

DRAFT

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Technical Memorandum

Date: June 10, 2020

From: Spencer Harris, HG 633

To: Ron Munds, General Manager
Los Osos Community Services District

SUBJECT: Update of Los Osos Basin Plan Programs U and C with respect to Basin Sustainable Yield.

Dear Mr. Munds:

As requested, Cleath-Harris Geologists (CHG) has prepared an update of Los Osos Basin Plan (LOBP) Program U (Urban Water Reinvestment) and Infrastructure Program C (Expansion Wells) with respect to the Basin sustainable yield. The 2019 Annual Monitoring Report recommended updating the sustainable yield estimate once the location of the second Program C Expansion Well was finalized and to incorporate revised expectations for recycled water availability¹. Although the location of the second Expansion Well is still under review, the purpose of this update is to supplement information presented in the public review drafts of land use planning documents prepared by the County of San Luis Obispo².

All three referenced public review draft documents describe six programs contained in the LOBP that were recommended for immediate implementation and that would increase the maximum sustainable yield of the Basin to an estimated 3,000 acre-feet per year (AFY). These LOBP programs are:

- Program M – Groundwater Monitoring
- Program E – Urban Water Use Efficiency
- Program U – Urban Water Reinvestment
- Program A – Basin Infrastructure Program A
- Program C – Basin Infrastructure Program C
- Program P – Wellhead Protection Program

Three of the above six programs, Program U, Program A, and Program C have a direct effect on the Basin sustainable yield. Of these three, Program A is the only one currently on track to be completed with no significant changes from the LOBP description. Program U and Program C, however, are subject to modifications that can reduce the Basin sustainable yield estimate for

¹CHG, 2019 Annual Monitoring Report, June 2019

²County of San Luis Obispo, (1) 2016-2018 Resource Summary Report (RSR), District 2 Revision, Updated Los Osos water supply section; (2) Growth Management Ordinance (Title 26) proposed amendments to establish a growth rate for Los Osos; and (3) Advisory Memo explaining the Los Osos growth rate calculations.



program combinations. The program combination E+AC+U was recommended for the existing population scenario in the LOBP, and is a simplification of terms for the implementation of all six LOBP programs listed above.

Program U

LOBP Infrastructure Program U involves the reinvestment of recycled water in an appropriate manner to help sustainably manage the Basin water resources. For the existing population, Program U anticipated 780 AFY of recycled water, but with 99 percent of the require parcels connected to the Los Osos Water Recycling Facility (LOWRF), actual recycled water flows are projected to only reach 540 AFY³. The distribution of recycled water in the basin has a direct effect on Basin sustainable yield, and recycled water discharges to the Broderon site community leach field is needed for sea water intrusion mitigation⁴.

All the maximum sustainable yield scenarios performed using the Model have assumed 448 AFY of recycled water discharges to Broderon. With a projected recycled water supply of 540 AFY for the existing population, however, there may be less than 448 AFY discharged to Broderon once other parts of Program U are completed, resulting in less seawater intrusion mitigation.

Program C

LOBP Program C included three Expansion Wells along the eastern edge of the Central Area. The first Expansion Well was completed in 2016, bringing the estimated Basin yield to 2,760 AFY⁵. Several potential locations are currently being evaluated for the second Expansion Well, some of which are less efficient at increasing the Basin yield than others⁶. A third Expansion Well is considered unnecessary to meet the water demand of the existing population⁷.

As previously noted, the estimated sustainable yield for the E+AC+U program combination recommended for immediate implementation in the LOBP was 3,000 AFY. Once a second Expansion Well is completed (assuming 448 AFY recycled water discharges to Broderon), the estimated sustainable yield would increase to 2,830-2,900 AFY, depending on the location of the second well⁸.

³CHG, 2019 Annual Monitoring Report, June 2019

⁴CHG, Lower Aquifer nitrate concentrations review and LA11 seawater intrusion evaluation, BMC Adaptive Management TM dated November 6, 2019.

⁵CHG, Basin Yield Metric response to reduced long-term precipitation in the Los Osos Groundwater Basin, Los Osos BMC / Morro Bay NEP TM dated March 3, 2017.

⁶CHG, Los Osos Basin Plan Program C Expansion Well No. 2 Sites Alternatives Update, Los Osos CSD TM dated February 19, 2020.

⁷CHG, Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation, February 28, 2019.

⁸CHG, Los Osos Basin Plan Program C Expansion Well No. 2 Sites Alternatives Update, Los Osos CSD TM dated February 19, 2020.



Program Combination E+U+AC

The maximum sustainable yield of the Basin has been estimated using the Model for a modified program combination E+U+AC scenario. Recycled water discharges to Broderson are reduced by 48 AFY (from 448 AFY to 400 AFY). This would allow Program U to distribute 140 AFY of recycled water between the Bayridge Estates leach fields, Urban reuse sites, and Sea Pines golf course. Program C is also modified to include only one additional Program C well completed at Site E (Bay Oaks Drive). Site E, owned by the Los Osos Community Services District, is a reasonably conservative placeholder for this analysis while the location of the second Expansion Well is finalized. The resulting maximum sustainable yield for the modified program combination E+U+AC is estimated in the Basin Model at 2,810 AFY, of which 80 percent, or 2,250 AFY, is considered available to Basin water users in order to provide a buffer against uncertainty. In addition, 750 AFY of the available water is reserved for agriculture in accordance with the Interlocutory Stipulated Judgment⁹.

Groundwater production for domestic, purveyor, and community facilities over the last five years has averaged 1,350 AFY¹⁰. Assuming this average is representative of future existing population water demand, and adding 750 AFY reserved for future agricultural water use, total Basin water demand for the existing population scenario is estimated at 2,100 AFY. The resulting Basin Yield Metric for modified program combination E+U+AC would be 75 (2,100 AFY/2,810 AFY). By comparison, LOBP estimates for program combination E+U+AC included an existing population water demand of 2,230 AFY, an estimated sustainable yield of 3,000 AFY, and a Basin Yield Metric of 74.

The marginal water supply available for increases to the existing population under program combination E+AC+U was estimated in the LOBP at 170 AFY. With modifications to Programs U and C, the corresponding marginal water supply available for potential development is estimated at 150 AFY (2,250 AFY available water – 2,100 AFY water demand). By comparison, the proposed amendments to the Growth Management Ordinance are estimated to result in a cumulative increase in Basin water use after five years of 63 AFY¹¹.

Water Level and Chloride Metrics

The LOBP Water Level Metric goal is 8 feet above mean sea level, and the Chloride Metric goal is to lower the metric below 100 milligrams per liter (mg/L). Water Level Metric and Chloride Metric projections for modified program scenario E+AC+U with 2,250 AFY production (a Basin Yield Metric of 80) are estimated by the Model to reach 8 feet and 75 mg/L, respectively. The Model estimates steady-state (long-term) conditions for a balanced basin.

⁹Interlocutory Stipulated Judgment filed 2/13/2004 in San Luis Obispo County Superior County, Case No. CV 040126.

¹⁰CHG, 2019 Annual Monitoring Report, June 2019

¹¹County of San Luis Obispo Advisory Memo explaining the Los Osos growth rate calculation.



The projected timeline in the LOBP for the Water Level Metric to reach the metric goal was within approximately 10 years of achieving the targeted Basin Yield Metric value of 80 or less. A Basin Yield Metric of less than 80 was documented in 2016, however, subsequent evaluation of the metric trend from groundwater monitoring data indicated the Water Level Metric goal would not be reached until 2033¹². Part of the extended timeline was due to lowering the LOBP metric values following removal of a density correction at the sandspit wells and adjustment of the datum used for survey reference point elevations¹³. Reevaluation of the metric goal is recommended, along with installation of water level transducers to help identify and interpret water level trends in the Lower Aquifer¹⁴. Groundwater mounding from recycled water discharges to the Broderson community leach field has been observed in the Upper Aquifer, and Lower Aquifer water levels are also expected to rise as the mound expands into the basin¹⁵.

The anticipated trendline for the Chloride Metric in the LOBP was a continued rise in the metric over a period of 10 years, followed by decline, and reaching the metric goal within approximately 30 years of achieving the targeted Basin Yield Metric value. Although initial evaluation of the Chloride Metric from groundwater monitoring results indicated the goal could be reached within just a few years, subsequent consideration of wellbore leakage (Upper Aquifer influence) and variations in pumping at one of the metric wells indicated that more time will be needed, as originally projected, to meet the goal^{16,17,18}.

¹²CHG, Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation, February 28, 2019.

¹³CHG, 2015 Annual Monitoring Report, June 2016.

¹⁴CHG, 2019 Annual Monitoring Report, June 2020.

¹⁵CHG, Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation, February 28, 2019.

¹⁶Ibid.

¹⁷CHG, 2018 Annual Monitoring Report, June 2019.

¹⁸CHG, 2019 Annual Monitoring Report, June 2020.