

## 17. WATER SUPPLY

- A. 1. Provide projection of the average daily potable and non-potable water demands at the end of each phase of development. If significant seasonal demand variations will occur, discuss anticipated peaks and duration. Use the format below.

Table 17.A1 and Table 17.A2 below show water demand and supply for the Project respectively.

Table 17.A1 Potable and Non-Potable Water Demand <sup>[1]</sup>								
Land Use	Number of Units	Water Use (GPD/Unit)	Potable Water Demand (MGD)(*)	Potable Water Demand with conservation reduction (MGD)(*)	Potable Water Demand with 40% irrigation reduction (**)	Non-Potable Water Demand (Irrigation)		Maximum Water Demand (MGD)
						25% Waste Water Recapture (MGD)(*) (***)	On-site Lakes	
Single Family, detached	1,257 du	350 gpd/unit	0.440	0.308	0.185	0.046	-	0.496
Single Family, attached	2,436 du	250 gpd/unit	0.609	0.426	0.256	0.064	-	0.686
Multi-Family	3,248 du	200 gpd/unit	0.650	0.455	0.273	0.068	-	0.732
Retail <sup>[2]</sup>	200,000 sf	5/100 gpd/sf	0.010	0.008	0.008	0.002	-	0.021
Office	100,000 sf	10/100 gpd/sf	0.010	0.008	0.008	0.002	-	0.021
Industrial / Flex Space	550,000 sf	20/1000 gpd/sf	0.011	0.009	0.008	0.002	-	0.021
K-8	3,200 stud.	15 gpd/stud	0.048	0.036	.0036	0.010	-	0.096
High School	1,600 stud.	20 gpd/stud.	0.032	0.024	0.024	0.007	-	0.064
Staff	360	15 gpd/person	0.005	0.004	0.004	0.001	-	0.011
Hospital	200 beds	250 gpd/bed	0.050	0.037	0.037	0.010	-	0.099
Community Uses	50,000 sf	10/100 gpd/sf	0.005	0.004	0.004	0.001	-	0.011
Parks	67 acres	5 gpd/person	0.001	0.001	0.001	0.000	-	0.003
<b>Total</b>			<b>1.871 MGD</b>	<b>1.319 MGD</b>	<b>0.844 MGD</b>	<b>0.211 MGD</b>	<b>0.000 MGD</b>	<b>2.261 MGD</b>

Source: Ford Engineers Inc.

(\*) Conservation is calculated at 30 percent for residential uses and 25 percent for non-residential uses.

(\*\*) Residential only; see discussion in response to Question 17 G, below.

(\*\*\*) MGD= Millions of Gallons per Day

<sup>[1]</sup> Current agricultural water demand on the Project site is of 3.100 MGD of non-potable ground water. The Project's estimated 1.692 MGD water demand will result in a -1.487 MGD net reduction in water impacts on the South Florida area.

<sup>[2]</sup> May include the exchange of up to 2,000 cinema seats for 28,311 sq.ft. of retail use based upon gross PM peak hour trips and the cinema seat exchange calculation as outlined in Table 21.B2 and Table 32.1

The Average Daily Demand (A.D.D.) is 0.844 MGD

The Maximum Daily Demand (268 percent of adjusted of A.D.D.) is 2.261 MGD

The Peak Hour Demand (450 percent of A.D.D.) is 0.158 MGH

Table 17.A2 Phase 1 Potable and Non-Potable Water Supply					
Use	On-Site Supply		Other	Total	Off-Site Supply
	Groundwater	Surface Water			
Potable					
All					0.844 MGD (WASD)
Non-Potable					
Irrigation	0.00 MGD	0.848 MGD	0.211 MGD	1.060 MGD	None

Source: Ford Engineers, Inc.

**2. Describe how this demand information was generated, including the identification of the consumption rates assumed in the analysis.**

Rates were obtained from Miami-Dade County “Schedule of Daily Rated Gallonage for various Occupancy” used by the Miami-Dade County Water and Sewer Department (“WASD”). The reduced conservation rates are based on a 30 percent conservation rate for residential uses and 25 percent for non residential uses, as discussed with WASD Staff.

**B. Provide a breakdown of sources of water supply, both potable and non-potable, by development phase through project completion. Use the format below.**

The potable water supply will be provided by WASD. The non-potable demand will be met with a combination of surface water sources and the on-site reuse treatment facility.

**C. If water wells exist on-site, locate them on Map H and specify those that will continue to be used. Also locate on Map H all proposed on-site wells. (For residential developments, if individual wells for each lot are proposed, simply indicate the number of units to be served, general locations, and any plans for eventual phase-out). Indicate the diameter, depth, and pumping rates (average and maximum) for each of the existing wells and project this information for the proposed wells (for lots served by individual dual wells, this information may be grouped for projection purposes). Also provide a breakdown of the wells with regard to potable and non-potable sources.**

Any existing wells are non-potable irrigation wells. This project does not propose any potable water supply wells. Any future irrigation wells will be permitted through the Miami-Dade County DERM and the South Florida Water Management District (SFWMD).

- D If on-site wells are used, will this result in interference with other water wells or result in adverse impacts to underlying or overlying aquifers? Document the assumptions underlying this response.**

No on-site potable water wells are proposed. Any future irrigation wells will be permitted through Miami-Dade County DERM and the South Florida Water Management District (SFWMD).

- E. Who will operate and maintain the internal water supply system after completion of the development?**

Water supply systems will be owned and operated by WASD.

- F. 1. If an off-site water supply is planned, attach a letter from the agency or firm providing service outlining.**

- (a) the projected excess capacities of the water supply facilities to which connection will be made at present and for each phase through completion of the project,**

**Exhibit 17.2**, the “Alternative Water Supply Plan” graph prepared by WASD demonstrates the Department’s capacity to serve the projected County population till the Year 2030. The graph indicates that water is available through the completion of the project.

- (b) any other commitments that have been made for this excess capacity,**

**Exhibit 17.2** indicates that water will be available for the project through the expected build out date.

- (c) a statement of the agency or firm’s ability to provide services at all time during and after development. (This agency must be supplied with the water demand and supply tables in paragraphs A and B above).**

Once the UDB expansion has been approved, WASD will be the utility providing water services for Parkland. Conditions and commitments relating to provision of service have been listed in a letter received from WASD, and included as **Exhibit 17.1**.

- 2. If service cannot be provided at all times during and after development, identify the required capital improvements, timing, cost, and proposed responsible entity for each phase in which service is unavailable.**

As indicated above, WASD will be able to serve Parkland. WASD has confirmed that adequate capacity exists in the system to serve the Project. The “Alternative Water Supply Plan” graph prepared by WASD, which demonstrates the Department’s capacity to serve the projected County population till the Year 2030, is attached as **Exhibit 17.2**. WASD has no indicated that there will be any issue with serving the Project through the expected build out date.

**Design Specifications:**

The potable water distribution system will be designed and built in accordance with WASD and the Miami-Dade County Public Works Department standard details and specifications. All water mains will be Ductile Iron Pipe. Generally, all water mains located on section line roads will be a minimum of 16-inch in diameter, all water mains located in half-section line roads will be a minimum of 12-inch diameter and all other water mains will be a minimum of 8-inch diameter. **Figure 17.1** identifies the location of the water mains. Fire hydrants location and spacing will be as per the Miami-Dade County Fire Engineering Section requirements. The water distribution system will be owned and operated by WASD.

**Cost Estimate:**

**Table 17.F1** is the Applicant's cost estimate for water service, which will be borne entirely by the Applicant.

<b>Table 17.F1 Water Service Cost Estimate</b>	
<b>02510 Water Service Supply Pipe</b>	
Section and-half section line roads	\$ 5,000,000
Parcels	\$ 9,681,086
<b>Subtotal</b>	<b>\$ 14,681,086</b>
Contingency (15%)	\$ 2,202,163
<b>Total</b>	<b>\$16,883,249</b>

Source: Ford Engineers, Inc.

**Table 17.F2** is the Applicant's cost estimate for the irrigation connection, borne entirely by the Applicant.

<b>Table 17.F2 Purple Pipe (Re-Use Water) Irrigation Distribution System Cost Estimate</b>	
<b>Item description</b>	<b>Total</b>
8-inch Supply Pipe – (on site)	\$ 935,200
8-inch Supply Pipe (SW 136 St & SW 152 St. from SW 162 <sup>nd</sup> Ave to SW 157 Ave.	\$ 633,600
<b>Subtotal</b>	<b>\$ 1,568,800</b>
Contingency (15%)	\$ 235,200
<b>TOTAL</b>	<b>\$ 1,804,120</b>

Source: Ford Engineers, Inc.



**G. Please describe any water conservation methods or devices incorporated into the plan of development. What percentage of reduction is anticipated over conventional plans?**

The proposed development will use appropriate water conservation devices and methods. Such devices may include, but are not limited to low-flow plumbing fixtures such as those listed in Section 604.4 of the Florida Building Code. In addition, during periods of severe water shortage, the Project will adhere to the requirements of Chapter 24, Section 12.1(8) of the Miami-Dade Code and Chapter 40E-21 of the Florida Administrative Code. The Project's landscaping will adhere to Chapter 18A of the Miami-Dade Code which promotes the use of xeriscape principles, the use of moisture and rain sensor switches for irrigation and sets design standards for irrigation systems to not overthrow or overflow on to impervious surfaces.

In order to accommodate the growing population of Miami-Dade County, Parkland is committed to working with the South Florida Water Management District and Miami-Dade Water and Sewer Department in developing an on-site reuse facility and conserving the current potable water supply. Parkland shall comply with all South Florida Water Management District and Miami-Dade Water and Sewer Department rules and regulations. In addition, Parkland shall where feasible and practicable:

- (a) Design and construct buildings with minimal impact on site topography and natural drainage ways;
- (b) Disturb only areas needed to install foundations and roadways;
- (c) Install anti-backsiphoning valves between well and water pipes;
- (d) Maintain a naturally vegetated buffer next to lakes, ponds and wetlands;
- (e) Maximize permeable materials for driveway, walkways and porches;
- (f) Use silt fencing or biofiltration (permeable bags filled with chips, compost or bales of straw) to control erosion during construction;
- (g) Designate appropriate locations for washing vehicles and equipment during construction – away from surface waters, storm drains and slopes that could erode;
- (h) Immediately repair all equipment and vehicle leaks during construction;
- (i) Will use low-flow equipment for toilets, showers, and faucets in a manner consistent with the EPA Water Sensible Standards;
- (j) Will use water efficient appliances and equipment in a manner consistent with the EPA Water Sensible Standards;
- (k) Will direct runoff from roofs toward landscaping and away from foundation rather than down storm drains (reduces water use and well as storm water and pollutant runoff).
- (l) For irrigation, provide all residential development with a cistern and/or other alternative (non-WASD) water supply sources. Where feasible, cisterns will also be used in other non-residential development; and
- (m) Provide native trees and shrubs and utilize xeriscape landscape principles, as appropriate, for greatest drought resistance.

As an example of the water savings that can be provided throughout the Project, **Table 17.G1** represents average savings for a single-family household resulting from the use of high-efficiency water-use fixtures. Applying a conservative 30 percent reduction in residential uses and 25 percent in non-residential uses to the Project's overall water demand projections would reduce the potable water demand from 1.871 MGD to 1.139 MGD. In addition, by providing alternate sources for residential irrigation demand, it is

anticipated that an additional 40 percent savings in residential demand will be realized, resulting in a net demand of 0.844 MGD.

The wastewater treatment demand would also be reduced by the same amount, from 1.871 MGD to 0.844 MGD. Of this resulting 0.844 MGD of wastewater treatment demand, 25 percent, or 0.211 MGD, will be recaptured for treatment and irrigation of certain common areas. With this reuse reduction, there would only be a net impact on WASD of 0.633 MGD of wastewater.

<b>Table 17.G1 Expected Daily Per Capita Indoor Water Savings</b>					
<b>Indoor Features</b>	<b>Standard Water Use</b>	<b>Standard Use (gal/day/capita)</b>	<b>Water Sense Criteria / Miami Dade</b>	<b>Expected Use (gal/day/capita)</b>	<b>Expected Water Savings (gal/day/capita)</b>
Toilets	1.6 gpf	8.16	1.28 gpf	6.53	1.63 (20%)
Bathroom Faucets	2.2 gpm	11.21	1.5 gpm	10.64	.57 (5%)
Kitchen Faucets	2.5 gpm	7	1.5 gpm (Miami Dade)		
Showerheads	2.5 gpm	12.12	1.5 gpm (Miami Dade)	7.27	4.85 (40%)
Hot water delivery systems	~10 gallons per day per household wasted	3.85	Assume 10% water savings for insulation and between 15-20% water savings for improved design.	2.89	.96 (25%)
Dishwashers	8.6 gallons per load (6 gallons per cycle)	1.04	5.8 gallons per load (4 gallons per cycle)	0.69	.35 (33%)
Clothes washers	39.6 gallons per load (12 gallons per cycle per cubic foot)	15.35	24 gallons per load (6 gallons per cycle per cubic foot)	8.44	6.91 (45%)
<b>Total Indoor</b>		<b>51.73</b>		<b>36.46</b>	<b>15.27 (30%)</b>

Source: Miami-Dade County Water and Sewer Department, 2008

A proposed 25 percent wastewater reduction will be realized through the use of a satellite reuse treatment facility located on-site. It is anticipated that the reuse facility will be located on a site approximately one-half acre in size and the proposed technology will be membrane filtration. "Purple pipe" will be used to distribute the reuse water to the areas in which the water will be employed for irrigation.

Based on water conservation measures and the commitment of Parkland to reuse a portion of its wastewater generation, the project will represent an approximate 66 percent reduction in wastewater demand. As such, Parkland will represent a model for water conservation and reuse for all future County development.

**H. Indicate whether proposed water service will be provided within an established service area boundary.**

This proposed Project falls within the WASD service area for both water and sewer.

**Exhibit 17.1**  
**Letter from**  
**Miami-Dade Water and Sewer Department**



Water & Sewer  
P.O. Box 330316 • 3071 SW 38th Avenue  
Miami, Florida 33233-0316  
T 305-665-7471

[miamidade.gov](http://miamidade.gov)

September 5, 2006

Ms. Jo Sesodia, AICP, DRI Coordinator  
SFRPC  
3440 Hollywood Blvd., Suite 140  
Hollywood, FL 33021

Re: Parkland Development of Regional Impact (DRI)

Dear Ms. Jo:

The Miami-Dade Water and Sewer Department (MDWASD) hereby submits the following comments on the Parkland DRI application:

**WATER:**

The Parkland project is located outside the Urban Development boundary (UDB), and the MDWASD's Water and Wastewater Master Plans do not include infrastructure outside the UDB. However, if the UDB changes to include the Parkland project within its limits, the MDWASD will be the utility providing water services subject to the following conditions:

- Adequate transmission and Plant capacity exist at the time of the owner's request.
- Adequate water supply is available prior to approval of a building permit.
- Approval of all applicable governmental agencies having jurisdiction over these matters are obtained.

**SEWER:**

The Parkland project is located outside the Urban Development boundary (UDB), and the MDWASD's Water and Wastewater Master Plans do not include infrastructure outside the UDB. However, if the UDB changes to include the Parkland project within its limits, the MDWASD will be the utility providing sewer services subject to the following conditions:

- Adequate transmission and plant capacity exist at the time of the owner's request. Capacity evaluations of the plant for average flow and peak flows will be required,

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depending on the compliance status of the United States Environmental Protection Agency (USEPA) Second and Final Partial Consent Decree.

- Approval of all applicable governmental agencies having jurisdiction over these matters are obtained.

Thank you for the opportunity to provide comments. Should you have any questions, please call me at (786) 552- 8120.

Sincerely,

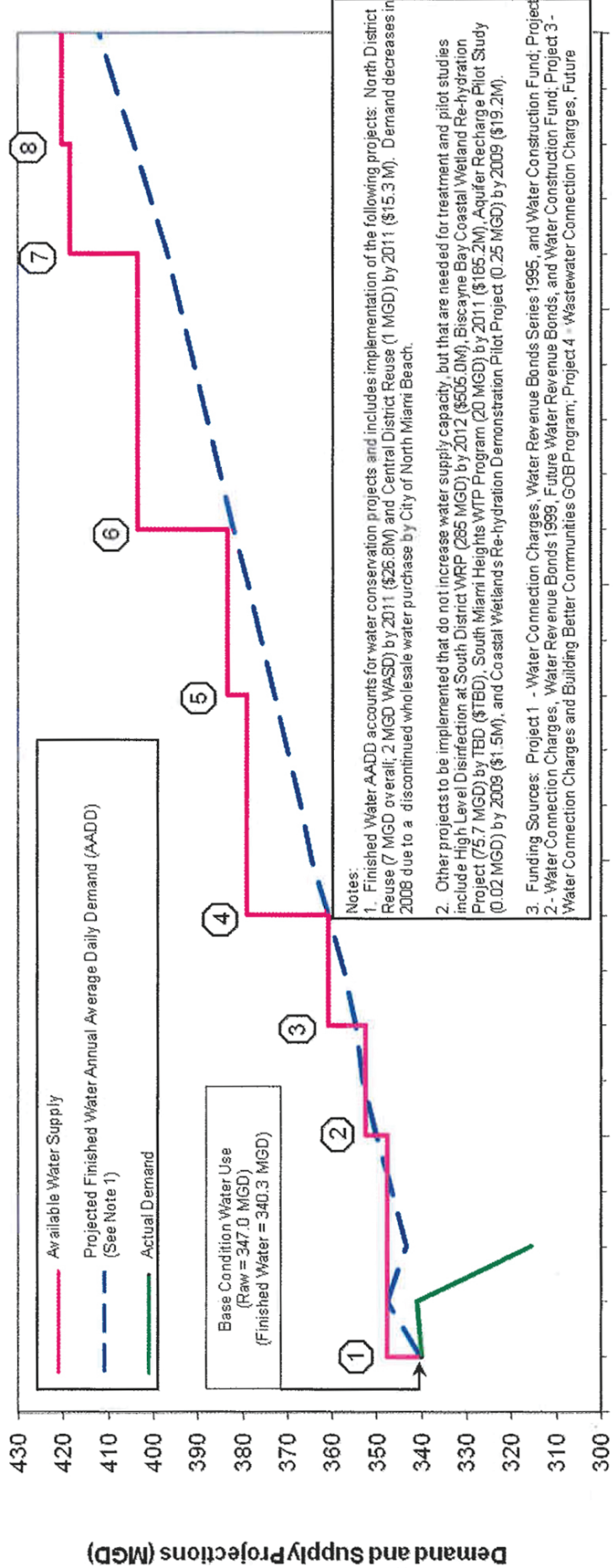


Bertha M. Goldenberg, P.E.  
Associate Director  
Planning and Performance Measurement

Cc: Mark Woerner, DP&Z

# Alternative Water Supply Plan

MDWASD Finished Water Demand and Water Supply Projections



**Notes:**

1. Finished Water AADD accounts for water conservation projects and includes implementation of the following projects: North District Reuse (7 MGD overall); 2 MGD WASD) by 2011 (\$26.8M) and Central District Reuse (1 MGD) by 2011 (\$15.3 M). Demand decreases in 2008 due to a discontinued wholesale water purchase by City of North Miami Beach.
2. Other projects to be implemented that do not increase water supply capacity, but that are needed for treatment and pilot studies include High Level Disinfection at South District WRP (285 MGD) by 2012 (\$505.0M), Biscayne Bay Coastal Wetland Re-hydration Project (75.7 MGD) by TBD (\$185.2M), South Miami Heights WTP Program (20 MGD) by 2011 (\$185.2M), Aquifer Recharge Pilot Study (0.02 MGD) by 2009 (\$1.5M), and Coastal Wetlands Re-hydration Demonstration Pilot Project (0.25 MGD) by 2009 (\$19.2M).
3. Funding Sources: Project 1 - Water Connection Charges, Water Revenue Bonds Series 1995, and Water Construction Fund; Project 2 - Water Connection Charges, Water Revenue Bonds 1999, Future Water Revenue Bonds, and Water Construction Fund; Project 3 - Water Connection Charges and Building Better Communities GOB Program; Project 4 - Wastewater Connection Charges, Future

**Project Names:**

1. Floridan Aquifer Blending at Alex-Orr WTP (7.2 MGD, \$7.7M)
2. Floridan Aquifer Blending Wellfield at Hialeah/Preston (4.8 MGD, \$19.2M)
3. New Upper Floridan RO WTP Phase 1 (8.5 MGD, \$93.0M) (WTP Capacity = 10 MGD)
4. Phase 1 SDWRP Groundwater Recharge (SMH WTP) (18 MGD, \$357.5M)
5. New Upper Floridan RO WTP Phase 2 (4.5 MGD, \$25.0M) (WTP Capacity = 15.0 MGD)
6. Phase 2 WDWRP Canal Recharge (Alex-Orr WTP) (20 MGD, \$482.0M)
7. Phase 3 WDWRP Canal Recharge (Alex-Orr WTP) (15 MGD, \$317.5M)
8. New Upper Floridan RO WTP Phase 3 (2.0 MGD, \$9.7M) (WTP Capacity = 17.5 MGD)

Source: Miami-Dade Water and Sewer Department



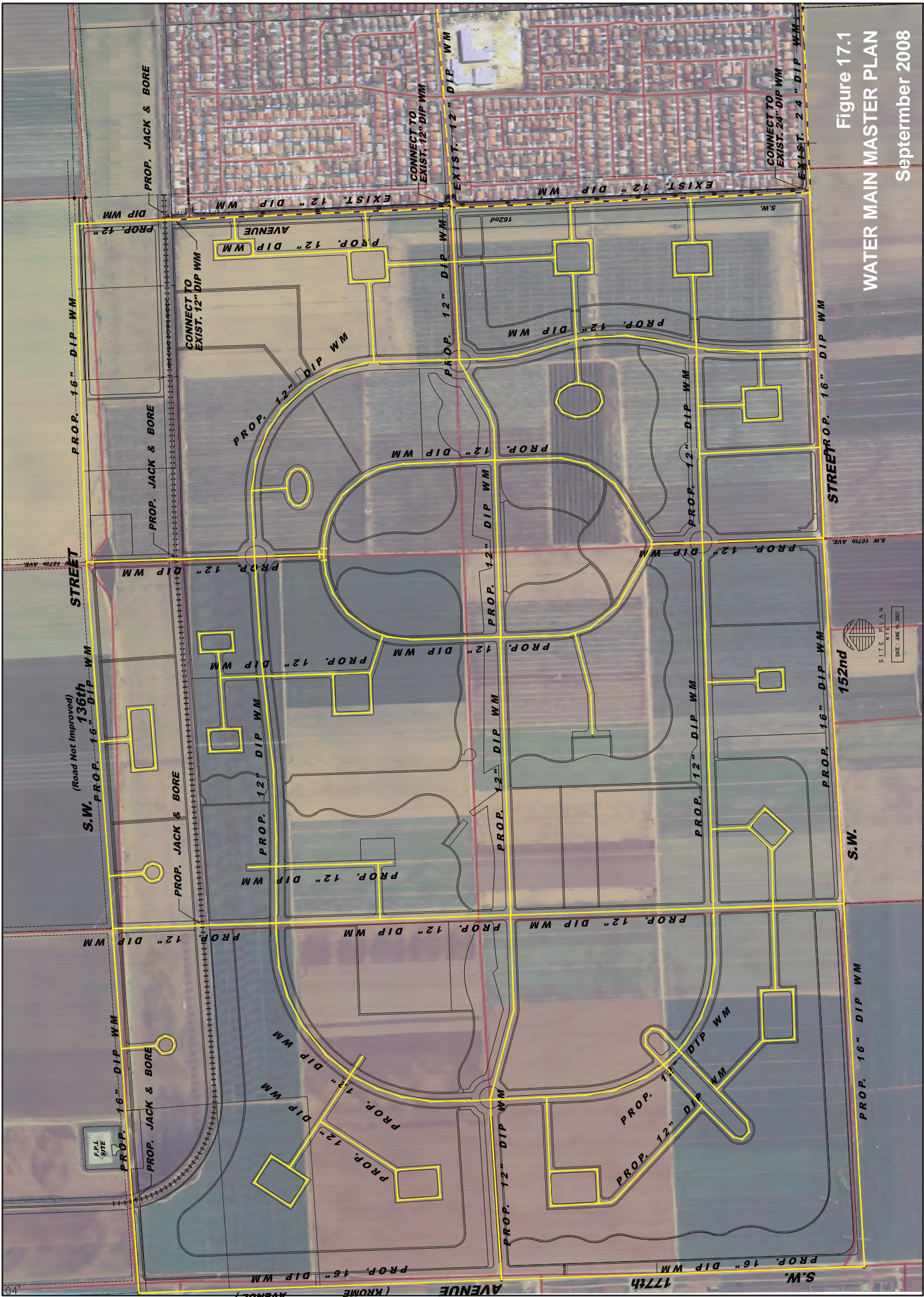



Figure 17.1  
 WATER MAIN MASTER PLAN  
 September 2008


  
 S I T E P L A N  
 DATE: JUNE 16, 2008

Source: Ford Engineers, Inc 2008; Adapted by The Curtis Group, 2008