LOS OSOS GROUNDWATER BASIN, BASIN MANAGEMENT COMMITTEE

NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that the Los Osos Groundwater Basin, Basin Management Committee Board of Directors will hold a **Regular Board Meeting** at **1:30 P.M.** on **Wednesday, March 20, 2019** at the South Bay Community Center, 2180 Palisades Ave, Los Osos, CA, 93402**.**

Directors: Agenda items are numbered for identification purposes only and may not necessarily be considered in numerical order.

NOTE: The Basin Management Committee reserves the right to limit each speaker to three (3) minutes per subject or topic. In compliance with the Americans with Disabilities Act, all possible accommodations will be made for individuals with disabilities, so they may attend and participate in meetings.

BASIN MANAGEMENT COMMITTEE BOARD OF DIRECTORS AGENDA

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **BOARD MEMBER COMMENTS.** Board members may make brief comments, provide project status updates, or communicate with other directors, staff, or the public regarding non-agenda topics.

5. **CONSENT AGENDA**

   The following routine items listed below are scheduled for consideration as a group. Each item is recommended for approval unless noted and may be approved in their entirety by one motion. Any member of the public who wishes to comment on any Consent Agenda item may do so at this time. Consent items generally require no discussion. However, any Director may request that any item be withdrawn from the Consent Agenda and moved to the "Action Items" portion of the Agenda to permit discussion or to change the recommended course of action. The Board may approve the remainder of the Consent Agenda on one motion.

   a. **Approval of Minutes from January 19, 2019 Meeting.**
   b. **Approval of Warrants, Budget Update and Invoice Register through February 2019.**
   c. **Approval of Contract with Twin Cities Surveying for budgeted well head surveys.**

6. **EXECUTIVE DIRECTOR'S REPORT**

7. **ACTION ITEMS**

   a. **Update on Status of Basin Plan Infrastructure Projects**

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

   b. **Discussion of CHG Report on Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation**

      Recommendation: Adopt amended report.

   c. **Discussion of 2019 Basin Management Committee Annual Budget**

Recommendation: Receive report on staff level discussions and adopt remainder of 2019 budget.

d. Consider Draft Request for Qualifications for BMC Executive Director

Recommendation: Discuss draft RFQ and provide input to staff for May 2019 approval.

e. Update on Status of Recycled Water Contracts with Agricultural Properties

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

8. PUBLIC COMMENTS ON ITEMS NOT APPEARING ON THE AGENDA

The Basin Management Committee will consider public comments on items not appearing on the agenda and within the subject matter jurisdiction of the Basin Management Committee. The Basin Management Committee cannot enter into a detailed discussion or take any action on any items presented during public comments at this time. Such items may only be referred to the Executive Director or other staff for administrative action or scheduled on a subsequent agenda for discussion. Persons wishing to speak on specific agenda items should do so at the time specified for those items. The presiding Chair shall limit public comments to three minutes.

9. ADJOURNMENT

BASIN MANAGEMENT COMMITTEE BOARD OF DIRECTORS

Agenda Item 5a: Minutes of the Meeting of January 16th, 2019

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 led the Pledge of Allegiance. Mr. Miller, acting Clerk, called roll to begin the meeting. Director Zimmer, Director Cote, Director Gibson and Chairperson Ochylski were all present.
4. Board Member Comments	Director Zimmer: I think it's worth noting the execution of the recycled water agreements, between the County and the agencies, it's been a lot of work and we were finally able to complete those.
5a. Minutes of the Meeting of January 16th, 2019 **5b. Approval of Budget update and Invoice Register through December 2018**	Director Zimmer: On the second page of the minutes there's a mix up in the conversation between me and Rob where our names need to be swapped. Mr. Miller: We will get that corrected. **No Public Comment** Mr. Miller: Prior to the motion we have one comment on part of the financial information. The categorization of Cleath's invoice shows the Monitoring Well which is an error. It should be categorized to Annual Monitoring. We've made that correction at the staff level so if you include that in the motion, we'll get that cleaned up for the final posted version. **Ayes: Director Gibson, Director Zimmer, Director Cote and Chairperson Ochylski** **Nays: None** **Abstain: None** **Absent: None** Approved as amended.
6. Executive Director's Report	Executive Director, Rob Miller, provided a verbal overview of the written content of the Executive Director's report. Director Ochylski: I've been following the Basin Management Boundaries and when I looked at the website they were in accord with the recommendation except with the deletion on that Northern boundary. However, when I looked on the website, I couldn't find anything that said why. Ms. Martin: They said due to the lack of scientific information for that small area and would like to see more. Mr. Miller: So they are looking for supporting documentation? Ms. Martin: Correct. Director Zimmer: Will the County form a GSA for those areas? Ms. Martin: That would be determined by DWR.

	Director Gibson: As I understand it there is no consumption in that area. Ms. Martin: Correct, it's open space controlled by State Parks. **<u>No Public Comment</u>**
7a. Appointment of BMC Officers for Calendar Year 2019	Mr. Miller: Discussed the Appointment of BMC Officers for Calendar Year 2019. Director Zimmer: Regarding the replacement of Rob's position, when you say recruitment process is that going to be a formal recruitment process? Mr. Miller: That's a good question, we'll probably need a little help from counsel on that. I was planning to have it be at least a formal RFP. It's professional services so it won't be like a public bid. The RFP would go out to the general consulting community, but I know from personal experience, if you don't target people and consultants the odds of getting a good response is small. Director Zimmer: So, one of the beginning steps would be the job description overall, is that where you thought you needed help? Mr. Miller: In the overall recruitment, if there are individuals that I don't have a relationship with but someone else here does, you can tell them what a great position it is. Director Cote: It's a Time and Materials Contract, it won't involve any special sub contract? Director Ochylski: As we go through the process, we'll decide how we are going to do this. The position they are hired for may not be doing exactly what Rob does, but it will be up for discussion. Mr. Miller: It's pretty well defined in the judgement for the duties of the Executive Director and they have the minutes from the past few years to look back on as well. Director Zimmer: If Golden State can help you with that let us know. Director Ochylski: I think we're all willing to help as well. Director Cote: I assume there will be an interviewing process that may involve closed meetings as well? Director Ochylski: Correct. Mr. Miller: We'll come back at our next meeting and define the process and suggest how we proceed. Director Ochylski: I think the idea is Rob would lay out above and beyond what was outlined in the bankruptcy settlement as well as what he's been doing the past few years and the parameters of what the job would consist of. We could sit down with him individually and give him input, and at our next meeting we could approve the RFQ.

	Public Comment None. Gibson: I'll move staff's recommendation. Director Zimmer: I second that. **Ayes: Director Gibson, Director Zimmer, Director Cote and Chairperson Ochylski** **Nays: None** **Abstain: None** **Absent: None**
7b. Update on Status of Basin Plan Infrastructure Projects	Mr. Miller: Gave a detailed overview of the Update on Status of Basin Plan Infrastructure Projects. Director Cote: Thanks for the comment about including S&T in the possible expansion well in number 2 under Program C, we would definitely like the option to possibly have a share of that. As well as the item Community Nitrate Removal Facility in Program B, S&T would also be interested in that opportunity. Director Zimmer: Under Program C we are going to do the test well, which the District has secured funding to initiate this project. Is it dependent on the location whether the other purveyors will contribute to the project? What is the next step and when will that timing come? Mr. Miller: We did a rate analysis last year where we looked at capital projects going forward, and full funding for that well was included as a potential capital project. The District has rates in place that would support the funding of that well. We didn't want to preclude participation by other parties, but the District is able to do the funding as of now. Director Ochylski: That decision hasn't been made yet. We are going to get the test well drilled first then we will decide how we are going to proceed. Director Cote: Regarding this project list, shouldn't we have a list of ongoing tasks for the next Executive Director that would be coming on board? Mr. Miller: I agree, I think that would be a good transitional document. Public Comment None. Board Comments Director Ochylski: We've provided input to staff for future options, is there any additional input?
7c. Discussion of CHG Report on Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation	Mr. Miller: Gave details on the CHG Report on the Los Osos Basin Plan Metric Trends Review and Infrastructure Program C Evaluation. Director Gibson: The letter from the CSD is from your Utilities committee. Is that the position of the Board?

	Director Ochylski: Yes, the Board approved this. Director Gibson: None of it seems substantive, I don't see any issues with it. Director Ochylski: No, it's just clarification. <u>Public Comment</u> None. Director Ochylski: I'll speak for the District because there were some clarifications that we felt were important to be made. It was unclear, not only to our District, but based on some of the public comments that we heard at the workshop as well as at previous meetings here, there was some confusion. Director Cote: I like the idea of adaptive management and this is something that is potentially more important than the exercise we go through to create the annual report. The adaptive management program is an opportunity to look at what we're doing and make changes to the methods that are described in the Basin Plan. I would prefer as we go forward that we begin to take the nitrate concentrations that are trending in an increasing manner through all our wells. We need to treat this issue with more importance. Mr. Miller: I have also been reviewing the Nitrate data sets that hit both the shallow and deep wells. We have budgeted some dollars to do this type of adaptive management study going forward into this calendar year. This is something we should talk about because I am pretty sure it has affected all three purveyors. Director Gibson: I think the thing with the nitrates is that it's an unexpected trend that we're seeing, and I don't think we have a mechanism to understand it at this point. So, I think what you're saying is, let's understand the physics of what's going on, then we can talk about what we need to do about it. Director Ochylski: As Rob said, it is in the budget for the upcoming year and I agree it is critical. Mr. Miller: At this point we'll take this as Board encouragement to move forward and finalize this memo. We'll bring back to you a redline version incorporating the CSD's comments, as well as some of the editorial comments that S&T has provided, and if there's anything else, get it to staff so we can bring it back in March hopefully to adopt.
7d. Adoption of the Basin Management Committee Annual Budget	Mr. Miller: Gave details on the budget for Calendar year 2019. Mr. Miller: Staff is suggesting that you approve items 1-7 contingent on approval by your member governing boards and that you direct staff to have subsequent discussion on the remaining items and bring those back for subsequent action. Director Zimmer: So, with Item 11 the conservation component, is that included with 1-7 or is that left out? Mr. Miller: I think that was left out because that was more focused on the implementation side of things.

	Director Ochylski: So, your amending the recommendation here to adopt the budget but only for items 1-7? Mr. Miller: Yes. Director Ochylski: I did have a question on number 9, in the comment column it talks about well ownership to be determined prior to construction, I understand what that means, but you may want to clarify that. Mr. Miller: The implementation of a fixed improvement like a monitoring well is something that this committee has not done yet. When you have joint contribution to these facilities you need to know who will own the monitoring well. We presume that a public agency should own it because it's going to be right on the fringe of County right of way. A public agency would be able to retain some of the rights going forward. Director Ochylski: What I wanted to clarify is that the committee cannot own this, it must be owned by one of the purveyors, unless we form a JPA. Director Gibson: The County is fully supportive with all these projects, but we need to understand the constraints that we operate under. We're also looking at what the County in-kind contribution has been in this as we've been using staff. I think in a very short time we can come to a reasonable agreement. This does suggest that somewhere down the line we'll need to have a fuller discussion of the full financial requirements of the efforts we're undertaking. Director Ochylski: Regarding the JPA, that is something that we've talked about and decided not to pursue for several different reasons. It's not something we've said we would never pursue, we just decided not to pursue it at that time. Director Cote: I think as we go forward with some of these community projects, we should take another look at that. Director Ochylski: Let's bring back some feedback from our legal counsel. Mr. Miller: We'll also bring back some sense of the cost as well. Director Gibson: We had an extensive discussion of pros and cons on it and the cons outweighed the pros significantly. It's a lot of work and probably something we want to avoid if possible. Director Cote: I'd like to see a document if there was one produced? Mr. Miller: there would be information in our minutes from that time I will see if I can pull it up. Director Zimmer: Regarding the Cuesta by the Sea Monitoring well, we do have funding for that. Is that funding we have available for the design, environmental, and planning of that well? So, this additional funding would be for the construction of it? Mr. Miller: We're essentially done with the design to drill, if it got appealed there may be some more staff time, but you are essentially complete with that phase and now you are onto the implementation.

	Public Comment Ms. Owen: You mentioned the conservation programs, you mentioned septic tank repurposing, how many of those do you expect? I would take the septic tank repurposing out of conservation since it is mostly over and done with. I also think we need to remove the contracts for recycled water to go to dryland farmers. I also think it would be a good idea to have a 3-D basin model. Mr. Miller: Septic tanks were just one possible use the committee could determine how to use it otherwise. Regarding the recycled water, now that we have agreements in place, as soon as we have the retrofits completed, we can begin tracking that water. I would summarize those results in an executive report and later finalize it in the annual report and then we can begin tracking those quantities. Also, I agree it would be nice to have a 3-D basin model. Maybe we can get a Cal Poly class to work with us and do some 3-D printing, that might be a cool idea. Director Gibson: I'll move the amended budget recommendation. Director Cote: I'll second that. **Ayes: Director Gibson, Director Zimmer, Director Cote and Chairperson Ochylski** **Nays: None** **Abstain: None** **Absent: None**
7e. Approval of Proposals for Hydrogeologic Services for Calendar Year 2019, to be provided by Cleath Harris Geologists	Mr. Miller: Gave details on Approval of Proposals for Hydrogeologic Services for Calendar Year 2019, to be provided by Cleath Harris Geologists. Director Ochylski: The CSD would take it to our Board for approval in February. Director Cote: This process and the timing of the budget makes it inconvenient if we had expenditures beyond our guesses. Mr. Miller: That wouldn't happen because you all control those expenditures. I tried to give some early warning in November of what's coming. Everyone is on a different budget cycle so it's hard. Director Ochylski: That's what I was going to point on out, the complexity of this is that there is no good time since everyone is on a different fiscal year. So, we do our best and take the budget projection and include that in our budget. Mr. Miller: If you have individual budgets you are preparing and need some feedback from staff, we'd be happy to provide that from the best of our ability and try not to surprise you later down the line. Director Gibson: What do we expect the timeframe for evaluating the well bore leakage if any? Mr. Miller: They are preparing to do that as part of that first draft that we will get some time around May.

	Director Ochylski: We have to have this by the court deadline. Mr. Miller: Right, draft in May, revision with discussion in early June, and if necessary special meeting at the end of June. Director Gibson: I would like to get that resolved, we have to figure out what's going on. <u>Public Comment</u> None. Director Ochylski: This is contingent on the agencies approving the funding. Director Gibson: I'll move to approve these with the direction given to staff. Director Zimmer: I'll second that. **Ayes: Director Gibson, Director Zimmer, Director Cote and Chairperson Ochylski** **Nays: None** **Abstain: None** **Absent: None**
8. PUBLIC COMMENTS ON ITEMS NOT APPEARING ON THE AGENDA	Director Ochylski: Entering into the contracts for the distribution of the water, could we explain which contracts were entered in to and where they were? Director Gibson: We have signed the agreements between the County and the LOCSD, between the County and Golden State, and between the County and S&T and we have also made necessary changes to the Tri-Party Agreement that eventually allows recycled water to be used on Sea Pines Golf Course. <u>Public Comment</u> Mr. Best: I agree that with the committee I think it would be good to have something listing all the ongoing tasks and projects on a chart so we can look at the big picture. It would give people a comprehensive picture of where we are. Ms. Owen: Is the County still honoring the contract with the dryland farmers? If so, how does that offset saltwater intrusion? How much would it cost to monitor the 500 private wells and put quantity meters on them? Mr. Vanfleet: I have a private well and I consider myself a water borrower not a water user. The water comes out of my well, I use it, it goes into my septic tank and right back into the aquifer. If you were to monitor the water usage between my well and septic tank you would probably see it come out positive if you add in the benefit of rainfall onto my property. Putting a meter on residential people like myself is a waste of money. Mr. Brannon: The solution to adding adequate water for buildout and the people we have is to capture the stormwater. When there is a big storm Warden Lake overflows. If you take all of the water usage in Los Osos, it is only 10% of the water that runs out and flushes out Warden Lake. We could do some stormwater recapture when there is excess water and pump it to Broderson and recharge the aquifer. Stormwater recapture should be a primary goal in the coming year to get new water into the aquifer.

	Mr. Cesena: Representing the LOCSD, I wanted to talk about the recycled water distribution. Now that contracts are in place with the school districts and users in town where we have salt water intrusion mitigation value, I think we should finish the discussion that started with one of Rob's old memos. I think it's time for the County to update us on those contracts with the dryland farmers. Mark Hutchinson wrote a long memo talking about why it would be imprudent to back out of those contracts. Six months ago, the CSD responded to that letter with a letter to the County essentially addressing each point and pointing out that none of those contracts have any saltwater intrusion mitigation value. We wanted the Cleath Harris Report to include those values. I would like to put it on the agenda for at least a quick update. If we need, I can gather all the past letters as well. Director Ochylski: The well monitoring is under the purview of the County, not this Committee. I felt like one of the owners of the dryland farming contracts is also the owner of Warden Lake. I'd like to take a look at that and bring that back. The CSD is concerned about the contracts, I will bring that back on the agenda. Director Gibson: Mr. Hutchinson wrote an extensive letter on why the recycled water is going where it's going. Depends on constraints we have for the permit of the wastewater treatment plant. I'm not sure of how many potentially active Ag reuse contracts we might be considering but we are getting closer to that. We will deploy the water as efficiently and effectively as we can, consistent with the requirements of the Wastewater Treatment Permit. Director Cote: We have a couple issues here, the issue of metering private wells and delivery of water to dryland farmers. The BMC can make recommendations to the County even though we cannot mandate things. Mr. Miller: I don't want to go to far into that, but we can certainly bring that back on the agenda. Director Cote: Could we add that discussion to an agenda? Director Ochylski: That was my idea to have that as a discussion at our next meeting.
9. ADJOURNMENT	Meeting was adjourned at 3:00 pm. The next meeting will be on March 20th 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: **March 20, 2019**

SUBJECT: **Item 5b – Approval of Budget Update and Invoice Register through February 2019**

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 December 31, 2018 (see Attachment 1) and separately for the current budget year 2019, through March 19, 2019 (see Attachment 2). A running invoice register is also provided as Attachment 3. One past invoice is included that was not received or approved by the BMC in 2018. This invoice is included within the 2018 administration line item. Staff recommends that the Committee approve all pending invoices, outlined in Attachment 4. Payment of invoices will continue to be processed through Brownstein Hyatt as noted in previous meetings. Staff acknowledges that budget Item 9, Cuesta by the Sea Monitoring Well, was not approved in the January 2019 meeting. However, the County was able to identify funding for its share subsequent to the January meeting, and the CHG invoices is limited to design phase efforts.

Attachment 1: Cost Summary (Year to Date- Dec. 31, 2018) 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	$45,773.00	91.5%	$4,227
2	Meeting expenses - facility rent (if SBCC needed for larger venue)	$1,000	$495.00	49.5%	$505
3	Meeting expenses - audio and video services	$6,000	$4,525.00	75.4%	$1,475
4	Adaptive Management - Groundwater Modeling	$10,000	$9,985.00	99.9%	$15
5	Semi annual seawater intrusion monitoring	$26,400	$26,392.61	100.0%	$7
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	$3,150.00	2.7%	$111,850
10	Conservation programs (not including member programs)	$10,000	$4,865.46	48.7%	$5,135
	Subtotal	$268,000	$124,751		$143,249
11	10% Contingency	$26,800	$1,695.00		
	Total	**$294,800**	**$126,446**	**42.9%**	**$168,354**
	LOCSD (38%)	$112,024			
	GSWC (38%)	$112,024			
	County of SLO (20%)	$58,960			
	S&T Mutual (4%)	$11,792			
Notes	Last update March 3, 2019				

Attachment 2: Cost Summary (Year to Date- March 20, 2019) for Calendar Year 2019

Item	Description	Budget Amount	Costs Incurred	Percent Incurred	Remaining Budget
1	Monthly meeting administration, including preparation, staff notes, and attendance	$50,000	$5,124.33	10.2%	$44,876
2	Meeting expenses - facility rent (if SBCC needed for larger venue)	$1,000	$120.00	12.0%	$880
3	Meeting expenses - audio and video services	$6,000	$675.00	11.3%	$5,325
4	Adaptive Management - Groundwater Modeling & Well Head Surveying	$15,000	$900.00	6.0%	$14,100
5	Semi annual seawater intrusion monitoring	$29,200	$0.00	0.0%	$29,200
6	2018 Annual Report	$33,500	$14,540.00	43.4%	$18,960
7	Grant writing (outside consultant)	$5,000	$0.00	0.0%	$5,000
8	Creek Recharge and Replenishment Studies	$50,000	$0.00	0.0%	$50,000
9	Cuesta by the Sea Monitoring well	$115,000	$1,200.00	1.0%	$113,800
10	Stormwater and Perched Water Recovery Project - Feasibility Study	$15,000	$0.00	0.0%	$15,000
11	Conservation programs (not including member programs)	$10,000	$0.00	0.0%	$10,000
	Subtotal	$329,700	$22,559		$307,141
	5% Contingency (rounded to nearest $100)	$16,500	$0.00		
	Total	**$346,200**	**$22,559**	**6.5%**	**$323,641**
	LOCSD (38%)	$131,556			
	GSWC (38%)	$131,556			
	County of SLO (20%)	$69,240			
	S&T Mutual (4%)	$13,848			

Notes **Last update March 8, 2019**

Attachment 3: Invoice Register for Los Osos BMC for Calendar Year 2019 (through March 20, 2019)

Vendor	Invoice No.	Amount	Month of Service	Description	Budget Item	BMC Approved
AGP	7615	$675.00	Jan.	Meeting expenses - audio and video services	3	
CHG	20190103	$8,300.00	Jan.	2018 Annual Report Preparation	6	
CHG	20190203	$6,240.00	Feb.	2018 Annual Report Preparation	6	
CHG	20190204	$1,200.00	Feb.	Cuesta by the Sea Monitoring well	9	
CHG	20190205	$900.00	Feb.	Adaptive Management	4	
SBCC	122	$120.00	Jan.	Meeting expenses - facility rent	2	
WG	47601	$1,181.75	Dec '18	Monthly meeting administration	1	
WG	47758	$5,124.33	Jan.	Monthly meeting administration	1	
Total		**$23,741.08**				

To be approved

ATTACHMENT 4

Current Invoices Subject to Approval for Payment (Warrant List as of March 19, 2019):

AGP	7615	$675.00	Jan.
CHG	20190103	$8,300.00	Jan.
CHG	20190203	$6,240.00	Feb.
CHG	20190204	$1,200.00	Feb.
CHG	20190205	$900.00	Feb.
SBCC	122	$120.00	Jan.
WG	47601	$1,181.75	Dec '18
WG	47758	$5,124.33	Jan.

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

SUBJECT: Item 5c: Approval of Contract with Twin Cities Surveying for budgeted well head surveys.

Recommendations

Staff recommends that the Committee approve the proposed scope and fee for well head surveying services in an amount not to exceed $3,500.

Discussion

Item 4 in the adopted 2019 BMC budget is described as “Adaptive Management - Groundwater Modeling & Well Head Surveying.” The well head surveying effort will confirm the elevation for 17 wells in the basin monitoring network as described in the attached proposal. The elevations of these wells were previously determined using topographic information, but now they will be determined within 0.01’.

Financial Considerations

The draft Committee budget for calendar year 2019 includes a specific line item for the proposed work as described above.

TWIN CITIES SURVEYING, INC.

SURVEYING | **LAND PLANNING** | **CONSULTING**

615-C Main Street | P.O. Box 777 | Templeton, CA 93465
(805) 434-1834 - Ext 302 | stouchon@twincitiessurvey.com | FAX (805) 434-3684

September 18, 2018

PAGES FAXED/EMAILED = FIVE
NON-PREVAILING WAGE

Eileen Stephens
The Wallace Group
612 Clarion Court
San Luis Obispo, CA 93401

Phone: 805-544-4011
Cell: 805-
Email: EileenS@wallacegroup.us

SUBJECT: Surveying Services for **your Los Osos Basin Well-Head Survey** at seventeen locations within the Community of Ls Osos, CA -- as per your request for proposal:

Dear Eileen:

TWIN CITIES SURVEYING, INC. is pleased to submit this proposal for providing surveying services for the subject project at the above seventeen locations:

I. PROJECT

A. We will determine the elevations of seventeen well-heads located throughout the Community of Los Osos, based on NAVD 1988 vertical datum as requested by you, on both public and private properties.

1) Based on the list of wells provided by you, listing the latitude and longitude, as well as an approximate elevation, we plan to determine the well elevation at a point to be indicated by others and marked with paint or some other method. We plan to establish elevations using static GPS surveying methods and equipment.

2) Process the survey data and provide the Wallace Group with the elevations of the seventeen wells, based on the NAVD 1988. Elevations will be provided to the hundredth of a foot.

B. All work will be done per governing agency requirements (County of San Luis Obispo), the Land Surveyor's Act, industry standards or mutual agreement between surveyor and client, whichever is appropriate for the task.

II. CONDITIONS TO PROJECT

A. **TWIN CITIES SURVEYING, INC.** will provide certificates as to evidence of insurance for General Liability, Automobile, and Workers' Compensation Insurance, if requested. Costs incurred by **TWIN CITIES SURVEYING, INC**. for additional client insurance requests (such as being named as additional insured, coverage to be "primary" or "non-contributing", endorsement for waiver of subrogation, additional limits of liability, etc.) will be charged to the client.

B. Per the list of locations and per your email, eleven of the wells are on public property with unhindered access, and six wells are located on private properties. We will attempt to contact the private owners and obtain permission to conduct our work. If we are unable to contact owners or obtain permission from them, we will contact you for obtaining the necessary permission and access.

III. FEES

A. **TWIN CITIES SURVEYING, INC**. proposes to perform the above surveying services as outlined in Item I - PROJECT and subject to Item II - CONDITIONS TO PROJECT as follows:

1) Perform the field work necessary to obtain the elevations requested and prepare documentation for you indicating those elevations, based on obtaining permission directly from the six private owners so work can be accomplished in one move in $3,500.00

2) If we are unable to obtain permission from all six private owners prior to starting observations, additional charges based on our schedule of hourly rates will be charged for additional trips to site.

IV. TERMS

A. Terms are due upon receipt of invoice. **Invoice will be sent and paid prior to first submittal of elevations to you and your consultants, if requested.**

NOTE: This proposal may be withdrawn by us if not accepted within 60 days.

If you are in agreement with the above scope of services and fees, please initial each page and authorize below and return one copy to us by mail, email, or by fax at (805) 434-3684. Thank you for considering our firm for this project and we hope you will consider our firm for future projects.

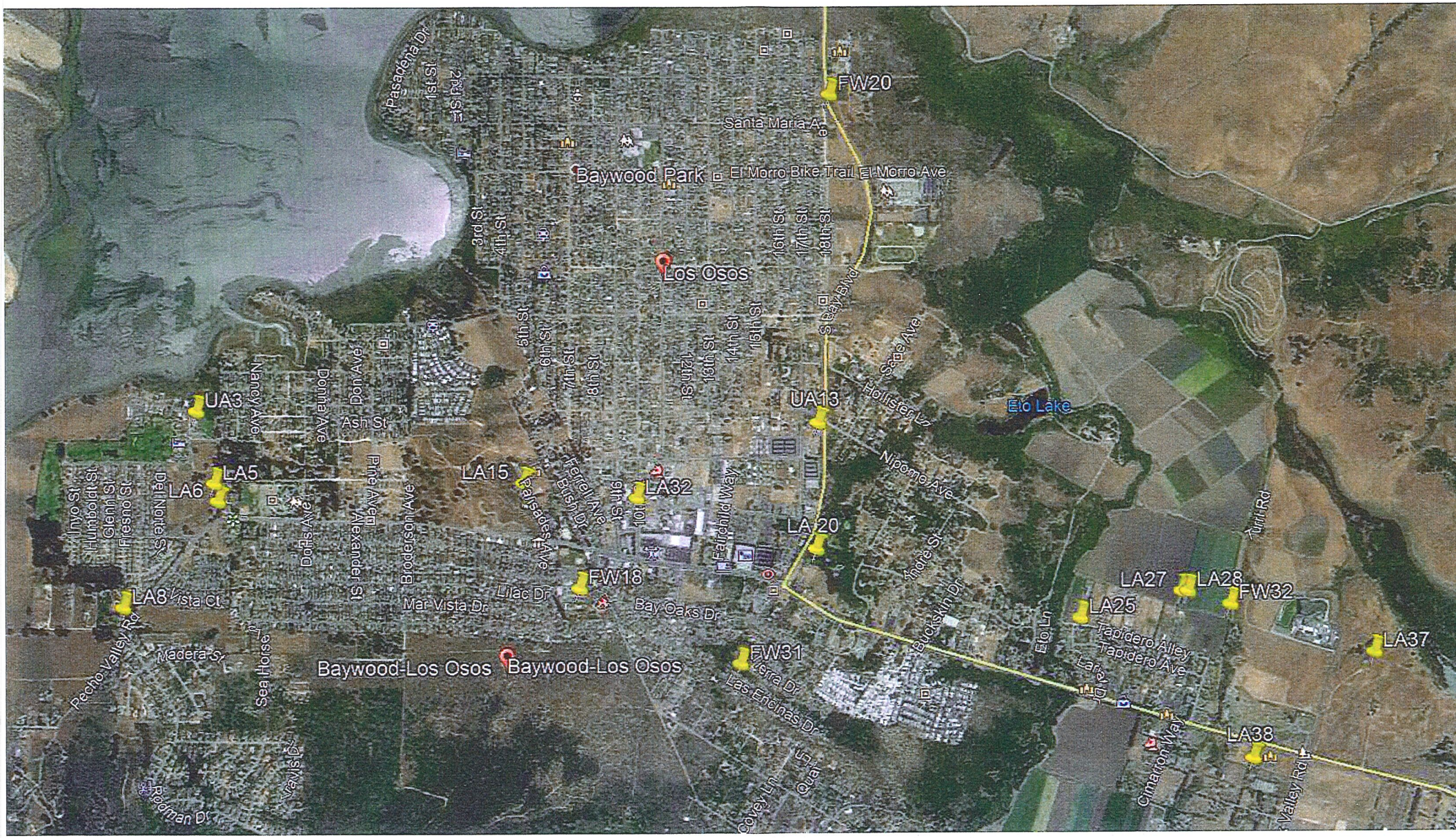
Respectfully submitted,

Skip Touchon, – President
PLS 4845 Expires 09/30/2018
P 18374

I agree to the above scope of work and fees and authorize **TWIN CITIES SURVEYING, INC.** to proceed with the work.

Sign _____ Print Name: _____

Date: _____


FW20
Santa Maria A...
Baywood Park
El Morro Bike Trail
El Morro Ave
Los Osos
UA3
UA13
Elo Lake
LA5
LA6
LA15
LA32
LA 20
FW18
LA8
LA27
LA28
FW32
LA25
LA37
FW31
Baywood-Los Osos
Baywood-Los Osos
LA38
Pasadena Dr
1st St
2nd St
3rd St
4th St
5th St
6th St
7th St
8th St
9th St
12th St
13th St
14th St
15th St
16th St
17th St
18th St
Santa Ana Blvd
Scenic Ave
Hollister Dr
Nipomo Ave
Nancy Ave
Donna Ave
Don Ave
Ash St
Invo St
Humboldt St
Glenn St
Fresno St
Del Norte St
Dolores Ave
Pine Ave
Alexander St
Broderson Ave
Palisades Ave
Ferrell Ave
Bush Dr
Fairchild Way
Indio St
Lilac Dr
Mar Vista Dr
Bay Oaks Dr
Buckskin Dr
Elo Ln
Turri Rd
Trapidero Alley
Trapidero Ave
Lariat Dr
Cimarron Way
Las Encinas Dr
Vista Dr
Vista Ct
Recho Valley Rd
Madera St
Sea Horse Dr
Redman Dr
Quail Ln
Valley Rd

Los Osos Basin

Montitoring Well Network Wells OWNED by BMC Members

Program ID	Well Number	Name/Location	Basin Area	Coordinates			Well Type	SURVEY SOURCE	Well Owner
				Latitude	Longitude	Reference Point Elev.			
LA20	30S/11E-17N10	GSWC South Bay #1	Central	35.311	120.824	140	M	TOPO	GSWC
LA6	30S/10E-13L4	GSWC Pecho	Western	35.3129	120.8524	68	M	TOPO	GSWC
UA3	30S/10E-13F4	GSWC Skyline	Western	35.3164	120.8535	19	M	TOPO	GSWC
FW20	30S/11E-8Mb	Santa Maria/18th Street	Central	35.3287	120.8233	95	MW	TOPO	LOCSD
FW31	30S/11E-19A	Bayridge Estates Leachfield	Central	35.3066	120.8276	213	MW	TOPO	LOCSD
LA15	30S/11E-18L2	GSWC Library-Palisades	Western	35.3136	120.8379	85	M	TOPO	LOCSD
LA32	30S/11E-18K9	LOCSD/10th	Central	35.313	120.8325	134	M	TOPO	LOCSD
UA13	30S/11E-17E10	LOCSD South Bay upper	Central	35.3159	120.8239	106	M	TOPO	LOCSD
LA37	30S/11E-21B1	Andre Windmill	Eastern	35.3069	120.7976	78	MW	TOPO	LOWRF
LA5	30S/10E-13L7	S&T Mutual #4	Western	35.3136	120.8526	37	M	TOPO	S&T
LA8	30S/10E-13N	S&T Mutual #5	Western	35.3088	120.8568	139	M	TOPO	S&T
FW18	30S/11E-18P	Sunnyside #1	Western	35.3095	120.8352	150	MW	TOPO	SLCUSD
FW32	30S/11E-21D14	Creek Valley - Old dom	Central	35.3088	120.8044	60	D	TOPO	PRIVATE
LA25	30S/11E-20Aa	Tapidero deep	Eastern	35.3083	120.8115	82	D	TOPO	PRIVATE
LA27	30S/11E-16Ma	Creek Valley - OBS	Eastern	35.3093	120.8067	67	D	TOPO	PRIVATE
LA28	30S/11E-16Mb	Creek Valley - East	Eastern	35.3093	120.8064	67	I	TOPO	PRIVATE
LA38	30S/11E-21E	Lilly Shallow - Snowy Egret	Eastern	35.3028	120.8034	121	D	TOPO	PRIVATE

TOPO Elevation estimated (NAVD 88)

Private property, so permission to enter for the survey will need to be obtained

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

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). Additional BMC funding for this project will be discussed under Item 7c. The concept of urban storm water recovery at 8th and El Moro was ranked in the draft County Stormwater Resource Plan, and future grant opportunities may be available. Planning funding for this project is included in the proposed 2019 BMC Budget, which will be discussed under Item 7c. The draft Stormwater Resource Plan can be found here: https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Committees-Programs/Stormwater-Resource-Plan/Documents/2018-09-10-SWRP-Public-Draft.aspx

Status of Zone of Benefit Analysis and Joint Powers Authority (JPA)

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 2019. The Zone of Benefit approach can be initiated at any time. As requested during the January 2019 BMC meeting, staff has prepared additional information regarding the formation of a JPA, primarily based on recent County experience in the Cuyama basin. This information is summarized in the attached pro/con matrix, and potential annual insurance costs are described in Exhibit A. The formation of a JPA was considered in the court-approved Judgement in 2015, and a JPA will ultimately be necessary if the parties choose to jointly own infrastructure. However, if the parties individually own the infrastructure and share resources by agreement, a JPA can be avoided. Given that the BMC already functions as a Brown Act entity, the cost of

insurance is viewed as the primary difference in annual cost. The formation of a JPA would also result in substantial up front legal expenses which have not yet been quantified.

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

BBM Update: On February 11, 2019, the California Department of Water Resources (DWR) published the Final Recommendations for the Basin Boundary Modifications. A summary of DWR's Final Recommendations for the Los Osos Basin are listed below**:**

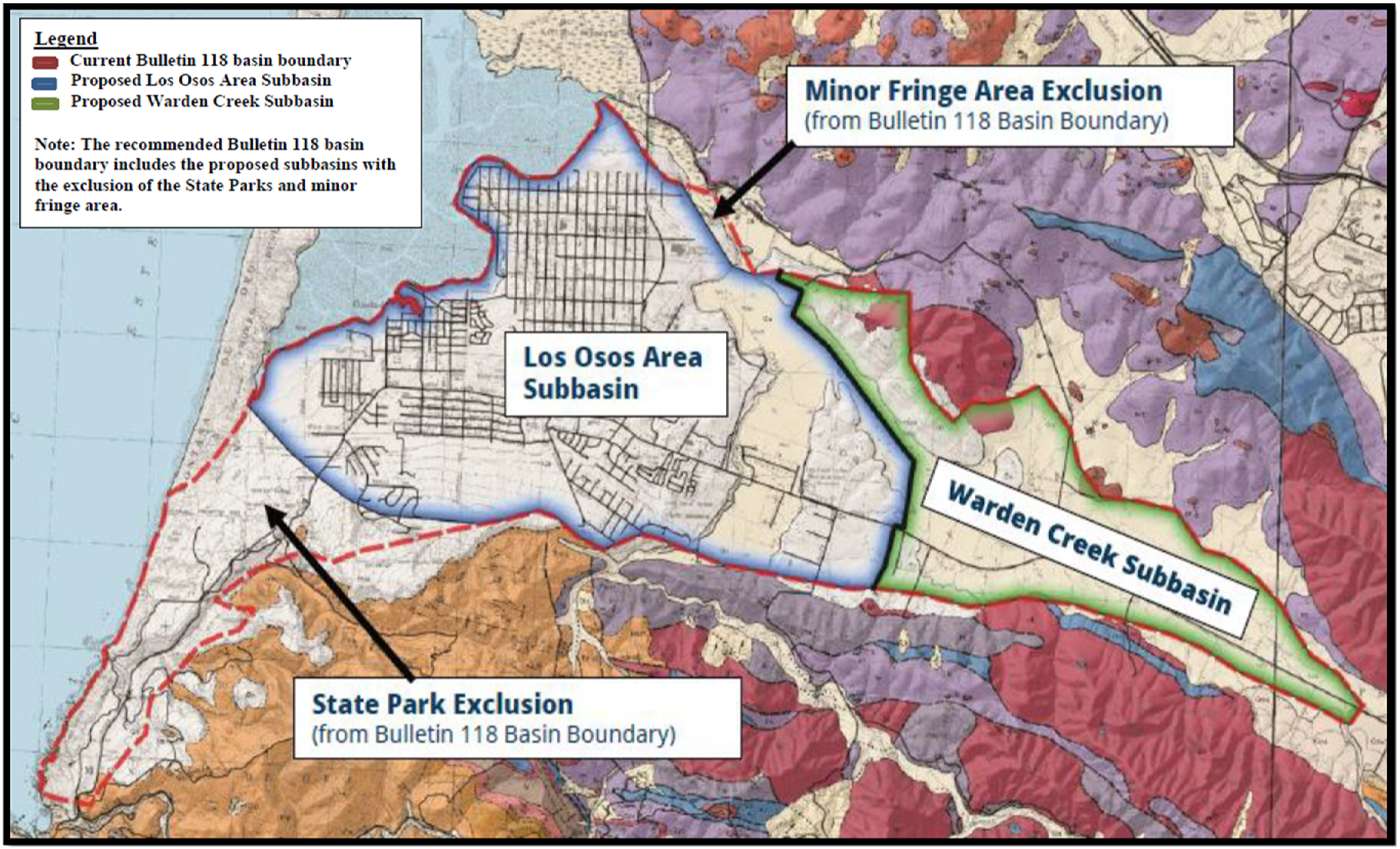
- DWR approved the creation of two jurisdictional subbasins: Los Osos Area Subbasin and Warden Creek Subbasin
- DWR approved the removal of the southern fringe area including Montana de Oro State Park (State Park Exclusion)
- DWR denied the removal of the minor northern fringe area (Minor Fringe Area Exclusion)

Next Steps - DWR reprioritizes basins/subbasins:

- April/May 2019 - DWR reprioritizes basins/subbasins (using modified boundaries)

More information on DWR's basin boundary modification process and prioritization process, please visit:
https://water.ca.gov/Programs/Groundwater-Management/Basin-Boundary-Modifications
https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization

Figure 1. Proposed Los Osos Basin Boundary Modification



Los Osos Wastewater Project Flow and Connection Update

Influent flows to the treatment facility average 0.47 mgd. No recycled water deliveries have been made to irrigation users yet. It is anticipated that the first connections will be in the Spring of 2019. Effluent is being disposed to both Broderson and Bayridge leachfields. The cumulative effluent disposal for the calendar year as of 2/28/2019 is 85.9 AF, of which 84.0 AF went to the Broderson leachfield and 1.9 AF went to Bayridge leachfield.

Enforcement: As of 2/28/2019, the sewer service area has a 97.8% connection status. There are 102 unconnected properties. 7 are waiting for the County low-income grant program to pay for their connection leaving 95 properties that may require enforcement. Of the 95 properties, 43 are in the process of connecting (ie: obtained a building permit). Subtracting households with permits leaves 52 properties (1.1% of 4582 total parcels) that are the focus of the Code enforcement process. A list of the 52 properties were transferred to the County Planning and Building Department. Code Enforcement was tasked with notifying properties with Notice of Violations and impending fines. Those notices were sent on Friday, March 1 with a compliance date of April 1, 2019.

Water Conservation Update

Rebate activity continues to be minimal. Three toilet rebates have been requested to date in 2019.

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/.

Pending Task List for Executive Director

As requested at the January 2019 meeting, the following list of pending tasks has been created for BMC input and reference:

Task Description	Estimated Schedule	Budget Consideration
Adaptive management – nitrate contamination in lower aquifer	Proposal for May 2019 meeting	Approved in 2019 Item 4
Recruitment for permanent Executive Director	Q2/Q3 of 2019	Included in annual admin cost, Item 1
Seawater intrusion imaging in coordination with Cal Poly	Pending land owner approval	Minor – staff time only
8th/El Moro urban storm water recovery project	Pending BMC approval of budget item 10	See item 10 for feasibility cost
Creek discharge project	Pending BMC approval of Item 8	See item 8 for cost

Joint Powers Authority Pro/Con Summary

CHART: This chart was prepared as a general reference from reports and documents to help assist local agencies, such as the Cuyama Groundwater Basin, determine whether to form a joint powers authority to serve as the groundwater sustainability agency (which they d**id**). Thus, while most of the descriptions, pros and cons are generally applicable, there are some distinctions to be made given the manner in which the Los Osos BMC was created. For example, with respect to the first con, there are already a number of administrative costs associated with the BMC (because for example, it is a Brown Act body) and with respect to the second con, the JPA would presumably have both common statutory powers and those powers given by the Court to the BMC in the Stipulated Judgment.

General Joint Powers Authority (JPA) Description Overview, Pros, Cons, and Insurance Cost

DESCRIPTION	PROs	CONs	INSURANCE
• Formed by local agreement among government agencies pursuant to CA Gov't Code §6500 et seq.(mutual water companies may also join) (CA Gov't Code §6525)	1. Integrates existing agency powers, authorities, and funding mechanisms	1. Would be a new government agency adding a layer of government with administrative costs	A JPA will require insurance. Insurance options with associated cost are shown in Exhibit A from the Cuyama Basin GSA (2017). In 2017, cost of insurance options ranged from $7,500 to $14,000 pending on insurance provider & option.
• May jointly exercise any power common to the contracting parties	**2.** Formed locally by participating agencies, is shaped to benefit local purposes, and includes an annual budget approved by a Board of Directors	2. Limited to powers held in common	
• Creates legally binding commitments among entities	3. Member parties can retain control over JPA through the governing board and budget	3. No membership option for non-government organizations (except mutuals), BUT can be appointed to the Board (decision-making (voting) power) or could be appointed to advisory position	
• Used to define authorities, liabilities, responsibilities, funding, and revenue generation capacities	4. Affords significant flexibility (e.g. Board of Director compositions)	4. Members are usually appointed rather than directly elected (although JPA could provide that e.g. Director representing County must be a Supervisor)	
• Can do business, hire staff, contract for service, enter into agreements	5. Easy to dissolve if not satisfactory		
• Can designate parties to carry out specific responsibilities, such as enforcement or management	6. May allow for associate member participation without conferring voting power		
• Can include defined liabilities; i.e., can sue and be sued	7. Creates separate entity that can contract, receive **grants**, undertake funding processes, etc.		

Sample Document for Los Osos BMC JPA Discussion

EXHIBIT A

TO: **Cuyama Basin Groundwater Sustainability Agency Board of Directors**

DATE: **August 2, 2017**

SUBJECT: **Agenda Item #10: Consider GSA Insurance Options**

Recommendation
Consider current insurance options available for the Cuyama Basin GSA

Discussion
On June 30, 2017, the Board of Directors directed Matt Klinchuch, General Manager of the Cuyama Basin Water District, to review insurance options and quotes needed for the GSA. The following is a summary of the potential insurance options currently available to the GSA. At the time of writing this summary, there are three options available, two with the California Association of Mutual Water Companies (**Cal Mutuals**) and one with the Special District Management Authority (**SDRMA**). Other agencies have been requested for quotes, but have not yet responded. Discussion for the different options is provided below along with a summary comparison table included as Attachment 1 for side-by-side comparison,

Cal Mutuals
The first two options are provided through the Joint Powers Risk and Insurance Management Authority (**JPRIMA**) through Cal Mutuals. The difference between the two JPRIMA options is one option (1a) does not include Commercial Excess Liability, where the second option (1b) includes $1,000,000 (occurrence & aggregate) Commercial Excess Liability. The other offerings for General Liability and Public Officials & Management Liability are identical with $1,000,000 per occurrence and $10,000,000 aggregates. The annual period for coverage runs from April 1 to March 31 and annual premiums are $7,489 (Option 1a) and $8,192 (Option 1b), but are prorate for this first year to $4,732 and $5,172, respectively. These options through JPRIMA are fully insured and not assessable.

To bind coverage, the GSA must provide a 'No Loss' letter confirming no known losses or concern for loss since formation, a copy of this year's budget, a copy of the GSA's bylaws, and a signed member agreement to join JPRIMA. There is also an initial three (3) year commitment to stay with the program.

SDRMA
The final option is through the Property/Liability Program through SDRMA. This option includes General, Public Officials & Management, and Commercial Excess coverages along with Property and Crime coverage. These latter two cannot be removed from the coverage and aren't likely necessary at this time since the GSA does not own property or have employees. All coverages are combined into three (3) limit levels of $2,500,000, $5,000,000, and $10,000,000 and associated annual premiums of $7,881.17, $9,613.67, and $13,947.67, respectively. The annual period for this program is July 1 to June 30. These premiums would also be prorated in the first year, but the rate would not be provided until all necessary binding documentation is completed. Additionally, this program is a partially self-funded pool that can be assessed in the future. To date there has not been an assessment to program members.

Two additional components associated with this program are: 1) this program does not pay commissions so the broker would need to add commission to these premiums, which in this case would be 6.5%, and 2) these quoted premiums include a 15% credit. The 15% credit must

be earned, and if not earned fees will be charged at the end of each year when audited. Credits can be earned through online trainings by Directors, attendance at functions, and possibly through the affiliations with the broker.

To bind coverage, the GSA must provide a 'No Loss' letter confirming no known losses or concern for loss since formation, a resolution by the Board authorizing execution of the JPA agreement, a signed member agreement to join SDRMA, and membership to the California Special Districts Association (adds estimated $1,231 to annual cost). This option also requires an initial three (3) year commitment to stay with the program.

Recommendation

Based on the current options available, the recommendation would be to go with the JPRIMA option including Commercial Excess Liability coverage (Option 1b). This option is believed to provide the appropriate level of coverage at a cost-effective price.

Attachments

Attachment 1: Summary Comparison Table

	Option #1a	Option #1b	Option #2
	JPRIMA	**JPRIMA**	**Property/Liability Program**
Vendor	CalMutuals	CalMutuals	SDRMA
Term Year	Annually 04/01 - 03/31	Annually 04/01 - 03/31	Annually 07/01 - 06/30
Coverage Provided	General Liability; Public Officials & Management	General Liability; Public Officials & Management; Commercial Excess	General Liability; Public Officials & Management; Commercial Excess; Property; and Crime
General Liability	$1 M Per Occurance; $10 M Aggregate; Deductible = $5,000	$1 M Per Occurance; $10 M Aggregate; Deductible = $5,000	Limits all combined to totals shown below
Public Officials & Management	$1 M Per Wrongful Act; $10 M Aggregate; Deductible = $5,000	$1 M Per Wrongful Act; $10 M Aggregate; Deductible = $5,000	
	Excludes Inverse Condemnation & Injunctive Relief	Excludes Inverse Condemnation & Injunctive Relief	
Excess Liability	Not Included	$1 M Per Occurance; $1 M Aggregate	
Total Annual Premium	$7,489	$8,192	$2.5M Limit - $7,881.17 $5M Limit - $9,613.67 $10 M Excess - $13,947.67
Prorated in First Year?	Yes	Yes	Yes
Prorated Premiums	$4,732	$5,172	Determined once final application and binding items are submitted
Items Need to Bind Coverage	No Loss Letter confirming no known losses or concern for loss since time of formation	No Loss Letter confirming no known losses or concern for loss since time of formation	No Loss Letter confirming no known losses or concern for loss since time of formation
	Copy of Budget and Bylaws	Copy of Budget and Bylaws	Resolution by Board authorizing excution of JPA Agreement
	Signed member agreement and contract to join JPRIMA	Signed member agreement and contract to join JPRIMA	Signed member agreement and contract to join SDRMA
	Requires 3 year commitment (through 2021)	Requires 3 year commitment (through 2021)	Annual membership to California Special Districts Association and pay annual dues ($1,231 based on estimated budget)
			Requires 3 year commitment (through 2021)

	Option #1a	Option #1b	Option #2
	JPRIMA	**JPRIMA**	**Property/Liability Program**
Other Features/Notes			
	Hired and Non Owned Auto Coverage' is option to include in the General Liability	Hired and Non Owned Auto Coverage' is option to include in the General Liability	Includes Crime, coverage cannot be removed from package
	Included in premium are JPRIMA Admin Fees: $520 in prorate; $772 in full year	Included in premium are JPRIMA Admin Fees: $560 in prorate; $836 in full year	Premiums include 15% credit, 15% must be earned, if not earned then fees will be charged at annual audit
	Fully insured, not assessable	Fully insured, not assessable	SDRMA does not pay commission, Broker would add 6.5% on top of these premiums
			Partially self-funded pool that can be assessed (to date no assessment on members)
Broker Contact Information			
	Lloyd Turner INSURICA	Lloyd Turner INSURICA	Lloyd Turner INSURICA
	246 E. Honolulu St. Lindsay, CA 93247 (559) 562-2527 lloyd.turner@insurica.com	246 E. Honolulu St. Lindsay, CA 93247 (559) 562-2527 lloyd.turner@insurica.com	246 E. Honolulu St. Lindsay, CA 93247 (559) 562-2527 lloyd.turner@insurica.com

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

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 five parts, designated Programs A through D and Program M. 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. Program U is the Urban Water Reinvestment Program that addresses the use of recycled water within the Basin. The attached table provides a comprehensive project status and summary.

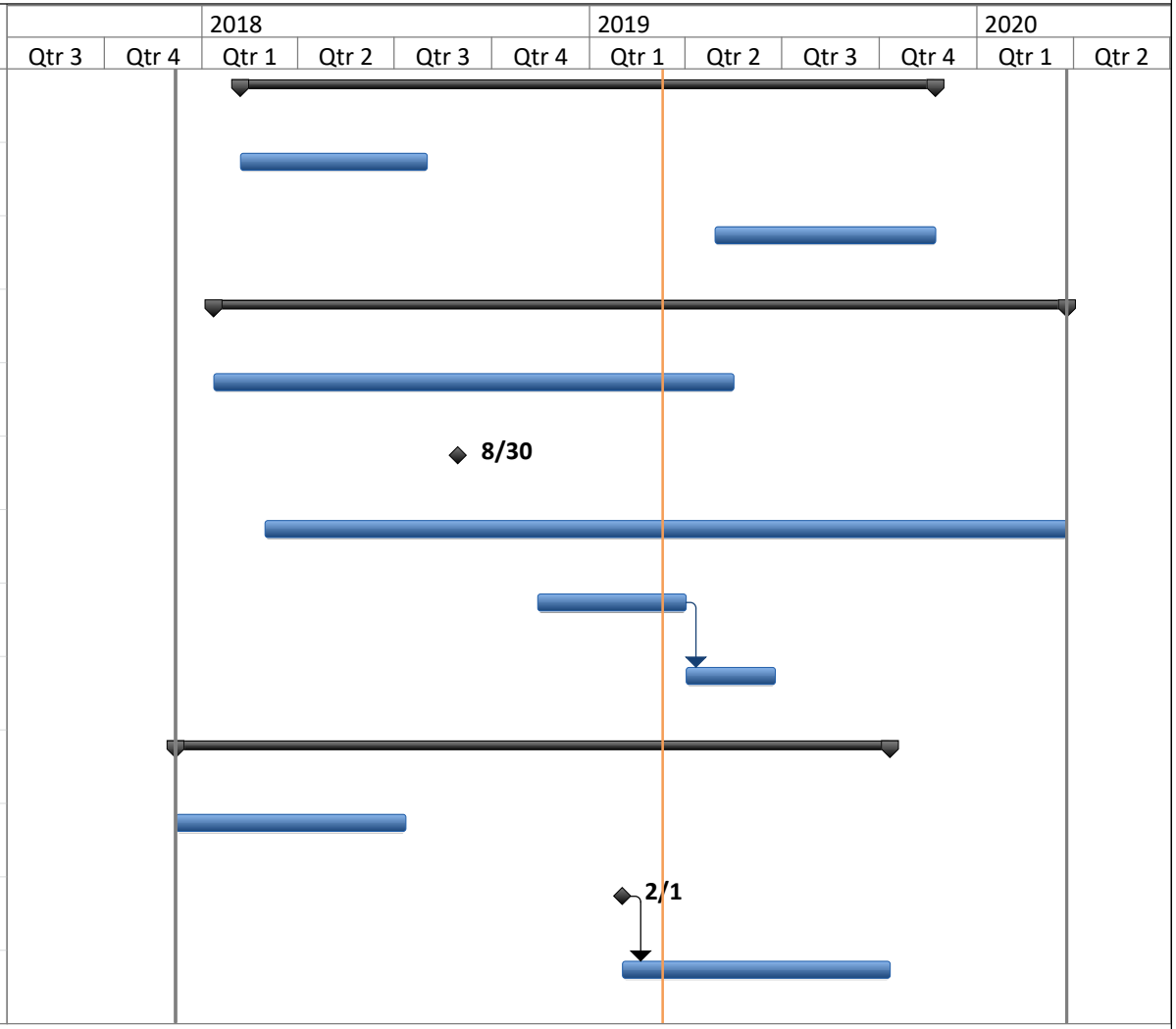
Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program A				
Water Systems Interconnection	LOCSD/ GSWC	Completed		
Upper Aquifer Well (8th Street)	LOCSD	Fully Funded	$250,000	Well was drilled and cased in December 2016. Budget remaining $250,000 to equip the well. Design is 100% complete and District is pursuing IRWM matching funds. If available, it is hoped that matching funds will be available by Q2 of 2019. Completion of construction is expected by December 2019.
South Bay Well Nitrate Removal	LOCSD	Completed		
Palisades Well Modifications	LOCSD	Completed		
Blending Project (Skyline Well)	GSWC	Completed		
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.

Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program C				
Expansion Well No. 1 (Los Olivos)	GSWC	Completed		
Expansion Well No. 2	LOCSD is currently leading the project with potential GSWC and S&T involvement, depending on final location	LOCSD is currently leading the project with respect to 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 was held on 8/30/2018. Due to community concerns over siting, environmental review and permitting is expected to be on going through Q1 of 2020, with construction complete by Q1 of 2021. The LOCSD authorized the preparation of bid documents for a test well at Site A (Los Osos Middle School) at their 11/1/18 meeting. Draft documents have been prepared, and staff is working on drilling details with the School District prior to going out to bid. The test hole is expected to be completed in Q2 of 2019.
Expansion Well 3 and LOVR Water Main Upgrade	GSWC/LOCSD	Cooperative Funding	BMP: $1.6 mil	This project has been 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	In 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	A wetlands delineation was completed in July 2018. A Minor Use Permit was approved on February 1, 2019. The project has been submitted to SLO County Public Works for an encroachment permit with bidding to follow. Construction is expected in Q3 of 2019. The project implementation cost has been included in the 2019 budget for consideration under item 7c.

Program U				
Creek Discharge Program	All Parties	Funded through BMC Budget/grants	$582,000 through feasibility phase	The 2019 draft budget includes funding for limited baseline monitoring and Soil Aquifer Treatment evaluation in the amount of $50,000.

Los Osos Basin Management Committee
Basin Plan Infrastructure Projects

ID	Task Name
1	**Upper Aquifer Well (8th Street)**
2	Engineering
3	Bidding and Construction
4	**Expansion Well #2**
5	Land Acquisition Phase
6	Community Workshop
7	Environmental Studies and Coastal Development Permit
8	Engineering for Test Well at Middle School
9	Bidding and Construction of Test Well
10	**New Zone D/E lower aquifer monitoring well in Cuesta by the Sea**
11	Design
12	Minor Use Permit Approved
13	Bidding and Construction



Mon 3/11/19

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

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

Recommendation
Adopt amended report.

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 were released as part of the August 2018 BMC meeting. A revised draft was released as part of the November 2018 BMC meeting, which included clarifications on well numbering and sequence of installation. The parties provided a number of comments on the draft, and these have been incorporated into a final version for adoption. The revised report is attached in both a clean and a redline format for ease of review.

As indicated in the previous meeting, a more detailed discussion of borehole contamination will be provided in the 2018 Annual Report. In addition, the Executive Director's report includes a follow up item for analyzing nitrate contamination in the lower aquifer as a key adaptive management effort for 2019.

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

Technical Memorandum

Date: February 28, 2019

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.

Dear Mr. Miller:

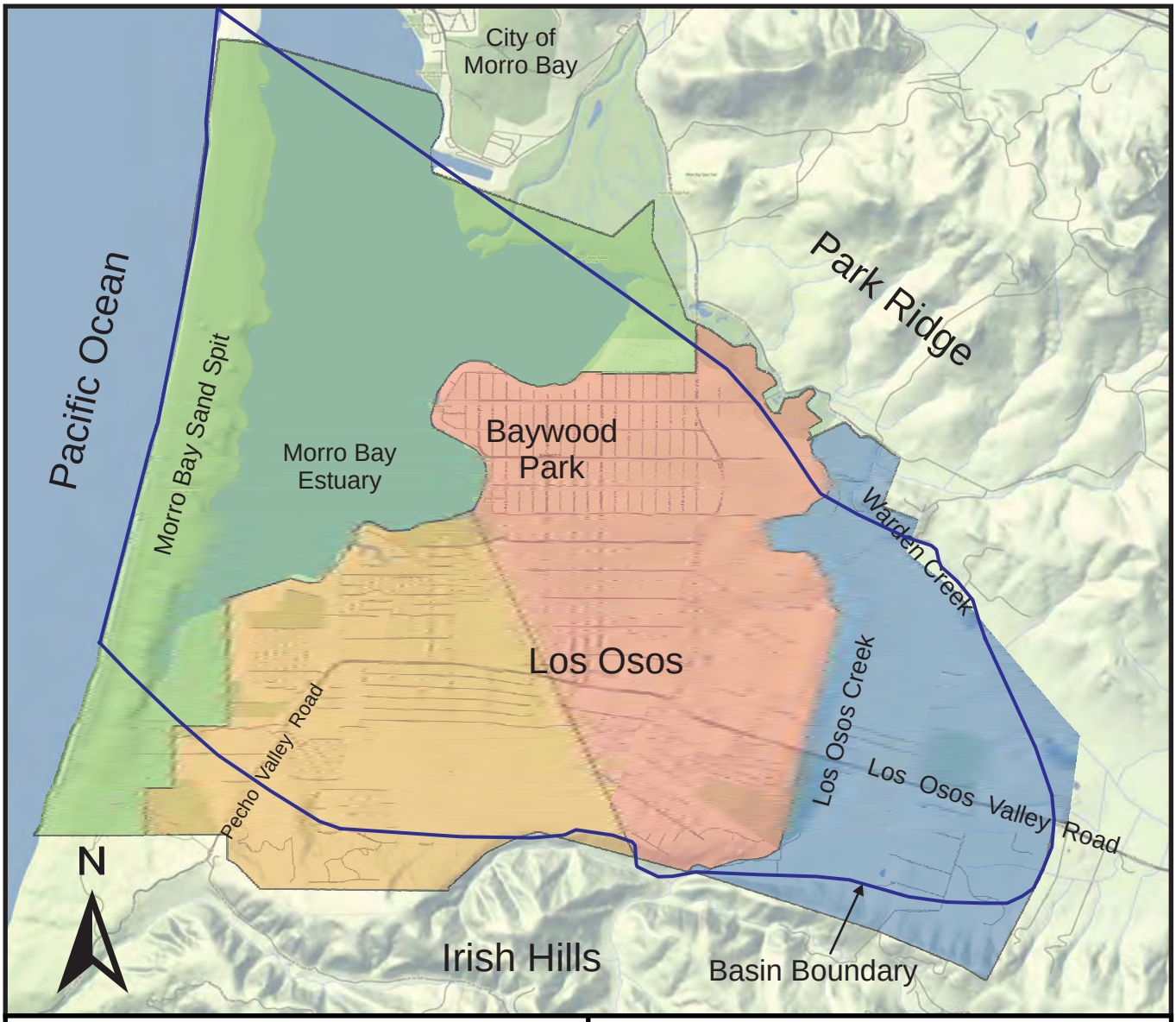
Cleath-Harris Geologists (CHG) has performed a metric trends review and basin infrastructure Program C evaluation as part of adaptive management for 2018. The purpose of this effort was to provide the Los Osos Basin Management Committee (BMC) with information and recommendations for making adjustments 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 (pages 239-240). These areas, with some adjustments noted below, are shown in Figure 2.

South Expansion Well Area - Vicinity of the mobile home parks south of Los Osos Valley Road in the GSWC service area.

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

North Expansion Well 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.

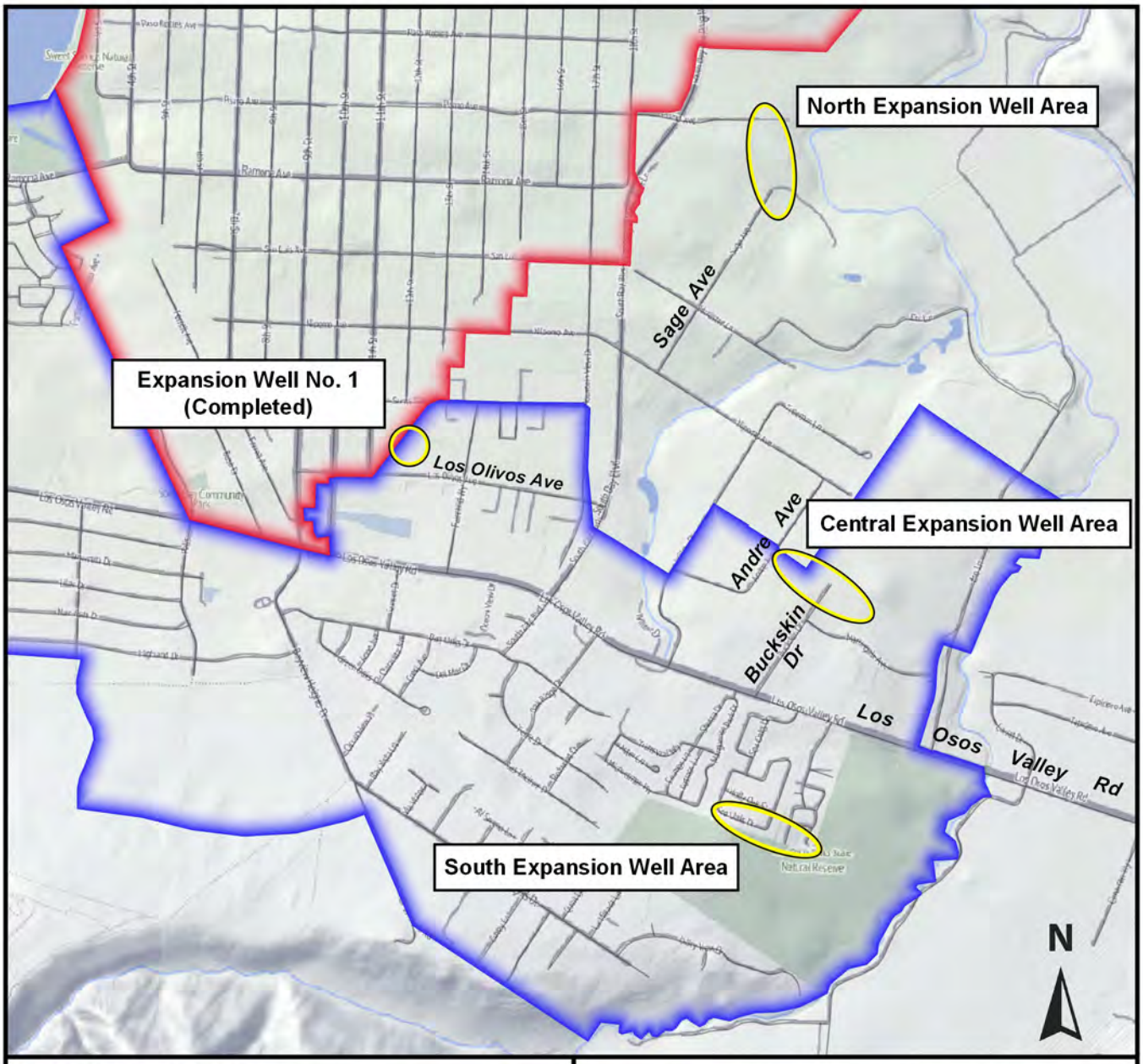
Expansion Well No. 1 (COMPLETED) - Originally planned in the vicinity of Buckskin Avenue north of Los Osos Valley Road and within the GSWC service area. GSWC relocated Expansion Well No. 1 to Los Olivos Avenue, and constructed a new Lower Aquifer well there in 2016.

The Program C evaluation for adaptive management considers whether additional Expansion Wells are needed, under current basin water demand, to achieve a Basin Yield Metric targeted value of 80 (BYM 80) or lower, and a distribution of pumping that reverses the historical seawater intrusion trend and maintains a stationary intrusion front at a location closer to the coast in accordance with LOBP goals. 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 and the Chloride Metric. A third method, the Upper Aquifer Water Level Profile, was introduced in the 2017 Annual Groundwater Monitoring Report to evaluate the potential for seawater intrusion in the Upper Aquifer , (CHG, 2018). A separate metric, the Nitrate Metric, was established in the LOBP to track nitrate concentrations in groundwater over time in areas of the basin that have historically been impacted by nitrates.

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.



Base Image: Stamen-Terrain

0 750 1500 2250 3000 ft

Scale: 1 inch ≈ 1,500 feet

Explanation

Potential 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

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 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 also no relationship 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 estimated amount of groundwater extracted in a given year with the estimated 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

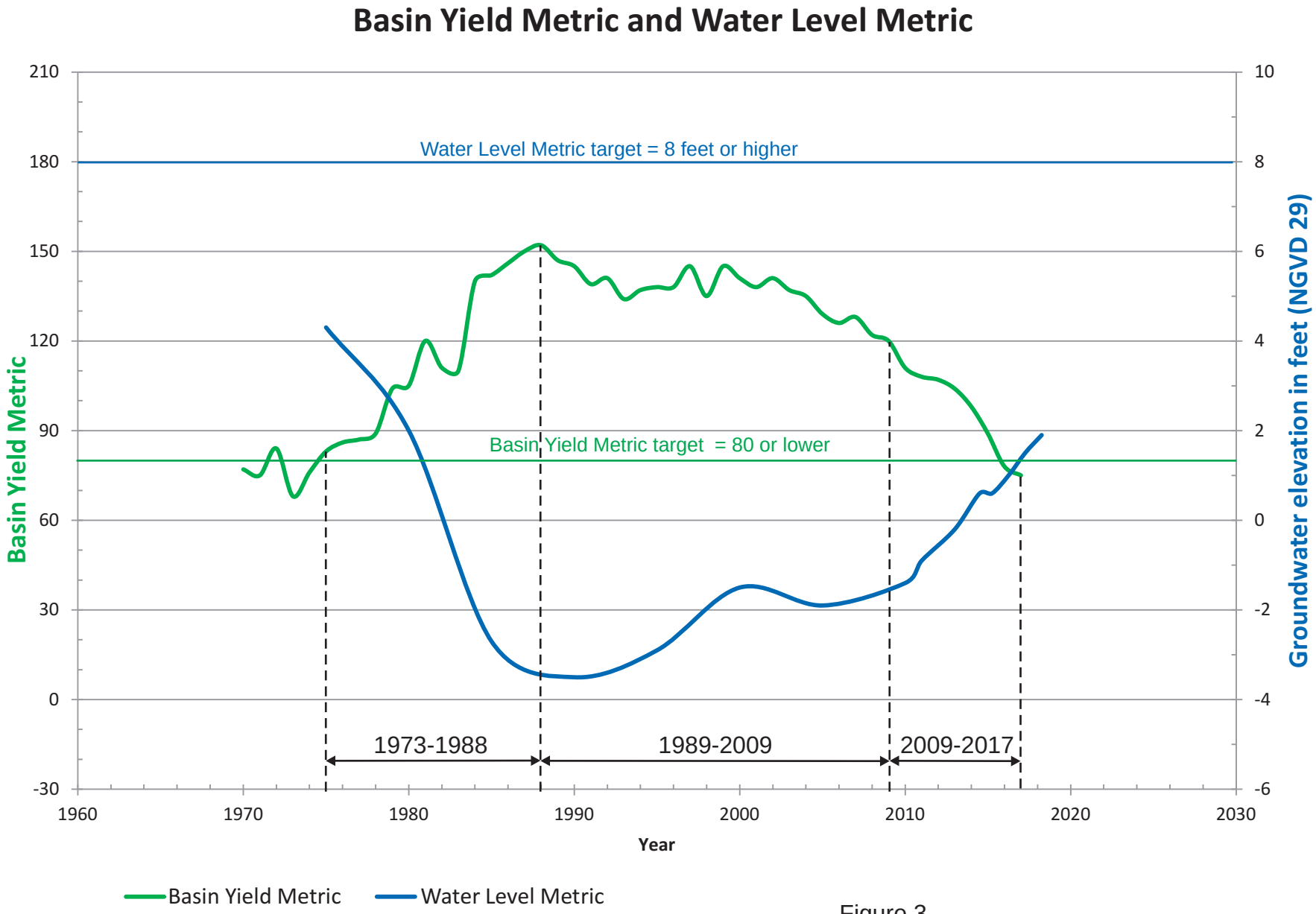


Figure 3
Basin Yield Metric and Water Level Metric
Los Osos Groundwater Basin
2018 Adaptive Management TM

Cleath-Harris Geologists

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.

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 (Figure 37 from LOBP; 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.

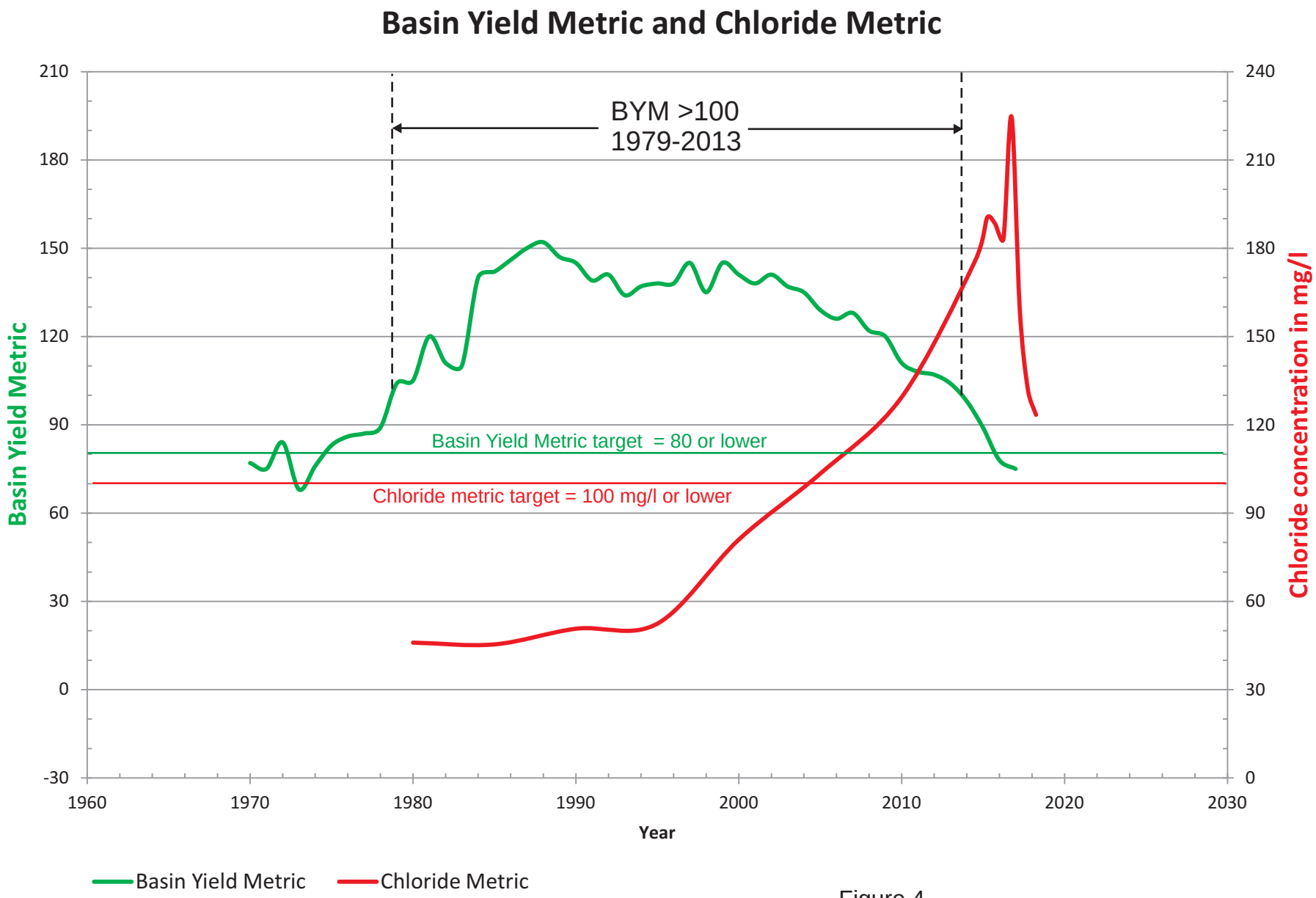


Figure 4
Basin Yield Metric and Chloride Metric
Los Osos Groundwater Basin
2018 Adaptive Management TM

Cleath-Harris Geologists

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 (Figure 37 from LOBP; Attachment B). The current Chloride Metric trend direction is consistent with the 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 from high-density septic systems (LOBP, 2015), most of 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 (Figure 31 from LOBP; 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 is 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 closer the coast, similar to the position shown in LOBP Figure 38 (Attachment B). Program C calls for three expansion wells to be constructed to meet the LOBP goals of halting or reversing 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 (Attachment B). Program C was partially completed in 2016 with the construction of Expansion Well No. 1 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 metered community purveyor production and 1,020 acre-feet of other non-metered 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 closer the coast. The current 2017 Basin Yield Metric is 75, which meets the targeted value. A

stationary seawater front can also be maintained at a position closer to the coast 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 dedicated water supply main to the District's main pressure zone 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.

Currently, the only active purveyor wells with excess pumping capacity under 2017 sustainable yield conditions are in the Western Area and western Central Area. Any production shifted to these westerly well locations, however, would cause a sustainable yield decline. A second Expansion Well would provide greater system redundancy and flexibility by allowing an easterly shift in 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 benefit to basin sustainable yield (Carollo Engineers, 2007; CHG, 2014). The ranking, from highest level of mitigation to lowest, is summarized in Table 1.

Table 1
Seawater Intrusion Mitigation Ranking
Equivalent Freshwater Head (EFH) Basin Model[1]

Rank	Disposal/Reuse Alternative	Seawater Mitigation Factor[2]	Comments
1	Urban Reuse (Community Park, Schools)	0.55	With decrease in Western Area Lower Aquifer pumping
	Agricultural Reuse (exchange)	0.55	Program D with decrease in Western Area Lower Aquifer pumping
2	Broderson Site Disposal	0.22	No change in pumping distribution
3	Agricultural Reuse (in lieu)	0.1	Decrease irrigation well pumping
	Memorial Park Reuse (in lieu)	0.1	Decrease irrigation well pumping
	Discharge to Los Osos Creek[3]	0.1	No change in pumping distribution
4	Agricultural Reuse (new demand)	0	No change in pumping distribution
	Reuse/Disposal outside of basin	0	No change in pumping distribution

[1] The EFH Basin Model was upgraded to SEAWAT in 2009. Use of seawater mitigation factors and associated EFH methodology to estimate Basin Yield was replaced by chloride concentrations and SEAWAT dual-density methodology.
[2] Disposal/reuse volume multiplied by mitigation factor for an alternative estimates the decrease in seawater intrusion at the coast, based on the Equivalent Freshwater Head (EFH) Basin Model (Carollo, 2007).
[3] Recycled water discharge to Los Osos Creek was not part of 2007 disposal/reuse analyses and the mitigation ranking is estimated based on subsequent work (CHG, 2014).

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. Agricultural reuse for new water demand (expanded acreage or higher intensity cropping) without exchange or in-lieu recharge assumes no change in irrigation well pumping.

Program C wells can improve the potential seawater intrusion mitigation benefit and purveyor yield from both agricultural reuse with in-lieu recharge and from recycled water discharges to Los Osos Creek. 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 or recycled water discharge 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, to predict the effects of pumping distributions on basin yield 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. 1 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 with a new program C well in each of the potential areas shown in Figure 2. Results are summarized below 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. 1)	2,760	0
Add Expansion Well No. 2 in North Area	2,850	90
Add Expansion Well No. 2 in Central Area	2,900	140
Add Expansion Well No. 2 in South Area	2,950	190
Maximum for Program C (add two wells)	3,000	240

As shown in Table 1, constructing Expansion Well No. 2 in the south area would potentially add the greatest amount of sustainable yield (190 AFY), followed by the Central area 4 (140 AFY), and the north area (90 AFY). A combination of two new Expansion Wells (south and central areas or south and north areas) would potentially add an estimated 240 AFY of sustainable yield.

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. More time is needed for observing the effects of decreased nitrate loading to the basin under current conditions with the Los Osos Wastewater Project completed.

- 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 closer to the coast. 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 sustainable yield from the addition of a second Program C Expansion Well are estimated to be 90 AFY in the north area, 140 AFY in the central area, and 190 AFY in the south area. 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.

References

Carollo, 2007, Viable Project Alternatives Fine Screening Analysis Final, prepared for San Luis Obispo County Los Osos Wastewater Project development, August 2007.
http://archive.slocounty.ca.gov/Assets/PW/LOWWP/document+library/Final+Fine+Screening+Report-Stamped.pdf

Cleath-Harris Geologists, 2014, Recycled Water Discharges to Los Osos Creek, Draft Technical Memorandum prepared for the Los Osos ISJ Group, March 18, 2014.
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

ATTACHMENTS

ATTACHMENT A:

Basin Metric Trends

Source:
2017 Annual Groundwater Monitoring Report

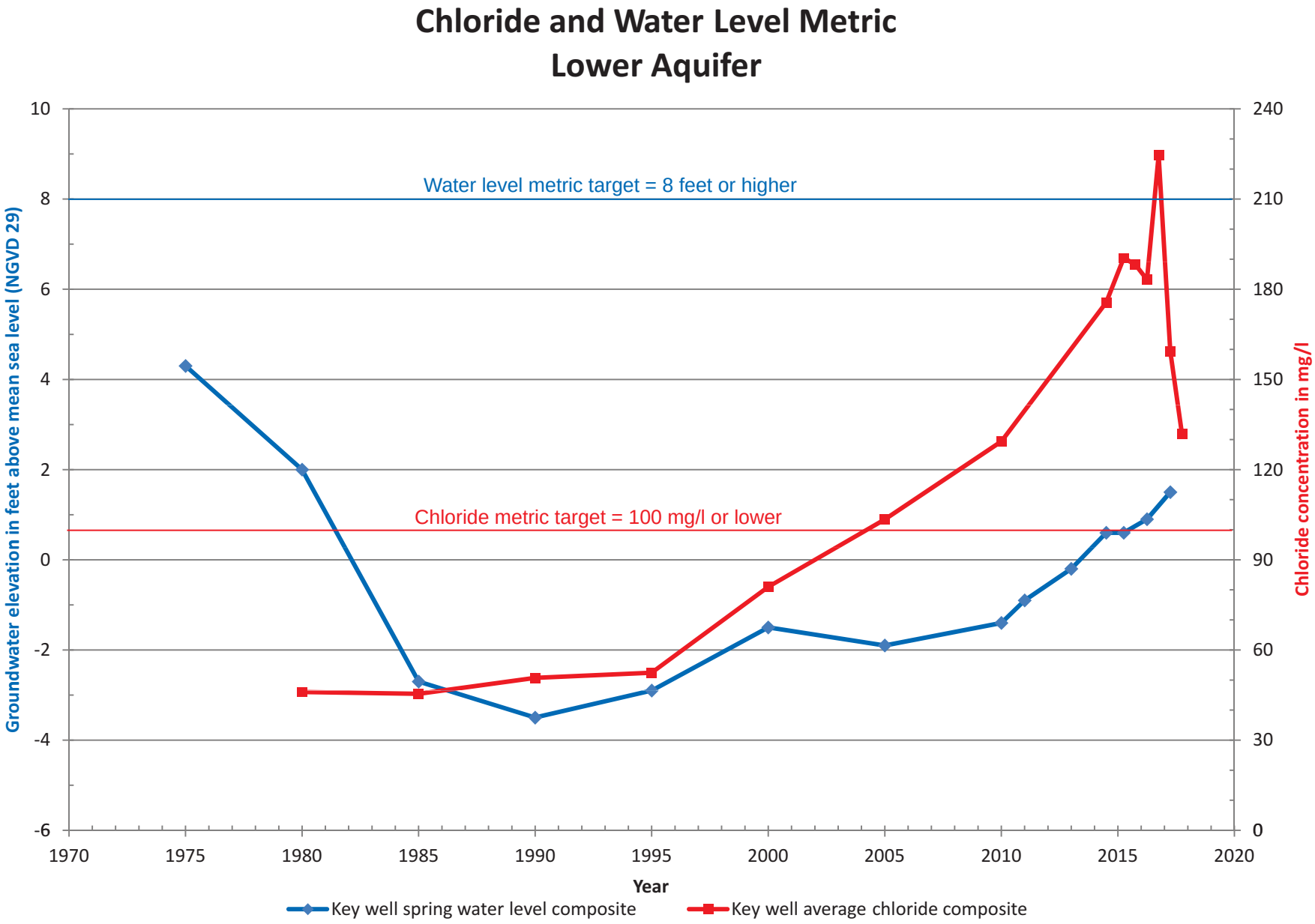
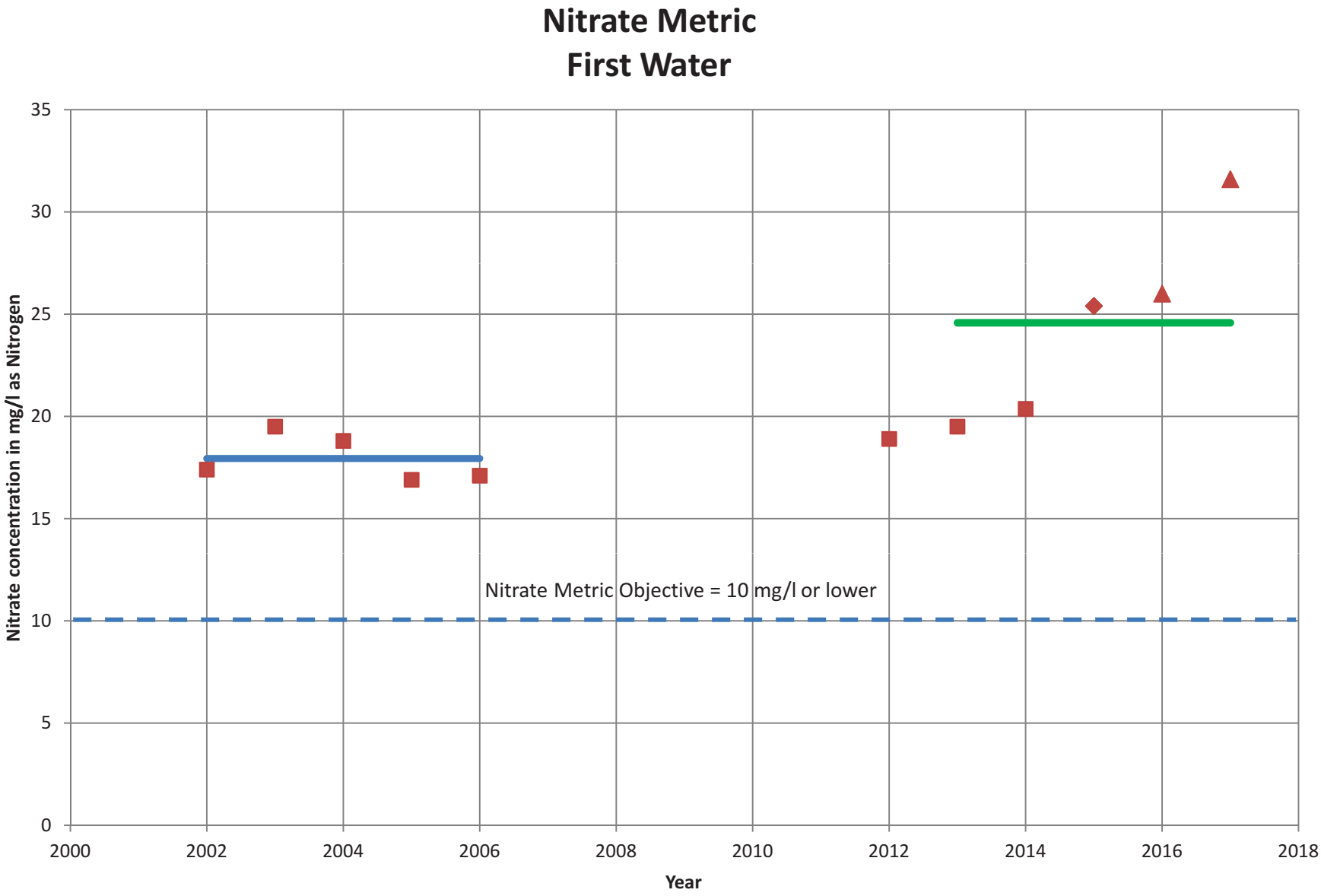


Figure 21
Chloride and Water Level Metric
Los Osos Groundwater Basin
2017 Annual Report

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

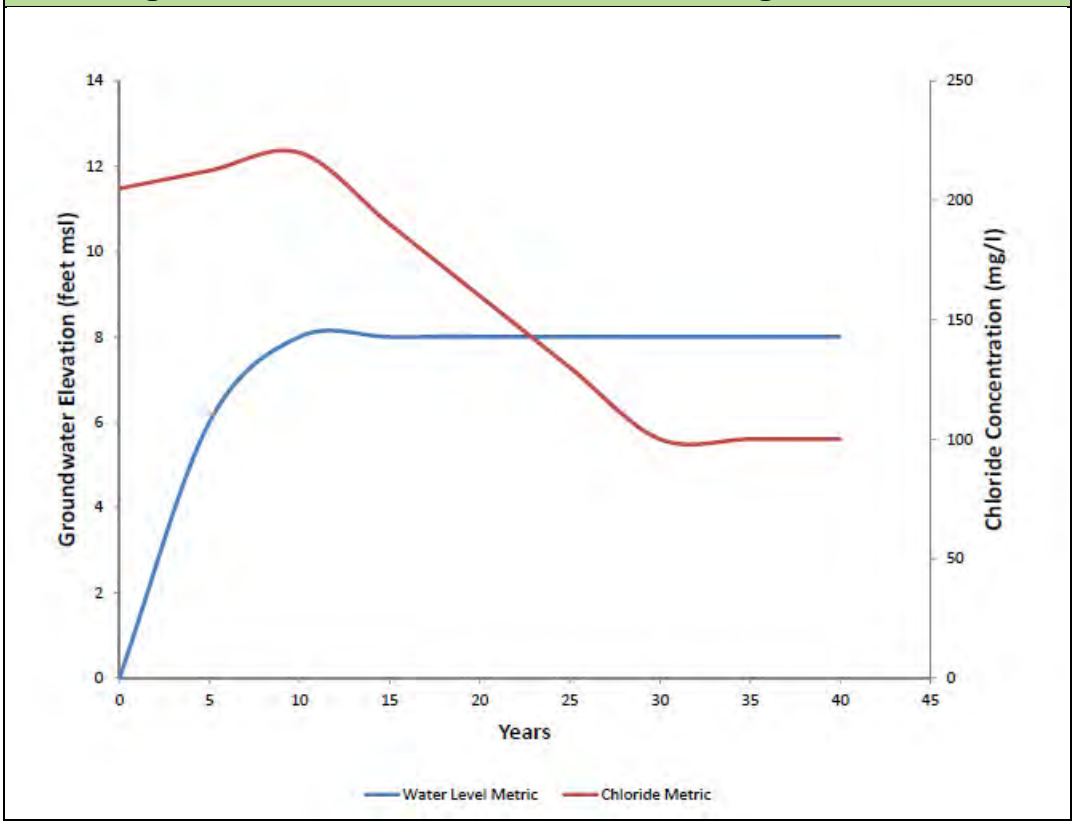
Reference: 2017 Annual Groundwater Monitoring Report (CHG, 2018)

ATTACHMENT B

Anticipated Metric Trends
Predicted Seawater Intrusion for Basin Metric Targets
Table 43

Source:
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

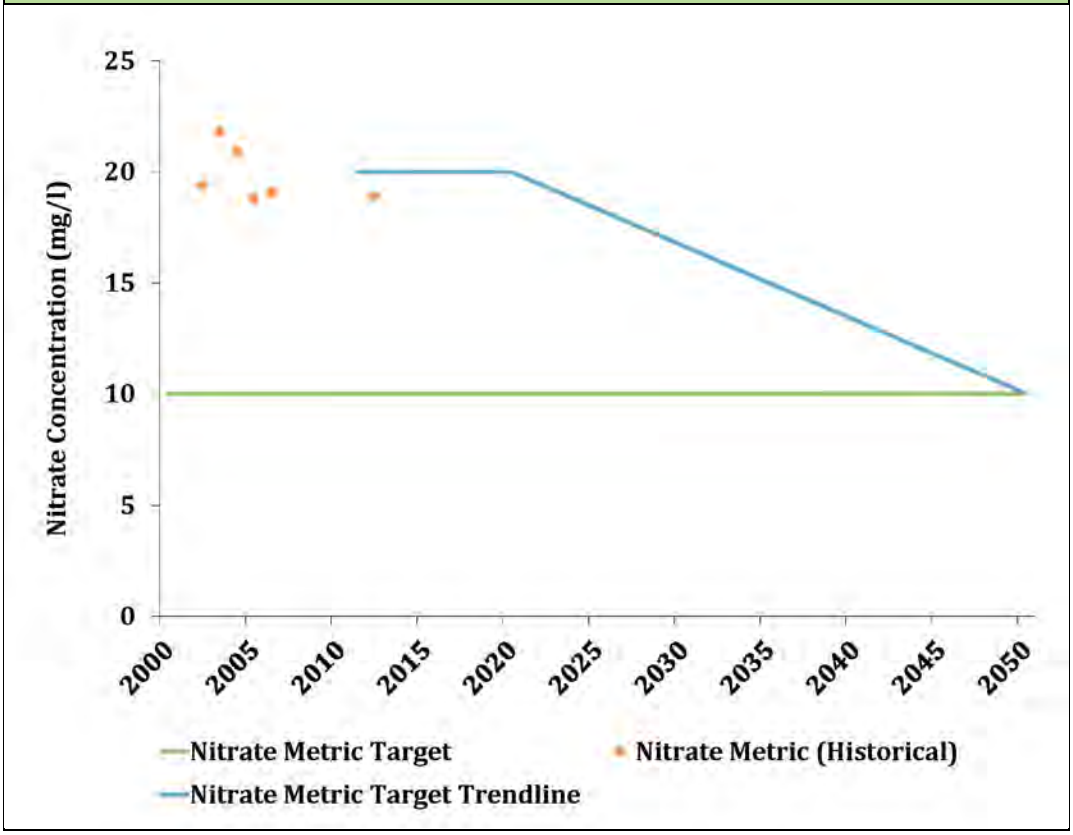
The prior sections of this chapter have addressed the two greatest threats to the Basin, namely, nitrate impacts to the Upper Aquifer and seawater intrusion into the Lower Aquifer. Those sections establish metrics for evaluating the twin threats and actions that will be taken to defend against them. 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.

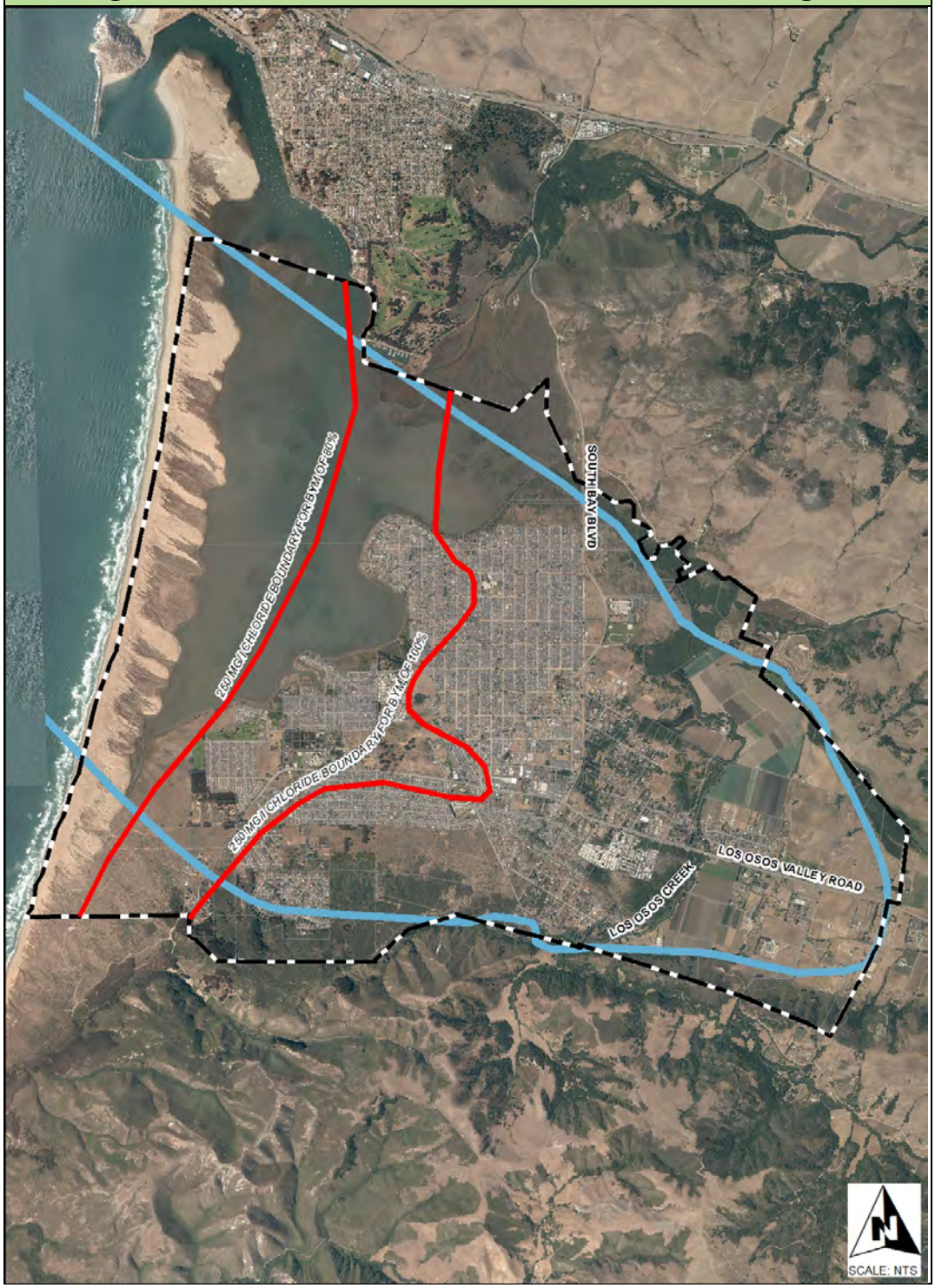
It is likely to take approximately 30 years for the Upper Aquifer to equilibrate to a change in nitrate loading, although the Nitrate Metric Target can potentially be achieved within a shorter time frame.[54] In the intervening years, nitrate removal or blending with other sources with lower nitrate 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).

Figure 38. Predicted Seawater Intrusion for Basin Metric Targets



Reference: 2015 Los Osos Groundwater Basin Plan Update (ISJ, 2015)

agricultural demands, this combination would result in less than full utilization of the Eastern Area. As noted above, the Agricultural Water Reinvestment Program would only be implemented if additional urban development were allowed by the County and Coastal Commission in Los Osos.

- **Urban Water Reinvestment Program with Basin Infrastructure Programs A, B, C and D and Supplemental Water (U+ABCD+S).** This combination would add desalinated groundwater from the Supplemental Water Program to Combination U+ABCD. The primary impact from adding desalinated groundwater would be demand-side, but there would be limited supply-side impacts as well. Since Supplemental Water is not recommended for implementation in this Basin Plan, its impact on the Basin was not specifically calculated using the Model.

Each of the combinations set forth above were analyzed to determine the resulting Sustainable $Yield_X$ of the Basin, as calculated by the Model. Table 43 lists the results of that analysis, including the Sustainable $Yield_X$ and Basin Development Metric of each combination. In addition, Figure 70 depicts the Sustainable $Yield_X$ attained by each combination in comparison to the Sustainable $Yield_P$ of 3,500 AFY. As more program components are implemented with each combination, the Sustainable $Yield_X$ generally increases, and the Basin Development Metric approaches 100 percent.

Table 43. Summary of Water Supply Program Combinations

Program Combination	Sustainable $Yield_X$	Basin Development Metric
N	2,450 AFY	70%
U	2,540 AFY	73%
A	2,570 AFY	73%
U+A	2,650 AFY	76%
U+AB	3,170 AFY	91%
U+AC	3,000 AFY	86%
U+ABC	3,350 AFY	96%
UG+ABC	3,350 AFY	96%
U+ABC+S	>3,350 AFY	>96%
U+ABCD	3,500 AFY	100%
UG+ABCD	3,500 AFY	100%
U+ABCD+S	>3,500 AFY	>100%

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

Redline version for comparison

Technical Memorandum

Date: February 28, 2019~~August 27, 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).

General areas for the Program C Expansion Wells were described in the LOBP (pages 239-240). These areas, with some adjustments noted below, are shown in Figure 2.

South Expansion Well Area - Vicinity of the mobile home parks south of Los Osos Valley Road in the GSWC service area.

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

North Expansion Well 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. 1 (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. 1 to Los Olivos Avenue, and constructed a new Lower Aquifer well there in 2016.

The Program C evaluation for adaptive management considers whether additional Expansion Wells are needed, under current basin water demand, to achieve a Basin Yield Metric targeted value of 80 (BYM 80) or lower, and a distribution of pumping that reverses the historical seawater intrusion trend and maintains a stationary intrusion front at a location closer to the coast in accordance with LOBP goals. 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 and the , The Chloride Metric, and the Nitrate Metric. A third method, the Upper Aquiferfourth monitoring based measure, the Water Level Profile, was introduced in the 2017 Annual Groundwater Monitoring Report to evaluate the potential for seawater intrusion in the Upper Aquifer , (CHG, 2018). A separate metric, the Nitrate Metric, was established in the LOBP to track nitrate concentrations in groundwater over time in areas of the basin that have historically been impacted by nitrates.

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 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 no relationship~~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 estimated~~actual~~ amount of groundwater extracted in a given year with the estimated 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.

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 (Figure 37 from LOBP;~~(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 (Figure 37 from LOBP;~~(LOBP, 2015;~~ Attachment B). The current Chloride Metric trend direction is consistent with the 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 from~~to~~ high-density septic systems (LOBP, 2015), most of 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 (Figure 31 from LOBP; ~~(~~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 is 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 closer the coast, similar to the position shown in LOBP Figure 38 (Attachment B). Program C calls for three expansion wells to be constructed to meet the LOBP goals of halting or reversing 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 (Attachment B).~~(ISJ, 2015).~~ Program C was partially completed in 2016 with the construction of Expansion Well No. 1 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 metered community purveyor production and 1,020 acre-feet of other non-metered 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 closer the coast. The current 2017 Basin Yield Metric is 75, which meets the targeted value. A

stationary seawater front can also be maintained at a position closer to the coast 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 dedicated water supply main to the District's main pressure zone 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.~~

Currently, the only active purveyor wells with excess pumping capacity under 2017 sustainable yield conditions are in the Western Area and western Central Area. Any production shifted to these westerly well locations, however, would cause a sustainable yield decline. A second Expansion Well would provide greater system redundancy and flexibility by allowing an easterly shift in 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 benefit to basin sustainable

yield (Carollo Engineers, 2007; CHG, 2014). The ranking, from highest level of mitigation to lowest, is summarized in Table 1.~~as follows:~~

Table 1
Seawater Intrusion Mitigation Ranking
Equivalent Freshwater Head (EFH) Basin Model[1]

Rank	Disposal/Reuse Alternative	Seawater Mitigation Factor[2]	Comments
1	Urban Reuse (Community Park, Schools)	0.55	With decrease in Western Area Lower Aquifer pumping
	Agricultural Reuse (exchange)	0.55	Program D with decrease in Western Area Lower Aquifer pumping
2	Broderson Site Disposal	0.22	No change in pumping distribution
3	Agricultural Reuse (in lieu)	0.1	Decrease irrigation well pumping
	Memorial Park Reuse (in lieu)	0.1	Decrease irrigation well pumping
	Discharge to Los Osos Creek[3]	0.1	No change in pumping distribution
4	Agricultural Reuse (new demand)	0	No change in pumping distribution
	Reuse/Disposal outside of basin	0	No change in pumping distribution

[1] The EFH Basin Model was upgraded to SEAWAT in 2009. Use of seawater mitigation factors and associated EFH methodology to estimate Basin Yield was replaced by chloride concentrations and SEAWAT dual-density methodology.
[2] Disposal/reuse volume multiplied by mitigation factor for an alternative estimates the decrease in seawater intrusion at the coast, based on the Equivalent Freshwater Head (EFH) Basin Model (Carollo, 2007).
[3] Recycled water discharge to Los Osos Creek was not part of 2007 disposal/reuse analyses and the mitigation ranking is estimated based on subsequent work (CHG, 2014).

~~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. Agricultural reuse for new water demand (expanded acreage or higher intensity cropping) without exchange or in-lieu recharge assumes no change in irrigation well pumping.

Program C wells can improve the potential seawater intrusion mitigation benefit and purveyor yield from both agricultural reuse with in-lieu recharge and from recycled water discharges to Los Osos Creek.~~.~~ 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 or recycled water discharge~~occurring~~ in the Los Osos Creek valley.~~Valley.~~

Pumping Distribution and Basin Yield under Program C

The Basin Model is a tool to assist with the understanding of basin dynamics, to predict the effects of pumping distributions on basin yield 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. 1 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 with a new program C well in each of the potential areas shown in Figure 2. Results are summarized below 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. 1)	2,760	0
Add Expansion Well No. 2 in North Area	2,850	90
Add Expansion Well No. 2 in Central Area	2,900	140
Add Expansion Well No. 2 in South Area	2,950	190
Maximum for Program C (add two wells)	3,000	240

As shown in Table 1, constructing Expansion Well No. 2 in the south area would potentially add the greatest amount of sustainable yield (190 AFY), followed by the Central area 4 (140 AFY), and the north area (90 AFY). A combination of two new Expansion Wells (south and central areas or south and north areas) would potentially add an estimated 240 AFY of sustainable yield.

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. More time is needed for observing the effects of decreased nitrate loading to the basin under current conditions with the Los Osos Wastewater Project completed.

- 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 closer to the coast. 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 sustainable yield from the addition of a second~~one new~~ Program C Expansion Well are estimated to be 90 AFY in the north area, 140 AFY in the central area, and 190 AFY in the south area. 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.

References

Carollo, 2007, Viable Project Alternatives Fine Screening Analysis Final, prepared for San Luis Obispo County Los Osos Wastewater Project development, August 2007.
http://archive.slocounty.ca.gov/Assets/PW/LOWWP/document+library/Final+Fine+Screening+Report-Stamped.pdf

Cleath-Harris Geologists, 2014, Recycled Water Discharges to Los Osos Creek, Draft Technical Memorandum prepared for the Los Osos ISJ Group, March 18, 2014.
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

ATTACHMENTS

ATTACHMENT A:

Basin Metric Trends

Source:
2017 Annual Groundwater Monitoring Report

ATTACHMENT B

Anticipated Metric Trends
Predicted Seawater Intrusion for Basin Metric Targets
Table 43

Source:
2015 Los Osos Groundwater Basin Plan Update

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

SUBJECT: Item 7c – Adoption of Basin Management Committee Annual Budget

Recommendations
Receive report on staff level discussions and adopt remainder of 2019 budget.

Discussion
In January 2019, the BMC adopted Items 1 through 7 of the attached Annual Budget for Calendar Year 2019. These items were subsequently confirmed by the parties. Items 8 through 11 were viewed by the County as implementation projects, which were not contemplated in the Stipulated Judgment prior to the approval of a new funding source, such as a special tax. Staff has been working with the parties at the staff level to resolve this issue, and the recommended approach is as follows:

- Item 8 – Creek recharge and replenishment studies: The County would contribute in-lieu services to this item, including the monitoring and testing performed at the Los Osos Wastewater Reclamation Facility (WRF).
- Item 9 – Cuesta by the Sea Monitoring Well: The County has identified CASGEM (California Statewide Groundwater Elevation Monitoring Program) funding for the project, and therefore can participate in the direct funding of this item.
- Item 10 - Stormwater and Perched Water Recovery Project - Feasibility Study: The County would contribute in lieu services to this item, including staff time to analyze the impacts and feasibility of the proposed urban storm discharge on the WRF.
- Item 11 - Conservation programs (not including member programs): This item will be removed from the BMC budget, and each party will fund its own programs. If public information funding becomes necessary in 2019, the BMC will consider the use of contingency funds. Staff will continue to provide updates on conservation activities.

Financial Considerations
The total amended budget proposed for 2019 is $335,700. The budget also includes a 5% contingency for unforeseen expenses. The estimated cost to each party is summarized as follows:

LOCSD (38%): $127,566
GSWC (38%): $127,566
County of SLO (20%): $67,140, including $13,700 of in lieu staff services for items 8 and 10.
S&T Mutual (4%): $13,428

Original proposed budget
January 2019 BMC meeting

Table 1: BMC 2019 Budget for 12 month period, allocated by fiscal year					
Item	Description	Cost	Projected Total in LOCSD FY 2018/19	Projected Total in LOCSD FY 2019/20	Comments
1	Monthly meeting administration, including preparation, staff notes, and attendance	$50,000	$25,000	$25,000	Assumes 20 to 25 hours per month, on average
2	Meeting expenses - facility rent (if SBCC needed for larger venue)	$1,000	$500	$500	$30/hr for non-profit
3	Meeting expenses - audio and video services	$6,000	$3,000	$3,000	
4	Adaptive Management - Groundwater Modeling and Well Head Surveying	$15,000	$10,000	$5,000	Includes $5k for surveying, and the remainder represents modeling studies as requested and approved by BMC
5	Semi annual seawater intrusion monitoring	$29,200	$14,600	$14,600	
6	2018 Annual Report	$33,500	$28,000	$5,500	Not including services contributed directly from BMC member staff
7	Grant writing (outside consultant)	$5,000	$3,000	$2,000	BMC member staff may also contribute to grant efforts
8	Creek Recharge and Replenishment Studies	$50,000	$15,000	$35,000	Grant pursuit, additional baseline modeling
9	Cuesta by the Sea monitoring well	$115,000	$40,000	$75,000	Well ownership to be determined prior to construction
10	Stormwater and Perched Water Recovery Project - Feasibility Study	$15,000	$5,000	$10,000	
11	Conservation programs (not including member programs)	$10,000	$5,000	$5,000	Consider pilot program for septic tank conversion rebates
	Subtotal	$329,700			
	5% Contingency (rounded to nearest $100)	$16,500	$8,300	$8,200	
	Total	**$346,200**	**$157,400**	**$188,800**	
	LOCSD (38%)	$131,556	**$59,812**	**$71,744**	
	GSWC (38%)	$131,556			
	County of SLO (20%)	$69,240	$31,480	$37,760	
	S&T Mutual (4%)	$13,848			

Amended budget for March 2019 BMC meeting

Table 1: BMC 2019 Budget for 12 month period, allocated by fiscal year					
Item	Description	Cost	Projected Total in LOCSD FY 2018/19	Projected Total in LOCSD FY 2019/20	Comments
1	Monthly meeting administration, including preparation, staff notes, and attendance	$50,000	$25,000	$25,000	Assumes 20 to 25 hours per month, on average
2	Meeting expenses - facility rent (if SBCC needed for larger venue)	$1,000	$500	$500	$30/hr for non-profit
3	Meeting expenses - audio and video services	$6,000	$3,000	$3,000	
4	Adaptive Management - Groundwater Modeling and Well Head Surveying	$15,000	$10,000	$5,000	Includes $5k for surveying, and the remainder represents modeling studies as requested and approved by BMC
5	Semi annual seawater intrusion monitoring	$29,200	$14,600	$14,600	
6	2018 Annual Report	$33,500	$28,000	$5,500	Not including services contributed directly from BMC member staff
7	Grant writing (outside consultant)	$5,000	$3,000	$2,000	BMC member staff may also contribute to grant efforts
8	Creek Recharge and Replenishment Studies	$50,000	$15,000	$35,000	Grant pursuit, additional baseline modeling
9	Cuesta by the Sea monitoring well	$115,000	$40,000	$75,000	Well ownership to be determined prior to construction
10	Stormwater and Perched Water Recovery Project - Feasibility Study	$15,000	$5,000	$10,000	
	Subtotal	$319,700			
	5% Contingency (rounded to nearest $100)	$16,000	$8,300	$7,700	
	Total	**$335,700**	**$152,400**	**$183,300**	
	LOCSD (38%)	$127,566	**$57,912**	**$69,654**	
	GSWC (38%)	$127,566			
	County of SLO (20%)	$67,140	$30,480	$36,660	Includes $13,700 ($13k + 5%) of in lieu staff services for items 8 and 10
	S&T Mutual (4%)	$13,428			

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

SUBJECT: Item 7d. Consider Draft Request for Qualifications for BMC Executive Director

Recommendations

Discuss draft RFQ and provide input to staff for May 2019 approval.

Discussion

Staff has prepared the attached draft RFQ for Committee review and comment. The document describes the duties of the Executive Director and provides key references for consultant review. The following schedule is recommended for the selection process:

- Review draft RFQ and provide input – March/April 2019
- BMC to approve RFQ, issue document to consultants, and designate two directors to serve on interview team – May 2019
- Statements of Qualifications due from consultants – June 27, 2019
- Interviews and selection team assembles recommendation – July 2019
- BMC selects Executive Director – August 2019
- New Executive Director assists Rob Miller in preparation of agenda package for October and December meetings, including preparation of 2020 budget
- New Executive Director assumes full duties – January 2020

Financial Considerations

The draft RFQ describes the BMC's budget allocation for administration, but acknowledges that adjustments may be required, depending on the consultant selected. If required, such an adjustment would occur with the 2020 budget.

LOS OSOS GROUNDWATER BASIN
BASIN MANAGEMENT COMMITTEE

REQUEST FOR QUALIFICATIONS for Professional Services as Executive Director

You are invited to submit your qualifications to serve as the Executive Director for the Los Osos Groundwater Basin Management Committee. The Basin Management Committee is responsible for overseeing and implementing the Basin Plan for the Los Osos Groundwater Basin.

Submissions are due to the Basin Management Committee, Attention Rob Miller at 2122 9th Street, Suite 102, Los Osos, CA 93402 no later than:

2:00 PM (PST), Thursday, June 27, 2019

For further information, please contact Rob Miller at (805) 544-4011 or via email at robm@wallacegroup.us.

REQUEST FOR QUALIFICATIONS for Professional Services as Executive Director

Summary

The Los Osos Groundwater Basin (Basin), underlies the unincorporated communities of Los Osos, Baywood Park, and Cuesta-By-the Sea in San Luis Obispo County, California. The Basin is the only source of water for residential, commercial, institutional, and agricultural development in Los Osos, and is a valuable resource for the community, region, and state. The Basin quality is in jeopardy due to the following challenges:

- Water quality degradation of the Upper Aquifer, primarily by nitrate; and
- Seawater intrusion into the Lower Aquifer

A Basin Plan was prepared to establish immediate and continuing goals for management of the water resources of the Basin. The Court approved a Stipulated Judgement in 2015 which includes the formation of a Basin Management Committee to oversee the implementation of the Basin Plan. The BMC includes representatives from Golden State Water Company, the Los Osos Community Services District, the S&T Mutual Water Company, and the County of San Luis Obispo. The function of the Executive Director is to act as the chief executive officer of the Basin Management Committee to carry out its duties and obligations. The following key documents are attached that form the basis of the Executive Director's duties:

- Los Osos Basin Plan (2015)
- Stipulated Judgement (approved by the Court in 2015)
- BMC Rules and Regulations (adopted in January 2016)

In addition, the following documents are available on the BMC website, which can be found at http://slocountywater.org/site/Water%20Resources/LosOsos/

- Detailed minutes of all BMC meetings since 2015
- Adopted annual reports as required by the Court
- Complete agenda packages for all BMC meetings, many of which contain important technical studies

The BMC generally holds 6 to 8 Brown Act-compliant public meetings per year to accomplish its objectives.

Scope of Work

The scope of work is anticipated to include, but is not limited to, the following:

- In consultation with the BMC chair, prepare agenda packages for up to 8 public meetings, similar to the documents referenced above.
- Perform the broad function of acting as the administrative staff of the BMC, including communicating with staff members from the BMC parties as needed.

- Understand the technical aspects of the Basin Plan and various BMC activities and projects, though the consultant does not need to be a licensed groundwater hydrologist.
- Act as the overall program manager for BMC projects. The detailed technical work will be managed and performed by BMC consultants under the direction of the Executive Director.
- Oversee the financial operation of the BMC, including recommending an annual budget and processing invoices. Prospective consultants are encouraged to review the financial updates and budgets contained within the various agenda packages to understand the scope of this work. The law office of Brownstein Hyatt Farber Schreck (BHFS) performs the accounting function for the BMC, including the payment of approved invoices.
- Ensure timely completion of the Court-mandated Annual Report, including the filing of required information to the DWR website by April 1st of each year.
- Manage BMC consultants and vendors including scope, schedule, budget, BMC comments, and the publishing of approved work products.
- SLO County staff currently maintain the BMC website. Work with County staff to ensure that documents and agenda packages are published timely and accurately.
- Function as staff (including clerk) during BMP public meetings, including appropriate technical input on questions from both Directors and the public. Ensure that the meeting venue and audio/visual services are coordinated.
- Oversee the BMC's compliance with the Brown Act, with input from legal counsel provided by the BMC parties.
- Prepare detailed minutes of all public meetings, similar to the current minutes.
- Represent the BMC as directed to other entities, including DWR, RWQCB, and other agencies.

Service Fees

Fees for the services of an Executive Director will be billed on a Time and Materials basis. The BMC annual budget currently includes $50,000 annually for these fees. If necessary, this value can be reconsidered by the BMC.

Experience Requirements

It is anticipated that the selected consultant will have experience with similar efforts, including technical experience in groundwater basin management.

Submittal Requirements

All interested parties shall submit three (3) hard copies of the qualifications submittal to perform the requested services in a single sealed envelope. The following information must be included in the Qualifications Submittal:

- A Cover Letter (max 2 pages)
- A Table of Contents

- A Firm Profile (max 3 pages). Include in the profile the location of the firm's office, primary contact information, years in business, and a statement of the firm's qualifications for performing the requested services.
- References. Please provide three references. Please include name, company or organization, phone number and email address.
- An approach that describes how the consultant's experience and resources will be employed accomplish the scope defined above.
- A scope section
- Recommendations on BMC budget allocation for the services of the Executive Director.
- A copy of the company licenses and permits.

Proposals shall be submitted to the Basin Management Committee, Attention Rob Miller, 2122 9th Street, Suite 102, Los Osos, CA 93402 no later than the time and date reference above.

LATE SUBMITTALS WILL NOT BE ACCEPTED

TO: **Los Osos Basin Management Committee**

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

DATE: **March 20, 2019**

SUBJECT: Item 7e. Update on Status of Recycled Water Contracts with Agricultural Properties

Recommendations

Receive update and provide input to staff for future action.

Discussion

Based on recent flow data, it appears that the Los Osos Wastewater Recycling Facility will be operating at an average daily rate of approximately 0.5 mgd for the near future. This translates to approximately 560 acre-feet per year of recycled water available. In the January 2019 meeting, the BMC requested an update on the status of recycled water deliveries. The following exhibits are attached for discussion:

- Exhibit A: Recycled Water Agreements Summary, current as of 3/5/2019
- Exhibit B: Update on Recycled Water Agreements for Agricultural Users, which was originally presented to the BMC in January 2018
- Exhibit C: Letter from LOCSD to SLO County Board of Supervisors regarding the use of recycled water on agricultural properties without achieving a seawater intrusion mitigation benefit

Staff may have additional comments at the meeting to facilitate the discussion.

Financial Considerations

There are no financial considerations for the BMC related to this item.

EXHIBIT A

Los Osos Recycled Water Agreements Summary

March 5, 2019

Agriculture Contracts

Name	Execution Date	Amount
Goodwin	April 23, 2013	10 AF
May	April 23, 2013	5 AF
Judge	December 18, 2012	50 AF
Michener	Not executed*	Requested 16 AF

*Agreement signed by the Michener's but never taken to the Board for approval

The Goodwins have installed most of the infrastructure to connect to the system. County staff is working on completing the connection which is estimated to be by the end of April 2019. To date, the other contracted parties have not expressed interest in connecting to the system.

Urban Contracts

Name	Date	Amount
Golden State Water Company	December 11, 2018	unknown
Los Osos CSD	December 11, 2018	unknown
Sea Pines	December 11, 2018	20-40 AF

Contracts are in place with the two primary water purveyors which allow the delivery of recycled water to schools within their service areas subject to the billing rate rates established by each purveyor. An agreement was executed with S&T Mutual Water Company to allow the County to directly deliver water to Sea Pines golf course which is inside their service area. Sea Pines will be connected to the system by the end of March 2019. Los Osos Middle School will be the first school to be connected to the recycled water system with anticipated connect date of August 2019. Additional schools will be connected to the system as resources are available, with the goal of connecting one school per year.

EXHIBIT B

TO: Los Osos Basin Management Committee

FROM: Mark Hutchinson, Deputy Director of Public Works

DATE: January 17, 2018

SUBJECT: Item 7e - Update on Recycled Water Agreements for Agricultural Users

Introduction

The Stipulated Judgment includes the following regarding the use of recycled water for agricultural irrigation:

> *"If an agricultural user desires to purchase recycled water from the LOWWP, it may do so on such terms and conditions as the County (or the then current owner of the LOWWP) shall determine from time to time, subject to review and comment by the Basin Management Committee."*

This report describes the background, status, intended benefits, and next steps for the agricultural recycled water delivery agreements. The Basin Management Committee may wish to provide comments to the Board of Supervisors regarding the information provided in this update.

Background

In 2009, when it was first proposed, the Los Osos Wastewater Project relied on secondary treatment of wastewater followed by spray irrigation on grazing lands as the method for disposal of treated effluent. As the project progressed through the Coastal Development Permit process at the County Planning Commission level, the treatment level was raised from secondary to tertiary at the "unrestricted reuse" level. At the same time the County agreed to reserve 10% of the now high-quality recycled water for agricultural uses, given that the revised project location was on a parcel designated for agriculture with active agriculture on adjacent parcels. The reservation for agricultural uses was included in a revised project description and formalized in the project's conditions of approval *"Total agricultural re-use shall not be less than 10% of the total treated effluent"*. The project then moved through appeals to the Board of Supervisors and the California Coastal Commission with both tertiary treatment and a 10% reservation for agriculture as part of the project description (there is also a 10% reservation for environmental purposes). In addition, and because of the change in the treated water disposal method, funding agencies required assurance that the new plant would be able to reach full operation. That is, confidence that a lack of suitable reuse sites and methods would not reduce the ability of the

project to operate at full capacity. In response, recycled water agreements were negotiated with agricultural users and the school district.

Current Status

The Los Osos Wastewater Project has entered into four agricultural recycled water delivery agreements (Three fully executed and one pending Board of Supervisors action) as shown in the table below. The total subscribed amount is 81 acre-feet, or approximately 16% of the current recycled water output of the water reclamation facility. No recycled water has been delivered to agricultural users to date. However, deliveries are anticipated to begin in summer 2018, pending issuance of the Recycled Water Permit by the Regional Water Quality Control Board. The amount of water delivered is dependent on the agreements, use site needs, and action by the recycled water users to complete the end user requirements for the Recycled Water Permit.

Contractor	Assessor Parcel Number	Annual Amount in Acre-Feet
May	074-225-021	5
Goodwin	074-225-019	10
Judge	067-171-085	50
Michener	074-225-022	16
	Total Amount	**81**

Benefits of Agricultural Reuse

The agricultural reuse component has four clear benefits for the Los Osos Wastewater Project:

Permit and Funding Compliance

At the most basic level, the delivery of water to agricultural operations ensures that the project will remain in compliance with its Coastal Development Permit and with the spirit and intent of its funding agreements. The importance of operating the project in compliance with these requirements cannot be over-stated. The consequences of failing to fulfill obligations to regulatory and funding agencies can not only impact the Los Osos project but, because these obligations are understood to be agency-agency partnerships, can also impact the County's ability to develop and fund other projects for the benefit of Los Osos and other communities throughout the County.

Operational Flexibility

All wastewater treatment facilities operate with a common constant: the flow of wastewater will not stop regardless of any operational issues with the treatment plant. Consequently, wastewater treatment operations must have operational redundancy, emergency storage, and multiple options to respond to unforeseen situations. These

requirements extend to reuse options for treated effluent in both the short and long terms. The Los Osos facility has ample on-site treated effluent storage, a 4x safety factor at the Broderson leach field, agricultural recycled water delivery agreements, and is moving forward with urban reuse agreements. Because future conditions cannot be fully predicted, maintaining the full spectrum of reuse options is important to the continued operational resilience of the facility.

Project Integrity

The Los Osos Wastewater Project has entered into recycled water delivery agreements with four area farmers. These individuals have planned their future business operations, and to some degree have invested in on-site infrastructure, looking forward to delivery of recycled water. Although the agreements contain provisions that would allow the project to cancel the agreements with six months' notice, the status of recycled water reuse within the community does not warrant invoking this provision. The current volume of recycled water produced by the plant is estimated at 500 acre-feet/year, growing to 550 AFY in the near term (2 years). With full urban reuse (less than 100 acre-feet/year including the golf course) and agricultural agreements totaling 81 acre-feet/year, the current and near-term amount of recycled water is sufficient to supply the agricultural users, all urban reuse options, potential environmental needs (Bayridge at 33 acre-feet per year), and still provide flows to the Broderson leach field.

Foundation for Future Water Supply Options

During development of the Los Osos project the concept of exchanging recycled water for groundwater currently being used by the farmers along Los Osos Creek was proposed as a method to supplement the community's water supply. However, these farmers have been reluctant to utilize recycled water given the abundant supply of groundwater and uncertainties surrounding the quality of the recycled water. The current agricultural recycled water delivery agreements are intended in part to demonstrate the real-world potential of recycled water for commercial agricultural irrigation. If successful, the program has the potential to facilitate future water supply agreements between farmers and the community.

<u>Moving Forward</u>

Current efforts to deliver recycled water include:

- Finalize the recycled water permit through the Regional Water Quality Control Board
- Execute recycled water agreements with Golden State Water Company, the Los Osos Community Service District, and Sea Pines Golf Course
- Amend the Tri-Party Agreement among the County, Monarch Grove and Sea Pines Golf Course to change the source of recycled water
- Transfer 1 Agricultural Recycled Water Delivery Agreement to a new owner

- Finalize 1 previously negotiated Agricultural Recycled Water Delivery Agreement
- Establish a construction water program using recycled water (in lieu of potable water)
- Support “end users” as they prepare the necessary permit documents and modify current irrigation systems to meet recycled water requirements
- Formalize a recycled water line easement along Blue Heron Lane

Although these efforts are both complex and time consuming, recycled water should be flowing to end users over the Los Osos Groundwater Basin by the summer of 2018.

File: 310.87.04 LOWWP Los Osos Wastewater Project - General

Reference:

EXHIBIT C

Honorable John Peschong

Chair, San Luis Obispo County Board of Supervisors

1055 Monterey Street, Suite D430

San Luis Obispo, CA 93408

Dear Mr. Peschong,

The Los Osos Community Services District (CSD) is deeply troubled regarding the proposed sale of reclaimed water from the Los Osos Wastewater Reclamation Facility (LOWRF) to agricultural properties on the eastern fringe of the Los Osos groundwater basin. Four contracts are in place that would allow the sale of up to 81 AFY – approximately 16% of the total water available from the LOWRF - to uses that would have zero seawater intrusion mitigation values for our critically over-drafted basin. Deliveries are scheduled to begin sometime this summer.

As seen in the attached memos, this discussion has been unfolding before the Los Osos Basin Management Committee (BMC) for some time now. Water conservation efforts within the community have resulted in a much lower output from the LOWRF than was anticipated at the time the project permits were issued. As detailed in the November 15, 2017 memo from BMC Interim Executive Director Rob Miller, at the time the County prepared the Recycled Water Management Plan (RWMP) – a requirement of the Coastal Development permit (CDP) - it was thought that the LOWRF would produce approximately 748 AFY with all currently developed properties connected to the facility. However, with 96% of the community now connected, average flows are 450,000 GPD and peak at 500,000 GPD. The peak flows translate to about 560 AFY, well short of the 748 AFY predicted in the RWMP.

As a result of this over-estimate, when the permits were issued it was thought that the planned leach fields and other urban reuse opportunities within town might not be able to handle all of the recycled water to be disposed of and that agricultural properties east of town would be a necessary disposal option. This led to the requirement in CDP Condition 97 that “Total agricultural reuse shall not be less than 10% of the total treated effluent”. At the time this condition was drafted it was envisioned that the reclaimed water would be replacing potable water uses so that the potable water could remain in the groundwater basin to mitigate seawater intrusion. The current contracts under discussion would ship water to currently non-irrigated parcels, an act that has zero seawater mitigation value.

Anticipating changed circumstances, the CDP also contains language in Special Condition 5 which calls for a Reporting and Adaptive Management Program so that changes to the RWMP could be accomplished without having to amend the CDP. As noted in the November 15, 2017 memo, “…given the lower volumes currently reaching the WWRF (LOWRF), amendments to the CDP may be warranted to maximize basin benefits”. The November memo also includes a

discussion of a May 2015 study prepared for the BMC by Cleath-Harris Geologists, Inc., which evaluated three options for discharge of the LOWRF effluent: to Los Osos Creek, to the Broderson leach field and to agricultural reuse. That study concluded that "the greatest potential benefit to purveyor wells would occur when moving water from new crop agricultural reuse to creek discharge". New crop agricultural reuse is exact intent of the four contracts under question.

In response to these conclusions, on January 17, 2018 the County released to the BMC the attached memo from Mark Hutchinson, Deputy Director of Public Works. It listed four reasons for continuing with the contracts under the guise that agricultural reuse would have "benefits for the Los Osos Wastewater Project". We will address these one by one but would like to begin by stating that actions that "benefit" the wastewater project but harm the groundwater basin do not benefit the citizens of Los Osos in any way.

The first benefit listed in the January memo is Permit and Funding Compliance. As noted above, adaptive management is also a requirement of the CDP and given the changed circumstances we believe it not be necessary to amend the CDP to make these changes to the RWMP. We believe that the delivery of water under these contracts could be viewed as being out of compliance with the CDP given that they have zero seawater mitigation value and the other disposal options do. The Judge contract is particularly troublesome as it would deliver water to a polo field east of Los Osos Creek, which is the designated Urban Reserve Line for Los Osos. Condition 97 of the CDP specifically states that "No amount of treated effluent may be used to satisfy, or offset water needs that result from non-agricultural development outside the Urban Reserve Line of the community of Los Osos". Aside from being east of the Urban Reserve Line, a polo field is a questionable agricultural use. As for the obligations to the funding agencies, are these more important than the obligations to the residents of Los Osos who depend upon the groundwater basin? Would the funding partners not understand this need for a change to the RWMP?

The second benefit is listed as Operational Flexibility. As noted in Public Works' January memo, "The Los Osos facility has ample on-site treated effluent storage, a 4x safety factor at the Broderson leach field, agricultural recycled water delivery agreements and is moving forward with urban reuse agreements". But given the reduced flows to the LOWRF, the agricultural reuse option - especially to new users - is not needed. Onsite storage, the Broderson and Bayridge leach fields and urban reuse options provide the operational flexibility needed. Given the conclusions of the 2015 Cleath-Harris study, a creek disposal option should be considered rather than the current agricultural reuse contracts.

The third benefit listed in the January memo is Project Integrity. Is this more important than the integrity of the groundwater basin? The memo states "individuals have planned their future business operations, and to some degree have invested in on-site infrastructure, looking forward to the delivery of recycled water". The CSD would like any information as to the value of those plans and investments so that they might be compared against the value of the plans

and investments our residents have made in their homes. The January memo then goes on to justify the contracts by stating that the currently produced 500+ AFY of recycled water is enough to meet all of the “agricultural users, all urban reuse options, potential environmental needs (Bayridge at 33 AFY), and still provide flow to the Broderson leach field”, as though that were the preferred order of disposal options. Given that the leach fields have a seawater intrusion migration factor of 0.22 and the agricultural contracts a mitigation value of zero, the contracts seem to be contrary to the CDP language requiring recycled water disposal to prioritize seawater intrusion mitigation. The Broderson leach field alone has the capacity to take nearly all of the recycled water produced by the LOWRF, the agricultural uses are not needed.

The fourth benefit listed in the January Public Works memo was a Foundation for Future Water Supply Options. Here the memo admits that the intent of the agricultural reuse program was to exchange recycled water for ground water being pumped to irrigate crops but notes the reluctance of those farmers to enter into these exchanges given the abundant supply of groundwater and the uncertainties surrounding the quality of the recycled water. The current contracts are intended to demonstrate the “real-world potential of recycled water for commercial agricultural irrigation”. This potential has already been proven in places like the Salinas Valley in Monterey County, where the farmers had an incentive to join exchange programs because their own wells were being affected by seawater intrusion. The need to prove the potential of such a program is not needed here, especially when the contracts designed to provide that proof could have a detrimental impact upon our groundwater basin and are possibly out of compliance with the project’s CDP conditions.

Given the above, the LOCSD requests that the County Board of Supervisors direct Public Works staff to begin the Adaptive Management process referenced in Special Condition 5 of the CDP to reflect the actual flows from the LOWRF and that you prioritize disposal of the recycled water to maximize seawater intrusion mitigation values. Given the urgency of halting seawater intrusion into our groundwater basin, we request that no agricultural deliveries take place until an Adaptive Management plan has been approved by the Coastal Commission and that you begin that coordination now.