

WATER SUPPLY

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

Table A-1, Potable/Non-Potable Water Demand for Each Phase of Development for Restoration May 2008, shows the projected average daily potable water demand for the combined development within the City of Edgewater.

Table A-1
Potable/Non-Potable Water Demand for Each Phase of Development
May, 2008

Phase/Land Use	Potable Water Demand (MGD)	Non-Potable Water Demand (MGD)		Total Water Demand (MGD)
		Irrigation	Other	
Phase 1 (2007-2013)				
Single-Family Residential	0.694			0.694
Multifamily Residential	0.161			0.161
Commercial/Retail - General	0.038			0.038
Office	0.030			0.030
Phase 1 Subtotals	0.923	0.810	0.000	1.733
Phase 2 (2014-2018)				
Single-Family Residential	0.329			0.329
Multifamily Residential	0.290			0.290
Commercial/Retail - General	0.081			0.081
Office	0.137			0.137
School	0.028			0.028
Phase 2 Subtotals	0.865	0.595	0.000	1.460
Phase 3 (2019-2023)				
Multi-family	0.649			0.649
Commercial/Retail - General	0.078			0.078
Office	0.074			0.074
Phase 3 Subtotals	0.801	0.069	0.000	0.870
PROJECT TOTALS	2.589	1.474	0.000	4.063
Assumptions:				
Potable Water – City of Edgewater				
Irrigation Rates	31	in. per year	2306.3	gpd/acre
	Dev Area (ac)	Irrigable area (ac)	Irrigable %	
Phase 1	1003	351	35	
Phase 2	593	208	35	
Phase 3	85	30	35	
School and Parks Phase 2	99	50	50	

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

Water use projections are based on usage rates provided by the City of Edgewater Utilities Department and Florida Department of Environmental Protection typical criteria. The expected land use classification and projected daily water demands are shown respectively in Table A-2, Potable Water Demand Rates City of Edgewater August 23, 2006.

Table A-2
Potable Water Demand Rates
City of Edgewater
August 23, 2006

Land Use	Potable Water Demand
Single-Family Residential	250 gpd/du
Multifamily Residential	250 gpd/du
Commercial/Retail - General	0.125 gpd/sf
Commercial/Retail - Food Service	0.725 gpd/sf
Office	0.1 gpd/sf
Golf Course and Amenities	0.5 gpd/sf
Park	250 gpd/rest rm
School Elementary	8.25 gpd/student
School Middle	18.75 gpd/student

Reference: City of Edgewater Comprehensive Plan

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

Potable Water Supply

Potable water supply will be obtained from the Upper Floridan aquifer.

Four well sites to be located within the property are proposed to be provided to the City of Edgewater. The City will own operate and maintain these water supply facilities. The City will be responsible for all permitting and delivery of water to the Edgewater portion of Restoration.

As is routine within the SJRWMD consumptive use permitting process, groundwater sources and pumping rates will be evaluated to determine the long term plan for water supply to avoid adverse environmental impacts.

No contamination areas are known to occur on the property.

Irrigation Water Supply

The potential sources of irrigation water supply for the project (listed below in order of increasingly better water quality) are:

- Reclaimed wastewater
- Stormwater reuse and surface water from the proposed onsite lakes/stormwater management areas.
- Groundwater from the surficial aquifer - extracted using shallow horizontal wells and/or vertical wells
- Groundwater from the Upper Floridan aquifer - extracted using deep wells

The estimate supplemental irrigation requirement is about 40 inches per year with a maximum demand of about 1.25 inch/week during the peak of the dry season (April/May). If we estimate that 35% of the developable land together with the golf course and school/park areas will be irrigated, then the average annual irrigation demand would be on the order of two million gallons per day.

The withdrawal of surface water from the wet detention ponds will be explored. The withdrawals will have to be controlled to prevent adverse dehydration impacts to adjacent wetlands and littoral zones.

Horizontal wells will be utilized where/when surface water sources are not available. The wells would be located in thick sandy soils, and the withdrawals controlled along the lake and wetland borders to prevent drawdown impacts to the wetlands. Water quality of the surficial aquifer groundwater is usually high in iron which creates staining problems. Therefore, this source would be used after surface water supplies are expended or as a supplemental source to surface water.

Lower water quality sources are more desirable for irrigation usage. Based on the discussion above, we contemplate that the irrigation water will be supplied by reclaimed water (to the extent available/provided by the utility companies); surface water and reuse stormwater (to the extent they can be effectively stored and utilized); groundwater from the surficial aquifer; and as a last resort, groundwater from the Upper Floridan aquifer.

A water conservation plan will be developed per the requirements of the St. Johns River Water Management District and is incorporated into the Management Plan for administering resources and ecology for the site.

Developer will seek opportunities to create water storage areas distributed within the site to allow for storage of reclaimed wastewater and stormwater for irrigation. This design will be done subject to availability of reclaimed water and a balanced design including total water budget management, aquifer recharge, feasibility and aesthetic site planning concerns. The Applicant's engineer will coordinate this as a master planning activity with SJRWMD participation in conjunction with the consumptive use permitting process for the irrigation water use.

A projection of the potable vs. non-potable water supply source is presented in Table B-1, Potable/Non-Potable Water Supply May 2008.

Table B-1
Potable/Non-Potable Water Supply
May, 2008

Phase	On-Site Supply				Off-Site Supply
	Ground-water	Surface Water	Other(Specify)	Total	
Existing					
Phase 1 (2007-2013)				0	
Potable	0.923			0.923	
Non-Potable				0.000	
Irrigation		0.810		0.810	
Other				0.000	
Phase 2 (2014-2018)				0	
Potable	0.865			0.865	
Non-Potable				0.000	
Irrigation		0.595		0.595	
Other				0.000	
Phase 3 (2019-2023)				0	
Potable	0.801			0.801	
Non-Potable				0.000	
Irrigation		0.069		0.069	
Other				0.000	
Project Total	2.589*	1.474**		4.063	

Notes:

*This water is provided by the City of Edgewater and is expected to be provided via wells sites to be given to the City at which time they will effectively be "off-site".

**Irrigation water to be provided by several sources with reuse stormwater and reclaimed wastewater being the primary sources as discussed in text. Actual breakdown is not available at this time.

- 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 wells, this information may be grouped for projection purposes). Also provide a breakdown of the wells with regard to potable and non-potable sources.**

There are no known existing on-site water wells; however, Edgewater has asked the developer to provide sites for future municipal wells. Concurrently, the City is evaluating various location onsite, but no specific locations have been selected.

In the event that wells are discovered on the property, they may be used for the development subject to all required permitting.

Due to the possibility of discovering water wells at the Restoration site, the following instructions are designed to provide all equipment operators and site personnel with specific instructions in the event that a potential water well is uncovered during excavation or land clearing activities. These will be included in the construction drawings for the various projects within Restoration.

“Water Wells appear as a steel or PVC pipe sticking up out of the ground and may be from 2”-18” in diameter or larger. Water wells on the Restoration site and in the site vicinity may or may not be actively flowing.

Procedure to be used upon discovery of water wells:

- Equipment Operator - Stop excavation or land clearing in the immediate area of the pipe and call the Site Supervisor.
- Site Supervisor - Mark the pipe with flagging tape or paint and call the Project Manager.
- Project Manager – Call Owner to have an inspection performed by experienced hydrogeologist or geotechnical engineer.
- Hydrogeologist or geotechnical engineer - Perform a site inspection to evaluate. Inspection may include a tape measure, water level meter, flashlight and probe rod to evaluate the pipe diameter, depth and bottom condition (hard or soft bottom). If determined to be a well, contact the St. Johns River Water Management District (407-659-4800) for further instructions.”

The recently issued St. Johns River Water Management District Consumptive Use Permit includes the proposed service area of Restoration and its associated demand. In addition, the applicant has provided sites for four (4) new potable wells for Edgewater which are also a part of the CUP permit.

D. If on site water 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.

On-site wells will be utilized. As part of the SJRWMD consumptive use permitting process, studies will be performed to show there are no adverse drawdown impacts.

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

The integrated master irrigation system utilizing stormwater, surface water and stored reclaimed water and well water, serving those portions of the site where feasible, will likely be owned, operated and maintained by a Community Development District, a Property Owners Association of the serviced properties or the respective City.

The Developer also proposes to construct public potable water mains and reclaimed water mains to be located in public rights-of-way or utility easements. Ownership, operation and maintenance of these works will ultimately be by the City of Edgewater as within the city limits.

- 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,**
 - (b) any other commitments that have been made for this excess capacity,**
 - (c) a statement of the agency or firm's ability to provide services at all times during and after development. (This agency must be supplied with the water demand and supply tables in paragraphs A and B above).**

A statement from the City of Edgewater evidencing their intention and ability to supply water and sewer services for the proposed development has been received. A copy of the request is attached. A copy of the utility company responses will be provided in the Applicant's response to agency review questions.

- 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.**

Please refer to letters from the City of Edgewater.

- 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 Applicant will instate the Florida Water Star Program onsite. In addition, water saving devices such as soil moisture sensors are being considered for the project. Reduction of residential usage will be approximately 15%, while office and commercial water usage is typically reduced by approximately 20%. As previously discussed, the applicant is anticipating the use of treated wastewater effluent, surface water and reuse stormwater for non-potable water demands to the extent available and feasible.

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

Portions of Restoration located within Edgewater are within the Edgewater Territorial Water Service Area. Portions of Restoration located within New Smyrna Beach are within the Utility Commission of New Smyrna Beach Territorial Water Service Area.



THE CITY OF EDGEWATER

POST OFFICE BOX 100 • EDGEWATER, FLORIDA 32132-0100

RECEIVED

DEC 22 2006

McINTOSH ASSOC., INC.

December 21, 2006

Mr. Jack Weinstein, P.E.
Donald W. McIntosh Associates, Inc.
2200 Park Avenue North
Winter Park, Florida 32789-2355

RE: Restoration DRI
Water and Wastewater Capacity Availability

Dear Mr. Weinstein:

I have attached the City of Edgewater's response to your letters of August 30, 2006 regarding water and wastewater capacity availability for the Restoration DRI. Brad Blais of Quentin L. Hampton Associates, Inc. has prepared this response following the meeting with John Florio, you, and myself at the City to discuss these matters. I hope this information will be helpful to you in preparing for the meeting scheduled in the City of Edgewater City Hall Conference Room at 11:00 a.m., January 11, 2007, with Don Mears, John Florio, Brad Blais and myself to further discuss water and wastewater issues facing Restoration.


If you have any further questions or need additional information prior to the January 11, 2007 meeting, please contact me at your convenience.

Yours truly,

Terry A. Wadsworth
Director of Environmental Services
386-424-2460

cc: Jon Williams, City Manager
Darren Lear, Director of Development Services
Brad Blais, Quentin L. Hampton Associates, Inc.

TAW:dmn

RICH  W. FERNANDEZ, P.E.
MARVIN HAMPTON, P.E.
BRAD T. BLAIS, P.E.
DAVID A. KING, P.E.
ANDREW M. GIANNINI, P.E.

TELEPHONE
386/761-6810
FAX #386/761-3977

Quentin L. Hampton Associates, Inc
Consulting Engineers
P.O. DRAWER 290247
PORT ORANGE, FLORIDA 32129-0247

December 14, 2006

Terry Wadsworth
Director of Utilities
City of Edgewater
PO Box 100
Edgewater, FL 32032

'RESTORATION' D.R.I. RESPONSES

Dear Terry:

We are in receipt of questions from the developer's engineers questions regarding wastewater and water capacity. The questions, dated August 30, 2006, are attached. Responses to the referenced items are detailed below:

WATER CAPACITY AVAILABILITY

- Item #17E.* The City of Edgewater will own and maintain the internal water supply system after completion of the development.
- Item #17F.1(a)* The City of Edgewater Alan R. Thomas WTP, PWS #3640331, is an enhanced lime softening facility. It has a permitted capacity of 5.0 MGD and currently operates at an average daily flow of approximately 2.10 MGD. The current committed capacity is 2.6 MGD, as of 12/15/06.
The water plant has approximately 2.4 MGD excess capacity at this time.

The City of Edgewater's raw water supply is obtained entirely from groundwater sources. Groundwater from the Floridan Aquifer is regulated by St. John's River Water Mgt. District (SJRWMD) under the Consumptive Use Permit (CUP) process. The City's CUP renewal application is currently under review..

The requested allocation increases each year based upon estimated population increases. The tabulated values represent estimates which reflect historical growth patterns and reasonable expectations for future growth trends. SJRWMD prepares independent population

projections and water use estimates which do not necessarily reflect the City's estimates or requests.

The 2006 allocation request is 2.21 mgd, the 2025 allocation request is 3.49 MGD. The allocation request is subject to 5 year evaluations, and potential modification, based upon actual utilization. Increased allocation requests would entail permit modification and revised groundwater modeling and environmental monitoring plans.

Based upon the developer's Potable water demand estimates, Table 17.A.1.E, the City has a groundwater allocation request which is sufficient to serve estimated Phase I demands only. Estimated potable water demands for Phases 2 and 3 entail an additional 1.49 MGD.

The referenced values do not reflect non-potable demands. The developer estimates a need for 0.838 MGD in Phase I and an additional 0.91 MGD for Phases 2 and 3, combined. Reclaimed water and/or stormwater sources will be required to satisfy non-potable water demands.

17F.1(b) The City has current average daily flows of approximately 2.10 MGD and outstanding commitments of approximately 0.5 MGD. The total committed capacity is approximately 2.6 MGD.

17F.1(c) The City intends to serve the proposed developments potable water demands. The City has adequate treatment capacity to meet the developments estimated demands. The treatment plant may also be expanded in the future to meet additional demands.

Based upon the City's pending CUP application, the City's groundwater allocation request is capable of satisfying the developer's estimated Phase I potable water demands. Modification of the City's CUP and/or implementation of alternative water supplies may be necessary in order to meet estimated Phase 2 and 3 demands.

Reclaimed water and/or stormwater sources will be required to satisfy projected non-potable demands.

17F.2 As stated in responses to Items 17F.1 (a,b and c), the City's current 2025 CUP allocation is 3.49 MGD. The pending CUP application has a 20 year requested duration. The current allocation request is sufficient to satisfy estimated potable demands in Phase 1 of the proposed development. The allocation is subject to revision every 5 years.

In order to serve Phases 2 and 3 of the proposed development, it will

be necessary to modify the City's CUP. The modification may require implementation of alternative water supply techniques or recharge enhancement programs to obtain additional water supplies.

Providing potable water service will require specific utility infrastructure components within the proposed development, in addition to distribution mains and components normally associated with residential and commercial developments. The specific components are as follows:

- Four (4) well sites, (50' x 50')
- Water storage tank and pump station site

17H.
established

The proposed utilities and water service areas are within an utility service area. There are no current disputes regarding adjacent utility service area boundaries.

WASTEWATER CAPACITY AVAILABILITY

18C.1

The City's existing wastewater treatment facility has a permitted capacity of 2.75 MGD. Current annual average flows at the facility are approximately 1.15 MGD. The committed capacity is 1.6 MGD. The City has approximately 1.15 MGD additional treatment capacity which is currently available to serve future developments. The existing site has no capacity for additional expansion.

The City intends to provide wastewater and reclaimed water service within the proposed development. Utility master planning efforts performed by the City set forth recommendations wherein available capacity in the existing WWTP will be reserved for future development east of I-95. This is largely a function of hydraulic capacity within the City's sewage collection and transmission system.

Future wastewater generated in new development west of I-95 will be treated in a satellite treatment facility, sited west of I-95. From a utility master planning perspective, siting a proposed treatment facility in the same proximity of the sewage sources and reuse demand provides efficiency with respect to sewage collection/transmission and reclaimed water distribution.

18C.2

In order to provide wastewater service within the proposed development, a site for a satellite WWTP will be required within the DRI. The proposed facility will be a 2.0 MGD facility, with

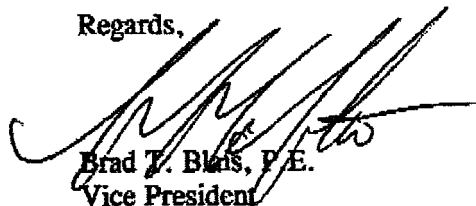
expansion capacity to 3.0 MGD. Reclaimed water storage and pumping facilities will also be located on the same site as the WWTP. A total site area of approximately 8 - 10 acres are required for the described facility.

In order to accommodate phasing plans, it may be possible to provide wastewater treatment capacity at the existing WWTP, on a temporary basis. Costs for wastewater transmission would be borne by the developer.

- 18E. The proposed wastewater service will be provided within an established service area. There are no disputes with adjoining utility providers regarding service area boundaries.

The responses detailed above represent our firm's recommendations regarding the City's utility service potential and limitations for water and wastewater service. We are available at your convenience to discuss this project in greater detail.

Regards,



Brad T. Blais, P.E.
Vice President

bth