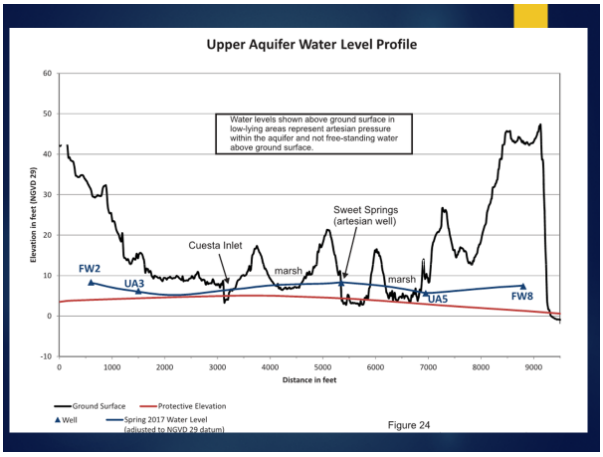
BASIN MANAGEMENT COMMITTEE BOARD OF DIRECTORS

Agenda Item 5a: Minutes of the Meeting of June 20th, 2018

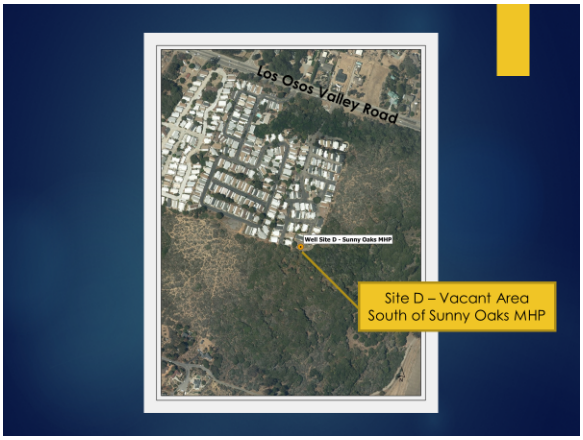
Agenda Item	Discussion or Action
1. CALL TO ORDER **2. PLEDGE OF ALLIGANCE** **3. ROLL CALL**	Chairperson Ochylski called the meeting to order at 1:30 pm and Director Gibson led the Pledge of Allegiance. Mr. Miller, acting Clerk, called roll to begin the meeting. Director Zimmer, Director Garfinkel, and Director Gibson and Chairperson Ochylski were all present.
4. Board Member Comments	No board member comments.
5a. Minutes of the Meeting of June 20th, 2018 **5b. Approval of Budget update and Invoice Register through December 2017**	No Board or Public comment. Director Gibson: Motion to accept the consent agenda. Director Zimmer: Second the Motion. **Ayes: Director Gibson, Director Zimmer, and Chairperson Ochylski** **Nays: None** **Abstain: Director Garfinkel** **Absent: None**
6. Executive Director's Report	Executive Director, Rob Miller, provided a verbal overview of the written content of the Executive Director's report. Mr. Miller: There was a recent change in our classification for our groundwater basin, I think it would be helpful to have Ms. Berg give us an update on that. Ms. Berg: The DWR released its reprioritization of all the basins throughout the state, based on the modifications they made in 2016. They used largely the same analysis, but they added in recognized adjudications that are listed as being exempt of from the new Sustainable Groundwater Management Act. They have a draft recommendation that this basin is largely exempt from SGMA and the Fringe areas outside of the BMC's boundary should be low priority. The challenge is, we've been pursuing boundary modifications to create a sub-basin for the Warden Creek area. However, that modification is on the same timeline as the recommendation for reprioritization, they are both set for October. We hope they do not impact each other. Director Zimmer: Just to clarify, you said it would be October before we hear back from the DWR? Ms. Berg: They will be taking comment during the summer and finalize in October, so we can hear back anytime in the Fall. Director Zimmer: Okay, it would be good to have updates if they became available. Mr. Miller: Yes, staff will do that.

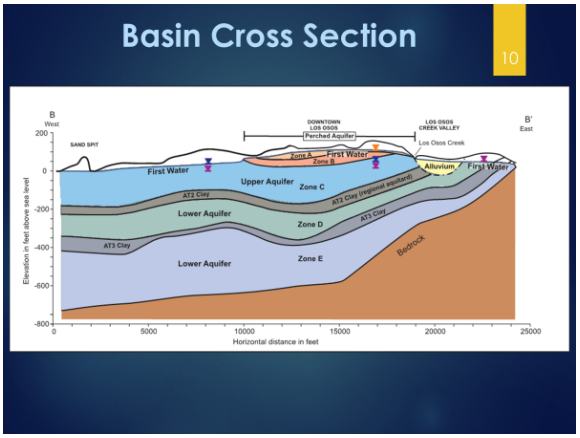
	<u>Public Comment</u> None.
7a. Presentation of 2017 Annual Report	Mr. Miller: Gave a detailed Presentation of the 2017 Annual Report.    Director Zimmer: In the report you have S&T producing 30-acre feet for 2017, it should be 32-acre feet. Mr. Miller: If you could send us your data on that we'll make sure it is updated in the final.

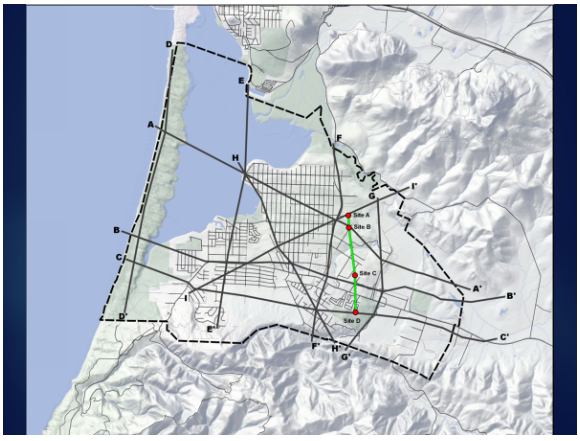
	Public Comment None. Board Comments Director Zimmer: Regarding the growth management in the County, we talked about at a previous meeting, will that come back to this committee for a final review? Director Gibson: In terms of going forward as we work on the Community Plan? The Community Plan is in process and we plan on going in front of our Planning Commission later this year. That charts the development potential looking forward and big piece of that will be the water supply. Once this all goes through its processes it will come back. The author of the report reminded me that in the footnote of the production table all the figures are rounded to the nearest 10-acre feet. Director Gibson: I want to move approval of the Annual Report and transmit as necessary where it needs to go. Director Garfinkel: I will second that. **Ayes: Director Gibson, Director Zimmer, Director Garfinkel and Chairperson Ochylski** **Nays: None** **Abstain: None** **Absent: None** All in favor.

7b. Discussion of Program C Site Selection Process	Mr. Miller: Gave a detailed overview of the Program C well site selection process.


Andre Avenue
Well Site C - Andre Avenue
Site C – Private Property on Andre Avenue


Los Osos Valley Road
Well Site D - Sunny Oaks MHP
Site D – Vacant Area South of Sunny Oaks MHP


Basin Cross Section
10
B
West
B'
East
DOWNTOWN LOS OSOS
LOS OSOS CREEK VALLEY
Perched Aquifer
SAND SPIT
Los Osos Creek
First Water
Zone A
Zone B
Alluvium
Upper Aquifer
Zone C
AT2 Clay
AT1 Clay (regional aquitard)
Lower Aquifer
Zone D
AT3 Clay
Bedrock
Zone E
Elevation in feet above sea level
Horizontal distance in feet


A
B
C
D
E
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L
Site A
Site B
Site C
Site D
A'
B'
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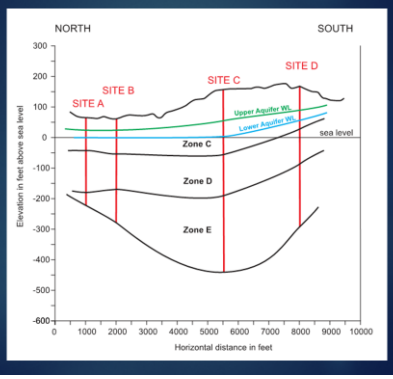
D'
E'
F'
G'
H'
I'

Basin Cross Section – Looking East

12



Annual Production

13

- Site A – LOMS (Zone D/E): Key concern, disadvantage
- Site B – Sage (Zone D/E): Neutral, acceptable production
- Site C – Andre (Zone D/E): Deepest portion of Zones D & E, advantage
- Site D – Sunny Oaks (Zone C/D/E) – good production including Zone C, advantage

Proximity to Infrastructure (Community Water Mains)

14

- Site A – LOMS: 1,100' pipeline required, neutral
- Site B – Sage: 2,200' pipeline required, disadvantage
- Site C – Andre: 600' pipeline required, advantage
- Site D – Sunny Oaks: 1,200 ' pipeline required using trenchless technology, neutral

Neighborhood/Community Acceptance

15

- Site A – LOMS: Expected to be non-controversial - advantage
- Site B – Sage: Potential controversy, neutral
- Site C – Andre: Significant community concern - disadvantage
- Site D – Sunny Oaks: Neighborhood opinion unknown at this time

Seller Status and Land Cost

16

- Site A – LOMS: Advantage
- Site B – Sage: Unknown, premature
- Site C – Andre: Advantage
- Site D – Sunny Oaks: Unknown, premature

Aesthetic Concerns Noise, Visual, other

17

- Site A – LOMS: Advantage – not in residential neighborhood
- Site B – Sage: On large residential parcel - mitigation required including submersible pump and sound proof enclosure
- Site C – Andre: 1-acre lot in residential neighborhood – mitigation required including submersible pump and sound proof enclosure
- Site D – Sunny Oaks: adjacent to mobile homes - mitigation required including submersible pump and sound proof enclosure

Example well site

18

Use of site as corporation yard not anticipated – Example from LOCSD South Bay Well

19

Example well sites – Palisades Well

20

Potential interference with Surrounding wells

21

- Site A – LOMS: Advantage – no residential wells in vicinity
- Site B – Sage: Minor or negligible impacts to existing residential wells expected, mitigation may be required in environmental document
- Site C – Andre: Minor or negligible impacts to existing residential wells expected, mitigation may be required in environmental document
- Site D – Sunny Oaks: Advantage – no residential wells in vicinity

Environmental and Endangered Species Impacts

22

- Site A – LOMS: Advantage – developed area
- Site B – Sage: Disadvantage – undeveloped with potential habitat
- Site C – Andre: Advantage - developed
- Site D – Sunny Oaks: Disadvantage – undeveloped with potential habitat

Site Layout and Access

23

- Site A – LOMS: Advantage with some constraints
- Site B – Sage: Advantage
- Site C – Andre: Disadvantage, but feasible
- Site D – Sunny Oaks: Advantage

Director Zimmer: You touched on the operations and maintenance of a well and that will require equipment coming in to do that service. Trying to project the future treatment is a huge component today as regulations get more stringent. Many of the wells Golden State operates have treatment being added. So overall, I think Mr. Miller did a really good job on covering all the different aspects of what goes into a new well with this presentation.

Director Garfinkel: I also felt the presentation was well done.

Director Gibson: The reason this well is being considered is to balance the Los Osos Groundwater Basin for everybody. We certainly look forward to the public comments and we are hoping to work cooperatively with the community to solve this problem.

Director Ochylski: Just to clarify under CEQA, alternatives must be studied, you can't just study one single site.

Public Comment

Mr. Itcher: My wife and I are residents on Nipomo Street near Andre. Our well has been a County Test Well for 15-20 years. It's currently down 10 feet to the 79 ft. level. Why is this well needed? Is it needed to supply water to the golf course location? If so, can't they drill into the lower aquifer at that location? Also, since we draw water from the upper aquifer, if a well goes into the lower aquifer how does it affect the upper aquifer?

Mr. Banfleet: I've lived on Nipomo Street for 30 years. Mr. Miller, in your letter you mention Program C consists of three wells, located on the eastern side of this central area, called Expansion Wells 1,2, & 3. You then mention 4 alternative sites and identified the locations in your presentation. So, how many sites are you referring to? The Andre Well site is proposed to be 600 feet deep, will it really be that deep? There is also a mention of a 10% set aside, who would that be for? The noise and nuisance from the well would violate our community's CC&R's. Also, concerning the environment, I think the oak trees will die if you drop the water table. There could also be interference with adjacent private wells. Tenants will be moving into 2030 Andre on the first of the month and they've been told to expect a new well to be drilled on the property, so has this already been decided?

Community Member: We moved into our property in 1985, five years later we had to replace our 120 ft. well with a 220 ft. well. Within the last year three of my neighbors had to replace their wells due to the falling water table. I'm concerned if this continues my

well will no longer function. Also, what water source recharges these aquifers? If it's the same for all the zones, what happens if we draw water from the lower zones?

Ms. Hawk: I am a resident on Buckskin Dr., a customer of Golden State Water, but we are part of a neighborhood. We bought into this property in 2006, at the end of street where there's 67 acres of open field. Our elderly neighbors would suffer both from the increase in traffic as well as the disturbance of the land. I saw your slide mentioning the willing seller on Andre. I don't see this developer as a willing seller, I feel he bought the property with the intention of bartering to allow him to retain 10% of the production so he can use that water for development.

Mr. Smith: I've lived on Andre since 1975 and I have a lot of concerns about this proposed site. The Andre well site should not be a consideration for a municipal well. It's a quiet residential neighborhood with lots zoned RA and a municipal well doesn't fall under either one of those. The disruption of the construction and maintenance of the well is not acceptable. The well will have detrimental effects on all the surrounding residential wells. Many of the wells in the area that have failed recently have been under 100 ft. The rest of them are about 150-200 ft. deep. It's my understanding that you're going to be tapping that zone, so I think it will have an impact on our existing wells. A developer from southern California bought this land hoping to benefit from the water he would get in return for building this well, I would like to know the legality of that?

Ms. Owen: How deep has the aquifer gotten over the years? In this area, what zone are the residential wells tapped into? You mention that you don't have record of recent wells, which I think is totally unacceptable since we were told all new wells would be monitored for usage. Could we divert some water from Broderson into the Creekside Disposal in hopes to guarantee that the upper aquifer would maintain a sustainable level?

Ms. Wooster: I am a resident on Freeman Ln., also in the Andre Well area. I just retired from a career in water quality monitoring and one of the things I'm particularly worried about is the lack of information about what our water levels have been doing over the past decade. In Paso Robles all the wineries are using up the water supply and we need to be careful that we don't run into that same issue here.

Mr. Bender: I live on Andre Street. With the growth in Los Osos where will the extra water come from? I am also opposed to the Andrew Well site.

<u>Board Comments</u>

Mr. Miller: Some of you asked why this well is needed and, in the past, we have drilled on the West side, which was short sighted. Production was great, but it resulted in seawater intrusion, so we need to now slow down the pumping on the West side and pump more strategically on the East side. There are 4 primary sites in this presentation and we are looking to screen those down to 1 or 2 sites. Regarding depth it may not be 600 ft. deep but it would probably be at least 300 ft. deep. To drill in Zone E at Site C we must reach these depths. There were some questions about drilling into the lower zones and how it would affect the upper zones, the only way to know that is to physically test it. When we've done this previously at the Sage Site, the shallow wells did respond to pumping in a small way. We would have to test to confirm what the impacts would be. It is possible to have two wells pumping next to each other, one deep and one shallower without affecting each other. We've seen this with our two wells on 8th street.

Director Zimmer: For the well construction there are also ways to blank off those Zones

	you aren't drilling from. Even though there might be some leakage from the well, the pumping would only come from those Zones you are meaning to pump from. Mr. Miller: Regarding, the 10% set aside at Site C, the owner has asked to reserve that percentage for future uses. That would be presumably for development. So that well will only produce 90% of what that well can provide. However, if you look at Site A we may only get 100 acre-feet from it, whereas the 90% of Site C might still be more than that. Concerning the legality of the set aside we do believe it is legal, but we can certainly investigate that. There was a question about aquifer recharge and the primary means of recharge in Zone C is rainfall. Zones D and E are recharged by slow percolation through Zone C through the thick clay. The Creek also has a direct connection with that deep aquifer. There was a question regarding if the developer hadn't purchased 2030 Andre would we be considering similar properties. We did a mailer to larger properties, so we probably wouldn't have looked at 1-acre parcels. However, we would consider any viable property in that area. There were some statements about need more information about well production in that area. I think the process would be looking at all the well logs through the County Health Department, get all the ones available to us, show them on a map and identify what aquifer zones they are in before we do an environmental review on this. That way we can say here's all the information that we have and be able to tell each well log owner which aquifer zone they are in. There were some questions about how well water levels have changed over time. Our annual reports are intended to do that, and we plot the water level contours so every year we can look back at previous years and see how things have changed. If there is an interest in level monitoring I think the County has a program where they are willing to do that under certain circumstances. We depend on private owners who are willing to have their well monitored to plot some of those contour lines. Director Ochylski: I just wanted to add that is a County function, not a function of this committee. Mr. Miller: There was also some questions about growth. All this discussion about this new well is focused on what we call program C and the initial goal of that program is to balance the Basin under current development. Once that occurs, the Basin in balance, and the Coastal Commission receives what they call substantial evidence of that happening, then I believe they will allow some growth. Director Gibson: I want to reiterate to the public here that during this whole process of the well site and construction, your thoughts and concerns will be documented and addressed throughout this process. The BMC has its role in the technical studies of the water supply and it is the County's job to be an interface between those who supply water and the entity that make's decisions on growth. Regarding the use of the 10% of the use of the well for the developer, there are checks and balances for that. Any new development in Los Osos would be required to hook up to a municipal water supply. Director Zimmer: Regarding the technical studies, is that an agenda item that will be coming back? Mr. Miller: Yes, but the workshop is the next step. If the public didn't feel like they were able to get enough back and forth we're going to allow that at the workshop. Then when we come back with more information we'll bring that back here.
8. PUBLIC COMMENTS ON ITEMS NOT APPEARING ON THE AGENDA	<u>Public Comment</u> Ms. Owen: I heard that nobody within the municipal water district can build anything

	new. However, Golden State is issuing will serves, so what was said is not true? Currently, there are new wells going under the jurisdiction of the County and we were promised that every new well would be monitored but you don't have that data. Also, the County is in control of all the private wells. Mr. Banfleet: Regarding the last mailer that I received, only the people that were on the last petition were notified, I would like to request that everybody in the surrounding streets of the well site are given notice of the workshop and further publications. Mr. Cesena: Speaking as a resident, the LOCSD recently sent a letter to the County regarding the contracts of selling reclaimed water from the treatment plant to ag interests to the East Side of the Basin and I would like to suggest an agenda item in the future to discuss that letter and possible support for that letter. Director Ochylski: Tomorrow night there is a conservation meeting. Mr. Miller: 7:00 PM come out and support us.
8. ADJOURNMENT	Meeting was adjourned at 3:15 pm. The next meeting will be on August 30th at the South Bay Community Center in Los Osos at 1:30 pm.

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **August 30, 2018**

SUBJECT: **Item 5b – Approval of Budget Update and Invoice Register through August 30, 2018**

Recommendations

Staff recommends that the Committee review and approve the report.

Discussion

Staff has prepared a summary of costs incurred as compared to the adopted budget through August 30, 2018 (see Attachment 1). A running invoice register is also provided as Attachment 2. Staff recommends that the Committee approve the current invoices, outlined in Attachment 3. Payment of invoices will continue to be processed through Brownstein Hyatt as noted in previous meetings.

Attachment 1: Cost Summary (Year to Date) for Calendar Year 2018

Item	Description	Budget Amount	Costs Incurred	Percent Incurred	Remaining Budget
1	Monthly meeting administration, including preparation, staff notes, and attendance	$50,000	$28,962.15	57.9%	$21,038
2	Meeting expenses - facility rent (if SBCC needed for larger venue)	$1,000	$240.00	24.0%	$760
3	Meeting expenses - audio and video services	$6,000	$2,200.00	36.7%	$3,800
4	Adaptive Management - Groundwater Modeling	$10,000	$8,260.00	82.6%	$1,740
5	Semi annual seawater intrusion monitoring	$26,400	$11,136.30	42.2%	$15,264
6	Annual Report - not including Year 1 start up costs	$29,600	$29,565.00	99.9%	$35
7	Grant writing (outside consultant)	$5,000	$0.00	0.0%	$5,000
8	Creek Recharge and Replenishment Studies	$15,000	$0.00	0.0%	$15,000
9	Cuesta by the Sea Monitoring well	$115,000	$840.00	0.7%	$114,160
10	Conservation programs (not including member programs)	$10,000	$3,920.80	39.2%	$6,079
	Subtotal	$268,000	$85,124		$182,876
	10% Contingency	$26,800			
	Total	**$294,800**	**$85,124**	**28.9%**	**$209,676**
	LOCSD (38%)	$112,024			
	GSWC (38%)	$112,024			
	County of SLO (20%)	$58,960			
	S&T Mutual (4%)	$11,792			
Notes	Last update August 22, 2018				

Attachment 2: Invoice Register for Los Osos BMC for Calendar Year 2018 (through August 30, 2018)

Vendor	Invoice No.	Amount	Month of Service	Description	Budget Item	Previously Approved
CHG	20180203	$11,095.00	Feb-18	Annual Report	6	Yes
Wallace Group	45523	$5,325.00	Jan-18	Administration	1	Yes
CHG	20180303	$10,260.00	Mar-18	Annual Report	6	Yes
CHG	20180304	$1,320.00	Mar-18	Semi-annual groundwater monitoring	5	Yes
CHG	20180305	$840.00	Mar-18	Cuesta-By-The-Sea Monitoring Well	9	Yes
Wallace Group	45731	$3,475.47	Feb-18	Administration	1	Yes
Wallace Group	45911	$4,456.16	Mar-18	Administration	1	Yes
SBCC	99	$120.00	Jul-18	Meeting Expenses-Facility Rent	2	Yes
SBCC	113	$120.00	Mar-18	Meeting Expenses-Facility Rent	2	Yes
AGP	7383	$750.00	May-18	Meeting expenses - audio and video services	3	Yes
CHG	20180402	$5,340.00	Apr-18	Annual Report	6	Yes
CHG	20180403	$5,874.80	Apr-18	Semi-annual groundwater monitoring	5	Yes
CHG	20180504	$2,870.00	May-18	Annual Report	6	Yes
CHG	20180505	$3,316.50	May-18	Semi-annual groundwater monitoring	5	Yes
Wallace Group	46110	$2,033.00	Apr-18	Administration	1	Yes
Wallace Group	46301	$6,511.61	May-18	Administration	1	Yes
AGP	7414	$1,450.00	Jun-18	Meeting Expenses-Audio/Video Services	3	

CHG	20180604	$625.00	Jun-18	Semi-annual groundwater monitoring	5	
CHG	20180605	$6,860.00	Jun-18	Adaptive Management-Groundwater Modeling	4	
Wallace Group	46487	$5,868.91	Jun-18	Administration	1	
Wallace Group	46487	$3,919.41	Jun-18	Water Conservation	12	
Wallace Group	46715	$1,293.39	Jul-18	Administration	1	
CHG	20180705	$1,400.00	Jul-18	Adaptive Management-Groundwater Modeling	4	
Total		**$85,124.25**				

Not yet approved

ATTACHMENT 3

Current Invoices Subject to Approval for Payment (Warrant List as of August 30, 2018):

Vendor	Invoice #	Amount of Invoice	Date of Services
AGP	7414	$1,450.00	June 2018
CHG	20180604	$625.00	June 2018
CHG	20180605	$6,860.00	June 2018
CHG	20180705	$1,400.00	July 2018
WG	46487	$9,788.32	June 2018
WG	46715	$1,293.39	July 2018

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **August 30, 2018**

SUBJECT: **Item 6 – Executive Director's Report**

Recommendations

Staff recommends that the Committee receive and file the report, and provide staff with any direction for future discussions.

Discussion

This report was prepared to summarize administrative matters not covered in other agenda items and also to provide a general update on staff activities.

Funding and Financing Programs to Support Basin Plan Implementation

As indicated in the January 2018 meeting the State Board confirmed that sea water intrusion mitigation projects under Program C are eligible for low interest loans but are not currently eligible for grants under Proposition 1. New wells in the upper and lower aquifer are viewed as aquifer management, not aquifer clean-up as defined by the State, therefore we will need to look for future funding rounds and other opportunities. Staff has engaged in the IRWM process with SLO County for the Los Osos Creek Replenishment and Recharge Project (IRWM Project ID 2017 NT-07). In addition, LOCSD is pursuing IRWM funds for the final equipping of its 8th Street upper aquifer well, which was previously drilled and cased.

During the March BMC meeting, the committee requested additional information regarding the grant eligibility of a Program B project. Based on the LOCSD's experience with the 8th Street well as part of the IRWM process, Staff expects future Program B projects to compete well based on predicted ranking criteria. The benefits of Program B projects include reduced sea water intrusion, accelerated reduction of upper aquifer nitrates, and water supply reliability. While funding for capital may be available for Program B, it should be noted that on a life cycle basis, over 80% of the cost of a Program B project is in the operational cost of nitrate removal. This cost is currently estimated at $800 to $1,000 per acre foot depending on nitrate concentrations.

Status of Zone of Benefit Analysis

Similar to previous updates, no special tax measure is being pursued by staff to fund BMC administrative or capital costs. This item has been removed from the BMC budget for 2018. The Zone of Benefit approach can be initiated at any time as directed by the BMC.

Sustainable Groundwater Management Act (SGMA) and Basin Boundary Modification Request (BBMR) Updates

SGMA Update: As indicated in the July 2017 update, the Plan Area defined in the Los Osos Basin Plan and approved by the Court is largely exempt from the requirements of SGMA. However, SGMA compliance is currently required in the areas outside of the adjudicated management area, but within the State's designated basin boundary (i.e., "fringe areas", see attached Figure 1).

On April 4, 2017, the County of San Luis Obispo (County) Board of Supervisors (Board) decided to become the Groundwater Sustainability Agency (GSA) for the Los Osos Basin "fringe areas". The GSA's first key step is understanding the hydrogeologic conditions of the "fringe areas". The County and its consultant, Cleath-Harris Geologists, Inc., are in the process of finalizing a basin characterization study (Study), in order to characterize and develop a hydrogeologic conceptual model of the "fringe areas". The Study is available on line at:

<https://www.slocountywater.org/site/Water%20Resources/SGMA/lososos/>.

BBMR Update: The California Department of Water Resources (DWR) is responsible for defining basin boundaries, but recognizes that refined scientific data or jurisdictional information may warrant boundary modifications. DWR is currently accepting basin boundary modification requests from local agencies. DWR's basin boundary modification request and re-prioritization timelines/ key milestones are shown on Table 1 below. More information on DWR's process can be found at: < https://water.ca.gov/Programs/Groundwater-Management/Basin-Boundary-Modifications >

Table 1. 2018 Basin Boundary Modification Request and Re-prioritization Timelines

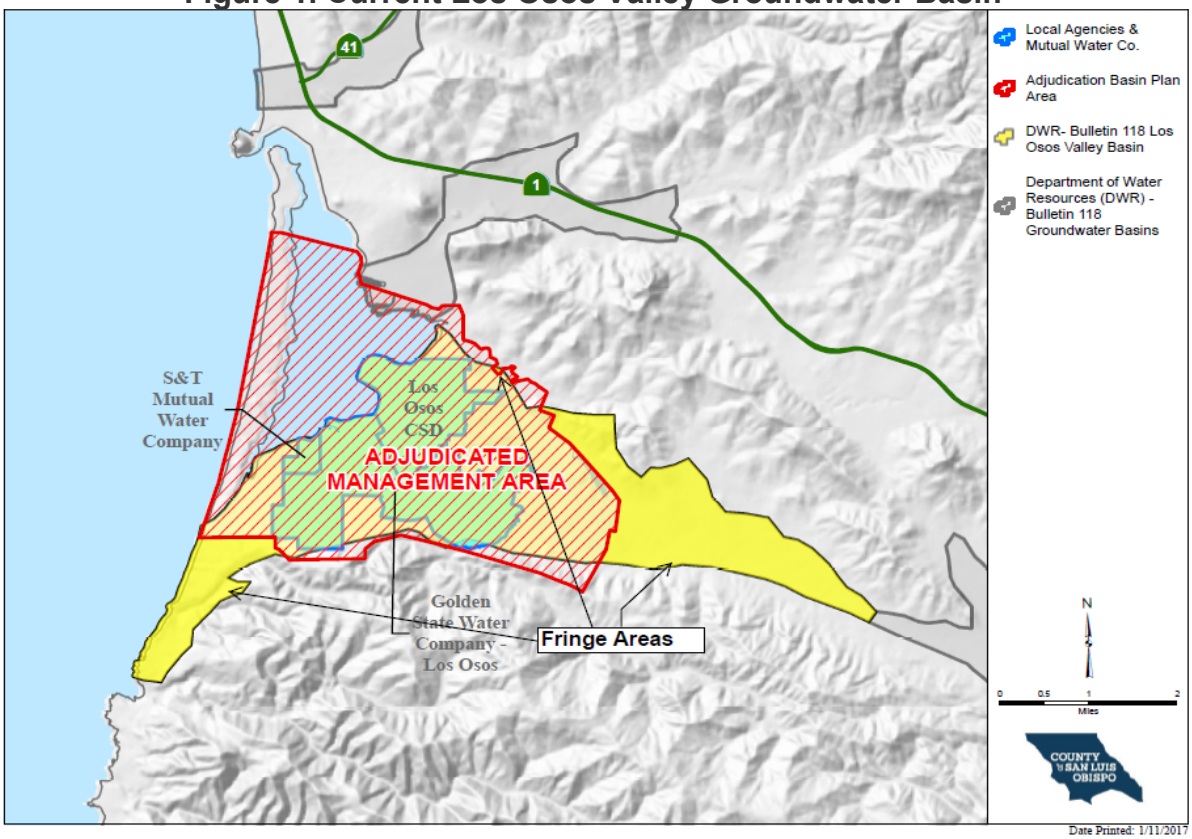
Key Milestones	**DATES**
Basin Boundary Modifications – Revised Timeline	
Extended Basin Boundary Submission Period (9 months)	September 28, 2018
DWR Releases Draft Basin Boundary Modifications	Winter 2018
DWR Releases Final Basin Boundary Modifications	Winter 2018
Re-prioritization for 2018 Basin Boundary Modifications	
DWR Releases Draft Re-prioritization for Modified Basins	February 2019
Public Comments due to DWR	February to March 2019
DWR Releases Final Re-prioritization	May 2019

On June 5, 2018, the County Board approved the submittal of the Los Osos Basin boundary modification request to DWR. As depicted in Figure 2 below, the County's approved basin boundary modification submittal includes a request to create two new subbasins in the Los Osos Basin ("Los Osos Area subbasin" and "Warden Creek subbasin"), and removal of two areas (Montana de Oro State Park and one minor fringe area). At the Board meeting, County staff noted that DWR's Draft 2018 SGMA Basin Prioritization (published on May 18, 2018) lists the Los Osos non-adjudicated basin areas as very low priority based on DWR's new proposed draft prioritization criteria[1]. Pending DWR's approval of the County's basin boundary modification request and approval of its proposed prioritization criteria, County staff anticipates that the proposed Warden Creek subbasin may be categorized as low priority[2]. County staff will be monitoring DWR's two separate processes listed in Table 1 above, in order to understand outcomes related to the Los Osos Basin.

More information on DWR's 2018 SGMA Basin Prioritization process can be found at:

<https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization>.

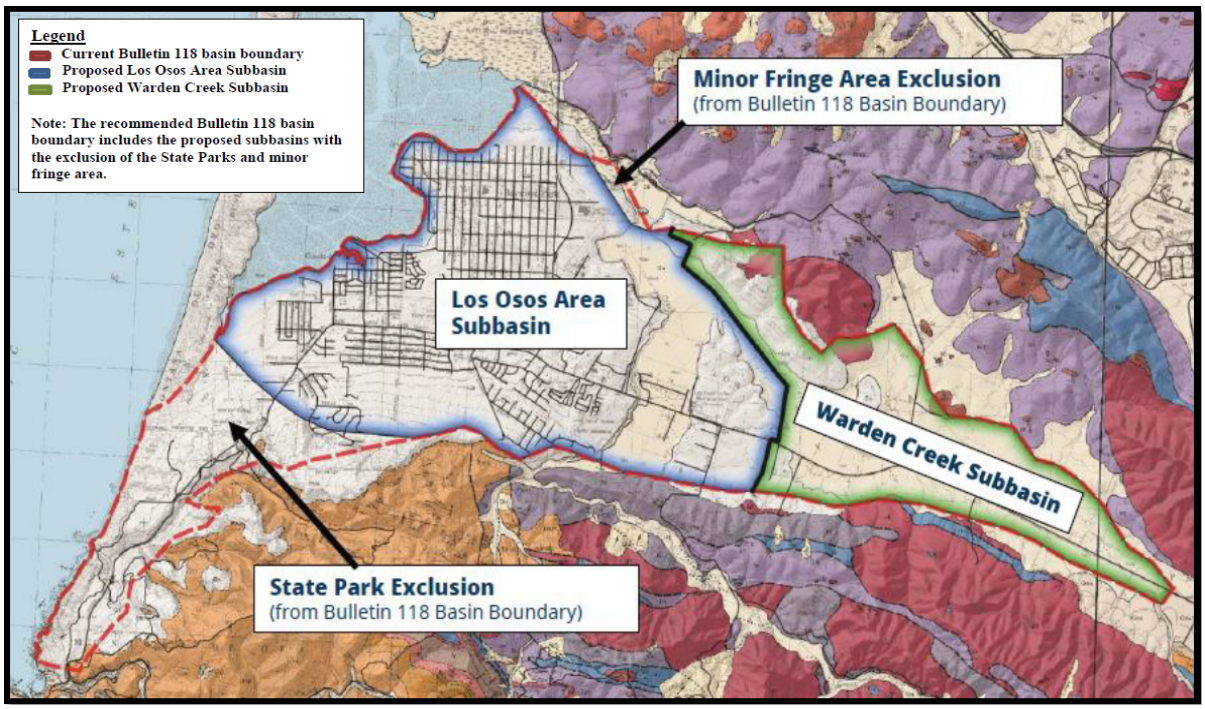
Figure 1. Current Los Osos Valley Groundwater Basin



[1] DWR's Draft 2018 SGMA Basin Prioritization in Sub-Component 8.c.3 states that basin's non-adjudicated portion extract less than or equal to 9,500-acre feet of groundwater is a very low priority with zero points.

[2] If DWR approves the Warden Creek subbasin (non-adjudicated section of the basin) and maintains its draft proposed 2018 SGMA Basin Prioritization criteria, DWR may reassess the new subbasin as low priority under the Basin Prioritization - Sub-Component 8.c.1 (i.e., any basin that uses less than or equal to 2,000 acre-feet of groundwater per year to be low priority).

Figure 2. Proposed Los Osos Basin Boundary Modification



Los Osos Wastewater Project Flow and Connection Update

- Of the 166 unconnected properties, 64 are waiting for the County/USDA/LOCSD low-income grant program to pay for their connection leaving 102 properties that may require enforcement. Of the 102 properties, 29 are in the process of connecting (ie: obtained a building permit). Subtracting those categories leaves 72 properties (1.6% of 4583 total parcels) that are the focus of the Code enforcement process.
- The County had a Board item on 8/7/18 to amend the County Code, available at this link: http://agenda.slocounty.ca.gov/agenda/sanluisobispo/Proposal.html;jsessionid=ED106C23778D82759E239D09AB55023F?select=8972
- Influent flows into the treatment facility are peaking at 0.50 mgd. No recycled water deliveries have been made to irrigation users yet. Effluent is being disposed at both Broderson and Bayridge leachfields. As of this writing, effluent disposal totaled 304 AF with 290 AF to Broderson and the remainder to the Bayridge leachfields. A recycled water agreement has been approved by LOCSD and is expected to be approved by the Board of Supervisors in October 2018, along with a final agreement with GSWC.

Option to Bring Morro Bay Wastewater to Los Osos WWRF

Similar to staff's last update, it was determined that both summer and winter peak day flows at the City of Morro Bay are expected to exceed the available capacity in the Los Osos Wastewater Reclamation Facility, and therefore an expansion would be required to accommodate the higher flows. A number of peak day flows of over 3 mgd have been observed at the existing Morro Bay facility. Additional information on the Morro Bay project can be found

here: http://morrobaywrf.com/. BMC Staff recently reached out to City staff to continue dialogue as requested at the June BMC meeting.

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **August 30, 2018**

SUBJECT: **Item 7A. – Update on Status of Basin Plan Infrastructure Projects**

Recommendations
Receive report and provide input to staff for future action.

Discussion
The Basin Management Plan for the Los Osos Groundwater Basin (Plan) was approved by the Court in October 2015. The Plan provided a list of projects that comprise the Basin Infrastructure Program (Program) that were put forth to address the following immediate and continuing goals:

Immediate Goals

1. Halt or, to the extent possible, reverse seawater intrusion into the Basin.
2. Provide sustainable water supplies for existing residential, commercial, community and agricultural development overlying the Basin.

Continuing Goals

1. Establish a strategy for maximizing the reasonable and beneficial use of Basin water resources.
2. Provide sustainable water supplies for future development within Los Osos, consistent with local land use planning policies.
3. Allocate costs equitably among all parties who benefit from the Basin's water resources, assessing special and general benefits.

The Program is divided into four parts, designated Programs A through D. Programs A and B shift groundwater production from the Lower Aquifer to the Upper Aquifer, and Programs C and D shift production within the Lower Aquifer from the Western Area to the Central and Eastern Areas, respectively. Program M was also established in the Basin Management Plan for the development of a Groundwater Monitoring Program (See Chapter 7 of the BMP), and a new lower aquifer monitoring well in the Cuesta by the Sea area was recommended in the 2015 Annual Report. The following Table provides an overview of status of the Projects that are currently moving forward or have been completed.

As indicated in the July 2017 BMC meeting, the LOCSD has implemented new water rates intended to provide net revenue for capital funding over the next three fiscal years as follows:

- FY 18/19: $700,000
- FY 19/20: $900,000

These rates will be sufficient to fully fund the District's portion of all Program A and C projects, either using debt service or pay-as-you-go. The need for Expansion Well No. 3 is covered under Agenda Item 7b.

Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program A				
Water Systems Interconnection	LOCSD/ GSWC	Completed		
Upper Aquifer Well (8th Street)	LOCSD	Fully Funded	$250,000	Well was drilled and cased in December 2016. Budget remaining $250,000 to equip the well. Design is 90% complete and District is pursuing IRWM matching funds. If available, it is hoped that matching funds will be available by Q1 of 2019. Completion of construction is expected by August, 2019.
South Bay Well Nitrate Removal	LOCSD	Completed		
Palisades Well Modifications	LOCSD	Completed		
Blending Project (Skyline Well)	GSWC	Fully Funded	Previously funded through rate case	No change since last update: The Rosina Nitrate Unit was brought on-line on October 9, 2017, and it is currently producing 160 gallons per minute of treated water.
Water Meters	S&T	Completed		
Program B				
LOCSD Wells	LOCSD	Not Funded	BMP: $2.7 mil	Project not initiated
GSWC Wells	GSWC	Not Funded	BMP: $3.2 mil	Project not initiated
Community Nitrate Removal Facility	LOCSD/GSWC	Partial	First phase combined with GSWC Program A	GSWC's Program A Blending Project allows for incremental expansion of the nitrate facility and can be considered a first phase in Program B.
Program C				
Expansion Well No. 1 (Los Olivos)	GSWC	Completed		

Project Name	Parties Involved	Funding Status	Capital Cost	Status
Expansion Well No. 2	GSWC/LOCSD	Cooperative Funding	BMP: $2.0 mil	Property acquisition phase is on-going through efforts of LOCSD. Four sites are currently being reviewed and a community workshop is scheduled for the evening of 8/30/2018. Due to community concerns over siting, environmental review and permitting is expected to be on going through Q3 of 2019, with construction complete by Q4 of 2020.
Expansion Well 3 and LOVR Water Main Upgrade	GSWC/LOCSD	Cooperative Funding	BMP: $1.6 mil	See agenda Item 7b – this project may be deferred under Adaptive Management.
LOVR Water Main Upgrade	GSWC	May be deferred	BMP: $1.53 mil	Project may not be required, depending on the pumping capacity of the drilled Program C wells. It may be deferred to Program D.
S&T/GSWC Interconnection	S&T/ GSWC	Pending	BMP: $30,000	Conceptual design
Program M				
New Zone D/E lower aquifer monitoring well in Cuesta by the Sea	All Parties	Funded through BMC Budget	$115,000 (2018 BMC Budget Item 9)	A wetlands delineation was completed in July 2018 and environmental permitting will be on-going through Q1 of 2019. A minor use permit will be required based on discussions with County staff. Construction is expected in Q2 of 2019.

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **August 30, 2018**

SUBJECT: **Item 7b – Discussion of CHG Report on Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation**

Recommendation
Receive draft report and provide input to staff for future action.

Discussion
In March 2018, the BMC retained Cleath Harris Geologists (CHG) to prepare a study evaluating Basin Infrastructure Program C in the context of current water demand and basin metrics. The draft results of this study are presented in the attached technical memorandum for BMC review and input. The study concludes that one additional Program C well is recommended for current development, and that the third expansion well can be deferred. Staff will provide an overview of the technical memo for the BMC and public at the meeting.

Cleath-Harris Geologists, Inc.
71 Zaca Lane, Suite 140
San Luis Obispo, CA 93401
(805) 543-1413

Technical Memorandum

Date: August 17, 2018

From: Spencer Harris, HG 633

To: Rob Miller, P.E., Interim Executive Director
Los Osos Groundwater Basin Management Committee

SUBJECT: Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation (DRAFT).

Dear Mr. Miller:

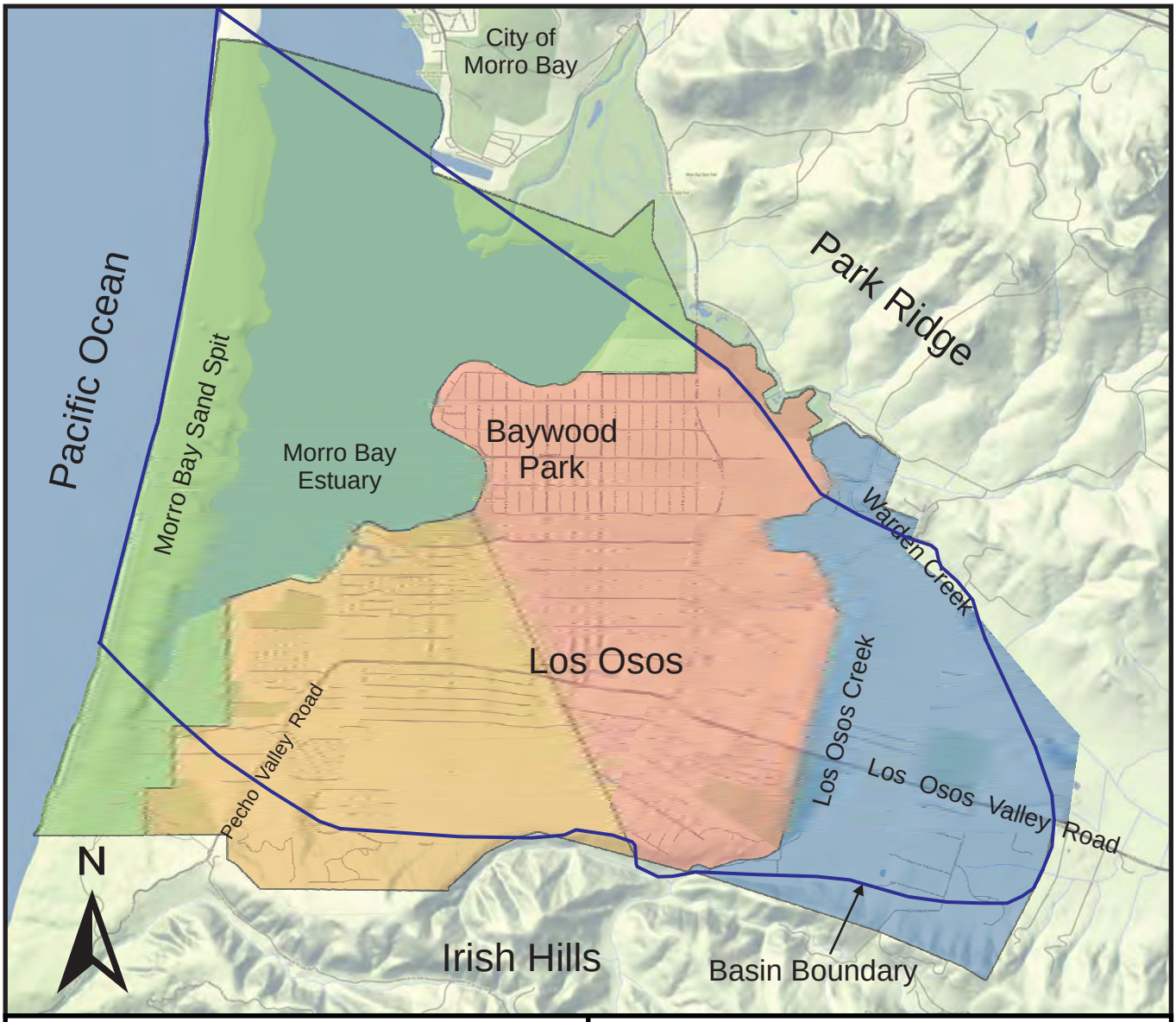
Cleath-Harris Geologists (CHG) has performed a metric trends review and basin infrastructure Program C evaluation as part of adaptive management for 2018. The purpose of this effort was to provide the Los Osos Basin Management Committee (BMC) with information and recommendations for making adjustments to the Los Osos Basin Plan (LOBP), as appropriate, based on a comparison of current basin metric trends with the anticipated trends, along with an evaluation of Program C using an updated existing population scenario. This memorandum presents the results of the adaptive management review.

Background

BMC members include water purveyors Golden State Water Company (GSWC), Los Osos Community Services District (LOCSD), and S&T Mutual Water Company, along with the County of San Luis Obispo. The basin refers to the adjudicated portion of the Los Osos Valley Groundwater Basin (DWR Basin 3-8), for which a Stipulated Judgment and the LOBP were approved by the San Luis Obispo Superior Court in October 2015. Figure 1 shows the basin and associated plan area boundaries. A brief overview of Program C and the basin metrics is provided below.

Basin Infrastructure Program C

Program C includes a set of infrastructure improvements that would allow the water purveyors to shift some groundwater production within the Lower Aquifer from the Western Area to the Central Area (Figure 1). Groundwater production from the Central Area generally results in less seawater intrusion than the same amount of production from the Western Area, which increases the sustainable yield of the Basin. Program C consists of three Expansion Wells located on the eastern side of the Central Area and associated pipelines. Implementation of Program C would have a direct, beneficial impact on mitigating seawater intrusion. (LOBP; ISJ, 2015).



Base Image: Stamen-Terrain

Explanation

Los Osos Basin Plan Areas:

- Dunes and Bay Area
- Western Area
- Central Area
- Eastern Area

Basin Boundary from Los Osos Basin Plan

0 2000 4000 6000 8000 ft

Scale: 1 inch ≈ 4,000 feet

Figure 1
Basin Location and Plan Areas
Los Osos Groundwater Basin
2018 Adaptive Management TM

Cleath-Harris Geologists

General areas for the Program C Expansion Wells were described in the LOBP. These areas, with some adjustments noted below, are shown in Figure 2.

Expansion Well No. 1 Area - Vicinity of the mobile home parks south of Los Osos Valley Road in the GSWC service area.

Expansion Well No. 2 (COMPLETED) - Originally planned in the vicinity of Buckskin Avenue north of Los Osos Valley Road and within the GSWC service area. GSWC relocated Expansion Well No. 2 to Los Olivos Avenue, and constructed a new Lower Aquifer well there in 2016.

Expansion Well No. 3 Area - Vicinity of north end of Sage Avenue east of the LOCSD service area. The area also includes a site currently under consideration in the south parking lot of the Los Osos Middle School play fields.

Expansion Well No. 4 Area - Vicinity of Andre Avenue and Buckskin Avenue in the GSWC service area, similar to the original area for Expansion Well No. 2.

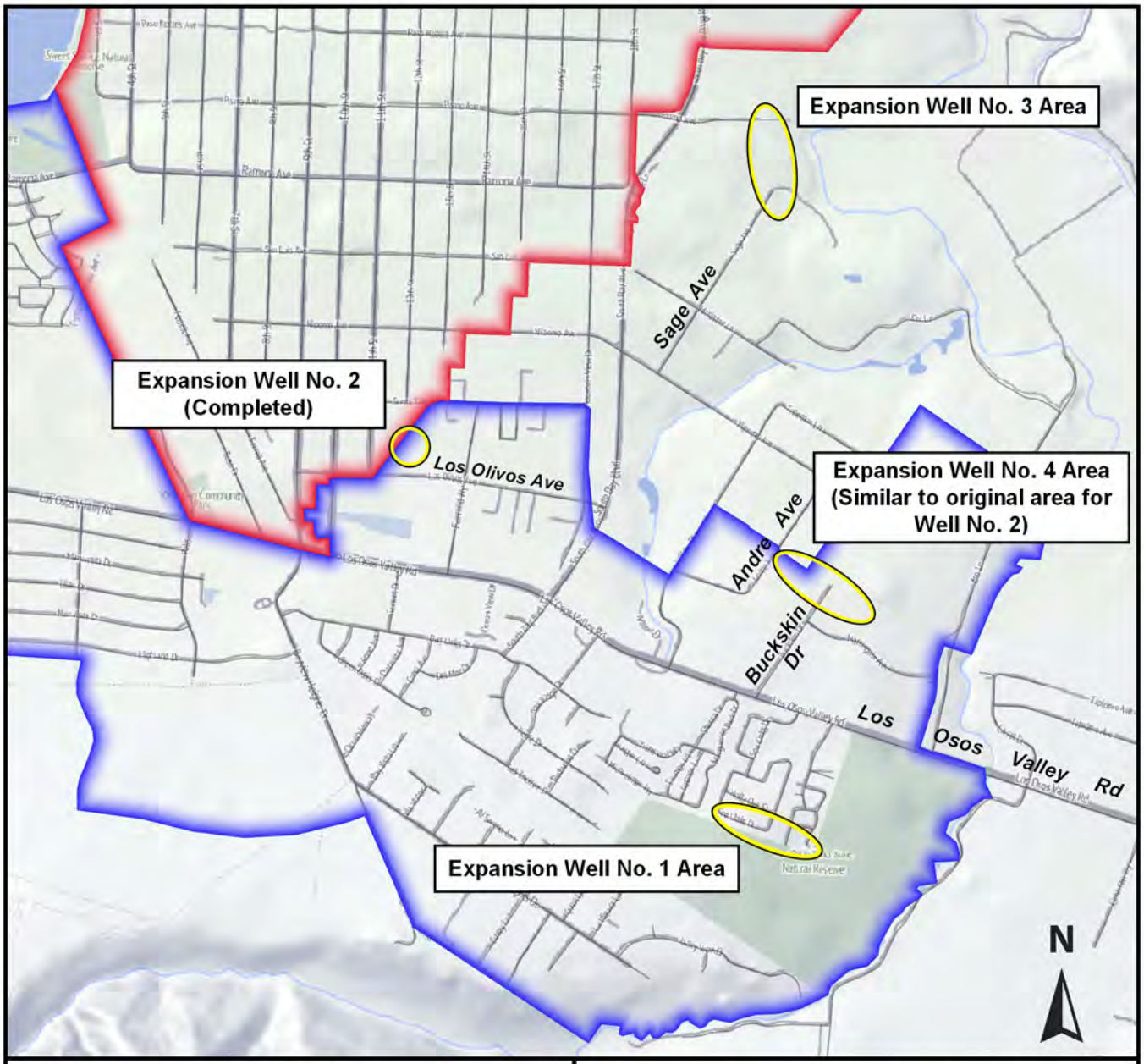
The Program C evaluation for adaptive management considers whether additional Expansion Wells are needed, under current basin water demand, to achieve both a Basin Yield Metric targeted value of 80 (BYM 80) or lower, and a distribution of pumping that maintains a stationary seawater intrusion front. The seawater intrusion front for the basin is defined as the 250 mg/L chloride concentration contour.

Basin Metrics

The LOBP established two methods for measuring progress on seawater intrusion mitigation, one based on comparing annual groundwater extractions with the estimated sustainable yield of the basin as calculated by the basin numerical groundwater model, and one based on evaluating water level and water quality data from the Groundwater Monitoring Program. The first method involves the Basin Yield Metric and the Basin Development Metric, while the latter method involves the Water Level Metric, The Chloride Metric, and the Nitrate Metric. A fourth monitoring-based measure, the Water Level Profile, was introduced in the 2017 Annual Groundwater Monitoring Report (CHG, 2018).

The metrics based on groundwater extractions are management tools. The Basin Yield Metric is used for comparing different infrastructure and pumping distribution combinations with respect to seawater intrusion mitigation and sustainable yield. The Basin Development Metric is a representation of the percentage of the Basin's maximum potential sustainable yield that has been developed, and is useful for identifying infrastructure programs needed to meet current and future water demands.

Only the Basin Yield Metric has a nexus with some of the physical metrics based on groundwater monitoring data. Both the Water Level Metric and the Chloride Metric are measures of effectiveness for Lower Aquifer seawater intrusion mitigation, and can be correlated



Base Image: Stamen-Terrain

0 750 1500 2250 3000 ft

Scale: 1 inch ≈ 1,500 feet

Explanation

Expansion Well Areas

Water Systems

Golden State Water Company - Los Osos

Los Osos CSD

Figure 2
Program C Potential Well Locations
Los Osos Groundwater Basin
2018 Adaptive Management TM

Cleath-Harris Geologists

to changes in the Basin Yield Metric. The Basin Development Metric tracks infrastructure program development relative to maximum potential sustainable yield, which does not correlate in real time with changes in groundwater monitoring data.

There is no also correlation between the Basin Yield Metric and the Nitrate Metric. Sustainable yield in the basin is constrained primarily by the need to prevent Lower Aquifer seawater intrusion. Nitrate concentrations in the Upper Aquifer play a major role in basin infrastructure, and are the primary focus of Program B, but the Nitrate Metric itself is independent of Lower Aquifer seawater intrusion mitigation.

Basin Metric Trends Review

Trends in the basin metrics are indicators of whether basin conditions are improving or deteriorating over time, and can be compared to anticipated trendlines for adaptive management. Metric trends from the 2017 Annual Groundwater Monitoring Report are included in Attachment A. Anticipated trendlines for the Water Level Metric, Chloride Metric and Nitrate Metric from the LOBP are included in Attachment B. Note that actual basin metric trends are not expected to follow straight lines, but the trendlines shown in Attachment B are useful to depict the general nature of the anticipated trends.

Basin Yield Metric and Water Level Metric

A comparison between Basin Yield Metric and Water Level Metric trends over time is shown in Figure 3. The Basin Yield Metric compares the actual amount of groundwater extracted in a given year with the sustainable yield of the basin under then-current conditions. For example, the Basin Yield Metric for 2017 is a ratio expressed as follows:

$$\frac{\text{Year 2017 Groundwater Production}}{\text{Year 2017 Sustainable Yield}} * 100$$

A Basin Yield Metric of 100 (BYM 100) indicates that production is equal to the estimated sustainable yield. The LOBP established the Basin Yield Metric target at 80 (BYM 80) or less, so that at least 20 percent of the yield of the basin can be used as a buffer against uncertainty.

As shown in Figure 3, the Basin Yield Metric and the Water Level Metric are closely correlated due to the relationship between groundwater production and water levels. Between 1973 and 1988, a relatively sharp increase in the Basin Yield Metric (and associated groundwater production) is accompanied by a sharp decrease in the Water Level Metric. The trends for both metrics are reversed between 1989 and 2009, with flatter trendline slopes. Between 2009 and 2017 there was a relatively sharp decrease in the Basin Yield Metric (and associated groundwater production), accompanied by a sharp increase in the Water Level Metric.

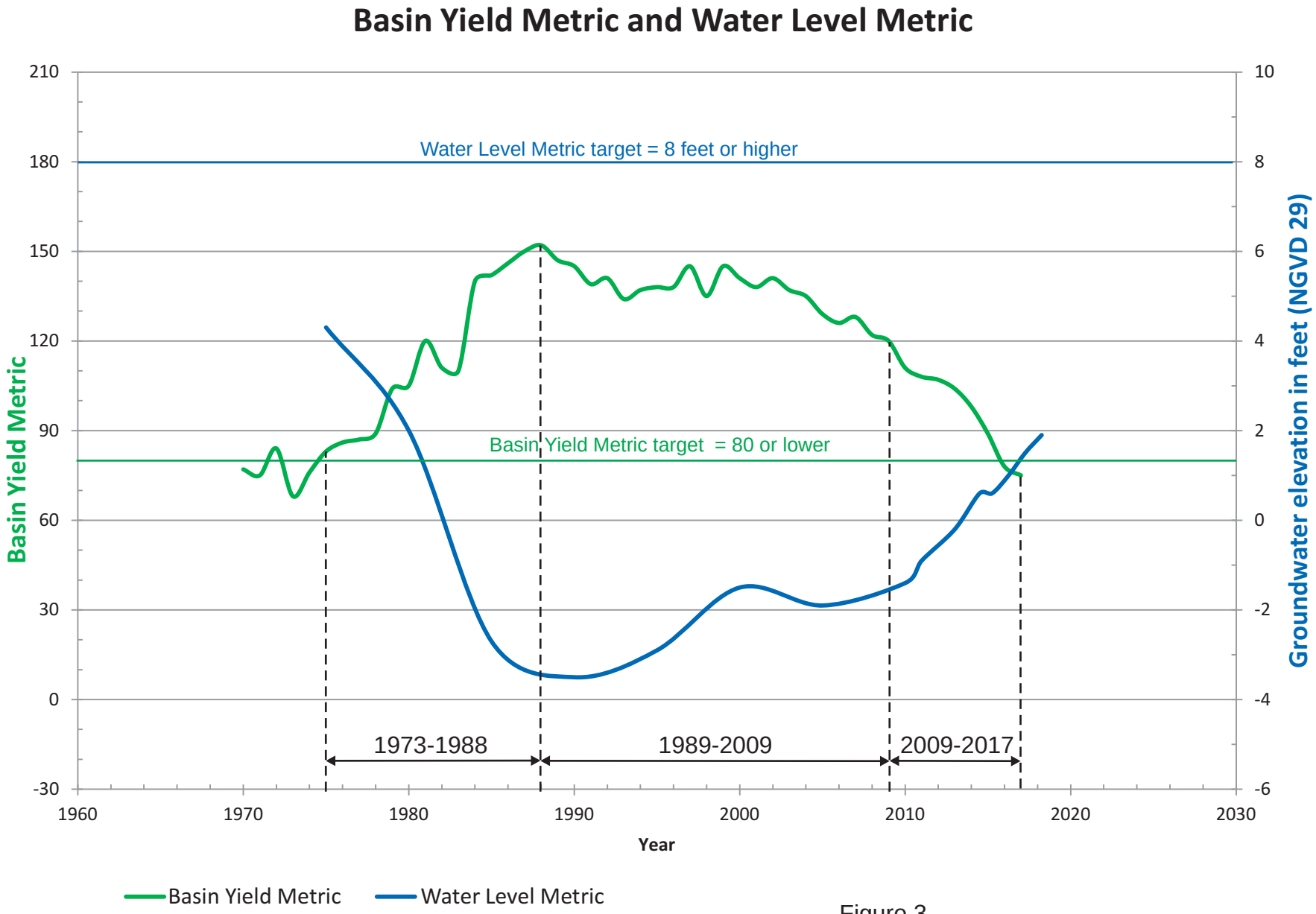


Figure 3
Basin Yield Metric and Water Level Metric
Los Osos Groundwater Basin
2018 Adaptive Management TM

Cleath-Harris Geologists

The anticipated trendline for the Water Level Metric was rising to reach the targeted value of 8 feet above mean sea level within approximately 10 years of achieving the targeted Basin Yield Metric value (LOBP, 2015; Attachment B). The current Water Level Metric trend direction is consistent with the anticipated trend, although the timeline for reaching the target is extended. In Spring 2018, the Water Level Metric measured 1.9 feet elevation, compared to 1.5 feet elevation in Spring 2017 (NGVD 29 datum). If the metric continues to rise at the current rate of approximately 0.4 feet per year, the target threshold of 8 feet above sea mean sea would be reached in 2033, or approximately 18 years after achieving BYM 80.

In 2016, adjustments were made to some of the Water Level Metric well reference point elevations, along with removal of the density correction for water levels on the sandspit, which lowered the Water Level Metric compared to prior calculations. Reevaluation of the metric target is recommended following confirmation of reference point elevations by a licensed surveyor (CHG, 2018).

Basin Yield Metric and Chloride Metric

A comparison between Basin Yield Metric and Chloride Level Metric trends over time is shown in Figure 4. There is a correlation between these two metrics, although it is not as straightforward, compared to the Water Level Metric correlation.

Sustainable yield is the denominator for the Basin Yield Metric calculation. Estimates of sustainable yield are provided by the Basin Model, and are the maximum amount of groundwater that may be extracted from the basin while maintaining a stationary seawater intrusion front, and with no active well producing water with chloride concentrations above 250 milligrams per liter.

If the Basin Yield Metric is above 100, then production exceeds sustainable yield (an overdraft condition), the Chloride Metric rises, and seawater intrusion is projected by the Basin Model to advance inland and impact active drinking water wells. A Basin Yield Metric below 100, however, does not necessarily indicate a sustainable condition, as the distribution of pumping also affects movement of the seawater intrusion front. In other words, the same annual volume of groundwater may be pumped from different aquifers in different locations and would result in the same Basin Yield Metric value for that year, but would not necessarily be equally sustainable.

By 1979, the Basin Yield Metric had exceeded 100, but the Chloride Metric did not respond until almost two decades later, beginning to rise between 1995 and 2000. The reason for the delay is interpreted to be due to the travel time required for seawater intrusion precursors (including steadily increasing chloride concentrations) to reach the metric wells.

The anticipated trendline for the Chloride Metric was a continued rise in the metric up to approximately 220 mg/L chloride, followed by decline, reaching the targeted value of 100 mg/L chloride within approximately 30 years of achieving the targeted Basin Yield Metric value (LOBP, 2015; Attachment B). The current Chloride Metric trend direction is consistent with the

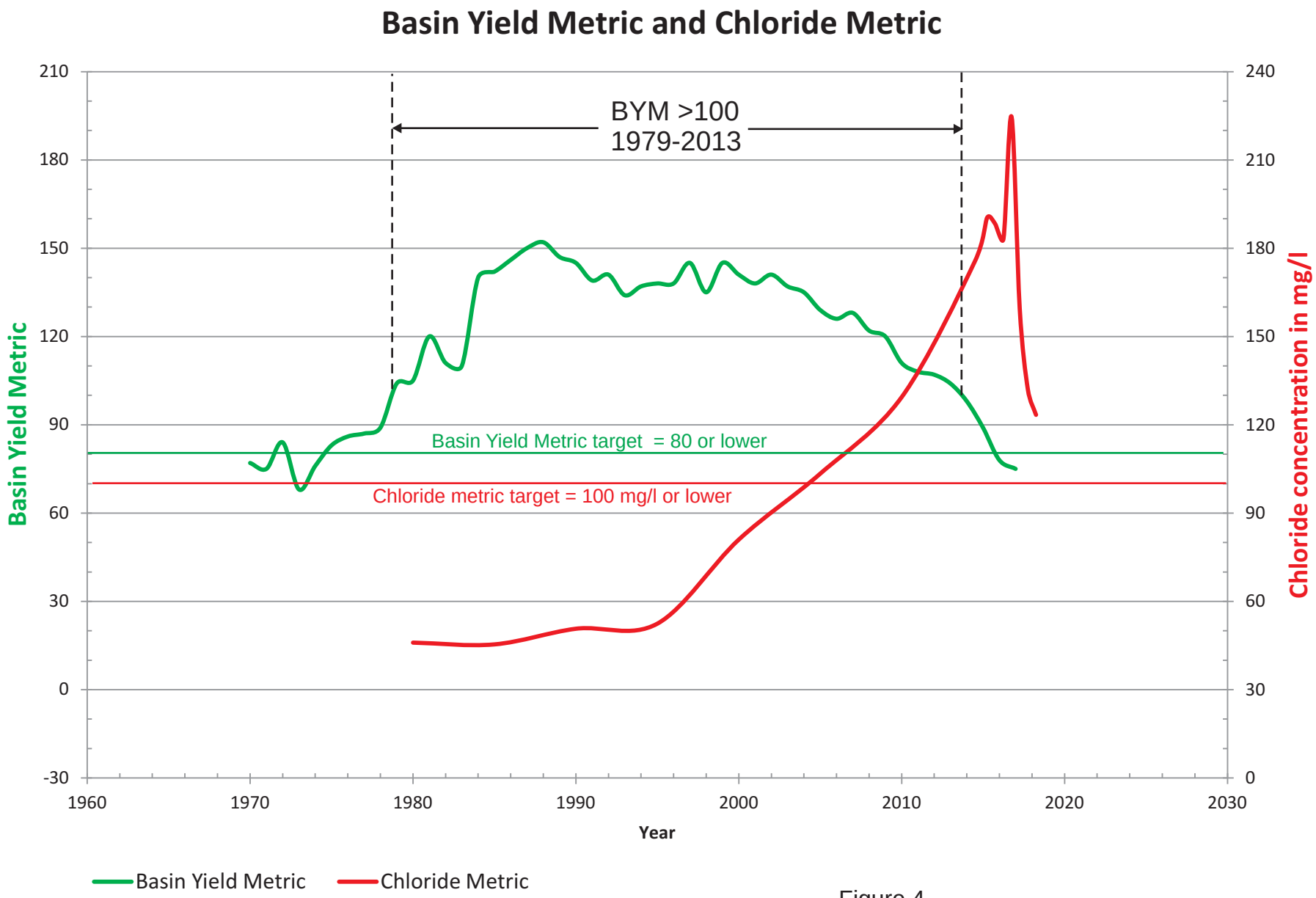


Figure 4
Basin Yield Metric and Chloride Metric
Los Osos Groundwater Basin
2018 Adaptive Management TM

Cleath-Harris Geologists

anticipated trendline, although the timeline for reaching the target is reduced. Chloride Metric values reached a maximum of 225 mg/L chloride in 2016, and have declining to 123 mg/L chloride through Spring 2018. If the metric continues to decline at the current rate of approximately 30 mg/L per year, the targeted value of 100 mg/L chloride or lower would be reached by 2019, approximately 4 years after the Basin Yield Metric moved below the targeted value of BYM 80.

A portion of the recent decline in the Chloride Metric is interpreted to be influenced by wellbore flow from the Upper Aquifer at one of the metric wells, although the majority of chloride concentration decline at the well appears to be occurring in the Lower Aquifer. Further evaluation of Upper Aquifer influence on the Chloride Metric is recommended as new data becomes available (CHG, 2018).

Nitrate Metric

Nitrate Metric trends through 2017 are shown in Figure 22 of the 2017 Annual Groundwater Monitoring Report (Attachment A). The five-year average for metric values increased by approximately 7 mg/L nitrate-nitrogen (NO_3-N) between 2002-2006 and 2013-2017. Individual year metric values reached 32 mg/L NO_3-N in 2017, over three times the Maximum Contaminant Level of 10 mg/L (the drinking water standard).

Elevated Nitrate concentrations in the urban area are attributable to historical wastewater discharges to high-density septic systems (LOBP, 2015), which are now conveyed to the Los Osos Wastewater Recycling Facility (LOWRF) for treatment and disposal. Recycled water being delivered to community leach field disposal sites from LOWRF contains approximately 2 mg/L total nitrogen, based on a 30-day average concentration reported for September 2017 (CHG, 2018).

The anticipated trendline for the Nitrate Metric was for values to remain stable through 2020, followed by a gradual decline, and reaching the targeted metric value of 10 mg/L by 2050 (Attachment B). The current Nitrate Metric trend is inconsistent with the anticipated trend, although a shift in the nitrate monitoring schedule may have influenced the 2016 and 2017 Nitrate Metric results and increased the metric compared to prior years (CHG, 2018).

Nitrate removal systems are in place at two locations, and provisions for additional nitrate removal capacity are planned during Upper Aquifer development under Program B. More time appears to be needed for observing the effects of decreased nitrate loading to the basin under current conditions with the Los Osos Wastewater Project completed.

Infrastructure Program C Evaluation

The Program C evaluation for adaptive management considers whether additional Expansion Wells under LOBP Program C are needed, under current basin water demand, to achieve both a

Basin Yield Metric target value of 80 (BYM 80) or lower, and a distribution of pumping that maintains a stationary seawater intrusion front. Program C calls for three expansion wells to be constructed to meet the LOBP goals of halting seawater intrusion and providing a sustainable water supply under the existing population scenario. Basin water demand for the existing population scenario was originally estimated at 2,230 AFY (Table 46 of the LOBP; ISJ, 2015). The updated existing population scenario assumes a water demand of 2,070 AFY, based on the estimated basin water use in 2017 (CHG, 2018).

2017 Basin Yield Metric

Water supply infrastructure at year-end 2017 included the following LOBP elements:

- Los Osos Wastewater Project
- Urban Water Reinvestment Program (U)
- Infrastructure Program A
- Partial completion of infrastructure Program C

The sustainable yield of program combination U+A is 2,650 acre-feet per year (AFY), as reported in Table 43 of the LOBP (ISJ, 2015). Program C was partially completed in 2016 with the construction of Expansion Well No. 2 by GSWC at Los Olivos Avenue (Figure 2). The contribution of Program C to basin sustainable yield is the difference between the yield of program combination U+A (2,650 AFY) and program combination U+AC (3,000 AFY), which is 350 AFY. Close to one-third, or an estimated 110 AFY of the sustainable yield contribution from Program C was developed in 2016, bringing the total estimated sustainable yield for year-end 2017 conditions to 2,760 AFY (CHG, 2017; 2018).

Groundwater production in 2017 was estimated at 2,070 acre-feet, including 1,050 acre-feet of community purveyor production and 1,020 acre-feet of other production (golf course, community park, memorial park, non-purveyor domestic, and agriculture). The corresponding Basin Yield Metric for 2017 was 75, which met the LOBP target of BMY 80 or less for the second consecutive year (CHG, 2018).

Program C Evaluation

Basin Model results indicate no additional Expansion Wells would be required under the existing population scenario, based on the current basin water demand of 2,070 AFY, to achieve both a Basin Yield Metric targeted value of 80 (BYM 80) and a stationary seawater intrusion front. The current 2017 Basin Yield Metric is 75, which meets the targeted value. A stationary seawater front can also be maintained with the existing Expansion Well, assuming long-term precipitation averages 17.5 inches per year.

There are other factors, however, which support construction of an additional Program C Expansion Well. These include water system reliability, drought impacts, and recycled water distribution.

Water System Reliability

Each purveyor well has a maximum annual production potential, based on historical performance and pumping tests. Nine of the 14 active purveyor wells are simulated to be pumping at maximum capacity in the Basin Model under the sustainable yield scenario for 2017 conditions. Some of the wells may need rehabilitation and other water system improvements may be required to provide the maximum capacity assumed in sustainable yield scenarios. For example, the LOCSD South Bay site has two supply wells, but needs a larger diameter water main to convey the full capacity that the two wells are capable of. Municipal supply wells will also eventually require replacement, and not all of the well sites may be suitable for drilling a new well, such as the LOCSD 3rd Street site. A second Expansion Well would provide greater system redundancy and flexibility for adjusting the pumping distribution, should any of the existing wells lose full capacity.

Drought Impacts

The recent exceptional drought (2012-2016) demonstrated that seawater intrusion can occur with a basin yield metric below BYM 100. The Chloride Metric continued to increase overall between 2012 and 2016, despite the Basin Yield Metric dropping below 100 in 2013, and below 80 in 2016 (Figure 4). Similar to the water reliability benefit, a second Expansion Well would provide greater flexibility for adjusting the pumping distribution, should any of the wells become temporarily impacted by seawater intrusion during exceptional drought.

Recycled Water Distribution

Recycled water flow from the Los Osos Water Recycling Facility (LOWRF) is estimated to be 580 AFY under the updated existing population scenario, which is 200 AFY less than anticipated (LOBP Table 32; ISJ, 2015). As a result, there is currently insufficient recycled water for all the reuse projects identified in the Urban Water Reinvestment Program.

Evaluation of seawater intrusion mitigation during prior studies have ranked various recycled water uses in terms of seawater intrusion mitigation and associated basin sustainable yield (Carollo Engineers, 2007; CHG, 2014). The ranking, from highest level of mitigation to lowest, is summarized as follows:

1) Urban reuse or agricultural exchange (equal benefit)
2) Broderson community leachfield
3) Agricultural reuse with in-lieu recharge (Eastern Area)
4) Los Osos Creek recharge
5) Agricultural reuse without exchange or in-lieu recharge (Eastern Area)
6) Spray fields or agricultural reuse out of Basin.

Agricultural exchange involves offsetting agricultural pumping with recycled water, combined with an equal amount of pumping from infrastructure Program D wells (Los Osos Creek valley

wells; not currently being considered). Agricultural reuse with in-lieu recharge is just offsetting agricultural pumping with recycled water use, without Program D wells.

Program C wells can improve the potential seawater intrusion mitigation benefit and purveyor yield from agricultural reuse with in-lieu recharge. For example, with the 2017 infrastructure in place, shifting recycled water from Broderson leachfield disposal to agricultural reuse with in-lieu recharge results in an estimated loss in purveyor yield of approximately 30 percent of the amount shifted. With a new Program C well, the loss in purveyor yield is reduced to an estimated 10 percent of the amount shifted. A new Program C well increases the ability of purveyors to capture any future in-lieu recharge occurring in the Los Osos Creek Valley.

Pumping Distribution and Basin Yield under Program C

The Basin Model is a tool to assist with the understanding of basin dynamics and to compare different pumping distributions for maximizing yield while mitigating seawater intrusion. General guidelines for optimizing the pumping distribution include the following:

- Maximize Upper Aquifer production (nitrate removal or blending may be required). Implementing infrastructure Program B meets this guideline.

- Shift Lower Aquifer production away from the coast. Implementing Program C meets this guideline.

The basin sustainable yield with three Program C wells completed was estimated at 3,000 AFY (ISJ, 2015). With Expansion Well No. 2 completed, the estimated sustainable yield for 2017 is 2,760 AFY (CHG, 2018). The Basin Model has been used to estimate the increased sustainable yield for each of the potential Program C wells, as shown in Table 1.

Table 1 - Program C Sustainable Yield Estimates

Program C Description	Estimated Sustainable Yield	Increase over 2017
	Acre-Feet per Year	
2017 Infrastructure (Expansion Well No. 2)	2,760	0
Add Expansion Well No. 1	2,950	190
Add Expansion Well No. 3	2,850	90
Add Expansion Well No. 4	2,900	140
Maximum for Program C (add two wells)	3,000	240

As shown in Table 1, Expansion Well No. 1 would potentially add the greatest amount of sustainable yield (190 AFY), followed by Expansion Well No. 4 (140 AFY), and Expansion Well No. 1 (90 AFY). A combination of two new Expansion Wells (Well No. 1 with Well No. 4 or Well No.1 with Well No. 3) would potentially add an estimated 240 AFY.

Conclusions and Recommendations

The following conclusions were reached during the basin metric review and Program C evaluation:

- Expectations are generally being met when comparing Water Level Metric and Chloride Metric trends to the anticipated trends. Both metrics are trending in the direction of improvement, as anticipated. The Water Level Metric trend is projected to reach the targeted value later than anticipated, however, while the Chloride Metric is anticipated to reach the targeted value sooner than anticipated.

- Expectations are not being met when comparing the Nitrate Metric trend to the anticipated trend. The Nitrate Metric is not improving, but is deteriorating.

- No additional Program C wells are needed under the updated existing population scenario to achieve a Basin Yield Metric below 80 and a distribution of pumping that maintains a stationary seawater intrusion front. There are other considerations, however, that would support adding one additional Program C well, including water system reliability, drought protection, and recycled water reuse.

- The potential increases in estimated sustainable yield from the addition of one new Program C well are 90 AFY for Expansion Well No. 3, 140 AFY for Expansion Well No. 4, and 190 AFY for Expansion Well No. 1. The addition of two new Program C wells could potentially add an estimated 240 AFY of sustainable yield.

The following adaptive management recommendations are based on the above conclusions:

- No adjustments to the LOBP are recommended in response to the metric trends review. Although the Nitrate Metric is not meeting expectations, nitrate removal systems are in place and there are provisions for additional nitrate removal for Upper Aquifer development under Program B. It is also too early to observe the effects of decreased nitrate loading to the basin under Los Osos Wastewater Project conditions.

- A reduction in infrastructure Program C from three Expansion Wells to two Expansion Wells is recommended to meet LOBP objectives for the updated existing population scenario. One of the Expansion Wells has been completed, so only one additional well would be needed, rather than two more per the current LOBP.

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https://www.losososcsd.org/files/1d22a4813/Item+3+DRAFT+Technical+Memo+-+Recycled+Water+Discharges+to+Los+Osos+Creek.pdf

Cleath-Harris Geologists, 2017, Basin Yield Metric Response to reduced long-term precipitation in the Los Osos Groundwater Basin, Technical Memorandum prepared for the Los Osos Groundwater Basin Management Committee and Morro Bay National Estuary program, March 3, 2017.
http://www.slocountywater.org/site/Water%20Resources/LosOsos/pdf/TM%20Basin%20Yield%20Metric%20Los%20Osos%20GW%20Basin%2020170303.pdf

Cleath-Harris Geologists, 2018, Los Osos Basin Plan, Groundwater Monitoring Program 2016 Annual Monitoring Report, prepared for the Los Osos Groundwater Basin Management Committee, June 2018.
http://www.slocountywater.org/site/Water%20Resources/LosOsos/pdf/2017%20Annual%20Report%20Final.pdf

ISJ Group, 2015, Updated Basin Plan for the Los Osos Groundwater Basin, January 2015.
http://www.slocountywater.org/site/Water%20Resources/LosOsos/pdf/Los%20Osos%20Groundwater%20Basin%20Plan%20January%202016.pdf

ATTACHEMENTS

ATTACHMENT A:

Basin Metric Trends
2017 Annual Groundwater Monitoring Report

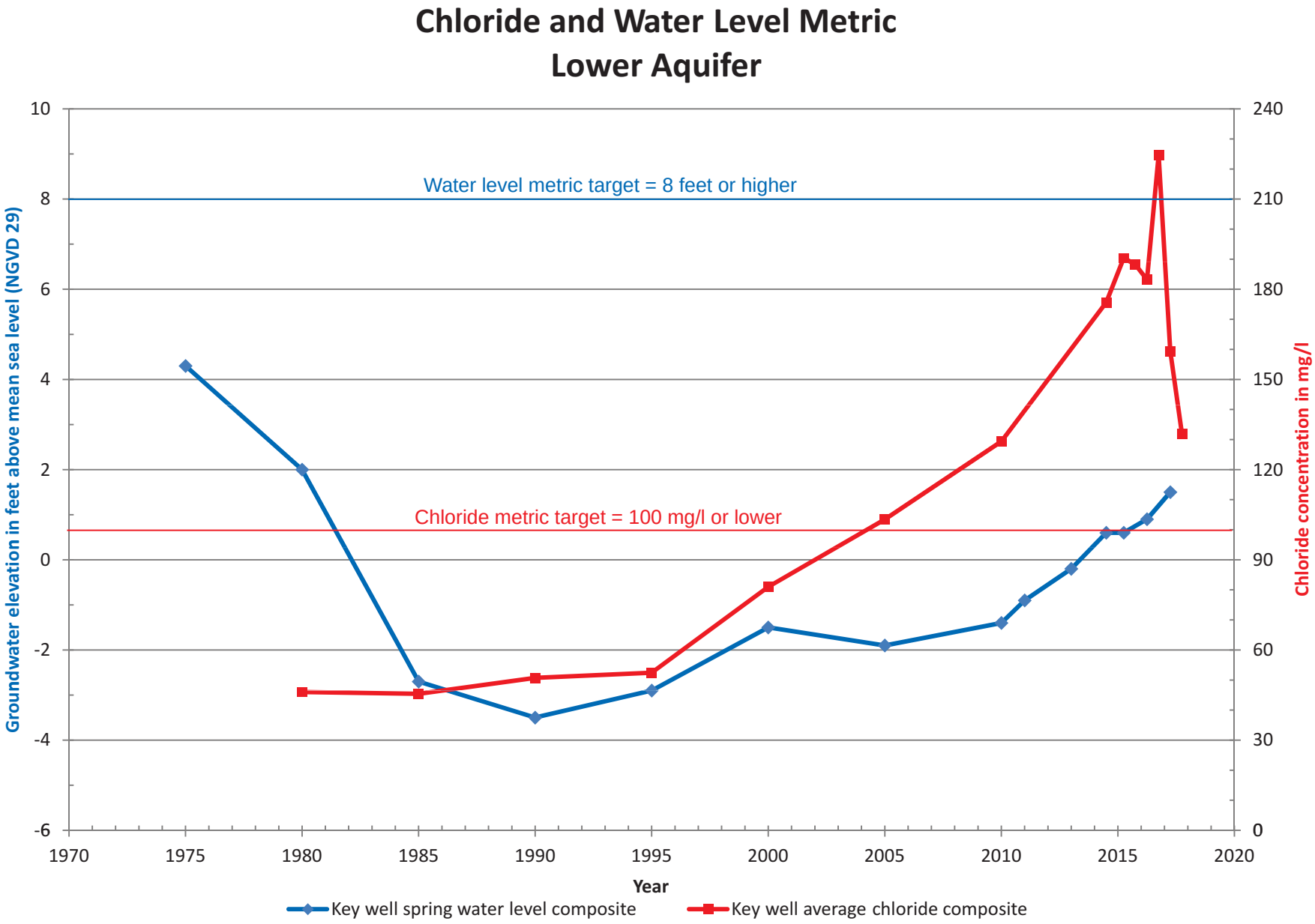
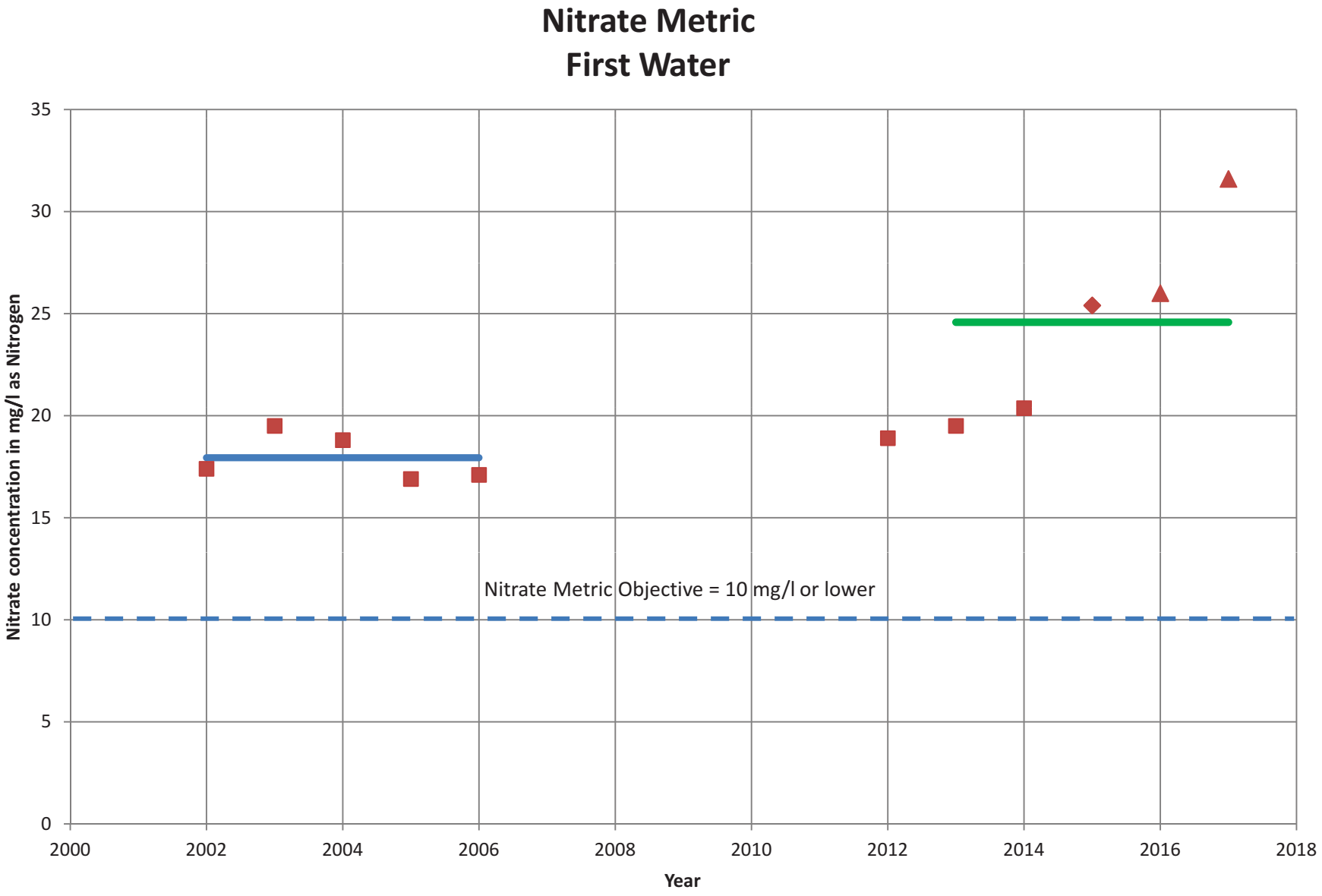


Figure 21
Chloride and Water Level Metric
Los Osos Groundwater Basin
2017 Annual Report

Cleath-Harris Geologists

Reference: 2017 Annual Groundwater Monitoring Report (CHG, 2018)



NOTE: Nitrate metric plots for 2013 and 2014 corrected to apply January 2014 data set to Winter 2013 season.

Figure 22
Nitrate Metric
Los Osos Groundwater Basin
2017 Annual Report

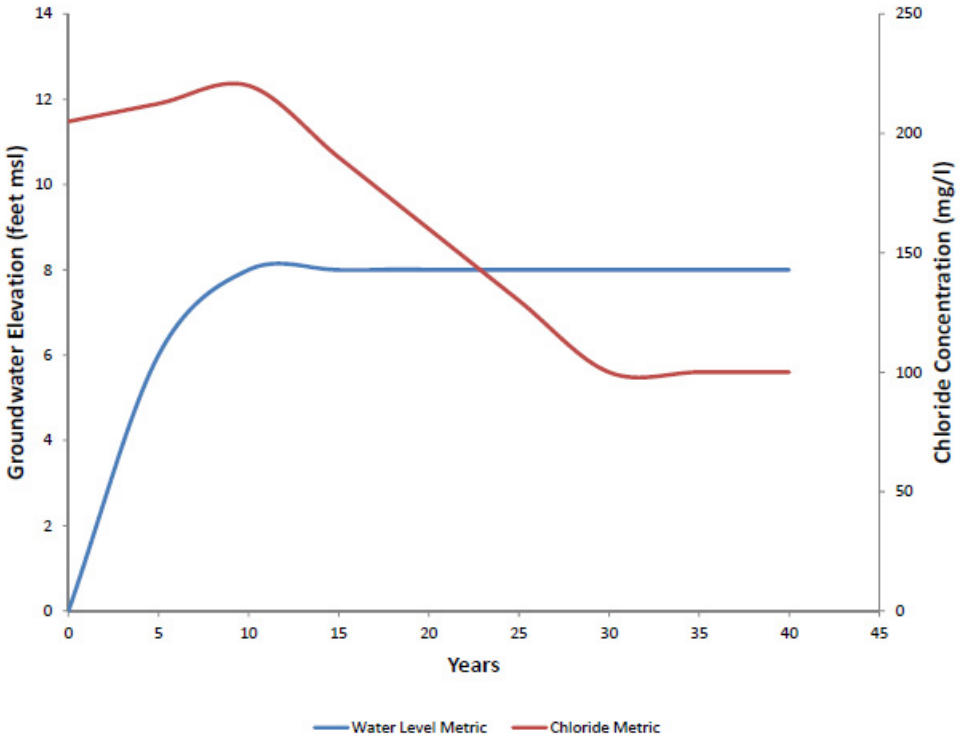
Cleath-Harris Geologists

Reference: 2017 Annual Groundwater Monitoring Report (CHG, 2018)

ATTACHMENT B

Anticipated Metric Trends
2015 Los Osos Groundwater Basin Plan Update

Figure 37. Water Level and Chloride Metric Target Trendlines



Based on the actions recommended in this Basin Plan, the Model predicts that the freshwater-seawater interface will be pushed seaward from its current location to that shown in Figure 38. As seen on that map, a Basin Yield Metric of 100 would maintain seawater intrusion (250 mg/l) at an equilibrium line underneath the landed portion of the Basin. This Basin Plan does not recommend allowing seawater intrusion to remain in the Basin to that extent, but rather to reverse the present location of seawater in the Basin (see Figure 26) to a position further seaward. In order to attain seawater intrusion at the seaward position, the Parties would need to achieve a Basin Yield Metric of 80 or below. Maintaining a buffer of 20 percent would shift seawater intrusion to a more favorable location than simply achieving a Basin Yield Metric of 100.

6.4 The Challenge of Uncertainty

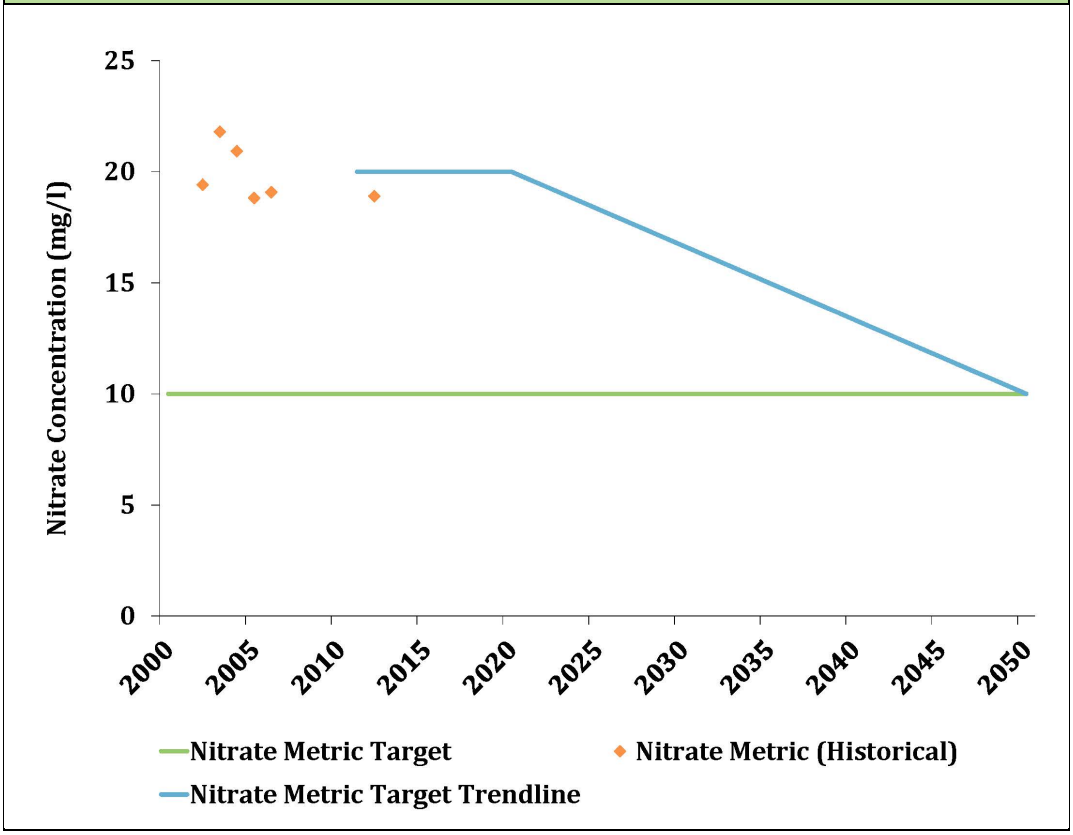
The prior sections of this chapter have addressed the two greatest threats to the Basin, namely, nitrate impacts to the Upper Aquifer and seawater intrusion into the Lower Aquifer. Those sections establish metrics for evaluating the twin threats and actions that will be taken to defend against them. In addition to past and present threats, however, there are also potential future threats. Future threats are particularly challenging to address because of their inherent uncertainty. Because these threats share that common condition, they are analyzed together as the single threat of uncertainty. Several sources of uncertainty are discussed below.

reducing the overall quantity of nitrate in the Basin. Nitrate removal facilities are components of the Basin Infrastructure Program set forth in Chapter 10.

Lastly, through the Basin Management Committee, the Parties will implement the Wellhead Protection Program set forth in Chapter 13. That program will ensure proper construction of new wells and abandonment of existing wells to prevent further impacts to either the Upper Aquifer or Lower Aquifer.

It is likely to take approximately 30 years for the Upper Aquifer to equilibrate to a change in nitrate loading, although the Nitrate Metric Target can potentially be achieved within a shorter time frame.[54] In the intervening years, nitrate removal or blending with other sources with lower nitrate levels will be required for extensive use of the Upper Aquifer as a source of drinking water. Figure 31 depicts a Nitrate Metric Target Trendline that will be used to measure progress toward the ultimate Nitrate Metric Target of 10 mg/l. The Parties will periodically evaluate the progress of the Nitrate Metric in relation to the trendline in Figure 31 in order to determine whether actions taken in the Basin are having the desired impacts on nitrate levels.

Figure 31. Nitrate Metric Target Trendline



[54] *See* Yates & Williams, *Simulated Effects of a Proposed Sewer Project on Nitrate Concentrations in the Los Osos Valley Groundwater Basin* (2003).

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **August 30, 2018**

SUBJECT: **Item 7c – Update on Status of Creek Discharge and Storm/Perched Water Recovery Projects**

Recommendation
Receive report and provide input to staff for future action.

Discussion
In November 2017, the BMC received a report from MKN regarding the steps and projected cost anticipated to establish a Groundwater Replenishment and Reuse Project (GRRP) through a recycled water discharge to Los Osos Creek. The summary of the projected costs is attached for reference. While the BMC did allocate $15,000 for calendar year 2018 toward this effort, this allocation represents less than 5% of the funding necessary to complete the studies and monitoring required by SWRCB to confirm final feasibility and initiate implementation. Staff believes that the projected cost can be partially offset by reduced lab fees using the County lab and with potential funding from other monitoring entities, but these measures are expected to result in perhaps a 10% reduction. IRWM planning grant funds are being pursued, but these funds will require a 1:1 match and their receipt is uncertain. In essence, for the project to move forward, the parties will most likely need to commit substantial funding consistent with the attached table. If incremental steps are desired, a geologic study for siting the two required monitoring wells can be undertaken, along with a continued evaluation of creek discharge benefits under the scenario of periodic extended drought. This work can likely be completed for the allocated $15,000 budget.

One of the challenges for project implementation is the limited availability of recycled water. As discussed in the November 2017 meeting of the BMC, the volume of available recycled water for current development is projected to be in the range of 500 to 550 AFY, which is 200 AFY less than the volume expected when the Basin Plan was published. The reuse of municipal storm water is a statewide objective that has driven a number of grant funded projects in California. One such project in Monterey County received substantial grant funding in excess of $2M for storm water recovery through the use of an existing wastewater collection system and water recycling facility. The County is also preparing a Stormwater Resource Plan under the IRWM process, and a conceptual stormwater recovery plan for Los Osos appears to be poised to rank competitively as noted here (see project WG 2-1):

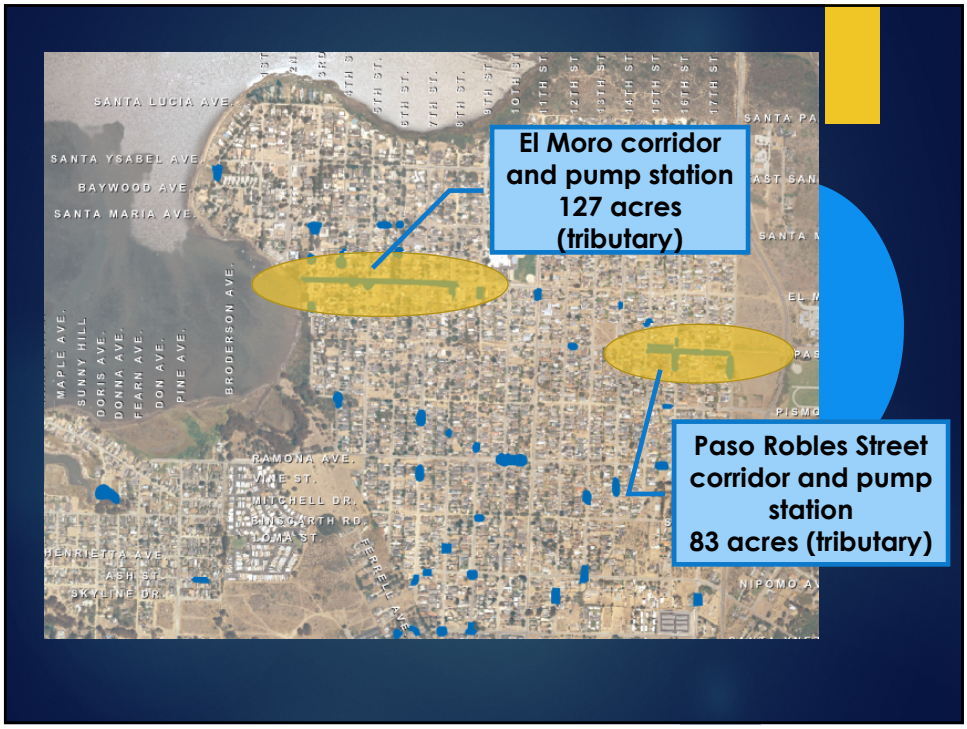
https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Committees-Programs/Stormwater-Resource-Plan/Documents/SWRP-Prioritized-Project-List-Draft-2018-06-20.aspx

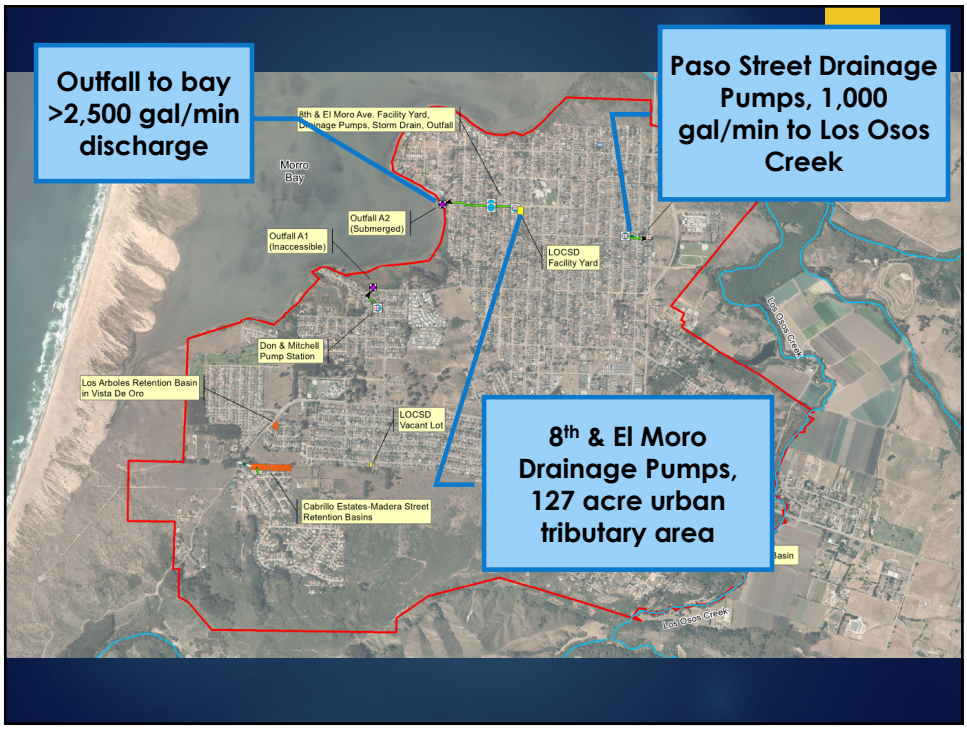
The concept is relatively straightforward, and the following elements are contemplated:

- Use the existing collection system elements to recover and reuse urban storm water from an existing 127-acre watershed and possible from a separate 83-acre watershed. Storm water would be stored in either tanks or through the combined use of an existing storm water retention basin at the Baywood Elementary School, and then metered into the collection system during off-peak times. This approach could capture up to 40 AFY depending on rainfall. If no recycled water irrigation uses are available at the time of the storm water recovery, Broderson would be used to augment recharge to Zone C. The water would be expected to have a very low salt content.
- In order to maximize the recharge and percolation capacity of the perched zone in the Baywood area, construct perched water recovery facilities to collect shallow water and discharge it during off into the sewer collection system. This element is expected to work by gravity in several locations and would add an additional 20 to 40 AFY of recovered water that would otherwise be lost to the bay. This approach would also ensure adequate groundwater separation for the proper functioning of Low Impact Development measures above the perched zone, such as the reuse of existing septic leach fields for roof water discharge.

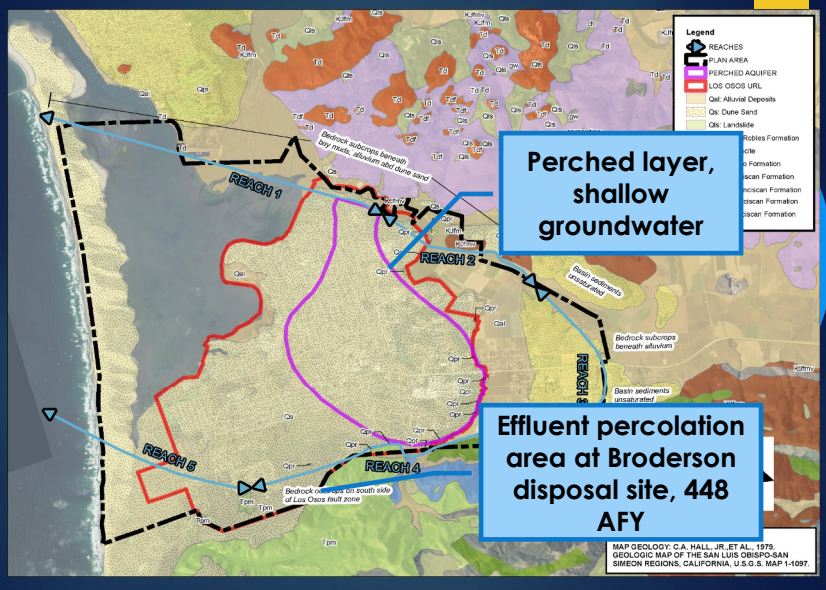
The attached slides further demonstrate this concept, and Staff will provide additional input at the meeting.

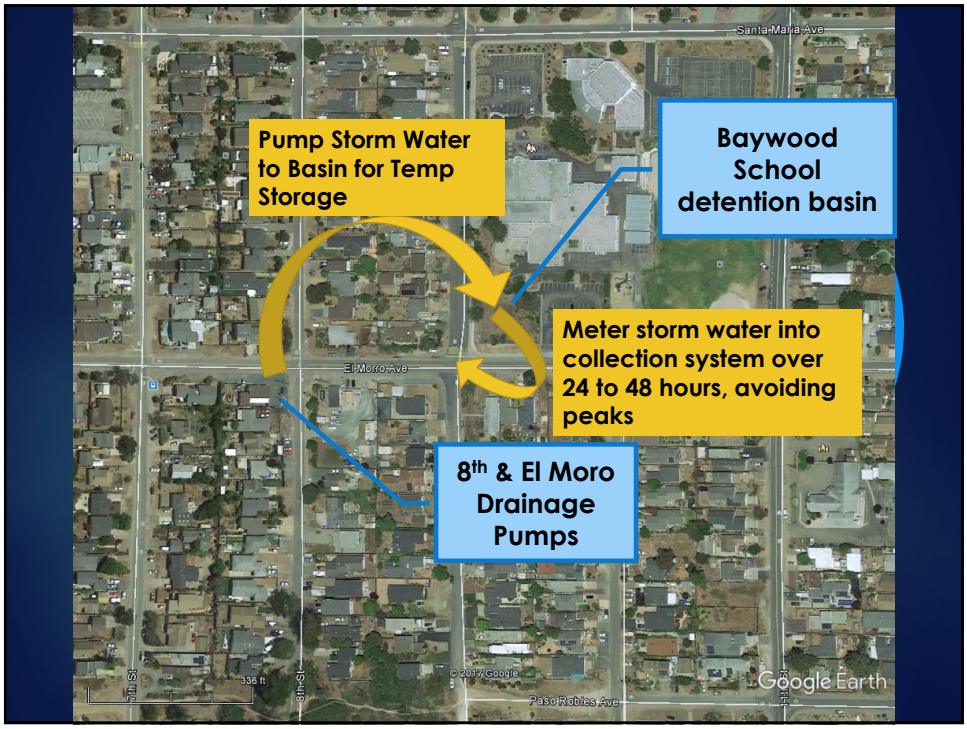
Table 5 Recommended Los Osos Creek GRRP Treatment Evaluation Budget			
Task	**Recommended Budget**		
	Planning/ Engineering	**Sampling/Lab Costs**	**Total**
Phase 1			
1. Develop water quality baseline	$ 14,000	$ 41,000	$ 55,000
2. SAT Evaluation	$ 47,000	$ 25,000	$ 72,000
Allowance for DDW Review	$ 5,000	-	-
Subtotal Phase 1	***$ 66,000***	***$ 66,000***	***$ 132,000***
Phase 2			
3. Hydrogeological Analysis	$ 55,000	$ 32,000	$ 87,000
4. Design/Construct 2 nested monitoring wells	$ 20,000	$ 100,000	$ 120,000
5. Source Water Evaluation	$ 10,000	-	$ 10,000
6. Treatment Evaluation	$ 27,000	-	$ 27,000
7. Pilot Studies	$ 15,000	$ 150,000	$ 165,000
8. Feasibility Report	$ 26,000	-	$ 26,000
9. Allowance for DDW Review	$ 15,000	-	$ 15,000
Subtotal Phase 2	***$ 168,000***	***$ 282,000***	***$ 450,000***
Total Phase 1 + Phase 2	**$ 234,000**	**$ 348,000**	**$ 582,000**
Note: Task 3, Hydrogeological Analysis, includes 1 year of quarterly groundwater sampling/analyses of the two new monitoring wells.			


El Moro corridor and pump station 127 acres (tributary)
Paso Robles Street corridor and pump station 83 acres (tributary)
SANTA LUCIA AVE.
SANTA YSABEL AVE.
BAYWOOD AVE.
SANTA MARIA AVE.
BRODERSON AVE.
MAPLE AVE.
SUNNY HILL
DORIS AVE.
DONNA AVE.
FEARN AVE.
DON AVE.
PINE AVE.
RAMONA AVE.
VINE ST.
MITCHELL DR.
BIMSCARTH RD.
LOMA ST.
HENRIETTA AVE.
ASH ST.
SKYLINE DR.
FERRELL AVE.
SANTA PA
PISMO
NIPOMO A


Outfall to bay >2,500 gal/min discharge
Paso Street Drainage Pumps, 1,000 gal/min to Los Osos Creek
8th & El Moro Ave. Facility Yard, Drainage Pumps, Storm Drain, Outfall
Morro Bay
Outfall A2 (Submerged)
Outfall A1 (Inaccessible)
LOCSD Facility Yard
Los Osos Creek
Don & Mitchell Pump Station
Los Arboles Retention Basin in Vista De Oro
LOCSD Vacant Lot
Cabrillo Estates-Madera Street Retention Basins
8th & El Moro Drainage Pumps, 127 acre urban tributary area
Los Osos Creek


Google Earth


Perched layer, shallow groundwater
Effluent percolation area at Broderson disposal site, 448 AFY
REACH 1
REACH 2
REACH 3
REACH 4
REACH 5
Legend
REACHES
PLAN AREA
PERCHED AQUIFER
LOS OSOS URL
Qal: Alluvial Deposits
Qs: Dune Sand
Qls: Landslide
MAP GEOLOGY: C.A. HALL, JR.,ET AL., 1979. GEOLOGIC MAP OF THE SAN LUIS OBISPO-SAN SIMEON REGIONS, CALIFORNIA, U.S.G.S. MAP 1-1097.


Pump Storm Water to Basin for Temp Storage
Baywood School detention basin
Meter storm water into collection system over 24 to 48 hours, avoiding peaks
8th & El Moro Drainage Pumps
Santa Maria Ave
El Morro Ave
Paso Robles Ave
336 ft
© 2017 Google
Google Earth

TO: **Los Osos Basin Management Committee Rob**

FROM: **Miller, Interim Executive Director**

DATE: **August 30, 2018**

SUBJECT: **Item 7d – Water Conservation Program Update**

Recommendations
Recommendation: Receive report and provide input to staff for future action.

Discussion
In November 2016, the BMC reviewed and endorsed an Addendum to the Water Conservation Implementation Plan for the Los Osos Wastewater Project. The document can be found at the following web address:
http://slocountywater.org/site/Water%20Resources/LosOsos/pdf/WCIP_Addendum%201_rev.pdf

In June 2017, the County approved a subset of the BMC rebate programs intended for properties connect to the Los Osos Wastewater Project as shown on the attached summary (Exhibit A). Two of the BMC's recommended measures are not included in the staff recommendation. These are the septic tank repurposing program (BMC Outdoor 1) and the Low Impact Development Landscape measure (BMC Outdoor 4). While both measures are reasonable elements of a community water conservation program, they are not recommended for inclusion in the County's efforts because there is no clear nexus between the wastewater project and the reduction of outdoor irrigation using potable water supplies. On June 20, 2017, the County submitted the measures in Exhibit A to the Executive Director of the California Coastal Commission. In November 2017, the County received approval for the rebates and is currently processing them upon request. The conservation rebate form has been updated on the County's website and can be accessed here:

https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/LOWWP/Water-Saver-Rebate.aspx

A conservation forum was widely advertised and held at the SBCC on 6/21/2018. The event was attended by approximately 40 residents. While the meeting went very well, the response in terms of actual rebate applications has been limited. Since that date, 5 applications have been received, including 3 washing machines, 1 hot water on-demand system, and a toilet retrofit. Title 19 rebates have been relatively limited as well.

Title 19 Status
As described in the March 2017 BMC meeting, Title 19 retrofits are pursued by private parties in order to facilitate development within the community. In recent years, the County has found that minimal retrofit opportunities are available through pre-approved measures with published values for water savings. This situation primarily impacts new development that is either outside of the prohibition zone, or not subject to Special Condition 6 of the Los Osos

Wastewater Project's Coastal Development Permit. The County currently considers retrofits on a case by case basis, including the installation of high-efficiency clothes washers. Since such retrofits are expected to continue irrespective of rebate funding, BMC staff will continue to communicate with County Planning regarding the potential inclusion of measures from the Addendum to the Water Conservation Implementation Plan within an updated version of Title 19.

EXHIBIT A

Water Conservation Implementation Plan, Los Osos Wastewater Project **Proposed Rebate Program** *changes in italics*			
Measures Required for Connection to the Wastewater System			
Fixture or Appliance	*Existing Fixture Flow Rate*	*New Fixture Flow Rate Eligible for Rebate*	*Rebates*
Toilets Residential & Commercial	Greater than 1.6 gpf	1.28 gpf or less	$250
Showerheads Residential & Commercial	Greater than 2.0 gpm	1.5 gpm or less	$40
Faucet Aerators Residential	Greater than 1.5 gpm	1.5 gpm or less	$5
Faucet Aerators Commercial	Greater than 0.5 gpm	0.5 gpm	$5
Urinals Commercial	Greater than 1.0 gpf	0.5 gpf or less	$500
Pre-rinse Spray Valves Commercial	Greater than 1.15 gpm	1.15 gpm or less	N/A
Optional Measures Eligible for Rebates (Requires Connection to the Wastewater System and Compliance with Above Measures)			
Toilets Residential & Commercial	Equal to 1.6 gpf	~~1.0~~ *1.28* gpf or less	$250
Washers Residential & Commercial	Less than Tier 3, Water Factor 4	Tier 3, Water Factor 4 or Less	~~$150~~ *$450 (1)*
Hot Water Recirc System *Residential & Commercial*	*N/A*	*N/A*	*$350*
Showerheads *Residential & Commercial*	*1.5 gpm or more*	*Less than 1.5 gpm*	*$40*
Complete Gray Water System	*N/A*	*N/A*	*$500*
Laundry only Gray Water System	*N/A*	*N/A*	*$50*
Recycled Water Irrigation *Commercial & Institutional*	*N/A*	*N/A*	*negotiated*
~~Alternative Measures~~	~~1.28 gpf toilet~~ ~~1.5 gpm showerhead~~ ~~1.5 gpm faucet aerators~~	~~Needs prior approval~~	~~$300~~

gpf = gallons per flush
gpm = gallons per minute

NOTES: (1) Rebate not retroactive to prior