

Operating Plan for Phase 1 of the C-51 Reservoir

Purpose:

The purpose of this document is to describe the operating plan for moving water in and out of Phase 1 of the C-51 Reservoir through the regional and sub-regional water conveyance systems to project participants who have obtained an allocation of storage in Phase 1 of the C-51 Reservoir. This operating plan is required pursuant to Special Permit Condition 19 of DEP Permit No. EI 50-30070-003 and Section 2.4 of the Operations and Maintenance Agreement (Agreement) for Phase 1 of the C-51 Reservoir Project between Palm Beach Aggregates, LLC (PBA) and the South Florida Water Management District (SFWMD) dated February 10, 2017.

Background:

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 surficial or Biscayne aquifer wellfields. Water deliveries from Phase 1 of the C-51 Reservoir will follow this same general principle.

By participating in the C-51 Reservoir Project, a project participant can access this water source through their surficial or Biscayne aquifer wellfields to offset potential additional seepage from the Lower East Coast Everglades Water bodies or North Palm Beach County/Loxahatchee River Watershed Waterbodies (Waterbodies) above their base condition (Section 3.2.1.E of the Applicant’s Handbook for Water Use Permit Applications [AH] within the SFWMD). The quantity of water required from to offset potential additional seepage from the Waterbodies will be determined during the project participant’s permit modification/renewal application process.

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 operating plan includes the delivery interval (e.g., weekly), the documentation required (e.g., pumping logs), and monitoring (e.g., stage in recharge areas). 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 Waterbodies. 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 through operation of S-5AE, G-538 via the C-51 Reservoir Connection to the L-8 Flow Equilibration Basin (FEB) when releases would otherwise go to tide via S155A and S155. Water deliveries from the C-51 Reservoir will utilize the C-51 Reservoir Connection to the L-8 FEB, G539, S5AE and S155A. Inflow and outflow operations will be coordinated by SFWMD under the terms of the Agreement.

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 as shown on Exhibit “A”. 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 the 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. Withdrawals associated with climatic conditions that exceed this level of drought are subject to water shortage criteria in Chapter 40E-21, Florida Administrative Code (F.A.C.) and orders issued pursuant thereto.

Operating Plan

Inflow to Phase 1 of the C-51 Reservoir:

- Phase 1 of the C-51 Reservoir will capture excess discharges from the SFWMD C-51 Canal west of S155A.
- Designed stages within Phase 1 of the C-51 Reservoir may fluctuate between 16.5 and -20 feet NAVD.
- Timing and volumes of inflows to Phase 1 of the C-51 Reservoir will be determined by SFWMD operations staff. In general, inflow operations will follow the protocols developed in conjunction with SFWMD and submitted by PBA in support of DEP Permit No. EI 50-30070-003, with the goal of filling Phase 1 of the C-51 Reservoir to the design stage of 16.5 NAVD at the end of the wet season each year.

Request for Offset Water:

- Each project participant will determine their monthly water to determine if water to offset withdrawals above its base condition is required, and provide this information to C-51 Reservoir, Inc., which will be the owner of Phase 1 of the C-51 Reservoir. C-51 Reservoir Inc. will compile this information in a spreadsheet showing the amounts needed above the baselines per project participant by wellfield. The form of this spreadsheet is attached as Exhibit “B.”
- C-51 Reservoir Inc. will notify Operations (watermanager@sfwmd.gov) with the monthly C-51 offset makeup water deliveries by the 7th of each month.
- Designated SFWMD staff will, if necessary, hold a monthly meeting to coordinate the delivery of the requested water quantities to basins/sub-basins serving the project participants’ applicable withdrawal facilities.
- SFWMD Operations Staff will estimate the structure operations schedules (gate and/or pump flow rates and durations) and volumes necessary to move the offset water from the regional system and Phase 1 of the C-51 Reservoir through the conveyance system into the applicable basins/sub-basins to maintain the stages as shown on Exhibit “C”.
- The initial project participants are Broward County, City of Sunrise, Lauderdale, Dania Beach and Miami Dade County as included on Exhibit B. If additional project participants are added, Exhibit B will be revised in collaboration with operations staff and approved as an amendment to this Operating Plan.
- SFWMD Operations Staff will coordinate weekly with participating 298 Districts to estimate weekly structure operation schedules of 298 District facilities needed for delivery of water to affected basins.

Outflow from Phase 1 of the C-51 Reservoir and Conveyance of Offset Water:

- The source of offset water for participating project participants will first be met by any locally available excess water in the conveyance system to reduce and/or prevent discharges to tide. There is no requirement to use the Regional System or other portions of the conveyance route to hold excess water to reduce the releases from Phase 1 of the C-51 Reservoir.
- When the SFWMD determines releases of offset water from Phase 1 of the C-51 Reservoir are required, the necessary volume will be pumped out of Phase 1 of the C-51 Reservoir via the following:
 - L-8 FEB - the same volume will be pumped through the L-8 FEB Pump Station (G-539) into the L-8 Canal.
 - Northern Connection - between the C-51 Reservoir and the L-8 Canal north of Structure G541.
- The necessary volume of water subsequently gravity flows from the L-8 Canal into the western C-51 Canal via the S-5AE Structure and into the eastern C-51 Canal through the S-155A Structure.
- LWDD then pumps the necessary volume of water from the eastern C-51 Canal into the LWDD E-1 Canal via LWDD Control Structure No. 2.

- If Phase 1 of the C-51 Reservoir water is necessary to offset withdrawals by a project participant in central or southern Palm Beach County, LWDD will manage canal elevations and operate structures in its system to ensure deliveries to the respective project participant.
- If Phase 1 of the C-51 Reservoir water is necessary to offset withdrawals by a project participant in Broward County or Miami-Dade County, LWDD will manage canal elevations and operate structures to deliver offset water to the south end of their system into the Hillsboro Canal.
 - The necessary volume of water will be gravity released from the LWDD E-1 Canal into the Hillsboro Canal via LWDD Control Structure No. 14.
 - The SFWMD or 298 District, as applicable, will then deliver the necessary volume of water from the Hillsboro Canal to the respective downstream basin/sub-basin canals for delivery to the project participant.
- Project participants may not exceed their base condition water use upon notification from SFWMD that offset water is not available.

Additional Criteria:

- Daily flows through the SFWMD structures in the Regional System due to use of Phase 1 of the C-51 Reservoir will be measured by the District in cubic feet per second (cfs) and stored by SFWMD.
- Daily flows into and out of the LWDD due to use of Phase 1 of the C-51 Reservoir shall be measured by the LWDD in million gallons and reported to SFWMD on a monthly basis.
- Daily flows into and out of the 298 Districts due to use of Phase 1 of the C-51 Reservoir will be measured by the applicable 298 District in million gallons and reported to SFWMD on a monthly basis.
- Project participant permits shall be issued with a condition requiring submittal of monthly pumpage reports on a monthly basis for those wellfields receiving offset water under this operating plan.
- PBA (or the C-51 not for profit as appropriate) shall enter into operating agreements with participating 298 Districts as needed (e.g., see agreement with the LWDD) to ensure a commitment of delivering water from Phase 1 of the C-51 Reservoir through the Regional System to the participating project participants.
- PBA (or the C-51 not for profit as appropriate) and each participating 298 District will be responsible for obtaining all necessary approvals from SFWMD to authorize operation of 298 District facilities to move water Phase 1 of C-51 Reservoir through the through their respective facilities to offset withdrawals within project participants in affected basins/sub-basins. Such approvals shall be obtained prior to the delivery of water from Phase 1 of the C-51 Reservoir water to the local 298 District.

- The additional incremental costs of the water deliveries, including pumping costs, shall be paid by the project participants, in accordance with the approved Operations and Maintenance Agreement, including the cost of moving water through the system specifically for each canal reach. The preliminary budget with the maximum of 35mgd for 365 days a year is attached as Exhibit “D” [This is Matt Alexander’s spreadsheet]
- Based upon the initial participants, the following improvements to the Regional System shall be completed, to be paid for by the appropriate project participant(s):

[Ernie will set up follow up meeting to include Matt Alexander] This Operating Plan shall be amended as necessary to reflect any operational changes, permit modifications, and the participation of specific end users.

DRAFT