400 South Federal Hwy
Hallandale Beach, FL 33009

City of Hallandale Beach City Commission Agenda Cover Memo

Meeting Date:	June 20, 2018		**Item Type:** *(Enter X in box)*	**Resolution**	**Ordinance**		**Other**	
				X				
Fiscal Impact: *(Enter X in box)*	**Yes**	**No**	**Ordinance Reading:** *(Enter X in box)*		**1st Reading**		**2nd Reading**	
	X		**Public Hearing:** *(Enter X in box)*		**Yes**	**No**	**Yes**	**No**
						X		X
Funding Source:	Water Supply &Treatment 490-3320W-565000		**Advertising Requirement:** *(Enter X in box)*		**Yes**		**No**	
							X	
Account Balance:	$6,595,476		**Quasi-Judicial:** *(Enter X in box)*		**Yes**		**No**	
							X	
Project Number :	10331		**RFP/RFQ/Bid Number:**					
Contract/P.O. Required: *(Enter X in box)*	**Yes**	**No**	**Strategic Plan Priority Area:** *(Enter X in box)*					
			Safety ☒					
			Quality ☒					
			Vibrant Appeal ☐					
Sponsor Name:	Roger M. Carlton, City Manager		**Department:** Public Works		Steven F. Parkinson, P.E., PWLF, Assistant City Manager/Public Works Director			

Short Title:

A RESOLUTION OF THE MAYOR AND CITY COMMISSION OF THE CITY OF HALLANDALE BEACH, FLORIDA, AUTHORIZING THE CITY MANAGER TO EXECUTE AN AGREEMENT WITH PALM BEACH AGGREGATES FOR THE CAPACITY ALLOCATION OF ONE MILLION GALLONS OF WATER PER DAY FROM PHASE 1 OF THE C-51 RESERVOIR OF WATER FOR A CAPITAL COST OF FOUR MILLION SIX HUNDRED THOUSAND DOLLARS ($4,600,000) AND AN ADDITIONAL ANNUAL OPERATING COST; AND PROVIDING FOR AN EFFECTIVE DATE.

Staff Summary:

Raw Water Supply Background:

The City of Hallandale Beach has endeavored to protect the City's high-quality Biscayne Aquifer water supply since the initial drilling of water supply wells in the City many years ago. As a coastal community, the movement of the saltwater front into the Biscayne Aquifer is a constant and continuing threat to the City's water supply. The City regularly monitors both production and sentry wells, throughout the City, for chlorides to warn of saltwater movement into the City's production wells. In addition to monitoring and limiting use of the eastern wells, #3 & #5, located near the water plant, to only emergency events, the City is proactively attempting to prolong the use of the City wells by moving water extraction to the western area of the City utilizing existing wells #7 & #8, located near the high school and OB Johnson Park, as well as constructing a new production well #9 (PW 9) located on Ansin Boulevard. PW9 is presently prepared for permitting and eventual solicitation of bids for installation.

These wells combined have a permitted capacity of 3,500,000 gallons per day and the City is nearing the upper limit of this permitted capacity on peak days. The City also has an interconnect with the City of North Miami which provides emergency extra capacity but at a very expensive cost. The City is working with the South Florida Water Management District (SFWMD), the permitting authority for water supply, to increase the City's allotment (upon construction of PW9) to a total withdrawal of 4.03 MGD from City wells. If approved by the SFWMD, this will yield the City an additional 0.534 MGD of raw Biscayne Aquifer water for treatment through the City's lime softening facility at the water plant.

In parallel to the City's modelling and permitting efforts, the SFWMD recently issued Broward County the water use permit for the South Regional Wellfield (SRW) from which Hallandale Beach presently receives additional Biscayne Aquifer raw water that is treated through the City's membrane softening facility at the water plant. This permit includes a rollback (reduction) for the City of Hallandale Beach (as well as other utilities that utilize the SRW) based on the Regional Water Availability Rule (RWAR). The limitation for the City of Hallandale Beach is now set at 3.26 MGD from the BC SRW. This represents a reduction in net raw water supply of 0.24 MGD that will need to be offset by a future alternative water supply (AWS) to allow the City to maintain treatment and delivery of finished water (potable water) to customers at the current level of service. The net result of the above is that the City will have 6.68 MGD available to meet the raw water demand in 2020 with no reserve capacity other than the North Miami alternative which is very expensive.

The raw water demand projections table below summarizes the 20 year raw water demand projections for the City and indicates the additional raw water that will be needed for average (avg) day demand from an AWS source.

Year	Hallandale Beach Service Area Population	Total Raw Water Projected Demand Avg Day (MGD)	Raw Water Avg Day BC SRW (MGD)	Raw Water Avg Day City Wells (MGD)	Raw Water Shortfall Avg Day from AWS (MGD)
2020	40647	6.68	3.26	3.42	0.00
2025	42110	7.68	3.26	4.03	0.39
2030	43574	7.94	3.26	4.03	0.65
2040	45818	8.35	3.26	4.03	1.06

Both Broward County and the City have utilized the University of Florida's Bureau of Economic Business Research (BEBR) projections for previous water supply planning and permitting efforts. Therefore, the City will continue to utilize updated BEBR projections for current water supply planning efforts.

In 2016, the 2015 medium population projections for Broward County were utilized to project the population for the City of Hallandale Beach. The ratio of the population for the City of Hallandale Beach was assumed to be equivalent to the ratio of the City of Hallandale Beach population to the Broward County population in 2010, which was 2.123 percent.

The planning period for the population projections is 50 years, per Broward County's request for a 50-year WUP. The table below summarizes the City's 2016 population projections for the project planning period from year 2020 through year 2065.

2016 Population Projections for City of Hallandale Beach

Year	Population Projection – Medium BEBR
2020	40,647
2030	43,574
2040	45,818
2050	47,745
2060	49,573
2065	50,730

How Do We Provide Additional Raw Water Supply?

The C-51 Reservoir was first conceptualized in the 1992 Everglades Restoration Plan (Restudy) Intended to capture excess stormwater discharged to the Lake Worth Lagoon via the C-51 Canal at the South Florida Water Management District (SFWMD) S-155 structure. The location of this reservoir is adjacent to the SFWMD's existing L-8 Reservoir in Palm Beach County and has been shown to share the same impermeable geologic formation that allows significant above ground storage capacity with reduced additional construction requirements. This unique feature allows for significant, and cost-effective wet season stormwater storage options with subsequent water supply deliveries throughout the dry season. In 2007, the SFWMD established the Restricted Allocation Areas for the Everglades and the Lower East Coast

Planning Region thus limiting future water supply withdrawals from the Biscayne aquifer to historic levels, prior to April 1, 2006. Therefore any increased water demands would need to be met through the development of alternative water supplies. The capture of excess stormwater as proposed in the C-51 Reservoir, is considered an alternative water supply project as defined in Florida Statutes 373.707. The storage of water that can then be permitted as an alternative water supply allocation, would directly benefit utilities in southern Palm Beach and Broward Counties, a significant multi-jurisdictional area.

The SFWMD operates and maintains the primary water canals and conveyance systems in Southeast Florida (Regional System) for flood control, water supply, and environmental purposes. The Regional System, along with additional secondary and tertiary systems owned and operated by various water control and drainage districts (298 districts, including Lake Worth Drainage District [LWDD]) (collectively the "conveyance system" or "conveyance route"), conveys surface water, which then interacts with groundwater through seepage and recharge. By moving water and maintaining water elevations within the Regional System canals, water users are provided water to recharge withdrawals from their Biscayne aquifer wellfields. Water deliveries from Phase 1 of the project defined in this memorandum, the C-51 Reservoir, will allow this to occur to the benefit of the City's raw water availability.

By participating in the C-51 Reservoir Project, the City of Hallandale Beach will be able to access this water source through their Biscayne aquifer wellfields and in the case of Hallandale Beach this is the Broward County South Regional Wellfield (BC SRW).

Phase 1 of the C-51 Reservoir will be operated to store and release water for delivery to the project participants in a manner similar to existing water supply deliveries (e.g., weekly delivery). The operational plan and criteria outlined below seeks to ensure that enough water is released and delivered in a manner and location which provides sufficient recharge to offset any potential increase in seepage from the canal delivery system. From an operational perspective, this will be accomplished the same way current water supply deliveries are accomplished, by holding canal stages within the ranges established for each canal reach, with the incremental additional water provided as needed for the C-51 Reservoir allocation deliveries.

Water deliveries into Phase 1 of the C-51 Reservoir will come from the C-51 Canal via the C-51 Reservoir Connection to the L-8 Flow Equilibration Basin (FEB) when releases would otherwise go to tide. Water deliveries from the C-51 Reservoir will utilize the C-51 Reservoir Connection to the L-8. Inflow and outflow operations will be coordinated by SFWMD under the terms of an operational agreement. In simple language, water will flow from the reservoir through canals to wellfields rather than to bays or oceans. In flood times, water may flow to the oceans. There is a lot of science behind the amounts of flows in different situations and that is the responsibility of the regulatory and operational agreements.

Water will be delivered to the basin or sub-basin where the project participant is withdrawing water above its base condition in a manner that makes use of any practically available excess

water available (i.e., canal stages above their water supply stage levels) along the conveyance routes. Water will be cascaded from upstream basins to compensate for the withdrawals as needed to maintain the stages. Water managers will determine if there is sufficient excess water (e.g., water is being released to tide) present in the conveyance routes such that compensating discharges from Phase 1 of the C-51 Reservoir are not required at that time. In general, water supply deliveries for existing permitted users and for the additional C-51 project participants are assessed and delivered on a weekly basis. There will be times when deliveries are made in anticipation that excess water will be insufficient for the week. It is recognized that storage within Phase 1 of the C-51 Reservoir allows project participants to meet withdrawals up to and including a 1-in-10 year drought, subject to restrictions in conveyance.

Current Situation:

City staff has explored the Floridan Aquifer as an AWS to provide additional raw water supply. The City staff has also considered purchasing a capacity allocation in the C-51 Reservoir from Palm Beach Aggregates, LLC (PBA) as an AWS to provide additional raw water supply. As the City has an immediate AWS need as well as a potentially long-term AWS need (for replacement of the City well supply if saltwater intrusion should impact City wells in the future), City staff is recommending a two-phased AWS approach. The immediate AWS need can be met by the purchase of additional raw water supply (nominally 1 MGD) through the C-51 Reservoir system which will be provided through increased pumpage from the BC SRW. The cost of this alternative is a one-time capital expenditure of $4.6 million, to be paid when the project is estimated to be completed in FY20/21 for a 1 MGD allotment from PBA. This funding has been put aside over the years and the revenue source has been a portion of the water rates paid by the City's customers. In addition, there is an operational and maintenance cost of $0.10/1,000 gallons pumped ($36,500/year) paid to PBA, SFWMD and the Lake Worth Drainage District, and $0.23/1,000 gallons pumped ($83,950/year), paid to Broward County SRW (the same O&M cost the City currently pays for BC SRW pumpage). The existing membrane filtration infrastructure at the water plant will not require modification or expansion to treat the water for this alternative.

Another option that was examined for the immediate water supply planning efforts included purchasing finished water from other utilities. The comparison of the finished water purchase vs the two AWS options (Floridan Aquifer and C-51 Reservoir) is shown on the table below. The least cost ranking of the options from least to greatest is the C-51 Reservoir participation, Floridan Aquifer, finished water purchase (see net present worth (NPW) in the table on the next page).

City of Hallandale Beach					
Near Term - Alternative Water Supply (AWS) Options					
to Produce 1 MGD of Finished (Potable) Water					
Alternative Water Supply Option	**Raw Water (MGD)**	**Finished (Potable) Water (MGD)**	**Capital Cost of Raw Water Supply and WTP Improvements**	**Annual Costs**	**20 Year NPW (for 1 MGD of Finished Water; n=5%)**
Purchase Finished Water	1.00	1.00	$ -	$ 1,204,500	$ 15,010,000
Construct Floridan Aquifer Well and pipeline	1.33	1.00	$ 11,500,000	$ 371,083	$ 16,124,000
Purchase Raw Water from C-51 Reservoir (thru BC SRW)	1.18	1.00	$ 5,411,765	$ 419,349	$ 10,638,000
Notes:					
1. Purchase water option is assumed to remain at current price of $3.30 per 1,000 gallons over the 20 year (for simplification of calculations). Actual purchase price may increase with time.					
2. The Floridan Aquifer (FA) well and pipeline option is listed at the cost of adding one FA well plus improvements at the WTP. Modeling of the FA would be required to more accurately estimate this option.					
3. The C-51 Reservoir option is listed at the current cost of $4.6M per 1 MGD (capital), $0.10/1,000 gallons (O&M) and $0.23/1,000 gallons (O&M) for pumping from BC SRW.					
4. Treatment costs are estimated at $0.73/1,000 gallons for nanofiltration treatment of BC SRW (and C-51 Reservoir Supply) and $0.83/1,000 gallons for reverse osmosis treatment of Floridan Aquifer supply.					
5. Additional capacity options will be considered for long term AWS needs for the City. One of these options is for the proposed C-51 system to be expanded, Phase 2, in the future.					

The agreements signed by Broward County and multiple Broward County communities include a June 30, 2018 deadline for moving forward with the project based upon the number of signed capacity allocation agreements. The current $4.60 capital costs per gallon ($4.6M/1MGD) are being held for those communities that sign capacity allocation agreements by June 30, 2018 (the current capital costs are based on December 2014 independent cost estimates). It is anticipated that project cost increases will be assessed for any capacity allocation agreements signed after June 30.

Recommendation:

City staff recommends that the City Commission authorize the City Manager to sign the Capacity Allocation Agreement with PBA for the purchase of 1 MGD of raw water from the C-51 Reservoir system and continue membrane softening treatment of supply from BC SRW (which will include the 1 MGD purchased from PBA) in parallel with continued lime softening treatment of City wells for the immediate AWS need. The City of Hallandale Beach will be joining Broward County, Lauderhill and Sunrise, who have already signed agreements for this project, and Dania Beach who is considering the agreement near the end of June. In addition, Miami-Dade is interested in replacing a 20mgd Floridan Aquifer RO Plant (in their CUP but has not been built) with a C-51 Reservoir allocation. Options for potential long term AWS will continue to be investigated to provide continuing water supply service.

Fiscal Impact:

The payment of the $4.6M will be due upon completion and operation of the conveyance system estimated to be in FY 20/21. Funding is allocated in account 490-3320W-565000, Project #10331, Water Supply & Treatment, which has a sufficient balance to fund the project.

Additional operating costs for the 1MGD allocation are as follows:

$0.009/1000 gal to the PBA
$0.085/1000 gal to SFWMD
$0.006/1000 gal to LWDD
$0.100/1000 gal. = $36,500/year

$0.230/1000 gal to Broward County
= $83,950/year

Operating costs will be budgeted in the Annual Operations Budget for the Utility Fund and have been included in the independent rate study, currently nearing completion, being prepared by Public Resources Management Group, Inc. The rates necessary to implement this water supply project and also to remedy the technical default in the debt service coverage requirements will be incorporated in the FY 18/19 proposed budget.

Why Action is Necessary:

Pursuant to Chapter 23 – Procurement Code, Section 23-6 Award of Contract, and Section 23-8 Unique Circumstances. The City Manager shall have the authority to recommend to the City Commission award of contracts.

One Last Word:

Approval of this project reflects state of the art planning for water resources on the part of the City Commission. Attached as Exhibit 7 is an editorial that appeared in the Miami Herald and the Sun Sentinel. There are four main recommendations including, 1) Move Wells, Build Better Treatment Plants, 2) Develop Alternative Water Sources, 3) Increase Water Conservation, 4) Pursue Regional Collaborations. Joining in the C-51 Project meets all of the recommendations outlined in the editorial.

Proposed Action:

Staff recommends approval of the attached resolution authorizing the City Manager to enter into an Agreement between the City of Hallandale Beach and Palm Beach Aggregates, LLC to purchase Capacity Allocation in Phase 1 of the C-51 Reservoir of one million gallons per day (1 MGD) at a capital cost of $4,600,000;

Attachment(s):

Exhibit 1 - Resolution
Exhibit 2 – Capacity Allocation Agreement
Exhibit 3 – C-51 Operation & Maintenance Agreement
Exhibit 4 – Maintenance & Repair Activities
Exhibit 5 – C-51 Reservoir Operating Plan
Exhibit 6 – C-51 Governance and Finance Group Final Report
Exhibit 7 – Miami Herald Editorial, June 8, 2018

Prepared by:

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