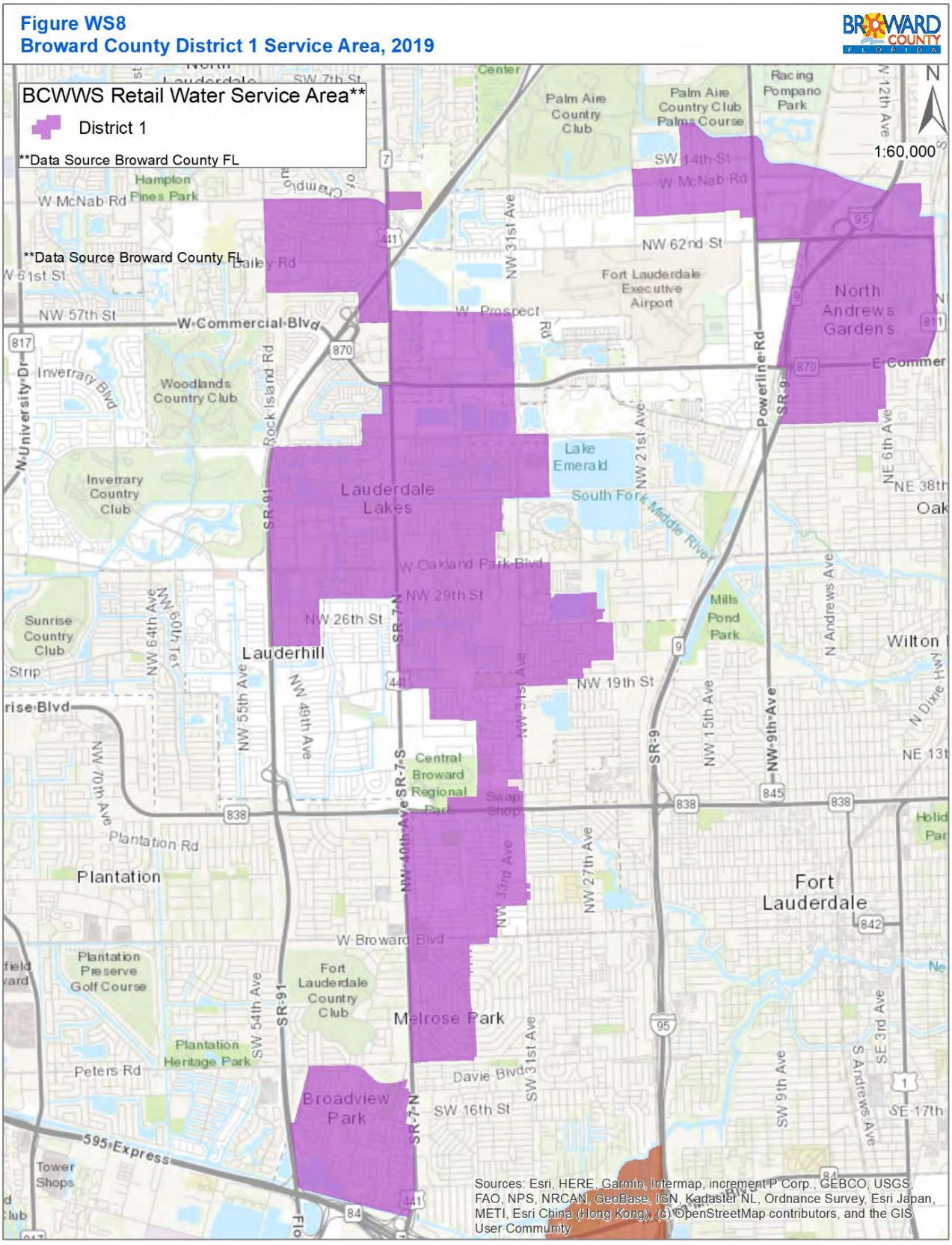

Figure WS8 BCWWS District 1 Service Area

Table WS15 District 1 Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw : Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use [1]					
2010	2,596	1.08	2,794	7.65	247
2011	2,677	1.13	3,023	8.28	273
2012	2,669	1.10	2,946	8.07	258
2013	2,606	1.09	2,843	7.79	260
2014	2,617	1.06	2,763	7.57	246
2015	2,740	1.05	2,886	7.91	267
2016	2,681	1.06	2,849	7.81	253
2017	2,686	1.05	2,809	7.70	257
Projected Water Use [2, 3]					
2020	2,755	1.05	2,904	7.96	263
2025	2,950	1.05	3,110	8.52	282
2030	3,132	1.05	3,301	9.04	299
2035	3,252	1.05	3,427	9.39	311
2040	3,336	1.05	3,516	9.63	319

1. BCWWS Monthly Operating Reports for Individual Well Pumpages
2. Projected Raw Water based on Actual Raw Water to Finished Water Ratio (3-Year Average) of 1.05
3. Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 33.07

Table WS16 Projected Average Day Finished Water by Municipality within District 1 in MGD [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
FORT LAUDERDALE	0.72	0.75	0.85	0.89	0.93	0.96
LAUDERHILL	0.83	0.79	0.88	1.03	1.12	1.19
LAUDERDALE LAKES	3.16	3.12	3.20	3.39	3.52	3.61
NORTH LAUDERDALE	0.68	0.65	0.79	0.79	0.80	0.80
OAKLAND PARK	1.20	1.26	1.24	1.28	1.30	1.31
POMPANO BEACH	0.05	0.05	0.06	0.06	0.06	0.07
PLANTATION	0.02	0.03	0.06	0.08	0.09	0.11
TAMARAC	0.14	0.23	0.23	0.24	0.25	0.26
BMSD	0.72	0.68	0.80	0.82	0.84	0.85

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 96 gpcd2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 99 gpcd

BCWWS District 2

District 2 has a service area of 14.8 square miles and contains 253 miles of water distribution and transmission mains. The facilities of District 2 are interconnected with the City of Deerfield Beach, the Town of Hillsboro Beach, the City of Pompano Beach, and Palm Beach County to provide for emergency water supply. In District 2, raw water is treated at the District 2 WTP located in the City of Pompano Beach prior to distribution to BCWWS retail customers and the City of Coconut Creek. The District 2 WTP was expanded in 1994 to its current capacity of 30.0 MGD to treat Biscayne Aquifer raw water using lime softening treatment. Figure WS9 shows the location of the District 2 WTP, storage tanks, and finished water distribution pipe 12-inches and larger with the District 2 service area.

The District 2 WTP treats raw water supplied by the District 2 and the North Regional Wellfields under SFWMD CUP No. 06-01634-W issued in March 2008 for a 20-year permit duration to withdraw water from the Biscayne and Floridan Aquifers. The District 2 wellfield has a design capacity of 27.1 MGD and is comprised of seven production wells. The North Regional wellfield has a design capacity of 20.2 MGD and is comprised of 10 production wells. The District 2 and North Regional Wellfields each provide approximately 50 percent of the raw water demand. While Floridan Aquifer production wells were planned as part of the original permit to provide AWS, no wells have been constructed to date. The permit allocates an annual withdrawal from the Biscayne Aquifer of 6,388 million gallons (MG) with a maximum month of 585 MG and an annual withdrawal from the Floridan Aquifer of 1,664 MG with a maximum month of 152 MG. Water use demand projections are presented in Table WS17 for finished water and Table WS18 for raw water through year 2040. Finished water projections are also shown by municipality within the District 2 service area. Municipal demand projections were estimated based on the actual 2015 use and the 5-year historic gallons per capita day of 112 gpcd was applied to 2020 through 2040 populations to calculate demand. Demand estimates are shown in Table WS19 below. The projected raw water use accounts for approximately 49 percent of the WTP capacity in year 2040.

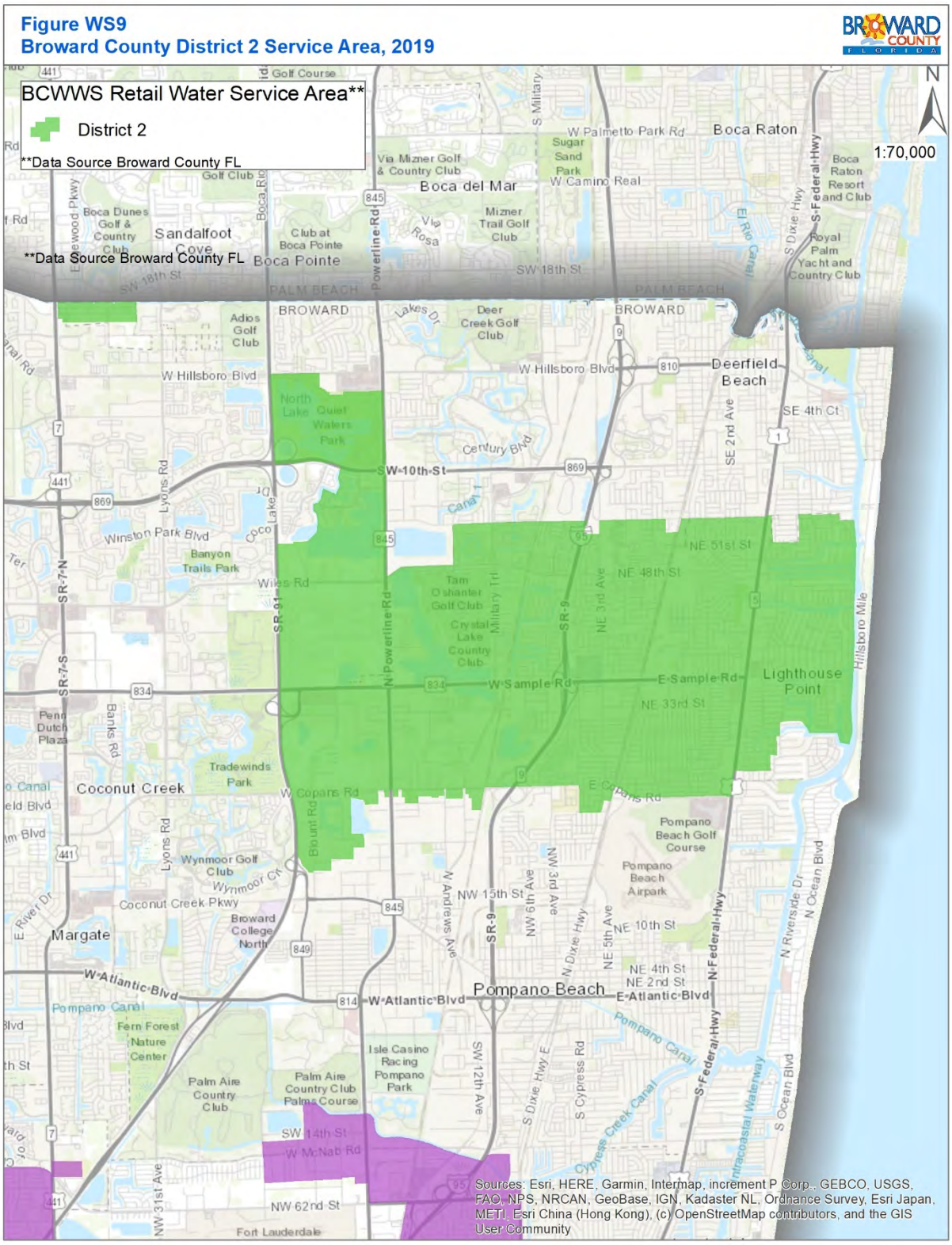

Figure WS9 BCWWS District 2 Service Area

Table WS17 District 2 Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands		
		Annual (MG)	Average Day (MGD)	Per Capita Use
Actual Water Use [1]				
2010	109,181	4,560	12.49	114
2011	109,400	4,496	12.32	113
2012	109,620	4,326	11.85	108
2013	109,839	4,496	12.32	112
2014	110,059	4,322	11.84	108
2015	110,278	4,599	12.60	114
2016	110,827	4,554	12.48	113
2017	111,376	4,661	12.77	115
Projected Water Use [2]				
2020	113,023	4,630	12.69	112
2025	114,814	4,704	12.89	112
2030	119,226	4,885	13.38	112
2035	121,410	4,974	13.63	112
2040	122,631	5,024	13.76	112

1. BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 112 gallons per capita day

Table WS18 District 2 Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw: Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use [1]					
2010	4,560	1.08	4,942	13.54	440
2011	4,496	1.04	4,689	12.85	418
2012	4,326	1.04	4,488	12.30	415
2013	4,496	1.03	4,629	12.68	415
2014	4,322	1.05	4,520	12.38	413
2015	4,599	1.04	4,793	13.13	432
2016	4,554	1.03	4,709	12.90	423
2017	4,661	1.04	4,833	13.24	434
Projected Water Use [2, 3]					
2020	4,630	1.04	4,880	13.37	442
2025	4,704	1.04	4,957	13.58	449
2030	4,885	1.04	5,148	14.10	466
2035	4,974	1.04	5,242	14.36	475
2040	5,024	1.04	5,295	14.51	480

1. BCWWS Monthly Operating Reports for Individual Well Pumpages inclusive of the Deerfield Beach Raw Water Large User
2. Projected Raw Water based on Actual Raw Water to Finished Water Ratio (3-Year Average) of 1.04
3. Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 32.90

Table WS19 **Projected Average Day Finished Water by Municipality within District 2 in MGD** [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
COCONUT CREEK	0.01	0.01	0.01	0.01	0.01	0.01
DEERFIELD BEACH	2.60	2.52	2.59	2.71	2.76	2.78
LIGHTHOUSE POINT	1.02	0.99	0.98	1.00	1.00	1.01
POMPANO BEACH	2.64	2.59	2.67	2.76	2.78	2.78

1. Calculated using District 2 Finished Water 5-Year Average Gallons Per Capita Day of 112 gpcd
2. 2015 demand Calculated using District 2 Finished Water Actual Gallons Per Capita Day of 114 gpcd

BCWWS District 3A and 3BC:

District 3 service area is divided into two geographically separate subdistricts 3A, Figure WS10, and 3BC, Figure WS11. The County purchases bulk treated water primarily from the City of Hollywood and distributes the treated water through the County's distribution system. District 3 has a combined service area of approximately 14.3 square miles and contains 223 miles of transmission and distribution mains. Subdistrict 3A is contains the Fort Lauderdale-Hollywood International Airport which is approximately 20 percent of the total area of the district. District 3A has interconnects with the City of Hollywood, for is primary water supply, and with the City of Fort Lauderdale and the City of Dania Beach, to provide for emergency water supply. Subdistrict 3BC has interconnects with the City of Hollywood for its primary water supply, and the Cities of Pembroke Pines and Miramar to provide for emergency water supply.

The City of Hollywood is responsible for ensuring adequate raw water supply and treatment facilities to serve the County District 3 service areas. The City's existing CUP (Permit No. 06-00038-W) was issued by the SFWMD on April 9, 2008 and expires April 9, 2028. The Hollywood CUP raw water allocation for the subdistrict 3A/3BC areas is 13.16 MGD to meet demands through the year 2028.

BCWWS' current finished water demand for District 3 averages around 6.4 MGD and is projected to increase to 8.3 MGD by 2040 as shown Table WS20 below. District 3's raw water demand is anticipated to be around 9.0 MGD in 2045 as shown in Table WS21, based on historical raw to finished water ratio of 1.09. BCWWS continues to coordinate closely with the City to ensure that future demands for District 3 are adequately addressed.

Finished water demand was estimated as shown in Table WS22 (District 3A) and WS23(District 3BC) by using the finished water 5-year historical gallons per capita day of 127 and the municipal populations for District 3A and District 3BC. Year 2015 was calculated using the actual gallons per capita day of 130.

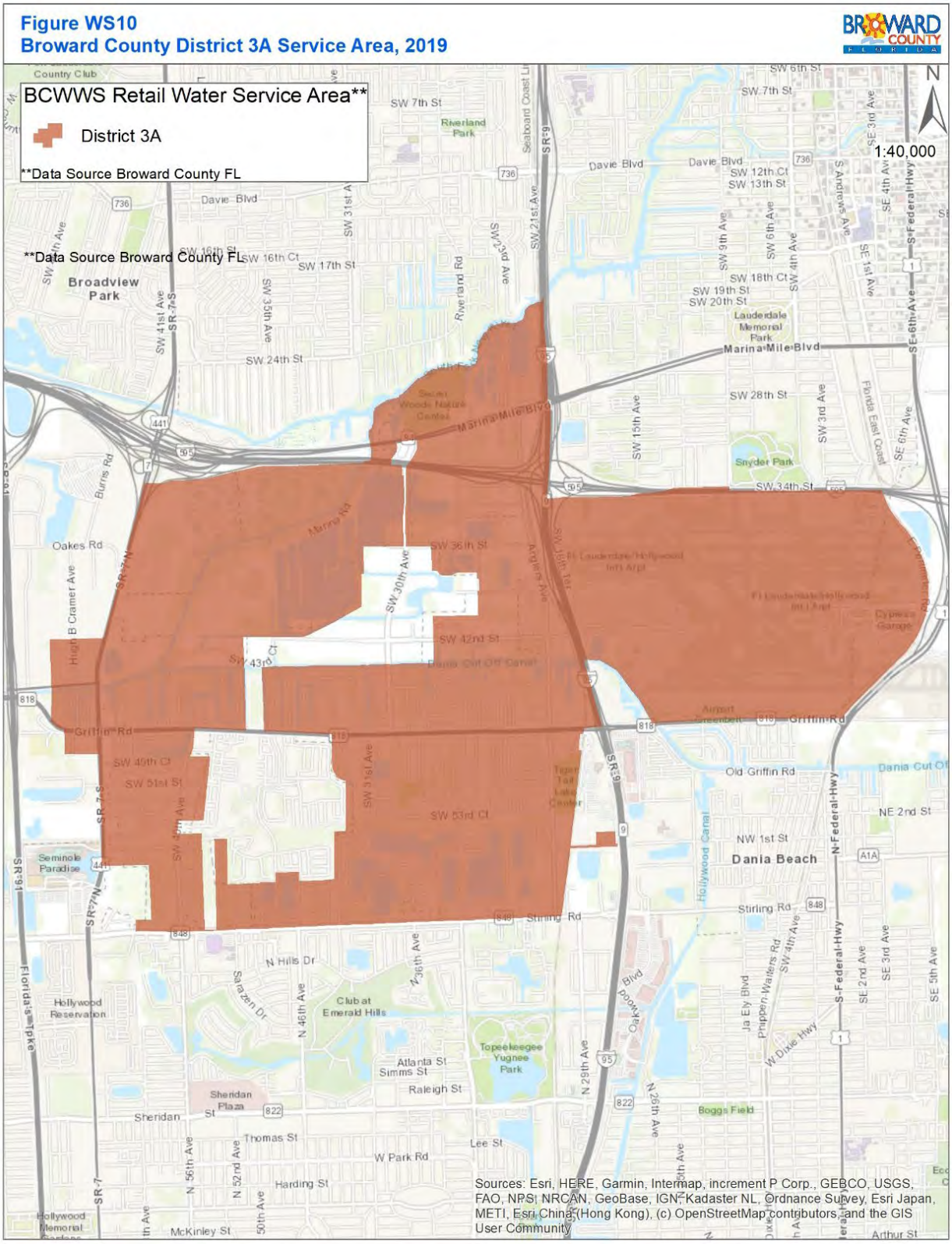

Figure WS10 **BCWWS District 3A Service Area**

Figure WS11
Broward County District 3BC Service Area, 2019

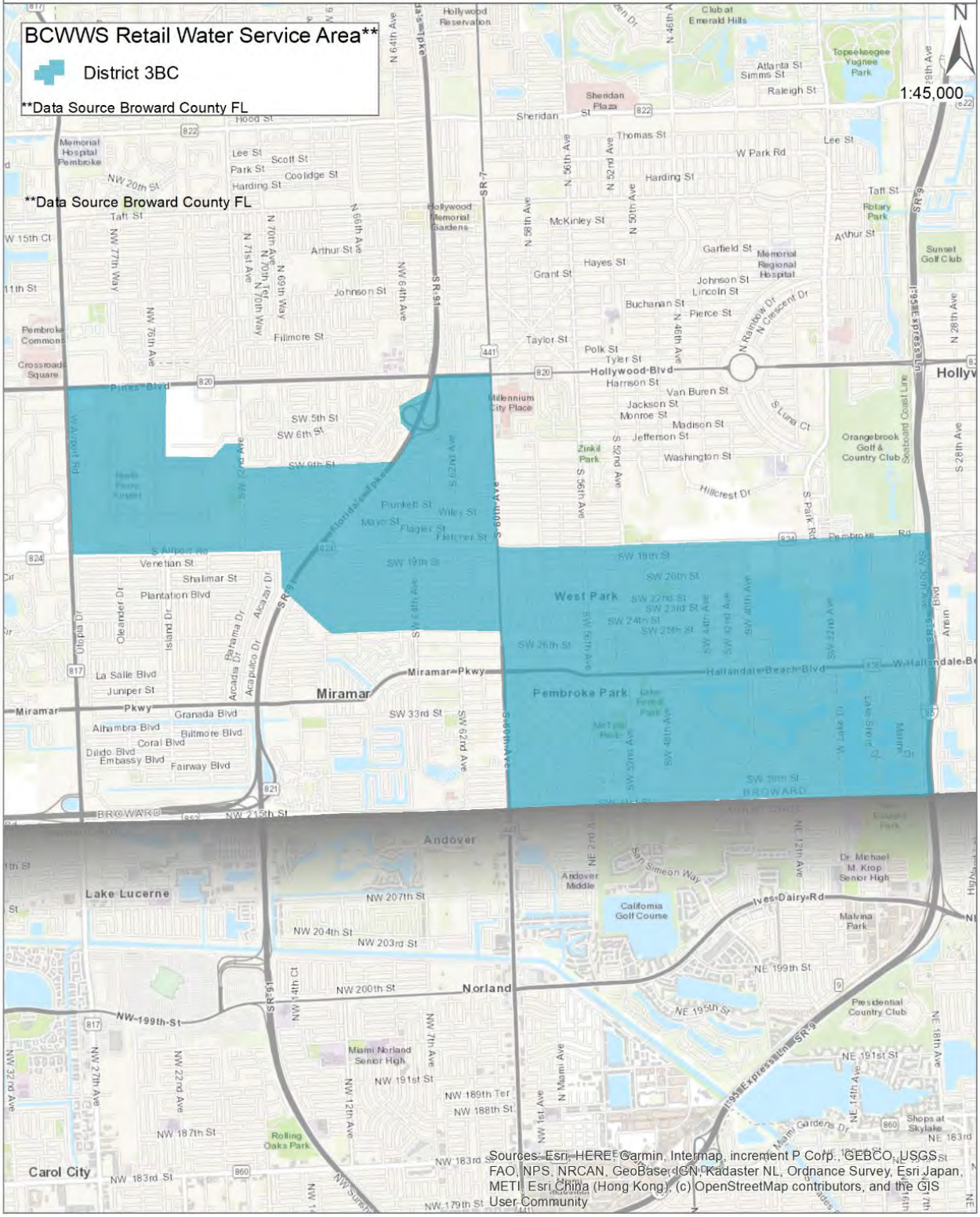

Figure WS11 BCWWS District 3BC Service Area

Table WS20 District 3A and 3BC Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands				
		Annual (MG)	Average Day (MGD)	Per Capita Use	Maximum Month (MGM)	Max Mo : Avg Day Ratio
Actual Water Use [1]						
2010	32,480	2,080	5.70	118	192	33.74
2011	49,158	2,210	6.05	126	196	32.42
2012	50,014	2,230	6.11	122	200	32.79
2013	50,871	2,362	6.47	127	204	31.59
2014	51,727	2,369	6.49	125	221	33.99
2015	52,584	2,490	6.82	130	222	32.51
2016	52,946	2,491	6.82	129	218	31.97
2017	53,308	2,383	6.52	122	212	32.48
Projected Water Use [2, 3]						
2020	54,394	2,523	6.91	127	244	32.51
2025	56,972	2,642	7.24	127	256	32.51
2030	60,221	2,793	7.65	127	270	32.51
2035	62,325	2,891	7.92	127	280	32.51
2040	63,734	2,956	8.09	127	286	32.51

1. BCWWS Monthly Operating Reports for 3A, 3B and 3C Finished Water Meters
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 127 gallons per capita day
3. Projected Finished Water Maximum Month based on Actual Finished Maximum Month to Average Day Ratio (5-Year Average) of 32.51

Table WS21 District 3A and 3BC Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw: Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use [1]					
2010	2,080	1.09	2,267	6.21	210
2011	2,210	1.09	2,409	6.60	214
2012	2,230	1.09	2,431	6.66	218
2013	2,362	1.09	2,575	7.05	223
2014	2,369	1.09	2,582	7.07	240
2015	2,490	1.09	2,714	7.44	242
2016	2,491	1.09	2,715	7.44	238
2017	2,383	1.09	2,599	7.12	231
Projected Water Use [2, 3]					
2020	2,523	1.09	2,743	7.52	244
2025	2,642	1.09	2,873	7.87	256
2030	2,793	1.09	3,037	8.32	270
2035	2,891	1.09	3,143	8.61	280
2040	2,956	1.09	3,214	8.81	286

1. BCWWS Monthly Operating Reports for 3A, 3B and 3C Finished Water Meters
2. Projected Raw Water based on SFWMD LECWSP 2018 Update, Appendix B, Table B-4 entry for Hollywood of 1.09
3. Actual and Projected Raw Water Maximum Month based on Actual Finished Maximum Month to Average Day Ratio (5-Year Average) of 32.51

Table WS22 **Projected Average Day Finished Water by Municipality within District 3A in MGD** [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
DISTRICT 3A TOTAL	2.12	2.15	2.30	2.42	2.50	2.55
DANIA BEACH	1.99	2.02	2.13	2.21	2.25	2.26
DAVIE	0.01	0.01	0.04	0.07	0.09	0.11
FORT LAUDERDALE	0.09	0.09	0.09	0.12	0.13	0.15
HOLLYWOOD	0.03	0.03	0.03	0.03	0.03	0.03

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 127 gpcd
2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 130 gpcd

Table WS23 **Projected Average Day Finished Water by Municipality within District 3BC in MGD** [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
DISTRICT 3BC TOTAL	4.71	4.76	4.94	5.23	5.42	5.54
HOLLYWOOD	0.58	0.59	0.64	0.68	0.71	0.73
MIRAMAR	0.86	0.84	0.93	1.05	1.12	1.18
PEMBROKE PINES	0.53	0.56	0.55	0.55	0.56	0.57
PEMBROKE PARK	0.90	0.88	0.86	0.91	0.93	0.93
WEST PARK	1.85	1.89	1.95	2.04	2.09	2.12

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 127 gpcd
2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 130 gpcd

South System Regional Wellfield (SRW):

BCWWS operates the SRW located in Cooper City, west of Pine Island Road, just north of Sheridan Street. The SRW supplies Biscayne Aquifer raw water from eight production wells to the Cities of Dania Beach, Hollywood, and Hallandale Beach and to the Florida Power and Light (FPL) Dania Beach Energy Center under large user agreements. The SRW CUP (06-01474-W) issued March 2018, and successfully modified July 10, 2019, reflects the complexities of providing regional raw water. The CUP allocation is divided into three portions that have individual expiration dates as shown in Table WS24 and Table WS25 details the individual large user allocation limitations.

Table WS24 SRW CUP Allocation Summary

Limitation	Duration	Average Day (MGD)	Maximum Month (MGM)
Temporary 5-Year Allocation	March 2018 to March 2023	15.64	533.17
Base Condition Allocation [1]	March 2023 to March 2038	11.62	396.13
TOTAL C-51 Offset Allocations [2]	March 2023-December 2065	5.00	170.33
TOTAL SR Wellfield Allocation	March 2023-December 2065 [2]	16.62	566.19

1. The Base Condition Allocation must be renewed every 20 years.
2. Broward County purchased 3.0 MGD of C-51 Reservoir Project storage to provide for demands in the BCWWS 3A/3BC service area through December 2065. The City of Dania Beach and the City of Hallandale Beach have purchased 1 MGD each of C-51 Reservoir Project storage to meet their projected demand with supply from SR Wellfield. Table WS16 summarizes the SRW raw water demands through 2040.

Table WS25 SRW Raw Water Large User Average Day Projections

Limitations	Dania Beach (MGD)	Hallandale Beach (MGD)	Hollywood-BCWWS 3A/3BC (MGD)	FPL (MGD)	TOTAL Allocation (MGD)
Temporary 5-Year Allocation (March 2018 - March 2023)	3.02	3.61	7.27	1.74	15.64
Base Condition Allocation [1] (March 2018 - March 2038)	1.58	3.26	5.78	1.00	11.62
C-51 Offset Allocations [2] (March 2023 - December 2065)	1.00	1.00	3.00	---	5.00
TOTAL SR Wellfield Allocation	2.58	4.26	8.78	1.00	16.62
C-51 Reservoir Project Allotments Under Agreements	1.00	1.00	3.00	---	5.00

1. Renewal of the Base Condition Allocation of 11.62 MGD is required every 20 years.
2. Broward County purchased 3.0 MGD of C-51 Reservoir Project storage to provide for demands in the BCWWS 3A/3BC service area through December 2065. The City of Dania Beach and City of Hallandale Beach have purchased 1 MGD each of C-51 Reservoir Project storage to meet their projected demand with supply from SR Wellfield.

City of Fort Lauderdale

Data indicate that City of Fort Lauderdale demands may exceed their Biscayne Aquifer supply in year 2035. The City's Water Supply Facility Work Plan 2020 Update outlines plans to address the potential deficit by investing in RO treatment of Floridan aquifer water (Hazen & Sawyer, 2019). In addition to the City's plans to develop 6 MGD of Floridan aquifer supply, the City signed an agreement in January 2020 for the purchase of 3 MGD of C-51 Reservoir water.

In 1926, the 6 MGD capacity Peele-Dixie lime softening WTP was opened in western Fort Lauderdale. Over the years, the plant has been expanded and modernized, increasing its capacity to 20 MGD. In 2008 the WTP was converted from a lime softening to membrane facility with a treatment capacity of 12 MGD at 85 percent treatment efficiency. The Fiveash lime softening WTP was built in 1954 to treat 8 MGD. Through a series of expansions, the plant has been able to keep pace with the rapid growth experienced in Fort Lauderdale and today has a designed capacity of 70 MGD. The Fiveash WTP is supplied raw groundwater for treatment from the Prospect Wellfield.

Raw water for the City of Fort Lauderdale is supplied by the Peele-Dixie and Prospect wellfields, which draw from the SAS. The raw water is treated at two water treatment facilities, the Peele-Dixie nanofiltration plant and the Fiveash lime softening plant. There are 37 active wells between the two. The Peele-Dixie and Prospect wellfields have a combined pumping capacity of approximately 107 MGD. The City constructed two Floridan aquifer test wells at the Peele Dixie wellfield location to collect water quality and drawdown information as part of their plans to move towards RO treatment of Floridan aquifer water.

The City of Fort Lauderdale's CUP (Permit No. 06-00123-W) issued on September 11, 2008, for 20 years, allows the City to pump a combined annual average daily allocation for the two wellfields of 52.55 MGD. In 2018, the combined pumpage from the Peele-Dixie and Prospect wellfields averaged 41.49 MGD (11.06 MGD below the permitted allocation). The City's SFWMD CUP limitations on Biscayne and Floridan aquifer withdrawals are the following:

- Annual Allocation Limit – 22,334 million gallons (MG) - 61.19 MGD
- Biscayne Aquifer Annual Withdrawal Limit – 19,181 MG – 52.55 MGD
- Floridan Aquifer Allocation Limit – 3,153 MG – 8.64 MGD.

(Hazen & Sawyer, 2019)

The City of Fort Lauderdale maintains a total of 10 water system interconnections with BCWWS District 1 (3), the Cities of Plantation (1), Tamarac (3), and Pompano Beach (1), and Town of Davie (1).

Fort Lauderdale has adopted its finished water level of service for potable water at 170 gpcd (SFWMD LECWSP, 2018). In 2015, the average per capita demand throughout the City's service area was 176 gpcd (Table WS26). Projected water use for each municipality in the City's service area is estimated in Table WS27 by applying the 5-year average gallons per capita day of 164 to the population projections for the individual municipalities.

Table WS26 **Fort Lauderdale Water Demand Forecast***

Year	Population	Overall Raw Water Per Capita (gpcd)	Finished Water Per Capita (gpcd)	Avg Day Biscayne Aquifer Raw Water Demand (MGD)	Avg Day Finished Water Demand (MGD)	Max Day Finished Water Demand (MGD)
2015	235,840	176	169	41.5	39.8	48.9
2020	241,454	172	164	41.5	39.6	48.7
2025	274,470	172	164	47.2	45.0	55.4
2030	292,768	172	164	50.4	48.0	59.1
2035	304,918	172	164	52.4	50.0	61.5
2040	315,109	172	164	54.2	51.7	63.6

Source: City of Fort Lauderdale Water Supply Facilities Work Plan 2020 Update DRAFT, November 7, 2019

Table WS27 **Fort Lauderdale Water Demand Forecast by Service Area Municipality**

Jurisdiction	2015	2020	2025	2030	2035	2040
TOTAL	39.86	39.60	45.01	48.01	50.01	51.68
Fort Lauderdale	29.61	29.52	34.23	36.56	38.12	39.38
Lauderdale by The Sea	0.70	0.60	0.66	0.65	0.64	0.63
Sea Ranch Lakes	0.12	0.11	0.11	0.12	0.12	0.12
BMSD	1.09	1.16	1.29	1.40	1.45	1.56
Davie	0.09	0.09	0.11	0.13	0.15	0.17
Lauderdale Lakes	0.06	0.06	0.06	0.06	0.06	0.06
Lauderhill	0.49	0.47	0.51	0.54	0.57	0.59
Lazy Lake	0.00	0.00	0.00	0.00	0.00	0.01
North Lauderdale	0.06	0.06	0.19	0.19	0.19	0.18
Oakland Park	5.26	5.22	5.37	5.69	5.92	6.09
Tamarac	0.35	0.33	0.33	0.33	0.34	0.33
Wilton Manors	2.02	1.95	2.15	2.33	2.45	2.55
Port Everglades	Population is included in BMSD					

Source: Calculation based on Hazen & Sawyer City of Fort Lauderdale Water Supply Facilities Work Plan 2020 Update Population and Demand Projections.

E. Conservation

Conservation practices for Broward County are presented in the sections below. The County actively solicits participation in its conservation programs through coordination with the Broward Water Advisory Board and its Technical Advisory Committee. It develops interlocal agreements in coordination with local municipalities and water management agencies and coordinates with local municipalities and their residents using email, Twitter,

Facebook, news releases and other methods that support and encourage participation in these County-wide programs which are outlined below.

Broward County

Within the County's Comprehensive Plan, policies within the Water Management Element that support and guide the County's water conservation initiatives include:

https://www.broward.org/BrowardNext/Documents/CompPlanDocs/WME%20GOPS-Adoption%20March%202019.pdf

POLICY WM3.27 Broward County will advocate for water conservation measures in building practices and will implement programs to support plumbing retrofits, toilet rebates, Florida-friendly landscaping and Florida Yards and Neighborhoods best management practices (BMP), and water conservation education.

POLICY WM3.33 Broward County will continue to enforce Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County Code of Ordinances, which reflects the NatureScape Broward program principles that promote the use of native and Florida Friendly landscaping and the preservation of native habitats in support of sustainable urban landscapes and the conservation of water resources.

POLICY WM4.17 Broward County, in partnership with local municipalities and water and wastewater entities, will continue to develop and implement programming for Countywide water conservation and initiatives, including the Conservation Pays Program, Water Matters education and outreach programs, NatureScape Broward, and the NatureScape Irrigation Services, to promote water and energy conservation.

The District's Comprehensive Water Conservation Program is organized into regulatory, voluntary, and education-based initiatives which are discussed in the 2018 LEC Water Supply Plan Update. As mentioned in this plan, regulatory initiatives in Broward County that have been adopted include local landscape and irrigation ordinances. In addition, the County has developed door hangers in English, Spanish, and Creole which cites these irrigation restrictions and distributed these to code enforcement agencies during their annual meetings. It has also developed a sticker with the irrigation restrictions that are placed within irrigation controller boxes at all public schools that are evaluated as part of the Environmental Partnership between the County and School Board of Broward County.

Voluntary and incentive-based initiatives are offered primarily through both the Broward Water Partnership's Conservation Pays and NatureScape Irrigation Service programs, which are partnerships between the County and multiple municipalities and/or utilities which

leverage their local funds to secure additional outside funds to realize additional water savings (e.g., Water Savings Incentive Program, Cooperative Funding Program).

Through the County's NatureScape/School Board of Broward County Environmental Partnership Agreement, water savings within Broward County Public Schools are recognized through the "How Low Can You Go Challenge", a contest in partnership with the Miami Heat, which challenges students and schools to reduce energy and water consumption over a three-month period. Winning schools receive plaques and are recognized during halftime at a Miami Heat game. In addition, beginning in 2019, the County has established a Conservation Partner of the Year Award to recognize local municipalities for their water conservation efforts. This award is made at Water Matters Day.

The County is particularly active in education, outreach, and marketing initiatives to help foster a stronger environmental conservation effort throughout the Broward community. All the programs and activities identified in the 2018 LEC update as part of the District's Comprehensive Conservation Program, and as listed below, are part of the County's initiatives to promote water conservation:

School educational programs. The County regularly promotes water conservation in the schools through classroom programs and teacher and staff trainings. During the 2018-2019 school year, County staff assisted the Global Scholars program in arranging for field trips and providing guest speakers to augment the "World of Water" focus which was the theme for the year.

Media campaigns. The Conservation Pays program promotes indoor water conservation through several media campaigns each year. The most recent campaign, "Play Conservation Pays and Win" used online gamification to educate the public on water conservation, sustainability, and climate change and had over 5,000 players.

Informative billing. The Conservation Pays program provides utility partners with blurbs to include in its billing.

Training staff and associates at facilities and operations that provide irrigation and landscaping materials, services, and supplies. The NatureScape Irrigation Services trains provides training to irrigation industry professionals on an annual basis on developments in water-saving devices. In addition, through the Environmental Partnership with Broward Schools, training is provided to facility managers on ways to save water. The NatureScape Broward program is working with big box stores to

promote water conservation by including more Florida-friendly plant selections within their stores.

Florida-Friendly Landscaping™ demonstration gardens are promoted through the NatureScape Broward program which works with Broward communities, garden clubs, and homeowner's associations to promote Florida-friendly™ landscaping and awards Emerald awards to a select group of homeowners/businesses/municipalities that exemplify excellent landscapes.

Workshops and exhibits. The County regularly offers workshops to promote water conservation and annually promotes water conservation to residents at Broward **Water Matters** Day, an event in March which draws attendance of approximately 4,000 residents.

Landscape design and irrigation education for residents is also promoted at Water Matters Day.

Irrigation water audits for residential and other users are conducted regularly by the NatureScape Irrigation Service and in the schools as part of the Environmental Partnership Agreement.

Indoor water use audits are conducted within Broward schools as part of the Environmental Partnership Agreement.

Retrofit and rebate programs for replacing inefficient water-using devices with efficient ones are promoted through the Conservation Pays program. A new rebate program promoting smart irrigation equipment has recently been implemented through the NatureScape Irrigation Service.

Through the County's water conservation initiatives, as of the end of September 2019, cumulative water savings of 4.44 billion gallons have been realized. Some draft results are presented in Table WS28 and the estimation of municipal participation across the County is presented in Table WS29.

Table WS28 **Water Savings Realized Through County Water Conservation Programs**

Name of Program	Metric	Cumulative gallons saved
NIS	3,508 evaluations	1,643,802,415
Environmental Partnership Irrigation Evaluations	199 evaluations	275,010,020
Conservation Pays Program	155,581 toilet rebates	2,497,634,300
NatureScape Broward	4,619 Florida-friendly habitats	26,850,000

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Table WS29 **Participation in County water conservation programs**

Muinicipality/Utility/Other	NIS (mobile irrigation lab)	Broward Water Partnership Conservation Pays (Indoor Conservation)	NatureScape Broward (Florida-Friendly Landscaping™)	Water Matters Education and Outreach
BMSD/WWS	X	X	X	X
Broward County Public Schools	X	X	X	X
Coconut Creek	X	X	X	X
Cooper City	X	X	X	X
Coral Springs	X	X	X	X
Coral Springs Improvement Dist.	X			
Dania Beach	X	X		X
Davie	X	X	X	X
Deerfield Beach	X	X	X	X
Fort Lauderdale	X	X	X	X
Hallandale Beach	X	X	X	X
Hillsboro Beach				X
Hollywood	X	X	X	X
Lauderdale-by-the-Sea			X	X
Lauderdale Lakes			X	X
Lauderhill		X	X	X
Lazy Lake				X
Lighthouse Point			X	X
Margate	X	X	X	X
Miramar	X	X	X	X
North Lauderdale	X		X	X
Oakland Park	X		X	X
Parkland			X	X
Pembroke Park			X	X
Pembroke Pines	X	X	X	X
Plantation	X	X	X	X
Pompano Beach	X		X	X
Sea Ranch Lakes				X
Southwest Ranches			X	X
Sunrise	X	X	X	X
Tamarac			X	X
West Park			X	X
Weston		X		X
Wilton Manors			X	X

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Water Use Restriction/Initiatives. As required in Chapter 40E-24, Florida Administrative Code, Broward County has enacted its own irrigation ordinance under Chapter 36, "Water Resources and Management," Article II, "Water Emergencies," Section 36-55 "Restrictions on landscape irrigation, Year-round landscape irrigation measures", of the Broward County Code of Ordinances. These measures mirror the measures found in Chapter 40E-24 and impose year-round, Countywide landscape 2-day per week irrigation restrictions. However, this only applies to BMSD areas. Municipalities within Broward County may adopt the provisions in Section 36-55 into their own municipal code. The County's mandatory irrigation restrictions are posted on the County's Water Resources website at:

https://www.broward.org/waterresources/Pages/IrrigationRestrictions.aspx

and in the Broward County Code of Ordinances at:

https://library.municode.com/fl/broward_county/codes/code_of_ordinances?nodeId=PTIICOOR_CH36WAREMA_ARTIIWAEM_S36-55YEUNLAIRMEVA

The County's service areas have been under either the SFWMD's mandatory Phase I and/or Phase II water restrictions or under the County's year-round ordinance since 2005. Since then, the overall per capita consumption has dropped in response to a combination of conservation messaging, financial incentives (High Efficiency Toilet rebates), and ordinance restrictions.

BCWWS has developed and implemented a successful strategy to systematically identify and eliminate, where possible, causes of lost water due to inaccurate flow metering and/or leaky pipes. This comprehensive strategy includes regular inspection, calibration and repair/ replacement of meters, and the replacement of aging infrastructure. These actions have significantly improved water losses by reducing leaks and per capita consumption.

An essential part of the Broward initiatives is the implementation of high efficiency plumbing requirements supported by the Broward County Board of County Commissioners, the Broward League of Cities, and the Broward Water Resources Task Force. Chapter 6, Section 604.4, of the Florida Building Code contains standards for ultra-low volume plumbing fixtures to be used in all new construction and Chapter 9, Section 908.8.1, requires a minimum of 8 cycles of concentration for cooling towers and contains requirements for reuse concentrate of cooling tower makeup water for air handling systems with a 4-ton BTU capacity air handling system or greater as a condition for the receipt of a certificate of occupancy.

Use of Florida-Friendly Landscape Principles. Pursuant to Section 373.228, F.S., Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County code of Ordinances, reflects the Florida-Friendly and NatureScape Broward program principles that promote water and energy conservation, while creating a climate resilient landscape. This is in effect for the BMSD areas of Broward County and individual municipalities are adopting as a model landscape code. The Florida-Friendly Landscaping™ program has developed nine principles for sustainable landscapes:

1. Right plant, right place
2. Water efficiently
3. Fertilize appropriately
4. Mulch
5. Attract wildlife
6. Manage yard pests responsibly
7. Recycle yard waste
8. Reduce stormwater runoff
9. Protect the waterfront

Water Conservation-Based Rate Structure. Rate structures that encourage water conservation reward consumers that have low rates of water consumption with the lowest per gallon charge and penalize those showing higher rates of water consumption with a higher per gallon charge. BCWWS adopted a tiered rate structure in 2012 to incentivize water conservation. More information on the rate structure may be found at the web address below:

http://www.broward.org/WaterServices/RatesAndFees/Pages/SingleFamily.aspx

Rain Sensor Overrides for New Lawn Sprinkler System. Broward County's "Landscaping for Protection of Water Quality and Quantity" ordinance is codified in the Broward County Code of Ordinances Sections 39-75 to 39-94. Subsection 39-79(b)(11) includes the requirement for the location and specification of controllers of rain shutoff devices and soil moisture sensors as part of the landscape plan.

Public Information Program. Broward County has several targeted outreach programs for Broward County residents including NatureScape Broward, Water Matters Day, Know the Flow, NIS, and the NatureScape Broward School Board Environmental Partnership Agreement. NatureScape Broward provides educational workshops and training on the need for water conservation, the principles of NatureScape, and assistance in the design of a NatureScape landscape. Residents are encouraged to

apply for NatureScape certification following adoption of NatureScape best management practices on their landscapes.

BCWWS has developed a public education program that includes the development and distribution of brochures, educational materials for elementary and high school students, and presentations to homeowner and condominium associations regarding water supply, treatment, and conservation. The utility also supports the Water Matters Program by purchasing and distributing rain gauges at the annual Broward Water Matters Day event.

City of Fort Lauderdale

The City of Fort Lauderdale has an active water conservation program, as detailed in the City's CUP, ordinances, and in their 2014 Water Supply Plan Update. In the 2008 CUP Renewal, the City used an aggressive approach to control its water demand by developing a conservation program through several initiatives. The first is the City's current efforts at retrofitting and upgrading significant portions of the water delivery systems, including leak detection. The City anticipates that the percentage of unaccounted for water loss will be reduced as this process is implemented. The second is the passage of an ordinance that the City estimated would meet a 10 percent reduction in the projected demands, compared to historical demands. The final initiative is the continued implementation of existing programs such as: limitation of irrigation hours, ultra-low volume plumbing in new developments, xeriscaping principles, conservation-based rate structure, rain sensor requirements, and the City's water conservation education program. More recently, the city is planning on implementing advanced metering infrastructure system wide to enable two-way communication between utilities and customers using smart meters, communication networks and data management systems. The City expects to achieve certain quantifiable goals in the implementation of this program and the City will provide data to the SFWMD on the progress of this demand management program. The City estimates this effort will result in an estimated per capita use rate of approximately 170 gallons per day, which was used for calculating the future demands for the service area.

The City also participates in the Broward Countywide Conservation Pays Program, in collaboration with 18 partners, to provide a coordinated regional campaign focused on water conservation and the distribution of rebates and other incentives.

As partners in the NIS with 18 local water utilities, the City annually selects a group of large water users, including government facilities, parks, schools, and homeowner associations, where the greatest potential exists for significant water savings. Tailored irrigation evaluations are performed by the NIS team of certified experts to capture measured water savings. Best management practices that encourage the 'right plant in the right place' and

smart irrigation are included in each report to help to promote water conservation messaging that adds to long-term water savings.

Fort Lauderdale is a registered County municipality in the community wildlife habitat program through NatureScape Broward. This program promotes water conservation, water quality protection, and the creation of wildlife habitat through Florida-friendly landscape practices that encourage the prudent use of water resources, and the planting of native, non-invasive, and other drought tolerant plants.

F. Reuse

Section 373.250(1), F.S., states that, "the encouragement and promotion of water conservation and reuse of reclaimed water, as defined by the department, are state objectives and considered to be in the public interest." In addition, Section 403.064(1), F.S., states, "reuse is a critical component of meeting the state's existing and future water supply needs while sustaining natural systems." This section highlights the current levels of reuse within each water supply entities' service area.

Broward County

BCWWS operates the Broward County North Regional Wastewater Treatment Plant (WWTP) located in the City of Pompano Beach. The facility has a FDEP-permitted capacity of 95.0 MGD. It provides wastewater services for northern Broward County. In 2018, the annual average daily wastewater flow at the facility was 71.8 MGD. Wastewater effluent is divided between deep injection well disposal and ocean outfall discharge. Approximately 3.8 MGD of the treated wastewater is reused at the facility or at adjacent facilities for irrigation, process or cooling water. Approximately 0.2 MGD of the reuse generated at the North Regional WWTP is delivered for residential and public access area irrigation (Annual Reuse Report to FDEP submitted on November 29, 2018). The primary users include Broward County Septage Receiving Facility, Broward County North Regional WWTP, Fedex, Pompano Business Center, Freshpoint Pompano, and Pompano Center.

Based on historic flows to the ocean outfall, the facility is required to reuse 21.45 MGD (60 percent) of treated wastewater by 2025 to comply with the 2008 Ocean Outfall statute (Section 403.086(9), F.S.). BCWWS is promoting collaborative regional water supply strategies to meet the required 60 percent water reuse by 2025. BCWWS has developed a regional reuse master plan and County Ordinance No.2017-05 created mandatory reuse under Chapter 34, Article XI, Reclaimed Water, in the Broward County Code of Ordinances.

Disposal of the treated wastewater is primarily via deep injection wells (44 MGD) and by ocean outfall (24 MGD). However, of the water sent to the ocean outfall, an average 3

MGD was captured by the City of Pompano Beach for further treatment and distribution for irrigation use. The City of Pompano Beach Oasis Reclaimed WTP has a capacity to treat 7.5 MGD of secondarily treated wastewater. Overall, water reuse at the facility and through the City of Pompano Beach accounts for approximately 5 percent of the wastewater treated at the facility.

The County has initiated several reclaimed pipeline projects over the past few years. Northeast of the North Regional WWTP is the City of Pompano Beach, Pompano Highlands neighborhood. BCWWS has installed reclaimed water pipelines as part of a neighborhood improvements program. The reclaimed system is complete, and the City of Pompano Beach has agreed to provide reclaimed water for residential landscape irrigation from the City of Pompano Beach Oasis Reclaimed WTP, which draws secondarily treated effluent for feed water from a North Regional WWTP pipeline. The City of Coconut Creek entered into an interlocal agreement with BCWWS in April 2016 to receive up to initially 1.4 MGD of reclaimed water with a long-term expectation of 3 MGD. Two connections were established to serve Coconut Creek.

BCWWS is proceeding with expansion of the North Regional WWTP Reclaimed System as well as extending a 42-inch diameter reclaimed pipeline to serve beneficial reuse users in both Broward and Palm Beach Counties. The expansion of the Reclaimed Water Treatment System at the North Regional WWTP is underway and a contract has been let for construction. Pre-construction activities are nearing completion and it is anticipated that construction of the pipeline will commence the first quarter of 2020. The project scope includes approximately 5 miles of 42-inch diameter reclaimed transmission main from the North Regional WWTP to the Palm Beach County line (Reclaimed Status Report submitted January 24, 2018). Approximately 20 MGD of potential reclaimed users have been identified in the, "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report," prepared by Hazen and Sawyer in 2013. County staff are also pursuing new potential users. The County continues to work towards meeting the requirements of the 2008 Ocean Outfall statute before 2025.

City of Fort Lauderdale

The City of Fort Lauderdale's George T. Lohmeyer Wastewater Treatment Facility is a central regional facility used to treat wastewater in a region encompassing Port Everglades, the Cities of Fort Lauderdale, Wilton Manors, and Oakland Park and parts of the City of Tamarac, Town of Davie, and BMSD. The facility has an FDEP-permitted capacity of 56.7 MGD. Treated effluent from the facility is disposed through five deep injection wells.

As stated in the City's Draft Water Supply Facilities Work Plan (November 7, 2019), "The facility does not currently treat effluent to reclaimed water standards for public irrigation or other offsite uses. However, on average the plant uses about 4-mgd of its own secondary effluent as in-plant re-use instead of potable water. Additionally, the City is participating in the County-wide Integrated Water Resources Plan Grants for feasibility studies related to potential beneficial reuse. These have included a 2008 feasibility study for selected reclaimed water projects within the City for a 50% cost share for $125,000. A second feasibility study in 2009 was for the reclaimed water in the area of the Convention Center Broward County provided a 50% cost share for $5,000. The City of Fort Lauderdale prepared a report assessing reclaimed water opportunities in November 2008 titled "Feasibility Study for the Implementation of Selected Reclaimed Water Projects with the City of Fort Lauderdale". Key conclusions of the report were (CDM, 2008):

- The GTL WWTP is located far from any significant users of reclaimed water, such as golf courses. Therefore, the construction of an irrigation-quality reclaimed water production facility at or near the plant to provide further treatment of effluent to public reuse standards is not feasible. There is little available space on the plant site or plant vicinity to construct the required treatment facilities. In addition, due to high levels of infiltration into gravity sewer piping located near coastal areas and waterways, the chloride concentration in the treated effluent over 1,100-mg/L, resulting in unaffordable levels of treatment to reuse standards at the GTL WWTP site. Therefore, the only practical alternatives for implementing reuse systems are off-site and near potential beneficial uses of reclaimed water;
- Two options studied (reclaimed water facilities at the E-Repump Station and the Former Composting Facility1) are technically feasible but are not be economically viable.

The City of Fort Lauderdale continues to assess water reuse opportunities to identify and assess cost effective alternative water supply opportunities. Indirect potable reuse systems have been evaluated by the City; none have emerged as economically feasible. However, due to the dual benefits of providing more disposal capacity and augmenting local water supplies, the City continues to contemplate indirect potable reuse opportunities when assessing alternative water supply investment decisions."

City of Hollywood

The City of Hollywood operates a regional WWTP that is subject to the requirements of the 2008 Ocean Outfall statute. The City of Hollywood implemented a reuse system that delivers up to 4 MGD of blended low-salinity reuse water for irrigation and an annual average of 4 MGD of high-salinity reuse water that is used internally at the City's Southern

Regional Wastewater Treatment Plant. The City is working towards having 10 MGD of reuse capacity by 2025 by the following methods:

- Credit for Existing Onsite Process Reuse – 4 MGD
- Reuse Water for Irrigation within the City – 1.5 MGD
- Contracted Reuse – 4.5 MGD

The City feels that the existing system may be expandable to additional contract, residential irrigation and commercial uses in the future up to an additional 0.3 MGD (Hollywood, 2020).

SPECIAL RECOMMENDATIONS AND ACTIONS

BCWWS, as a Water Supply Entity, is responsible for the implementation of the water supply development projects identified in the 2018 LECWSP Update, as approved by the SFWMD governing Board, in November 2018. The County projects listed in Chapter 6 and Appendix E of the 2018 LECWSP Update are listed below.

A. Broward County Water Reuse Projects

BCWWS, in compliance with the requirements of the ocean outfall legislation, developed the "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report", prepared by Hazen and Sawyer in 2013. This plan documents the County's intent to produce an additional 21.45 MGD of reclaimed water. Of the 21.45 MGD reclaimed water production, 19.7 MGD will be produced at North Regional WWTP. (The remaining reclaimed water will be produced through the Pompano Beach filter facility.) BCWWS reclaimed system projects are outlined below.

North Regional WWTP Capacity Improvements. The capacity improvements construction project will consist of a 16 MG reclaimed water filter capacity expansion with high level disinfection and associated pumping facilities for future expansion of the reclaimed water distribution system at the North Regional WWTP. The project will expand the use of reclaimed water for irrigation. The expansion will include a treatment module, pumping, piping and chemical modifications, emergency power, and related site improvements. Construction is anticipated to be complete by 2021 at an estimated cost of $59 million. As of September 2019, the project is 25 percent complete (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

North Regional WWTP Reclaimed Water Transmission System. The reclaimed water transmission system for new customers in Palm Beach County will be constructed through an Interlocal Reclaimed Water Agreement between Broward County and Palm Beach County. In this agreement, Broward County is tasked with construction of transmission and treatment facilities to provide approximately 15 MGD of reclaimed water to Palm Beach County and 3 MGD to North Springs Improvement District. In addition, potential new users along the transmission corridor in Broward County will be identified for service. The project will expand the use of reclaimed water for irrigation. The project construction is anticipated to be complete by 2021 at an estimated cost of $29 million (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

North Regional WWTP Reclaimed Water Transmission System Expansion. Approximately four miles of 24-inch diameter reclaimed water main will be constructed from NW 39th Avenue in Coconut Creek to North Springs Improvement District, to connect with approximately 4,000 linear feet of reclaimed water main that was constructed as part of the County's Hillsboro Pines Neighborhood Project. The project will expand the use of reclaimed water for irrigation. The project construction is anticipated to be complete by 2021 at an estimated cost of $6.4 million (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

B. C-51 Reservoir Project

BCWWS has associated 3 MGD of their total 6 MGD purchase with their SR Wellfield CUP to offset demands for raw water from their 3A/3BC service area. Construction is scheduled to begin in October 2019 with full operation anticipated by October 2021.

C. Technical Water Resources Assessments

Climate change and sea level rise pose significant threats to regional water supplies. Local impacts are accelerated by increased wellfield pumpage, rising sea level, and aging urban drainage infrastructure, leaving municipalities and water utilities grappling with how to balance the planning needs with the financial challenges.

The County is continuing to partner with USGS to advance the expansion of the Inundation Climate vulnerability model focused on coupled hydrologic impacts of saltwater intrusion, surface and groundwater elevations, and stormwater inundation, using the SWR and URO packages, throughout the entire urban extent of the County.

The County is also using the results of the 2014 FEMA study to calculate Future Conditions 100-year flood elevations that are anticipated to occur in 2070 accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use update, addition of detention storage and ponded drainage routine, model calibration to a recent flooding storm event, and incorporation of future tide levels and a 100-year rainstorm event. It is anticipated the modeling will be completed in the Fall of 2019 and, once approved, will be formalized as the second map of the Future Conditions Map Series.

Upper Floridan Aquifer Geotechnical Study

Broward County, in cooperation with USGS, completed the Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study has compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. Using borehole

and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional component of the project was to complete seismic profiling along approximately 14 miles of the Hillsboro Canal, which resulted in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

The results offer better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage options, such as ASR. Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425 square mile study area. In addition, many unconformities that might identify faults that are either near-vertical reverse faults or karst collapse structures throughout the County were identified. Water utilities in these areas may consider further studies around these features when planning project near their vicinities.

D. Broward County Water Partnership

The Broward County Water Partnership is an ongoing High Efficiency Toilet Replacement and Water Conservation Incentives Program. Broward Water and Wastewater Services are media partners in the Countywide Water Conservation Incentives Program, launched in 2011. This program has provided approximately 4,500 high efficiency toilets with an estimated water savings of 450 thousand gallons per day. The program utilizes monthly promotional material, public service announcements, radio adds, etc., to promote a consistent water conservation messaging throughout the partner service areas. This covers almost 80 percent of Broward County. Historically, this program has been supported, in part, through the SFWMD's Water SIP and Cooperative Funding Programs, which have provided $277,000 in matching funds through 2018. Neither of these programs are currently funding the partnership.

Additionally, BCWWS' High Efficiency Toilet Rebate Program has been in existence since 2010 and has offered over $250,000 in billing credits for replacing 2,500 water wasting toilets. This effort is supported by $30,750 of matching funds from the SFWMD. Promotion of this program throughout the BCWWS service area will continue through this next five-year planning period unchanged.