



A Tradition of Stewardship
A Commitment to Service



AGENDA

REGULAR COMMITTEE MEETING

Thursday, October 25, 2012, 2:00 p.m.

Agricultural Commissioner's Office/UCCE Conference Room
1710 Soscol Avenue, Napa CA

Committee Members

Michelle Benvenuto
Tucker Catlin
Alan Galbraith
Don Gleason
Dave Graves
Michael Haley
Peter McCrea
Charles Slutzkin
Steve Soper
Marilee Talley
Bill Trautman
Jim Verhey
Susanne von Rosenberg
Duane Wall
Dale Withers

1. CALL TO ORDER & ROLLCALL
2. WELCOME & OPENING REMARKS
(*Staff, Consultant, Committee*)
3. ORGANIZATIONAL ITEMS (10 min)
(*Staff, Consultant, Committee*)
 - a. REVIEW MEETING AGENDA AND PROCESS
 - b. APPROVAL OF ACTION MINUTES & MEETING SUMMARY
 - c. REVIEW ACCOMPLISHMENTS & ADOPT UPDATED WORK PLAN/SCHEDULE

4. PUBLIC COMMENT

In this time period, anyone may comment to the Committee regarding any subject over which the Committee has jurisdiction, or request consideration to place an item on a future Agenda. No comments will be allowed involving any subject matter that is scheduled for discussion as part of this Agenda. Individuals will be limited to a three-minute presentation. No action will be taken by the Committee as a result of any item presented at this time. (*Chair*)

5. PRESENTATIONS AND DISCUSSION ITEMS:

COMMITTEE REVIEW, DISCUSSION & DIRECTION

- a. GROUNDWATER MONITORING DATA (45min)
(*Phil Miller, Deputy Director/Public Works-Flood; guest: Tom Adams, Senior Counsel, DP&F*)
 - GROUNDWATER DATA MANAGEMENT & DISCLOSURE
 - WHAT PARTICIPATION MEANS FOR WELL OWNERS
 - Q&A - DISCUSS GRAC QUESTIONS
- b. DRAFT NAPA COUNTY GROUNDWATER MONITORING PLAN (55 min)
(*Vicki Kretsinger Grabert (LSCE)*)
 - REVIEW UPDATES TO DRAFT GROUNDWATER MONITORING PLAN
 - REVIEW AREAS OF INTEREST (18) FOR MONITORING TO SUPPORT HYDROGEOLOGIC CONCEPTUALIZATION & NEXT STEPS
 - Q&A - DISCUSS GRAC QUESTIONS

804 First Street,
Napa, CA
94559

Tel: 707-259-8600
Fax: 707-259-8619

➤ COMMITTEE BREAK

5. PRESENTATIONS AND DISCUSSION ITEMS : (cont'd)

COMMITTEE REVIEW, DISCUSSION & DIRECTION

- c. REVIEW OF THE COMMUNICATION & EDUCATION VOLUNTARY GROUNDWATER LEVEL MONITORING INFORMATIONAL BROCHURE AND OUTREACH MATERIALS (30 min)
(Michael Haley/Ad-Hoc Committee; Deborah Elliott, Water Resources Specialist/Public Works-Flood, Patrick Lowe, Natural Resources Conservation Manager/Public Works-Flood)

6. OTHER BUSINESS

7. ANNOUNCEMENTS

- a. UPCOMING EVENTS OR ITEMS OF INTEREST FROM THE COMMITTEE AND STAFF (5 min)

8. FUTURE AGENDA ITEMS

9. ADJOURNMENT to the NEXT MEETING (*Chair*)

Meeting Cancelled: Thursday, December 13, 2012 – 2:00 p.m.

Next Meetings:

- Special Meeting: Thursday, January 31, 2013 – 2:00 p.m. (proposed)
- Regular Meeting: Thursday, February 28, 2013 – 2:00 p.m.

Note: Where times are indicated for agenda items they are approximate and intended as estimates only, and may be shorter or longer, as needed. If requested, the agenda and documents in the agenda packet shall be made available in appropriate alternative formats to persons with a disability. Please contact Greg Morgan at 707-259-8621, 804 First St., Napa CA 94559 to request alternative formats.





A Tradition of Stewardship
A Commitment to Service



ACTION MINUTES

NAPA COUNTY GROUNDWATER RESOURCES ADVISORY COMMITTEE MEETING

August 23, 2012

1. CALL TO ORDER & ROLL CALL

The Napa County Groundwater Resources Advisory Committee (GRAC) met in regular session on Thursday, August 23, 2012 with the following members present:

Michelle Benvenuto; Vice Chair Tucker Catlin; Alan Galbraith; Don Gleason; Dave Graves; Michael Haley; Chair Peter McCrea; Charles Slutzkin; Steve Soper; Marilee Talley; Bill Trautman; Susanne von Rosenberg; Duane Wall; and Dale Withers. Jim Verhey arrived during Item No. 5.a. and left before Item No. 5.b.

2. WELCOME & INTRODUCTIONS

Not formally discussed.

3. ORGANIZATIONAL ITEMS

a. REVIEW MEETING AGENDA AND PROCESS

Chair Peter McCrea referenced Items 5.a and 5.b and hoped the items would provide a lot of in-depth discussion.

b. APPROVAL OF ACTION MINUTES AND MEETING SUMMARY

Action Minutes of the June 28, 2012 regular meeting and July 26, 2012 special joint GRAC-WICC meeting approved. Meeting Summary of the June 28, 2012 regular meeting approved as amended.

MB TC AG DG1 DG2 MH PM CS SS MT BT JV SVR DW1 DW2
X

c. HANDOUT OF THE ADOPTED MISSION STATEMENT

Patrick Lowe, Natural Resources Conservation Program Manager, Public Works, referenced the Mission Statement included in the agenda packet and stated the most notable change was adding "non-regulatory" under Item b of the Mission Statement. Staff would be providing an update on the GRAC's activities to the Board of Supervisors towards the end of the year, which would include the Mission Statement.

4. PUBLIC COMMENT

None.

5. PRESENTATIONS AND DISCUSSION ITEMS

a. DRAFT NAPA COUNTY GROUNDWATER MONITORING PLAN

Vicki Kretsinger Grabert, Principal Hydrologist, LSCE, presented a PowerPoint presentation that went over the results of an ad hoc meeting regarding the objectives and criteria for prioritizing groundwater monitoring, as well as the groundwater monitoring plan outline, ground water levels and quality objectives and priorities, confidentiality procedures, and the next steps. References were made to a summary of the ad hoc meeting and the draft groundwater monitoring plan included in the agenda packet. The GRAC previously reviewed and commented on Chapters 1 through 3 of the groundwater monitoring plan and were now being provided with Chapters 4 through 6. Some of the GRAC members voiced concerns that “water balance” could be interpreted as monitoring individual well levels and that this terminology should be modified in the groundwater monitoring plan and outreach materials to indicate that level monitoring is aggregate. Vice Chair Tucker Catlin, a member of the ad hoc committee, mentioned that surface water to ground water interaction was discussed as a goal but wasn’t included in the ad hoc meeting summary. Several questions arose during the discussion of confidentiality procedures. Some of the questions posed were what information is kept confidential/can a landowner choose the information; will data that is kept completely confidential still be usable; where does the data go, who gets to look at it, what are they going to do with it during the normal course of business, and how will it be processed; under what conditions can data be discoverable; and is the data used in a report kept indefinitely. Some suggestions made to address landowners’ concerns were to have the groundwater monitoring plan and outreach materials list what the potential risks are for participating in the groundwater monitoring program and to clearly specify what information is kept confidential under the County’s groundwater monitoring program and CASGEM and under what conditions, if any, would that information become discoverable. Chair Peter McCrea felt that the GRAC was comfortable with the draft groundwater monitoring plan up to the confidentiality issue, which should be the focus of the next meeting to ensure clarity, as well as revising the water balance terminology.

b. REVIEW AND CONSIDERATION OF ADOPTION OF THE GRAC COMMUNICATION AND EDUCATION PLAN

Patrick Lowe, Natural Resources Conservation Program Manager, Public Works, gave an overview of the communication and education plan’s progress and suggested the plan itself, which incorporates previously received comments from the GRAC, could be adopted today while the brochure and FAQs could receive additional comments for further revision. Member Michael Haley stated the ad hoc subcommittee looked at the original plan and came up with certain principles the plan should follow, which were to emphasize the voluntary nature of the groundwater monitoring program and to prioritize both the needed subareas and likely groups of well owners who would be contacted first and then expand gradually out. After today’s discussion on the groundwater monitoring plan, it doesn’t seem quite as urgent to look for hundreds of volunteers, and maybe prioritization doesn’t need to be emphasized as much. The plan is considered to be a working plan since it will have to be revised accordingly as time goes by until the plan is concise. An explanation of benefits to the landowner is mentioned in the plan, but member Jim Verhey previously suggested it should also mention possible potential risks.

Item 5.b...Continued

Some suggestions were made to the content and distribution of the plan and brochure. Mr. Lowe added that staff will be sending a Word version of the brochure text and FAQs in an email to the GRAC requesting any additional comments. Written comments submitted by the end of the meeting would also be accepted. The GRAC approved the plan subject to making it explicit in the document that it's a "working plan".

MB TC AG DG1 DG2 MH PM CS SS MT BT JV SVR DW1 DW2
X

6. OTHER BUSINESS

a. UPDATE ON THE DWR GRANT APPLICATION FOR GROUNDWATER MONITORING WELLS

Patrick Lowe, Natural Resources Conservation Program Manager, Public Works, referenced the Board of Supervisors' resolution in the agenda packet that authorizes the Director of Public Works to apply for DWR grant funding. Mr. Lowe also referenced a copy of the grant application binder on hand and acknowledged the efforts of Vicki Kretsinger Grabert, Principal Hydrologist, LSCE, and Deborah Elliott, Water Resources Specialist, Public Works, for completing the application along with a number of other LSCE and County staff. A response to the application will not be known until November/December, but staff will keep the GRAC apprised.

b. UPDATE ON CALIFORNIA STATEWIDE GROUNDWATER ELEVATION MONITORING (CASGEM) PROGRAM

Phil Miller, Deputy Director-Flood Control and Water Resources, Public Works, stated there were no new responses from potential participants. At the time of the last meeting, staff was going to start an effort to re-contact those who have yet to respond, which is ongoing. Patrick Lowe, Natural Resources Conservation Program Manager, Public Works, referenced the updated letter that was sent in June based on the GRAC's direction to ensure the letter was more explicit and that it addressed some of the concerns pertaining to confidentiality.

c. DISCUSS USE OF THE MEETING SUMMARY

Dorian Fougères, Ph.D., Mediator, Center for Collaborative Policy, CSUS, asked the GRAC if they found the Meeting Summary useful, which contains much more detailed meeting information than the Action Minutes. The GRAC concurred that the Meeting Summary is useful as a good reminder of what was discussed and if members miss any meetings. Mr. Fougères replied that the Meeting Summary would continue to be produced. A motion made by Vice Chair Tucker Catlin was approved to have redlined versions of updated documents included in the agenda packets as appropriate.

MB TC AG DG1 DG2 MH PM CS SS MT BT JV SVR DW1 DW2
X

7. ANNOUNCEMENTS

None.

8. FUTURE AGENDA ITEMS

- Review of Groundwater Monitoring Plan with additional details on confidentiality
- Review of Updated GRA Committee Workplan (October/December)

9. ADJOURNMENT to the NEXT MEETING

Adjourned to the next regular meeting of the Napa County Groundwater Resources Advisory Committee on Thursday, October 25, 2012 at 2:00 p.m.

PETER McCREA, Chairperson

ATTEST:

PATRICK LOWE, Secretary

By: _____
GREG MORGAN, Supervising Office Assistant

Voting Key

If not unanimous, member votes will be tallied (N = No; X = Excused; A = Abstained) using the following Committee Member abbreviations:

MB = Michelle Benvenuto; TC = Tucker Catlin; AG = Alan Galbraith; DG1 = Don Gleason; DG2 = Dave Graves;
MH = Michael Haley; PM = Peter McCrea; CS = Charles Slutzkin; SS = Steve Soper; MT = Marilee Talley;
BT = Bill Trautman; JV = Jim Verhey; SVR = Susanne von Rosenberg; DW1 = Duane Wall; DW2 = Dale Withers

Example Key:

MB TC AG DG1 DG2 MH PM CS SS MT BT JV SVR DW1 DW2

MEETING SUMMARY

Napa County Groundwater Resources Advisory Committee Meeting August 23, 2012

Produced by the Center for Collaborative Policy, CSUS

Meeting Synopsis

The Napa County Groundwater Resources Advisory Committee (GRAC) held its seventh meeting on August 23, 2012. Discussion focused on two key topics, the draft Napa County Groundwater Monitoring Plan 2012 and the proposed GRAC Communication and Education Plan. Ms. Vicki Kretsinger Grabert of Luhdorff and Scalmanini Consulting Engineers (LSCE) summarized the outcomes of the July 6 GRAC ad hoc committee meeting. She highlighted how suggestions on global monitoring goals and priorities provided by the ad hoc committee, in conjunction with the suggestions provided by the GRAC at their June 28 meeting, guided the recent amendments to the plan. LSCE identified eighteen (18) recommended groundwater monitoring sites that are essential, along with 6 other sites for groundwater and surface water monitoring (DWR grant application), with additional voluntary sites welcomed to meet the goals and priorities of the plan and further the County's understanding of Napa's groundwater resources. Discussion on the draft Communication and Education Plan and the Groundwater Monitoring Plan underlined the importance of ensuring that all public materials, including GRAC meeting slides and handouts, use clear terminology, list items in order of importance, and offer transparency of both the benefits and risks with water level and quality monitoring.

Mr. Michael Haley of the GRAC ad hoc Public Outreach and Education Committee, and Mr. Patrick Lowe, Natural Resources Manager, presented the draft Communication and Outreach Plan. GRAC unanimously adopted the plan adding language which makes explicit that the plan is a working document. Brief updates were provided on the Department of Water Resources (DWR) Grant application for groundwater monitoring sites and on the California Statewide Groundwater Elevation Monitoring (CASGEM) program. The County has submitted the final grant application to DWR for six (6) groundwater monitoring sites, with instrumentation for groundwater and surface water monitoring, and is awaiting a response (notification expected by early next year). The County did not receive any inquiries or hear of any concerns regarding the County's recent communication to CASGEM volunteers. The upcoming October meeting will continue discussion on the evolving draft Napa County Groundwater Monitoring Plan with specific attention to groundwater monitoring data management and confidentiality.

Please see the GRAC's webpage for copies of the August 23, 2012 presentations and handouts (www.countyofnapa.org/bos/grac).

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Action Items

1. **COUNTY STAFF** to send a reminder to GRAC members to submit edits for the brochure and will attach the brochure in Word format.
2. **COUNTY STAFF** to revise the Communication Brochure and inserts to include GRAC comments and for consistency (details provided in meeting summary, see Items 5(a) and 5(b).)

3. **LSCE** to confirm whether water quality monitoring will include constituents related to mining and mining byproducts.
4. **LSCE** to confirm if any monitoring sites for groundwater quality are located near spray fields.
5. **COUNTY STAFF** to revise confidentiality section in the Groundwater Monitoring Plan, including a table that indicates what is made public in the full and in the partial participation programs. (See details under Data Confidentiality Procedures)
6. **LSCE** to indicate areas where monitoring is needed to fill data gaps using dots at identifiable major crossroads. (for use in the Communications and Outreach materials, not the Groundwater Monitoring Plan) LSCE will also include a roadmap for next steps.

1. Call to Order & Roll Call

All members of the Napa County Groundwater Resources Advisory Committee (GRAC) were in attendance.

2. Welcome & Opening Remarks

Chair Peter McCrea opened the session and noted the meeting agenda was designed to provide time for significant discussion and would focus on the draft monitoring plan and communication and outreach plan.

3. Organizational Items

a. Review Meeting Agenda and Process

Chair McCrea briefly reviewed the two major items on the agenda.

b. Approval of Action Minutes & Meeting Summary

No corrections were suggested to the formal June 28 meeting minutes.

AGREEMENT: The June 28 meeting minutes were unanimously approved.

Michael Haley noted a correction to the meeting summary in that Michelle Benvenuto is not on the ad hoc Education and Outreach committee.

c. Handout of the Adopted Mission Statement

Mr. Patrick Lowe, Natural Resources Manager, Public Works, drew attention to the revised GRAC mission statement included in the GRAC meeting packet. Minor changes were made according to GRAC feedback at the June 28 meeting with adding the words "non-regulatory" under item b and amending language for grammatical clarity. The

mission statement will be presented to the Board of Supervisors towards the end of the year, with an update on GRAC's activities and progress.

4. Public Comment

Chair McCrea invited public comments. No public comments were provided.

5. Presentations and Discussion Items

a. Draft Napa County Groundwater Monitoring Plan

Ms. Kretsinger Grabert reviewed her presentation's sections, and objectives with each section.

Ad-Hoc Committee Report on Goals Objectives and Priority Actions

Ms. Vicki Kretsinger Grabert, of LSCE, presented updates to the draft Groundwater Monitoring Plan. She summarized the outcomes and discussion items from the July 6 ad hoc committee meeting. At the meeting, ad hoc members Chair Peter McCrea, Vice Chair Tucker Catlin, Ms. Suzanne von Rosenberg, and Ms. Michelle Benvenuto and consultant and County staff Ms. Kretsinger Grabert, Mr. Patrick Lowe and Mr. Rick Thomasser, reviewed the data and rationale that led to priorities proposed at the June 28 GRAC meeting. The committee tested the criteria and made adjustments to the priorities listed in the draft plan for groundwater level and quality monitoring. The ad hoc committee also discussed Napa's current and projected population and land and water use and how some preliminary projections and estimates (as presented in a draft DWR document based on existing reference documents) were believed to be overestimated. The committee decided to prioritize according to known data rather than future projections. Additionally, the committee produced global monitoring goals and revised wording in the plan outline provided to GRAC at the June meeting. A meeting synopsis is included in the GRAC packet.

QUESTIONS AND DISCUSSION:

- **Calculating water balance.** Question: Water balance is mentioned which implies volume will be assessed. Yet, we aren't monitoring what is pulled from the well. How is balance calculated? Answer: Balance is calculated at the aggregate level looking at volumes of inflows and outflows to the groundwater system; groundwater levels, which are used to assess the change in groundwater storage, are coupled with information derived from stream gauging and other items. Water level in itself

does not provide information on the balance. But the balance is determined by an overall estimation of what is going in (inflows) and what is going out (outflows).

- **Benefit with calculating balance.** Comment: However, when we talk about "balance" it is in terms of aggregate volume. It offers benefits in that by understanding balance, including groundwater recharge, we can identify how much water we can safely use without adverse effects. This may allow for additional groundwater development without future negative consequences that could impact landowners and current groundwater users.
- **Volume calculation at the aggregate level.** Question: Would it be accurate to say that measures are at the aggregate levels, not looking at individual use, and there is no need to look at volume? Answer: Yes and no. To understand the hydrological balance, inflow and outflows are used to calculate the change in the volume of groundwater storage. However, it is at the aggregate level. We are looking at what is being extracted from an area and what is being recharged; through water level monitoring the change in the groundwater storage volume can also be calculated.
- **Balance calculation equips County to respond to State.** Comment: As part of the San Francisco water region, Napa's water balance will be estimated in the California Water Plan. The construct is already out there. In the past, Napa County has had to work with the State to correct the State's conversions for Napa. There is an advantage to having Napa understand its water balance. The County can then be prepared to react to State calculations and any future plans to issue regulations. It would offer benefits to our stakeholders such as the agriculture community.
- **Anticipated fears that monitoring will lead to regulation.** Question: Does the County plan to initiate a program to monitor water use? Although GRAC is focused on monitoring groundwater in aggregate, we anticipate stakeholders will ask this question. Water use is a sensitive topic for Valley landowners and residents. The word "balance" may trigger concern. Answer: There is no direction from the board to monitor and regulate water use across the Valley. It is not believed to be in the plans. However, that is not to say that it would not happen in the future.
 - **"Balance" as a red flag.** Comment: Listing "balance" as a monitoring plan goal may raise a red flag on something that the County has no intent to do. We should be sensitive to language used.

had limitations with variables it considers. DWR uses publicly available data that is applicable state-wide (e.g., census data). As such, it is important for DWR to get feedback from GRAC and the County for consideration.

- **Monitoring for sustainability.** Comment: GRAC's conversation today is worthwhile and one that others are having. For example, NASA is monitoring groundwater levels in Central Valley using satellites. Their data showed a high level of water withdrawal in the San Joaquin Valley. This led to concerns over regulation and satellite monitoring. But ignoring a lowering water table doesn't provide more water. It is not a sustainable solution. It just puts off the day of reckoning when you realize you over draw your water resource. So looking at it at a macro way and not drilling down to individual use is all good, but this story highlights the universality of if you measure it, someone will want to regulate it.

Presentation of the Draft Groundwater Monitoring Plan

Ms. Kretsinger Grabert reviewed changes to the draft Groundwater Monitoring Plan and sections illustrated in slide five. The first three sections of the plan were revised according to GRAC feedback at the June 28 meeting. Sections four through six, *Groundwater Monitoring Network Design and Development*, *Groundwater Data Management*, and *Reporting and Assessment*, were added and amended according to ad hoc committee feedback. Priorities, objectives and recommendations are detailed on page 30 of the draft plan. Slides and discussion also highlighted areas where water level monitoring wells are needed to fill data gaps.

QUESTIONS AND DISCUSSION:

- **Sequencing bullets in slide six.** Comment: For slide six, if most of the ad hoc time was spent on second item, "Address data gaps," the first item, "Monitoring aligned with County water resources goals," seems out of order. Plus, this bullet will always cause people to hesitate and ask what it means. It would be best to put bullet one on the bottom in ranking.
 - **Drafting materials for public view.** Comment: Our meeting materials are for public consumption, but viewed without the benefit of our discussion. Bullet items should be in sequential order and language reviewed for ease of public reading. For example, for slide seven, "budget" is an output of the other bullets and should be listed at the top with text that indicates the other items are included in the budget calculation.

- **Definition of “budget” and word usage.** Question: Why do we use the word “budget” in materials? It may connote restrictions and another word may be better for public materials Answer: Budget is a commonly used term in the field. Budget means you are looking at all the components for inflows and outflows.
 - See earlier action item recommendations about replacing the term with “aggregate or gross water balance”
 - **Calculating outflow.** Question: In terms of calculating balance, do we factor in items such as water that flows to San Pablo Bay? We perceive there is a lot of water that is never captured in the water balance Answer: Yes, it is captured in “basin outflow.”
- **Slide 8 “V” icon.** Question: I understand you changed priorities based on GRAC’s feedback, but what does the “V” stand for in column six? Answer: The “V” stands for volunteered wells and when outreach focus should be on obtaining data from existing supply wells. This is where there is a general interest in learning about the area, which will require broader outreach and education and a general call for volunteers. It is not as specific to location and target area as the 18 specifically identified areas of interest.
 - **Slide 8 “2+V” icon.** Question: What does 2+V stand for? If you get two volunteers, at Calistoga for example, it fills that need? Answer: There is a note on page 35 of the draft plan that explains the column references. The “2+V” means there are two specific areas within which we think it will be useful to target existing wells to fill data gaps. However, additional volunteers are always welcome to fortify the data.
- **Desired number of landowner volunteers.** Question: How many wells do we need volunteered? The number will impact the education and outreach effort. Answer: there are 18 specifically identified areas shown on the slide and in the work plan. In other subareas, there may be one or two. Overall, it is on the order of roughly 40.
 - **Number of critical sites needed.** Question: Can you summarize the number of critical sites? Is it 18 or 18 plus six? Answer: We have 81 current sites where groundwater level monitoring is occurring. Slide 11 highlights the data gaps consisting of 18 areas of interest. Additionally, we identified six monitoring sites in the County’s grant application submitted to DWR for groundwater and surface water monitoring facilities, which are detailed in the plan.

- **Accuracy with well location.** Question: Appendix B includes a list of all the sites. Do we know their exact location and can we confirm their exact locations to be certain they are categorized correctly? Answer: That is a good question and we are trying to locate wells using driller logs. However, GPS coordinates are not included and at times it is hard to locate the well using drillers' logs. A well categorized in one subarea could in actuality be in another subarea.
- **Wells to assess hydrological connectivity.** Question: Are the six proposed groundwater and surface water monitoring facilities intended to show connectivity? Answer: Yes, to identify if there is a direct hydrological connection between the groundwater and the Napa River tributary system.
 - **Location for proposed monitoring wells.** Question: Where are the six groundwater and surface water monitoring facilities located? Answer: The intent is to locate them near to current groundwater level monitoring sites and near to where stream gauging can occur. This is to couple the groundwater measurements with surface water level (stage) measurements, both of which would be covered by the grant. The County would monitor levels, salinity, temperature, etc. to make those connections. That would indicate if there is a seasonal, continuous, or absent hydrological connection.
- **Location of public water supply wells.** Question: Do we know the exact location of the public water supply wells? Answer: For security purposes, the Department of Public Health truncates locations to plus or minus one mile. Hence it is difficult to confirm the location and we tried to recognize where a well may be outside a subarea. Our recommendations include refining locations of currently monitored wells.
- **Why precise location is needed.** Comment: To add an example for why exact locations are important, the Oak Mill district is vast and has varied water resources. There may be no groundwater in the middle and a lot in the periphery. As such, where you are monitoring makes a significant difference. I assume you would like a lot of wells dispersed around an area with complicated geology.
- **Securing more sites than the minimum.** Comment: Given these challenges, our target may need to be more than the 18 sites plus six monitoring wells. Response: The total number of sites added to the program may simply be the 18 plus six monitoring wells, or many more. The goal is to get as many wells available as possible, review the details and narrow to the best wells for monitoring purposes.

- **Outreach for public education and securing volunteers.** Comment: Our goal should be more than just finding wells, but to help County residents understand the issues at hand and to create a public discussion.
- **Balancing cost and data.** Comment: A large number of sites would seem optimal, but there is also a cost consideration and challenge to secure a large number of volunteers. A smaller list to start may be easier for GRAC to hone in and target prospective participants.
- **Source of the 1,300 site figure.** Question: Previously we discussed 1,300 sites have been monitored, where did that number come from? Answer: Those are well locations plotted for purposes of the hydrogeologic conceptualization work. **Using well logs on file to identify optimal sites for monitoring wells.** Question: Previous discussions showed the 1,300 locations with red dots. The County has well log data on file for these sites. Could you use the data which includes the location, construction data, etc. to identify landowners who may have a desirable well to monitor on their property? You can then take a red dot with an optimal well measured in past and match it up with the yellow dot where a well is needed. That may expedite outreach. Answer: The property owner may change from what was on file, but that may be another beneficial data tier to look at. (The wells located on the above-referenced map are not the same wells as plotted on other maps that show historically monitored wells.)
- **Focus on the 18 sites and more broadly.** Comment: Starting with these 18 locations and narrowing to wells that appear optimal from drillers' logs is a good starting point. And, we should also outreach to other areas where data may be lacking. We may need such data in the future. Response: Yes, it should be a two prong approach.
- **Public outreach.** Comment: GRAC should discuss the approach in more detail during our next agenda item on the Communication and Education plan.

Ms. Kretsinger Grabert presented objectives and priorities for the groundwater quality monitoring program which were discussed with the ad hoc committee. There are naturally occurring contaminants in Napa. The County should have a baseline and then monitor water quality the following year; subsequently, triennial monitoring is recommended. Monitoring may uncover trends, unintended adverse effects of new wells or land use, and/or prepare the County to respond to any changes with drinking water requirements. Wells monitored for water quality will also be included in new (volunteered) wells added for groundwater level measurements. Outreach efforts will

mirror each other but there may be some differentiation according to area of interest. Page 34 in the plan includes the table on priorities as shown in the slides 15 and 16.

QUESTIONS AND DISCUSSION:

- **Boron concerns in Calistoga.** Question: We hear a concern about boron in the upper Napa Valley. How prevalent is boron? Is it also an issue in Carneros? Answer: Boron is an issue mostly in Calistoga. In the 2011 report, LSCE included boron on the list to monitor in the County program.
- **Use of GEO tracker data.** Question: How deep are the GEO tracker wells? They all seem pretty shallow, are they still useful for monitoring levels? Answer: GEO tracker wells are often shallow but also important for water level data. Water levels may differ in wells located at the same site due to geologic conditions. Hence, water level data for both shallow and deep wells constructed in an area offers important information.
- **Monitoring metals associated with mercury mines.** Question: Are we also monitoring in areas where the water is toxic due to mercury mining? Mercury is a byproduct. Are we assessing associated toxic elements such as cinnabar? Answer: Most heavy metals are included in the list for monitoring. The list includes naturally occurring constituents as well as conditions that may lead to leaching of contaminants into the groundwater.

ACTION ITEM: LSCE to confirm whether water quality monitoring will include constituents related to mining and mining byproducts.

- **Monitoring temperature.** Question: Will temperature be monitored? Answer: Yes, temperature is included in the Groundwater Monitoring Plan.
- **Monitoring near spray fields.** Question: Are any of the monitoring wells near the spray fields? Answer: I don't know off hand.

ACTION ITEM: LSCE to confirm if monitoring may be near spray fields for monitoring of changes.

Review of Draft Data Confidentiality Procedures

A two tiered participation program is proposed with differences in data confidentiality. The "Partial Participation" tier relates to participation in just the County's monitoring program which would ensure construction information would be kept confidential at the County level. Volunteers for the "Full Participation" tier would participate in both the County's program and CASGEM; well construction information would be available

online at the DWR's site or in County reports related to CASGEM. Page 43 of the plan includes text on the two tiers and level of confidentiality for each.

QUESTIONS AND DISCUSSION:

- **Landowner options for data confidentiality.** Question: In the agreement, can landowners opt and indicate what, if any, data can be made public? Answer: They can volunteer for either option, but volunteering in the program indicates their interest in sharing the data. In the *full participation* program, only the well drilling data, not names and addresses would be available. Report on groundwater conditions share scientific information and a general location of the well, but not the name of the owner.
- **Clarification on data made public in the *partial participation* program.** Comment: The location data, well construction, etc., is confidential. However it will require a release by the well owner for water level and water quality data for future public reports. This is indicated on the third paragraph on page three. Question: Isn't that in reference to the CASGEM program? Answer: No, that is for both.
- **Framing participation.** Comment: People don't want to volunteer this information. However, if approached in the right manner with the right protections, people may be willing to share data. We should approach it from what protections a landowner would receive in exchange for information the County wants. This may be in the outreach materials and included in the plan.
 - **Communicating benefits and drawbacks.** Comment: Outreach materials should present both the upsides and downsides associated with participation. Here, we only focus on the benefits. A section is needed on potential downsides, ramifications and likelihood of risks to data confidentiality.
- **Public reporting requirements.** Comment: Although the County's intent is to keep this information confidential, how much can it keep confidential with public reporting requirements? Under what conditions can data be discovered, such as the County being sued? Data would be subject to the public records act unless legislation is created that indicates it is privileged. Otherwise it is subject to subpoena. We need be clear how the data may be protected and where exceptions may occur.
- **Balancing confidentiality with usefulness of data.** Comment: There are ways to protect data. However, we will need to look at how the data will be used and weigh the level of confidentiality that can be afforded and yet still make the data useful.

- **Example of aggregation.** Question: How would we aggregate the data and still make it useful? Response: An illustration of how the data will be used is the groundwater report completed by LSCE. We have 250 sites with data accessible. It shows data on a subarea and local level. By not lumping, we can confidently say things are stable. Lumping too much reduces our level of certainty.
 - **Concerns over desires to participate.** Comment: Online available data may result in reluctance to participate. Response: Yet, new participants in CASGEM were interested without much outreach and making this data available did not create a reluctance to participate.
 - **Third party reviewer.** Question: Would it make sense to have a third party who evaluates the data and ensures it is kept confidential such as a private data bank? It would require someone to describe what input is received, where the data goes, who looks at it, and what is done with it in the normal course of business. Response: Even with a third party, data is discoverable.
 - **Clear list of what is disclosed.** Comment: A list of what items will be disclosed is needed for both the partial and full participation programs. GRAC should be very familiar with these and answers to anticipated questions. Answers are clear for CASGEM but additional work is needed to address some of the “what if” issues brought up such as what may be disclosed in the event the County is sued.
- ACTION ITEM:** County Staff to create a table that indicates what is made public in the full and in the partial participation programs. Additional information may include who can view the data, intended use of the data, how the data may look in terms of outputs, etc.
- **Retention of data.** Question: Does the data need to be retained once the data is collected? Answer: Yes, the most valuable records for water levels are those with a long history. We need to monitor trends and assess impact of changes such as drought, climate change, etc. Long records are valuable to uncover issues or assure concerns.

AGREEMENT: GRAC members feel comfortable with the plan up to the section on Confidentiality, if language is added that clarifies “gross or aggregate water balance” and objectives are sequenced according to importance.

The next meeting will focus on confidentiality to get more clarity on this issue.

b. Review and Consideration of Adoption of the GRAC Communication and Education Plan

Mr. Lowe oriented GRAC to the proposed Communication and Education Plan. This plan captures input from the ad hoc committee over the last few months. The plan also incorporates feedback provided at the joint Watershed Information Center and Conservancy (WICC) and GRAC meeting. The draft plan was generally well received by WICC and some general comments were provided for the brochure. It is noteworthy that the plan is based on GRAC's current level of understanding. Amendments may be added to the plan as GRAC progresses in their work and has more knowledge on the program. However, the County is asking for GRAC to adopt this "Communication and Education Plan" as a working document. Other materials such as the brochure will continue to be developed and discussed.

Mr. Michael Haley added context by briefly reviewing the process the ad hoc committee used to review materials. He also stressed that, if adopted, the document should be considered a working plan. He then invited comments and discussion.

QUESTIONS AND DISCUSSION:

- **Broad public outreach.** Comment: To clarify, does this plan make information publically available for discourse prior to focusing in on select prospects? GRAC should open discourse on the need to monitor and protect our groundwater resource. This ensures we don't lower the number of participants by focusing too narrowly. Response: Yes, people should know about it.
- **Consistency with language.** Comment: Objectives one and two refer targets and interested parties and residents. Yet, under guiding principles it refers to interested parties but not also to residents. Is there a reason for this change? Answer: The intent was to signify priorities by having an emphasis on interested parties. The second part is more general for the public. We can reword the language here.

ACTION ITEM: County staff will review and amend language between objectives and guiding principles to provide for consistency.

- **Frequently asked questions (FAQs).** Question: Where did we include the FAQs? Answer: These are included on a separate page and not as part of the plan.
- **Supplemental materials.** Comment: A slip sheet can be tailored for audiences and accompany the brochure. It can offer transition information plus enable tailoring such as between well owners and city dwellers.
- **GRAC volunteers for outreach.** Question: Who among us will present to various stakeholder groups? Once we understand more about the program, we should take

ownership and present plans to our peers. Response: We will be sure to ask for GRAC volunteers as we go through the outreach strategies. Volunteers will especially be needed for strategies three, four and seven. All GRAC members should be engaged for strategy number two listed on page five of the plan.

- **Action plan for prioritizing efforts to secure 18 wells.** Question: Can LSCE detail a plan of action or roadmap that identifies where wells are needed to fill data gaps with specific locations and needs? A roadmap that illustrates low hanging fruit for geologic conceptualization? Answer: LSCE can provide more detail on needed locations and suggested steps with the 18 wells.
- **Implementation strategy.** Consultant comment: A middle-level plan for implementation of communications and outreach should be developed.
- **Dots at major crossroads.** Question: Can LSCE indicate areas that need monitoring volunteers with dots at major crossroads? That may enable readers to quickly identify if they have a well that may meet monitoring needs. The map should be general and not on any one person's property. Answer: Yes, we can get more specific with locations.
 - ACTION ITEM:** LSCE will indicate areas where monitoring is needed to fill data gaps using dots at major crossroads and a roadmap of next steps.
- **Detail on needed sites for GRAC.** Comment: GRAC will need more detail on where sites may be optimal. A general dot may be in an area with 15 wells, but only two or three that are optimal. That will help GRAC target areas.
- **PowerPoint materials.** Comment: It seems there is a need for yet another communication piece that is a step between the brochure and the monitoring plan. This would be used to communicate about the program to specific constituents such as vintners, the Farm Bureau, etc. It may be in a PowerPoint format to support a roughly 20-minute presentation. Response: That is included in page 5 of the plan under the second strategy listed. If it is more urgent, it can be developed and discussed at the October meeting.
- **Training for GRAC members.** Comment: GRAC members should receive training on presenting the information prior to formal outreach efforts. Response: County can provide that. Once we have a short PowerPoint with an executive summary we can prepare GRAC to take it on the road.
 - **Transparency with risks.** Comment: GRAC members have been asked by the County to help secure participants. The tendency is to "sell" the idea.

However, water is a sensitive issue and requires caution. We must ensure transparency with goals, risks and benefits.

- **Conveying the risks of not monitoring.** Comment: The risks should also include the risk of not monitoring. For example, an absence of data risks not making the right decision or not having information to respond to State regulation.
- **Status of the brochure.** Comment: We are not yet ready to sign-off on the brochure. We need more time and attention on this item to support the committee. Response: Agreed, the committee and County need GRAC feedback on this piece. A deadline was set at the last meeting for materials but no feedback was provided.

ACTION ITEM: County staff will email a reminder for GRAC to provide brochure edits. For editing convenience, the brochure text will be sent in Word format.

- **Brochure opening sentence.** Comment: The first sentence should be changed to address what this brochure is about and why we are providing it to recipients. This will better capture the reader's attention.
- **Audience appropriate language.** Comment: This is good information however GRAC is educated on this topic whereas the vast public is not. People do not know definitions of terms such as "recharge." Response: Before final, the County can send the draft brochure to Water Words that Work, who can ensure that pictures and language are appropriate for a public audience.
- **Conveying number of wells needed to public.** Comment: Providing a sense that a limited number of wells will be monitored may ease concerns and make people feel more comfortable.

AGREEMENT: GRAC members adopted the Communication and Education Plan with the amendment to indicate that this is a working document.

IMPLEMENTATION STRATEGY

Mr. Fougères summarized earlier discussion on soliciting wellowner participation and additional outreach.

QUESTIONS AND DISCUSSION:

- **Purpose of general outreach.** Question: If we determine what wells are needed, shouldn't we simply talk with those landowners? Why do we need efforts targeting the general public? GRAC Discussion: There is a need for the scientific data and there is a need to get public support to reduce risk of opposition. The aim is also to plant the idea in people's heads before we approach them, which provides for a better lead-in.
 - **Educating on the watershed and groundwater interaction.** Comment: It is also to raise awareness on how streams above ground impact our groundwater and to raise awareness on the value of this resource. It reduces the risk of this issue becoming divisive, especially if we use words such as "ours."
- **Opening by assuring Napa is not in crisis.** Comment: The opening sentence should clarify that this is not a big issue. That will reduce the risk of conflict. This should also be stated at the start of presentations.
 - **Brochure and other materials:** Materials should reflect the number of wells needed and begin by noting that groundwater conditions are generally good in the County.
- **Future staff needed to monitor new wells.** Question: Will Public Works need to assume responsibility of monitoring new wells we secure? Will you need more people to manage this? Answer: Yes, Public Works will monitor the wells. The Board has not yet allocated money for Public Works to staff this effort. Part of the value of GRAC's effort is to identify the right level of effort needed to help the Board decide on level of funding.
- **Advance landowner participant notice of monitoring.** Question: Do you let people know you are coming to monitor their well? Answer: Yes, for participants we do that already. Comment: You may want to include this in the roadmap and communication on how the County monitors sites.

6. Other Business

a. Update on the DWR Grant Application for Groundwater Monitoring Wells

Mr. Lowe provided a brief update on the grant application for groundwater monitoring wells. The application intent was approved by the Board of Supervisors and application submitted to DWR. The County anticipates a response by November or December.

QUESTION:

- **Public view of the application.** Question: Is the application on a public website people can view? Answer: No, the application was submitted electronically through the DWR grant application system.

c. Update on the California Statewide Groundwater Elevation Monitoring (CASGEM) Program

Mr. Phil Miller, Deputy Director of Public Works, provided an update on CASGEM in that the County has not received any questions or feedback from CASGEM participants.

d. Discuss Use of the Meeting Summary

See Agenda Item 8 below.

7. Announcements

a. Upcoming Events or Items of Interest from the Committee and Staff

No items were discussed.

8. Future Agenda Items

Mr. Patrick Lowe and Mr. Dorian Fougères inquired if the informal meeting summary, further detailing GRAC meetings, was useful for GRAC members. Several GRAC members relayed it has helped them in times they missed a meeting and/or to refresh their memory on the previous meeting.

Mr. Patrick Lowe concluded the meeting by noting the subjects of confidentiality and GRAC work plan will be included on the next meeting agenda.

DISCUSSION:

- **Redlining documents.** Suggestion: GRAC reads a lot of paper and multiple versions of documents. A redlined version for editing documents would be easier to review. Can the County redline materials where we are seeing an updated version from something previously reviewed? Answer: Yes.
 - Where possible, Napa County staff will provide redlined documents for GRAC convenience.

9. Adjournment to the Next Meeting

Thursday, October 25, 2012 – 2:00pm

Agricultural Commissioner’s Office/UCCE Conference Room

1710 Soscol Avenue, Napa CA

Attendees

Groundwater Advisory Committee Members:

1. Michelle Benvenuto
2. Tucker Catlin
3. Alan Galbraith
4. Donald Gleason
5. Dave Graves
6. Michael Haley
7. Peter McCrea
8. Charles Slutzkin
9. Steve Soper
10. Marilee Talley
11. William Trautman
12. James Verhey
13. Suzanne Von Rosenberg
14. Duane Wall
15. Dale Withers

Public Attendees:

16. John Ferons
16. Nancy Gressinger

County Staff Members and Consultant Attendees:

17. Taralyn Atkins-Brown, CCP
18. Deborah Elliott
19. Dorian Fougères, CCP
20. Vicki Kretsinger Grabert, LSCE
21. Steve Lederer
22. Daisy Lee
23. Patrick Lowe
24. Phil Miller
25. Greg Morgan
26. Mark Nordberg, DWR
27. Rick Thomasser



GRA Committee Work Plan

Mission Statement :

The GRAC's duties and responsibilities are to assist staff and consultants with recommendations regarding : (a) Synthesis of existing information and identification of critical data needs; (b) Development and implementation of an ongoing non-regulatory groundwater monitoring program; (c) Development of revised well pump test protocols and related revisions to the County's groundwater ordinance; (d) Conceptualization of hydrogeologic conditions in various areas of the County and an assessment of groundwater resources as data becomes available; (e) Development of groundwater sustainability objectives that can be achieved through voluntary means and incentives; and (f) Building community support for these activities and next steps.

The GRAC shall cease to exist upon completion of these purposes or on December 31, 2014, whichever occurs first, unless the GRAC is affirmatively perpetuated by resolution of the Board of Supervisors.

Meeting Time & Location:

The GRAC will meet every other month at 2:00 PM on the 4th Thursday of the month, except for December, when the meeting will be held on the 2nd Thursday. Special Meetings may be called by the GRAC for other dates, as provided by the Brown Act. All meetings will be held at 1710 Soscol Ave, Suite 3, Napa, in the Napa County Agricultural Commissioner/UCCE conference room.

Work Plan Overview:

The following provides a topical overview of scheduled meetings.

October 2011: Introduction & background

- Welcome/introduction/round table
- Organizational Items (bylaws, elect Chair/Vice Chair, calendar, ground rules, Brown Act)
- County Policies regarding groundwater
- Stakeholder assessment findings
- Groundwater Study Results Part 1
- Other Business (CASGEM participation & consultant selection)

December 2011: What we know & what we don't know

- Organizational items (cont.)
- Groundwater Study Results Part 2
- Confidentiality protocol for groundwater data/information
- CASGEM program requirements, County compliance & next steps
- Volunteer well monitoring & public outreach to date
- Discuss Draft Plan for Public Outreach/Education
- Other Business (Consultant contract & schedule)

February 2012: Next Steps: Consultant Scope of Work, Monitoring & Outreach

- Overview of Groundwater Concepts and Sonoma County GW Monitoring program
- Review/discuss and adopt updated GRAC Workplan/Schedule
- Review/discuss Groundwater Study Recommendations (covered in Oct and Dec)
- Review/discuss Confidentiality Memo and Update to CASGEM Participants
- Review/discuss Consultant Scope of Work and Schedule and Geographic Focus Areas
- Review/discuss revised Plan for Communication & Education, and/or refer to an Ad Hoc Committee for further development
- Monitoring wells background information/demo: construction, function and cost
- Introduction to components of a successful groundwater monitoring program

April 2012: Draft groundwater monitoring program

- Review/discuss Communication and Education Plan from Ad Hoc Committee
- Overview of the History & Update on the Milliken-Sarco-Tulocay (MST) Basin
- Review/discuss the working draft/annotated outline groundwater monitoring program
- Review/discuss well confidentiality and potential policy for the GW Monitoring Program

June 2012: Draft groundwater monitoring program

- Review/discuss and adopt the GRAC Mission Statement
- Review/discuss Communication and Education Plan
- Review/discuss conceptualization of hydrologic conditions
- Review/discuss first draft of groundwater monitoring program [Sections 1-3]
- Review/discuss draft well data confidentiality policy, as needed

July 2012: Joint meeting with the WICC Board & Subsequent Report to the Board of Supervisors

- Overview of the WICC Board and GRA Committees
- Presentation on studies (past and present) and development of Groundwater Monitoring Plan
- Review/discuss and comment on Communication and Education Plan and outreach strategies

August 2012:

- Review/discuss and provide direction on the draft Groundwater Monitoring Plan [Sections 1-7]
- Review/discussion and adoption of Communication and Education Plan
- Review/discuss and comment on outreach FAQs and brochure: *Groundwater Resources in Napa County – Monitoring for Sustainability*

October 2012:

- Review 1st Year accomplishments, and review/discuss and adopt the updated GRAC Work Plan
- Review/discuss next steps and provide direction on the draft Groundwater Monitoring Plan (GWMP)
 - Review/discuss draft GWMP Section 5 - Groundwater Data Management (Data Use/Disclosure), and draft Guidance Document (outline) on GW Data Management and Disclosure
 - Review areas of interest (18) for monitoring wells to fill data gaps and support hydrogeologic conceptualization
 - Review/discuss next steps including implementation/outreach
- Review/discuss Communication and Education outreach materials (brochure/maps/other inserts)

December 2012 > rescheduled to January 2013:

- Review/discuss and consider adoption of the Groundwater Monitoring Plan (GWMP)
 - Review/discuss and finalize GWMP Section 5 - Groundwater Data Management, and Guidance Document on GW Data Management and Disclosure
- Review/discuss and finalize Communication and Education outreach materials (brochure/inserts)
- Presentation of results from LSCE conceptualization of hydrogeologic conditions
 - Updated understanding of hydrogeology (focus on Valley Floor)
 - Evaluation of groundwater recharge
- Status of DWR grant application

February 2013:

- Review/discuss results from LSCE conceptualization of hydrogeologic conditions (*cont'd from January*)
- Presentation/overview of well permitting and testing
- Review/discuss proposed groundwater ordinance updates, including well pump test standards
- GRA Committee begins communication/outreach activities for volunteer wells
- GRA Committee update/report to Board of Supervisors

April 2013:

- Review/discuss proposed groundwater ordinance updates (*cont'd from February*)
- Report on communication/outreach activities

June 2013:

- Review/discuss and adopt groundwater ordinance updates
- Update on well level data collected spring 2013
- Report on communication/outreach activities
- Annual update/report on the CASGEM Program

July 2013: Joint meeting with the WICC Board & Subsequent Report to the Board of Supervisors

- Overview of the WICC Board and GRA Committee activities and programs
- GRA Committee completes communication/outreach activities for volunteer wells
- Review/discuss GRA Committee annual report to Board of Supervisors

August 2013 to June 2014:

- Continue groundwater monitoring communication/outreach (assess/adjust as needed)
- Periodic update/report on the Groundwater Monitoring Plan (living document)
- Presentation and information on the inter-relationship of surface and groundwater
- Develop groundwater sustainability objectives and incentives
- Review/discuss recommended next steps

August 2014 to December 2014:

- Conclude GRAC's work and make final recommendations to the Board of Supervisors

5 Groundwater Data Management

This section describes how groundwater data obtained by the County will be managed, used, and shared. Specifically, this section discusses the types of data to be collected, the County's Data Management System (DMS), and which data may be shared with the State (e.g., DWR or other entities) and/or reported to the public.

5.1 Data Management Overview

An overview of the County's data management approach is provided in **Figure 5-1.** Data will be collected from a variety of sources and programs. The groundwater monitoring program includes public and volunteered wells¹ and also permit-required monitoring. Therefore, it is important that guidelines are established to ensure that data are managed according to the well owner's permission and/or as it relates to applicable permit conditions.

5.2 Data Management System (DMS)

The Napa County DMS has been constructed to incorporate existing and new data about groundwater resources in Napa County (LSCE, 2010a). The data incorporated in the DMS will be used on an ongoing basis by the County to evaluate countywide groundwater supply and quality conditions and functions as a secure central data storage location.

In order to ensure security and user flexibility, the database was designed using Microsoft Access 2000 and the .mdb database format. Access has the capacity to store historical and future data, up to a total of 2 GB of data, and the DMS can be transitioned to an enterprise database software system as necessary.

5.3 Data Use and Disclosure

In this section, the County's use and disclosure of collected data are described. A tiered participation approach in the volunteer groundwater monitoring program will be followed which allows property owners to choose their level of participation, including what data can be shared versus what data are to be kept confidential as required by State law (Water Code §13751, §13752). Well owners that volunteer their well for inclusion in the County's program would receive the groundwater information collected from their well. This may be provided on an annual basis and/or in periodic reports produced by the County.

5.3.1 Protected Data

² As described in Section 4, the County has identified areas of interest where additional groundwater level and/or quality monitoring will help address data gaps. The County will be seeking well owners interested in volunteering their wells for inclusion in this program. All groundwater level and/or quality monitoring will be done by the County or representatives on behalf of the County (i.e., the monitoring is at no cost to participants and participants will receive information about groundwater beneath their property).

The DMS contains certain protected information that will not be made publicly available. For example, drillers' reports and the specific well construction information contained therein are confidential. This data will be held as confidential unless permission is received from the well owner.

5.3.2 Data Sharing and Disclosure

The County is planning to implement an education and outreach program that includes communication to the public about opportunities to volunteer to have their well monitored as part of the County's groundwater monitoring program. The County is providing a tiered participation program as described below.

Napa County Program

Property owners interested in participating in the County program but who wish to keep their information confidential may elect to not have their well data (e.g., groundwater levels) reported to DWR's Water Data Library or as part of the CASGEM program. This means the County would only use the collected groundwater data (levels and/or quality) for public education and information but would display the data in publically distributed reports which ensure the owner's privacy.

Water Data Library

DWR maintains groundwater information in a database called the Water Data Library (WDL). Napa County reports groundwater level elevation data to DWR for inclusion in the WDL. Although well location information is included in the WDL, well construction information is not reported. This level of participation will be offered to property owner's volunteering their well for the County groundwater monitoring program. This will authorize the County to release water level information, but State mandated protected information will continue to be held as confidential.

CASGEM Program

Property owners interested in participating in the County's groundwater monitoring program and who are willing to provide the information required by the CASGEM program could also become participants in that program. Particularly, owners would recognize that if the County elects to include their well in the CASGEM program, the construction information for their well would be available online on DWR's site.

5.3.3 Reporting of Data

The County has historically routinely reported groundwater level data to DWR for inclusion in the WDL. Beginning in 2012, the County is also now reporting a subset of the groundwater level data collected by the County to DWR as part of the CASGEM program.

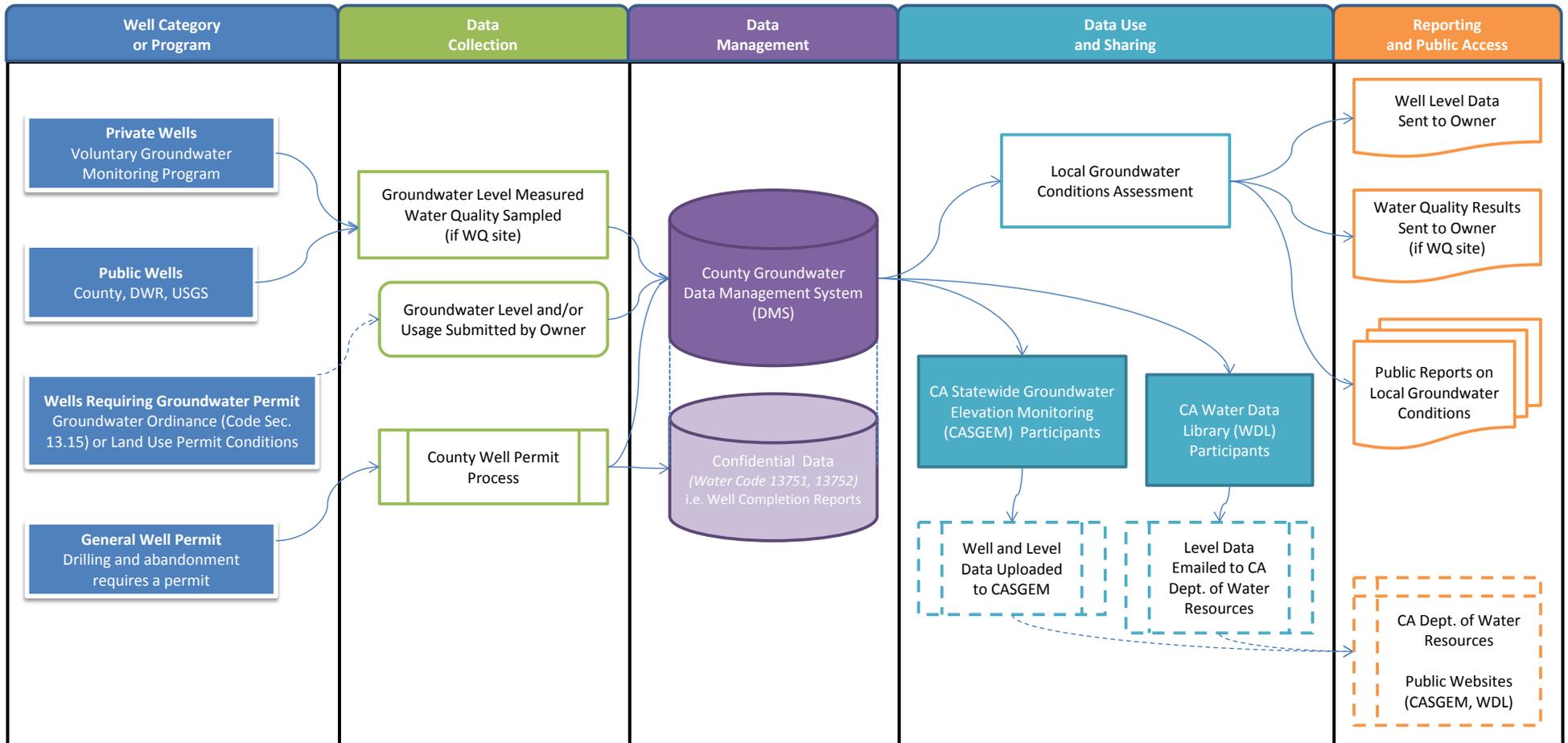
Any maps prepared from data in the DMS should represent well locations with large symbols. Names and addresses of well owners would be kept confidential. Additional information related to reporting is contained in **Section 6**.

5.3.4 Data from Other Sources

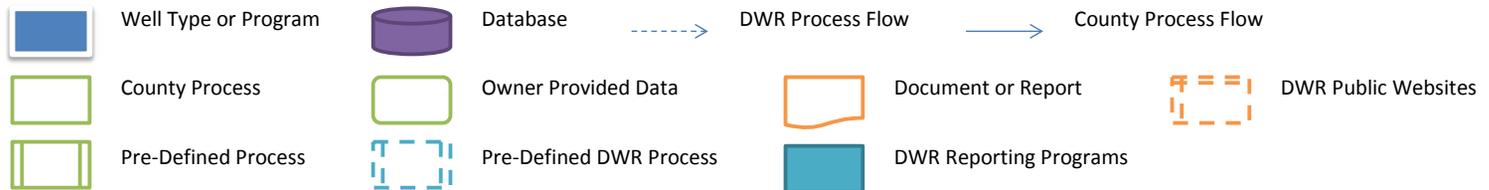
In addition to the groundwater level and quality data directly collected by the County, other groundwater data are available for the County to download and include in the evaluation of countywide groundwater conditions. Several different public agencies collect and maintain groundwater data, including DWR, the USGS, the California Department of Public Health (DPH; GeoTracker-GAMA), and the State Water Resources Control Board (SWRCB; GeoTracker) (LSCE, 2010a). These sources can be accessed through the SWRCB website that summarizes the current data and databases available on the web at www.waterboards.ca.gov/resources/data_databases/. These programs and publicly available databases are continually evolving to expand and merge to create a more useful and powerful network of information. During the development of the County DMS, these data sources were combined with Napa County's own records in order to populate the Napa County DMS (LSCE, 2010a).

For gathering data that is collected by external agencies, a timeframe of about 2 to 3 years is a reasonable span between obtaining updates. This can be a sizeable effort to integrate multiple datasets, and planning should be done to avoid inconsistencies, gaps or duplications of data over a historical record.

Figure 5-1 Groundwater Data Collection, Management, Use, and Reporting



Legend



OUTLINE

**NAPA COUNTY GROUNDWATER
DATA MANAGEMENT AND DISCLOSURE
GUIDANCE DOCUMENT**

I. INTRODUCTION

- A. Goals and Objectives
 1. Tell people what we are doing
 2. What it means to participate
- B. Intended Audiences
 1. County Staff and Consultants
 2. Program Participants
 3. General Public

II. DATA COLLECTION

- A. Napa County Voluntary Groundwater Monitoring Programs
 1. CASGEM (DWR's Program)
 2. Napa County General
- B. Napa County Non-voluntary Groundwater Monitoring Program
 1. MST and CUP Related
- C. Programs by Others
 1. DWR
 2. USGS
 3. CDPH
 4. SWRCB
- D. Well Completion Information
- E. Groundwater Levels
 1. Procedure
- F. Groundwater Quality
 1. Procedure
- G. Consumption Information
 1. Select Group
 - a. MST
 - b. Per CUP requirements

III. NAPA COUNTY DATA PROCESSING

- A. Data Storage and Security
 - 1. Data Management System (DMS)
 - 2. Well Permitting Databases
 - a. Old Wells (Paper)
 - b. New Wells
 - 3. MST Database
- B. Basin Characterization
- C. Evaluation of Trends
 - 1. Groundwater Elevation
 - 2. Groundwater Quality
- D. Potential Groundwater Modeling
 - 1. Overall Basin Sustainability
 - 2. Project Impacts (CEQA)

IV. PUBLICATION OF DATA AND RESULTS

- A. Napa County Voluntary GMP
 - 1. No location specific or proprietary information to be published
 - a. Individual's data will be provided to each participant
 - 2. Completed reports available on the website
- B. Napa County Non-Voluntary GMP
- C. Other Agencies
 - 1. DWR
 - a. CASGEM - location specific & proprietary information (online data, no report)
 - b. WDL – location specific (online data, no report)
 - 2. USGS
 - 3. CDPH
 - 4. SWRCB
- D. Legal Issues
 - 1. Water Code
 - 2. Public Records Act

V. APPENDICES

- A. DMS Procedures
- B. Water Code Sections 13751 and 13752
- C. Representative Public Websites
- D. Sample Right of Entry

**AGREEMENT TO PARTICIPATE IN THE NAPA COUNTY
VOLUNTARY GROUNDWATER MONITORING PROGRAM and RIGHT OF ENTRY
TO ACCESS GROUNDWATER WELLS**

Site Address: _____ APN: _____
State Well Number: _____
Napa County Well Number: _____
Name of Property Owners: _____
Mailing Address: _____
Telephone No: _____
Email Address: _____

As the owner(s) of the above property, we agree to participate in (please check **only** one box):

California Statewide Groundwater Elevation Monitoring Program (CASGEM)

- Groundwater level measurements are collected twice a year (April and October)
- Well construction details, well location, type of well (e.g., residential, irrigation, etc.) ground surface elevation and groundwater elevation data will be made available to the public on State and County websites or through other means.

Napa County Program

- Data will be collected as above, but confidential data such as the precise well location and well construction details will not be made publically available.

Optional water quality testing may be conducted under the Napa County program unless the box below is checked.

- We do not agree to participate in Napa County groundwater quality monitoring.

As participants in the Groundwater Monitoring Program, we agree to grant to the County and its authorized agents, assignees, employees and designees access to the property for the purpose of groundwater monitoring. Groundwater quality testing may be performed unless the above box is checked.

The County shall indemnify, defend and hold harmless Owner(s) from and against all claims, causes of action, damages, liabilities, injuries, actions, costs, and expenses (including reasonable attorneys' fees and costs), arising from or related to County's use of the property, exercise of County's rights under this Agreement, excepting only such loss, damages, or liability arising from intentional acts or sole negligence of the Owner(s).

The County agrees to provide collected groundwater data to the Property Owner no later than 90 calendar days after the sampling event.

The term of this Agreement shall begin on the date last signed below and shall continue until terminated in writing by either Party.

Property Owner:

By: _____

Title: _____

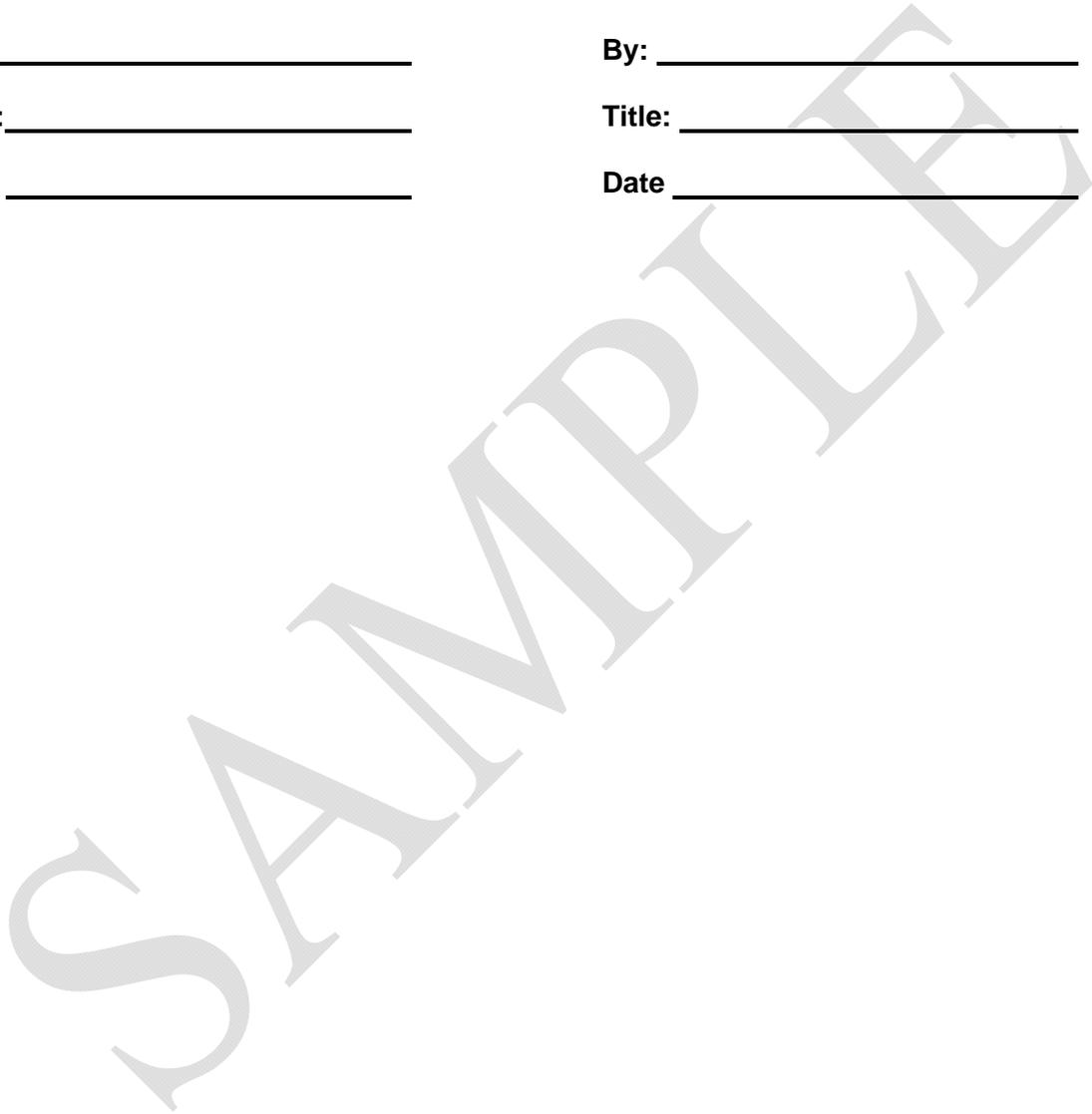
Date _____

Public Works Director:

By: _____

Title: _____

Date _____



Napa County

Groundwater Monitoring Plan 2012

Final Draft October 15, 2012



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EXECUTIVE SUMMARY

Groundwater and surface water are highly important natural resources in Napa County. Long-term, systematic monitoring programs are essential to provide data that allow for improved evaluation of water resources conditions and to facilitate effective water resources planning. In 2009, Napa County embarked on a countywide project referred to as the “Comprehensive Groundwater Monitoring Program, Data Review, and Policy Recommendations for Napa County’s Groundwater Resources” (Comprehensive Groundwater Monitoring Program), to meet identified action items in the 2008 General Plan update. The program emphasizes developing a sound understanding of groundwater conditions and implementing an expanded groundwater monitoring and data management program as a foundation for future coordinated, integrated water resources planning and dissemination of water resources information.

The purpose of this *Napa County Groundwater Monitoring Plan 2012* (Plan) is to formalize and augment current groundwater monitoring efforts [levels and quality] to better understand the groundwater resources of Napa County, aid in making the County eligible for public funds administered by the California Department of Water Resources (DWR), and regularly evaluate trends to identify changes in levels and /or quality and factors related to those changes that warrant further examination to ensure sustainable water resources. The Plan is considered a living document that will be updated based upon the data collected and County/community needs. It is envisioned that groundwater conditions and recommended modifications to the countywide groundwater monitoring program would be reported triennially or as needed.

Recent studies by Napa County have found that there are many areas in the county where further efforts to establish or refine groundwater monitoring, using existing or new monitoring facilities, will improve the understanding of groundwater resource conditions and availability. This Plan summarizes groundwater monitoring priorities and recommendations for addressing these priorities. This Plan also summarizes the overarching groundwater level and quality monitoring objectives defined by the County and the Groundwater Resources Advisory Committee (GRAC).

Existing groundwater level and quality monitoring sites are described and recommendations are made for additional monitoring locations of interest to fill data gaps. As additional monitoring sites are considered, or existing monitoring facilities are further evaluated, the groundwater level and quality monitoring objectives will be used to evaluate the suitability of the existing or proposed facilities to ensure that the data being (or planned to be) collected can address these objectives.

The recommended monitoring sites can be addressed in several ways, including:

- 1) Investigating the potential to restart monitoring where historical records are available but monitoring was discontinued;
- 2) identifying existing wells of suitable construction that might be volunteered for inclusion through County and GRAC education and outreach efforts (this may include wells that are already being monitored for groundwater quality); and
- 3) Constructing new dedicated monitoring wells if suitable existing wells either do not exist in the area of interest or are otherwise not available.

This Plan includes recommendations for 18 areas of interest for focused education and outreach efforts to identify existing wells suitable for meeting the monitoring objectives. Additionally, this Plan describes six groundwater monitoring sites located along the main Napa Valley Floor from the City of Napa north to St. Helena adjacent to the Napa River system. These recommended sites would provide the necessary information to further characterize in greater detail the interrelationship between groundwater and surface water resources.

DRAFT

1 INTRODUCTION

1.1 Purpose

Groundwater and surface water are highly important natural resources in Napa County. Collectively, the County and other municipalities, water districts, commercial and industrial operations, the agricultural community, and the general public, are stewards of the available water resources. Currently, municipal and private stakeholders are actively engaged in assessing the reliability of current and future demands and supplies. Important sources of water include both groundwater and surface water of good quality and quantity, to meet future urban, rural, and agricultural water demands. Similar to other areas in California, businesses and residents of Napa County face many water-related challenges including:

- Increased competition for current and future available supplies;
- Preserving the quality and availability of local and imported water supplies;
- Sustaining groundwater recharge capacity and supplies;
- Meeting challenges arising during drought conditions;
- Avoiding environmental effects due to water use; and
- Changes in long-term availability due to global warming and/or climate change.

To address these challenges, long-term, systematic monitoring programs are essential to provide data that allow for improved evaluation of water resources conditions and to facilitate effective water resources planning. Establishment of a groundwater and surface water monitoring network results in the collection of data necessary to distinguish long-term trends from short-term fluctuations, anticipate unintended consequences due to current and historical land uses, identify emerging issues, and design appropriate water resources planning and management strategies. In 2009, Napa County embarked on a countywide project referred to as the “Comprehensive Groundwater Monitoring Program, Data Review, and Policy Recommendations for Napa County’s Groundwater Resources” (Comprehensive Groundwater Monitoring Program), to meet identified action items in the 2008 General Plan update. The program emphasizes developing a sound understanding of groundwater conditions and implementing an expanded groundwater monitoring and data management program as a foundation for future coordinated, integrated water resources planning and dissemination of water resources information.

The purpose of this *Napa County Groundwater Monitoring Plan 2012* (Plan) is to formalize and augment current groundwater monitoring efforts [levels and quality] to better understand the groundwater resources of Napa County, aid in making the County eligible for public funds administered by the California Department of Water Resources (DWR), and regularly evaluate trends to identify changes in levels and /or quality and factors related to those changes that warrant further examination to ensure sustainable water resources. The Plan is considered a living document that will be updated based upon the data collected and County/community needs. It is envisioned that groundwater conditions and recommended modifications to the countywide groundwater monitoring program would be reported triennially or as needed.

1.2 Organization of the Plan

This Plan formalizes recommendations provided in the County’s Comprehensive Groundwater Monitoring Program by outlining steps to augment countywide groundwater level and quality monitoring. Recent studies by Napa County have found that there are many areas in the county where further efforts to establish or refine groundwater monitoring, using existing or new monitoring facilities, will improve the understanding of groundwater resource conditions and availability. This Plan summarizes groundwater monitoring priorities and recommendations for addressing these priorities. This Plan also summarizes the overarching groundwater level and quality monitoring objectives defined by the County and the GRAC. These objectives provide the framework necessary to ensure that the data collected from the countywide monitoring facilities can address these objectives.

On June 28, 2011, the County Board of Supervisors adopted a resolution establishing a Groundwater Resources Advisory Committee (GRAC). Two of the tasks assigned to the GRAC include: 1) assisting with the synthesis of the existing groundwater information and identifying critical data needs; and 2) providing input on the furtherance of the ongoing countywide groundwater monitoring program. During preparation of this Plan, input from this committee is being coordinated to optimize additional groundwater monitoring locations that serve to meet the objectives of the County’s Comprehensive Groundwater Monitoring Program and the California Statewide Groundwater Elevation Monitoring (CASGEM) program. As explained in the next section, the CASGEM program is a subset of the countywide groundwater monitoring program.

This Plan includes the following sections:

Section 2: Hydrogeology of Napa County

- DWR Basins/Subbasins and County Subareas
- Summary of Geology and Groundwater Resources
- Overview of Recent Groundwater Studies and Programs
- Presentation of Groundwater Monitoring Priorities
 - Groundwater Level Monitoring
 - Groundwater Quality Monitoring
- Summary of Recommendations from Recent County Studies

Section 3: Groundwater Resources Goals and Monitoring Objectives

- Napa County Water Resources Goals and Policies
- Groundwater Level Monitoring Objectives
- Groundwater Quality Monitoring Objectives
- Funding and Collaboration for Groundwater Monitoring

Section 4: Groundwater Monitoring Network Design and Development

- **Groundwater Level Monitoring** - Monitoring Network (including existing groundwater level monitoring wells, recommendations to expand the monitoring well network, frequency of monitoring, and field methods)
- **Groundwater Quality Monitoring** - Monitoring Network (including existing groundwater quality monitoring wells, recommendations to expand the monitoring well network, frequency of monitoring, field methods, and parameters of interest)

Section 5: Groundwater Data Management

- Data Management Overview
- Data Management System (DMS)
- Data Use and Disclosure

Section 6: Reporting and Assessment

- Annual Update and Review of Monitoring Plan and Well Network
- Annual CASGEM Reporting
- Triennial Countywide Reporting

2 HYDROGEOLOGY OF NAPA COUNTY

This section summarizes the countywide geologic and hydrologic setting, and includes information about DWR groundwater basin/subbasin delineations and a description of the Napa County groundwater monitoring subareas. The studies that form the basis of the understanding of County hydrogeology are referenced, including the work for the Updated Conceptualization and Characterization of Hydrogeologic Conditions (LSCE and MBK, 2012 in progress).

2.1 DWR Basins/Subbasins and County Subareas

DWR has identified the major groundwater basins and subbasins in and around Napa County; these include the Napa-Sonoma Valley (which in Napa County includes the Napa Valley and Napa-Sonoma Lowlands Subbasins), Berryessa Valley, Pope Valley, and a small part of the Suisun-Fairfield Valley Groundwater Basins (**Figure 1**). These basins and subbasins are generally defined based on boundaries to groundwater flow and the presence of water-bearing geologic units. These groundwater basins defined by DWR are not confined within county boundaries, and DWR-designated “basin” or “subbasin” designations do not cover all of Napa County.

Groundwater conditions outside of the DWR-designated areas are also very important in Napa County. An example of such an area is the Milliken-Sarco-Tulucay (MST) area, a locally identified groundwater deficient area. For purposes of local planning, understanding, and studies, the County has been subdivided into a series of groundwater subareas (**Figure 2**). These subareas were delineated based on the main watersheds, groundwater basins, and the County’s environmental resource planning areas. These subareas include the Knoxville, Livermore Ranch, Pope Valley, Berryessa, Angwin, Central Interior Valleys, Eastern Mountains, Southern Interior Valleys, Jameson/American Canyon, Napa River Marshes, Carneros, Western Mountains Subareas and five Napa Valley Floor Subareas (Calistoga, St. Helena, Yountville, Napa, and MST).

2.2 Summary of Geology and Groundwater Resources

2.2.1 Previous Studies

Previous hydrogeologic studies of Napa County and also mapping efforts are divisible into geologic studies and groundwater studies. The more significant studies and mapping efforts are mentioned in this section. **Table 2-1** shows the chronological sequence of these efforts that span more than six decades. Weaver (1949) presented geologic maps which covered the southern portion of the county and provided a listing of older geologic studies. Kunkel and Upson (1960) examined the groundwater and geology of the northern portion of the Napa Valley. DWR (Bulletin 99, 1962) presented a reconnaissance report on the geology and water resources of the eastern area of the County; Koenig (1963) compiled a regional geologic map which encompasses Napa County. Fox and others (1973) and Sims and others (1973) presented more detailed geologic mapping of Napa County. Faye (1973) reported on the groundwater of the northern Napa Valley. Johnson (1977) examined the groundwater hydrology of the MST area.

Helley and others (1979) summarized the flatland deposits of the San Francisco Bay Region, including those in Napa County. Fox (1983) examined the tectonic setting of Cenozoic rocks, including Napa County. Farrar and Metzger (2003) continued the study of groundwater conditions in the MST area.

Wagner and Bortugno (1982) compiled and revised the regional geologic map of Koenig (1963). Graymer and others (2002) presented detailed geologic mapping of the southern and portions of the eastern areas of the County, while Graymer and others (2007) compiled geologic mapping of the rest of Napa County.

**Table 2-1
Summary and Chronology of Hydrogeologic and Geologic Studies
and Mapping Efforts in Napa County**

Hydrogeologic and/or Geologic Studies and Mapping Efforts	Year of Report or Map Publication							
	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010-2019
Weaver, 1949	♦							
Kunkel and Upson, 1960		♦						
DWR 1962		♦						
Koenig, 1963		♦						
Fox et al., 1973				♦				
Sims et al., 1973				♦				
Faye, 1973				♦				
Johnson, 1977				♦				
Helly et al., 1979					♦			
Wagner and Bortugno, 1982					♦			
Fox, 1983					♦			
Graymer et al., 2002							♦	
Farrar and Metzger, 2003							♦	
Graymer et al., 2007							♦	
DHI, 2006 and 2007							♦	
LSCE, 2011								♦
LSCE and MBK, 2012 (in progress)								♦

-  = Report and Map produced
-  = Report only
-  = Map only

In 2005 to 2007, DHI Water & Environment (DHI) contributed to the 2005 *Napa County Baseline Data Report* (DHI, 2006a and Jones & Stokes et al., 2005) which was part of the County's General Plan update (Napa County, 2008). A groundwater model was developed by DHI in conjunction with the Napa Valley and Lake Berryessa Surface Water models to simulate existing groundwater and surface water conditions on a regional basis primarily in the North Napa Valley and the MST and Carneros Subareas (DHI, 2006b). A 2007 technical memorandum, *Modeling Analysis in Support of Vineyard Development Scenarios Evaluation* (DHI, 2007), was prepared to document the groundwater model update which was used to evaluate various vineyard development scenarios.

Additional geologic maps, groundwater studies, and reports are listed in the references of the Groundwater Report (LSCE, 2011). As recommended in the Groundwater Report and described below, additional work has been conducted to update the conceptualization and characterization of hydrogeologic conditions particularly for the Napa Valley Floor (LSCE and MBK, 2012 in progress).

2.2.2 Summary of Geology and Water Resources

The geology of Napa County can be divided into three broad geologic units based on their ages and geologic nature. These units are: 1) Mesozoic Basement Rocks (pre-65 million years (my)), which underlie all of Napa County, but are primarily exposed in the Eastern County area and the Western Mountains Subarea, 2) Older Cenozoic Volcanic and Sedimentary Deposits (65 my to 2.5 my), including Tertiary Sonoma Volcanics (Miocene and Pliocene; 10 my to 2.5 my) which are found throughout the county, especially in the mountains surrounding Napa Valley, and 3) Younger Cenozoic Volcanic and Sedimentary Deposits (post 2.6 my to present), including the Quaternary alluvium of the Valley Floor. The two primary water-bearing units in the county are the tuffaceous member of the Sonoma Volcanics and the Quaternary alluvium.

Outside of the Napa Valley Floor, percolation of surface water appears to be the primary source of recharge. The rate of recharge within areas such as the MST Subarea has been shown to be significantly higher where streams and tributaries cross highly permeable outcrops (e.g., the tuffaceous member of the Sonoma Volcanics or shallow alluvium). Direct infiltration of precipitation is a major component of recharge in the main Napa Valley. Recharge throughout much of the county is generally limited by underlying shallow bedrock of low permeability. An additional component of groundwater recharge that is less understood is deep percolation through fractured rock and fault zones. This type of recharge can be very difficult to quantify due to the highly variable size and distribution of faults, fractures, and joints in a given area.

2.2.2.1 Groundwater Occurrence and Quality in the Sonoma Volcanics

Groundwater occurs in the Sonoma Volcanics in Napa County and yields water to wells. Well yields are highly variable from less than 10 to several hundred gallons per minute (gpm). The most common yields are between 10 to 100 gpm. Faye (1973) reported well-test information which showed an average yield of 32 gpm and an average specific capacity of 0.6 gallons per minute per foot of drawdown. From the available well log data, the Tertiary marine sedimentary rocks are poor groundwater producers either for a lack of water or poor water quality (high salinity). At great depths, groundwater quality in the Tertiary marine sedimentary rocks is generally poor due to elevated chloride concentrations.

According to Kunkel and Upson (1960), groundwater in the Sonoma Volcanics is generally of good quality except in three areas. The first area with poor groundwater quality, the Tulucay Creek drainage basin, east of the City of Napa, contains groundwater with elevated iron, sulfate, and boron. The Suscol area, south of the City of Napa, is the second area where some wells exhibit poor quality groundwater due to elevated chloride concentrations, possibly from leakage from salty water in the Napa River, alluvial material above, or the existence of zones of unusually saline connate water deep within the Sonoma Volcanics. The third area of poor groundwater quality, the Calistoga area in the northern end of the Napa Valley, contains isolated wells with elevated chloride, boron, and some trace metal concentrations.

Kunkel and Upson (1960) reported that the principal water yielding units of the Sonoma Volcanics are the tuffs, ash-type beds, and agglomerates. The lava flows were reported to be generally non-water bearing. However, it may be possible that fractured, fragmental, or weathered lava flows could yield water to wells. The hydrogeologic properties of the volcanic-sourced sedimentary deposits of the Sonoma Volcanics are complex and poorly understood.

2.2.2.2 Groundwater Occurrence in Other Units and in the Quaternary Sedimentary Deposits

Several hundred wells and test holes on record have been drilled into the exposed Huichica Formation. Well yields tend to be low to modest (< 10 gpm to tens of gpm). Only a few known wells on record are completed in the Clear Lake Volcanics near the northern County line. Three wells report high yields of 400 to 600 gpm. Much of the Clear Lake Volcanics to the south appear to be thinner, limited in extent, and in ridge-top locations where possible groundwater production appears to be less likely.

Groundwater production from Quaternary alluvium is variable, with yields ranging from <10 gpm in the East and West mountainous areas to a high of 3,000 gpm along the Napa Valley floor where the alluvium is thickest (>200 feet). According to Faye (1973), average yield of wells completed in the alluvium is 220 gpm. Many wells drilled in the alluvium within the last 30 years extend beyond the alluvium and into the underlying Cenozoic units. Kunkel and Upson (1960) report that groundwater in the alluvium is generally of good quality. The groundwater is somewhat hard and of the bicarbonate type, with small concentrations of sulfate, chloride, and total dissolved solids. A few isolated areas have increased chloride and boron concentrations.

2.3 Recent Groundwater Studies and Programs

This section summarizes the recently completed studies by Napa County and the recommendations relevant to groundwater monitoring that were developed.

2.3.1 Napa County's Comprehensive Groundwater Monitoring Program

In 2009, Napa County implemented a Comprehensive Groundwater Monitoring Program to meet identified action items in Napa County's 2008 General Plan update (Napa County, 2008). The program emphasizes developing a sound understanding of groundwater conditions and implementing an expanded groundwater monitoring and data management program as a foundation for future coordinated, integrated water resources planning and dissemination of water resources information. The program (and elements of this Plan) covers the continuation and refinement of countywide groundwater level and quality monitoring efforts (including many basins, subbasins and/or subareas throughout the county) for the purpose of understanding groundwater conditions (i.e., seasonal and long-term groundwater level trends and also quality trends) and availability. This information is critical to enable integrated water resources planning and the dissemination of water resources information to the public and state and local decision-makers. Napa County's combined efforts through the Comprehensive Groundwater Monitoring Program along with the related AB 303 Public Outreach Project on groundwater (CCP, 2010) and the efforts of the Watershed Information Center & Conservancy (WICC) of Napa County create a foundation for the County's continued efforts to increase public outreach and participation in water resources understanding, planning, and management. An informed and engaged public enables support of planned water resources projects and programs proposed by the County and others to meet the goals and objectives discussed in Section 3.

Napa County's Comprehensive Groundwater Monitoring Program involved many tasks that led to the preparation of five technical memorandums and a report on *Napa County Groundwater Conditions and Groundwater Monitoring Recommendations* (Groundwater Report) (LSCE, 2011a). This report and the other related documents can be found at: <http://www.countyofnapa.org/planning/groundwater/>. The report documents existing knowledge of countywide groundwater conditions and establishes a framework for the monitoring and reporting of groundwater levels and groundwater quality on a periodic basis. The report also summarizes priorities for groundwater level and quality monitoring for each of the county subareas.

2.3.2 Napa County Statewide Groundwater Elevation Monitoring (CASGEM)

This section describes the new DWR [California Statewide Groundwater Elevation Monitoring \(CASGEM\) program](#). The wells included by the County in the CASGEM program are a *subset* of the overall network of wells monitored in Napa County.

In November 2009, Senate Bill SBX7 – 6 mandated that the groundwater elevations in all basins and subbasins in California be regularly and systematically monitored with the goal of demonstrating seasonal and long-term trends in groundwater elevations. In accordance with the mandate, DWR developed the CASGEM program. DWR is facilitating the statewide program which began with the opportunity for local entities to apply to DWR to assume the function of regularly and systematically collecting and reporting groundwater level data for the above

purpose. These entities are referred to as Monitoring Entities. The legislature added a key aspect to SBX7 – 6 which was to make certain elements of the groundwater level information available to the public.

Wells designated for inclusion in the CASGEM program are for purposes of measuring groundwater levels on a semi-annual or more frequent basis that are representative of groundwater conditions in the state’s groundwater basins and subbasins.

On December 29, 2010, the County applied to DWR to become the local countywide Monitoring Entity responsible for designating wells as appropriate for monitoring and reporting groundwater elevations for purposes of the CASGEM program.

The wells selected by the County for this program may be a *subset* of the overall wells monitored and need not be inclusive of the County’s entire monitoring network. Thus, the County’s participation in the CASGEM program complements other pre-existing groundwater monitoring that has been ongoing in Napa County for sometime (the overall historical monitoring record began in 1918). The end goals of the CASGEM program from the state’s perspective is to support the understanding, managing, and sustaining of groundwater resources throughout California.

Following confirmation, the County, as the Monitoring Entity, proceeded to identify a *subset* of monitored wells to be included in the CASGEM network and to prepare a CASGEM Network Plan as required by DWR (LSCE, 2011b). At the time the County’s CASGEM Network Plan was submitted to DWR, fourteen wells were included in the program. Currently (as of June 2012), the number of CASGEM wells has increased to nineteen.

2.3.3 Updated Conceptualization and Characterization of Hydrogeologic Conditions

In 2012, activities were implemented to update the characterization and conceptualization of hydrogeologic conditions (LSCE and MBK Engineers, 2012 in progress). Work to date is summarized below for three tasks, including: 1) the updated Napa Valley geologic conceptualization, 2) linking well construction information to groundwater level monitoring data, and 3) groundwater recharge characterization and estimates.

An important aspect of the work to update the hydrogeologic conceptualization is providing a refined understanding of the mechanisms through which water moves in response to the hydrologic cycle, particularly in the aquifer system underlying the main Napa Valley Floor,. This involves many complex pathways and also considers many different time scales. As discussed further below, a key County General Plan goal (Napa County, 2008) is to “Conserve, enhance and manage water resources on a sustainable basis to attempt to ensure that sufficient amounts of water will be available for the uses allowed by this General Plan, for the natural environment, and for future generations.” The groundwater monitoring program described in this Plan is instrumental to accomplishing this goal. The groundwater monitoring data (especially levels) are important for understanding the quantity of water flowing into and from a groundwater basin. Construction of a water budget, also known as a water balance, is a tool scientists can employ to assess the quantity of groundwater in storage. This tool is also used to observe how the quantity of groundwater in storage may vary over time. This tool relies upon a defined accounting unit of volume, for example a groundwater basin or other hydrologic unit of

analysis. Measurements of water flowing into and out of the defined unit are used to determine the change in water storage. In the simplest form, the equation for this is:

$$\text{Inflows} - \text{Outflows} = \text{Change in Storage}$$

Typical Inflows and Outflows are summarized below (DWR, 2003):

Inflows

- Natural recharge from precipitation;
- Seepage from surface water channels;
- Intentional recharge via ponds, ditches, and injection wells;
- Net recharge of applied water for agricultural and other irrigation uses;
- Unintentional recharge from leaky conveyance pipelines; and
- Subsurface inflows from outside basin boundaries.

Outflows

- Groundwater extraction by wells;
- Groundwater discharge to surface water bodies and springs;
- Evapotranspiration; and
- Subsurface outflow across basin or subbasin boundaries.

Information relating to each of the above inflow and outflow data components provides the best approximation of the change in storage. A simple way of estimating the change in storage in a basin is through the determination of the average change in groundwater elevations over the groundwater basin for a period of time. This change in water levels is then multiplied by the area overlying the basin and also the average specific yield (in the case of an unconfined aquifer system, or storativity in the case of a confined aquifer system). The change in groundwater levels is best determined over a specific study period that considers different water year types (wet, normal, dry, multiple dry years), but it is common for shorter time periods (e.g., one year's spring to spring groundwater elevations) to be used. This simplistic approach to calculating a change in storage does not provide an indication of the total volume of groundwater storage or the storage available for use. Rather, this computation provides a "snapshot" perspective of short-term trends. The quick calculation should only be considered as an indicator; a more complete groundwater balance evaluation is much preferred (e.g., groundwater flow model). For example, if stresses on the aquifer system induce additional surface water infiltration, the change in groundwater storage may not be apparent (DWR, 2003).

2.3.3.1 Updated Napa Valley Geologic Conceptualization

Published hydrogeologic studies of the Napa County have been largely based on pre-1970 water well drillers' reports and focused on the higher yielding Quaternary alluvium deposits of Napa Valley (Kunkel and Upson, 1960; Faye, 1973). Most previous hydrogeologic cross sections have been constructed in the southern portion of the valley near and to the east of the City of Napa (Kunkel and Upson, 1960; Sweetkind and Taylor, 2010; Farrar and Metzger 2003). The northern valley has been characterized by alluvium thickness maps (Faye, 1973) with little attention paid to the older deposits and Sonoma volcanics.

As part of this investigation, a series of eight cross valley geologic sections were constructed utilizing water well drillers' reports extending up to 2011 (**Figure 2-3**). Cross-section locations were chosen based on perceived geologic relationships and the availability of sufficient well control. A total of 1,087 water well drillers' reports were reviewed and located on topographic base maps; 181 of these were selected for use in the cross sections. Geologic correlations seen on the cross-sections were then extended between sections by available well control and surficial geologic maps. From the geologic cross-sections and correlations of other water well drillers' reports, the Quaternary alluvium was separated from underlying units, and an isopach (contours of equal thickness) map was constructed.

The alluvium is divided into three facies on the map based on lithologic character. From the area just north of the City of Napa and southward, the alluvium is characterized as the basin fill facies consisting of thin sand and gravels with some thicker channel deposits interbedded with thicker beds of silt and clays of floodplain, marshland and possibly, estuary deposits in the Soscol area. This area is not well defined because of lack of well control. North of this area, the Napa Valley alluvium is subdivided into two facies: the fluvial facies and the alluvial plain facies. A narrow band of the fluvial facies consists of thick-bedded sand and gravel channels with interbedded floodplain silts and clays. The total thickness is up to 300 feet near Yountville and thins southward. The fluvial facies remains thick (up to 200 feet) northward to near Rutherford, and then thins to a thickness of 100 feet or less near the St. Helena area. The area between Rutherford and Oak Knoll Avenue is where the highest well yields are reported. Outside of the fluvial facies towards the valley sides occur the alluvial plain facies of thin sand and gravel beds of tributary streams interbedded with thicker, alluvial fan flood-flow sandy gravelly clays. These deposits appear to thin from a thickness of over 100 feet near the fluvial facies, with which they interfinger, to zero thickness near the valley sides. The alluvial plain facies deposits appear to be modest to low water yielding in pre-1970 wells, but more recently constructed wells extend into deeper units.

Beneath the alluvium is a complex sequence of Tertiary sedimentary deposits (Huichica Formation) and igneous deposits of the Sonoma volcanics. These units are strongly deformed by folding and faulting and have complex stratigraphic relationships. From the geologic cross sections, lateral correlations, and surficial map relationships, a structure contour map (elevations) of the top of these units and the subcrop¹ pattern were developed (LSCE and MBK Engineers, 2012 in progress). From north of the City of Napa and southward, these deposits are dominated by fine-grained basin fill with few sand and gravels of floodplain, estuary origin. North towards Yountville, sedimentary deposits of the Huichica Formation appear to overlie Sonoma volcanic andesites and tuffs. Sonoma volcanics and the older Mesozoic Great Valley sequence are exposed in a structural uplift area in the small hills in the Yountville area.

Further north, a Sonoma volcanic andesite flow breccia appears to transition into a sedimentary conglomerate along the center of the valley. This unit is encountered in deep, high yielding wells also completed in the overlying alluvium fluvial facies, but it is not clear if this unit also is high yielding. Overlying the conglomerate/breccia on the east is the sedimentary Huichica Formation of sandstones and mudstones (?). To the west of the unit occur older Sonoma volcanic andesites, tuffs in the south, and younger (?) Sonoma volcanics tuffs interbedded with

¹ Occurrence of strata in contact with the undersurface of a stratigraphic unit, which in this case includes the strata beneath the alluvium.

Huichica Formation (?) sedimentary deposits of sand and gravels and clays. All of the Tertiary units beneath the valley floor appear to be low to moderately water yielding with poor aquifer characteristics.

2.3.3.2 Linking Well Construction Information to Groundwater Monitoring Data

As part of the updated hydrogeologic characterization, existing monitoring well construction data from all available public sources were reviewed to determine the distribution of aquifer-specific monitoring data in Napa Valley. This effort addresses recommendations of the Comprehensive Groundwater Management Program to identify and fill data gaps that will allow for analysis of groundwater occurrence and flow as a more robust understanding of the extent of groundwater resources in the county is developed. A major component of this work has been to identify construction information for previously monitored wells in Napa Valley.

Groundwater level monitoring needs identified through the Comprehensive Groundwater Management Program include improved spatial distribution of groundwater level monitoring, additional characterization of subsurface geologic conditions in each subarea to identify aquifer characteristics, further examination of well construction information to define which portion of the aquifer system is represented by water levels measured in the currently monitored wells (and in many cases to link construction information to the monitored wells), and improve the understanding of surface water/groundwater interactions and relationships.

To address these needs, the Data Management System (DMS) created as part of the Comprehensive Groundwater Management Program was used along with a set of over 6,000 well drillers' reports for wells drilled in the county through 2011. Location and other data about wells where water level data have been collected for at least 5 years within the Napa Valley Floor were extracted from the Napa DMS. Data were extracted using a two-step query to first confirm the data record and then the subarea designation for each well. That query returned 453 wells matching the criteria; many of these wells were constructed for monitoring regulated soil and groundwater contamination sites.

Well construction information for these wells was identified by comparing data about the wells available in the Napa DMS with the actual drillers' reports that contain the well driller's record of subsurface lithology encountered during the drilling process. Information in the Napa DMS was compared in sequence for each well and included the township/range/section, parcel number, well address, type of well, intended use, and date of well completion. The range of data collected at each well relative to the recorded well completion date on the Well Completion Report was also referenced as a secondary indicator when more than one well was found with a given address or parcel. Records compiled by Kunkel and Upson (1960), who performed an extensive survey of wells drilled in Napa Valley through approximately 1952, were also referenced in cases where the earliest measurements or date of well completion were prior to 1960, which predates most drillers' reports from Napa County that were provided by DWR.

Due to slight variations in location information recorded by various monitoring entities over time, multiple point locations have sometimes been assigned for a single well. The Napa DMS and direct communications with Napa County staff were used to identify duplicate well records. The DMS was used to compare metadata, including well depth, borehole depth, and construction

date to avoid over representation of sites where water levels have been or are being recorded. This process identified 42 duplicate well entries for sites where water levels have been or are currently monitored by Napa County, DWR, and USGS.

Monitored wells with at least 5 years of monitoring data and that are also relatively close to the mainstem Napa River were identified to address the need for improved monitoring of groundwater/surface water interactions in Napa Valley. That process identified 101 wells located within a one-quarter mile radius of the Napa River, with 38 wells which were not associated with regulated soil and groundwater contamination sites. A total of 180 wells were found within a one-half mile radius of the Napa River, with 89 of those not associated with regulated sites. Although the regulated sites most often have aquifer-specific shallow monitoring wells completed in the alluvial aquifer system, their spatial distribution is skewed to coincide with the developed population centers in the valley.

All monitored wells with at least 5 years of data were then compared by location with existing surface water gauges along the Napa River to evaluate the potential for pairing measurements of river stage with groundwater levels to assess surface water/groundwater interactions. Ultimately, six sites spanning from the City of Napa north to St. Helena were identified for future monitoring focus (see additional discussion of these sites in Section 4).

2.3.3.3 Groundwater Recharge Characterization and Estimates

Another important feature of the current hydrogeologic investigation is the development of improved characterization of groundwater recharge in the areas of greatest groundwater development, with an emphasis on Napa Valley. Understanding the volume of and mechanisms driving groundwater recharge in the county will be essential in determining where and how much groundwater can be produced without incurring negative impacts (LSCE, 2011a). Currently, evaluation of recharge mechanisms and volumes within Napa County has been limited to the Napa Valley (Faye, 1973) and the MST Subarea (Johnson, 1977; Farrar and Metzger, 2003).

The high permeability of the alluvial sediments in the Napa Valley permits precipitation and surface water to readily infiltrate and recharge groundwater throughout the majority of the valley. These high permeability soils combined with the large volume of water that flows through the Napa River create the potential for significant recharge to occur under the hydrologic circumstances and hydraulic gradient that allow for recharge from the river to groundwater to occur.

For the current project, mass balance and streamflow infiltration methods are being used to estimate regional and local recharge. Streamflow infiltration can be characterized by comparing the elevation of surface water to the shallowest adjacent groundwater. Detailed remotely sensed elevation data of the mainstem Napa River and several major tributaries have been obtained for this purpose. These LiDAR data provide sub-meter precision elevation data and have been sampled at 3 foot intervals along each watercourse. These data will be paired with previously collected groundwater level data and estimates of the hydraulic conductivity of alluvial sediments to estimate the potential for recharge to groundwater or discharge from groundwater to surface water.

In addition, mass balance recharge estimates are being developed for the Napa River watershed and major tributary watersheds using a range of available data (LSCE and MBK Engineers, 2012 in progress). Available records for streamflow, precipitation, land use, and vegetative cover throughout these watersheds have been used to develop spatially-distributed estimates of annual hydrologic inputs and outputs in order to solve for the volume of groundwater recharge. Key components of this work include quantifying the distribution of precipitation across the land surface, quantifying the amount of water that returns to the atmosphere by evapotranspiration, and quantifying the hydraulic properties of soil and alluvial materials through which water must infiltrate to reach groundwater. Estimates developed through the mass balance approach will be evaluated using a sensitivity analysis to determine the degree to which any individual or set of inputs affects the recharge estimate.

2.3.4 Groundwater Monitoring Priorities

Priorities for addressing groundwater level and quality monitoring are presented below. These are based on the analysis of existing groundwater data and conditions described in the Groundwater Report (LSCE, 2011a). Preliminary prioritizations presented in the Groundwater Report are provided in Appendix A. The recommendations from the Groundwater Report have been slightly updated with input received from the GRAC.

2.3.4.1 Groundwater Level Monitoring

Currently, groundwater level measurements are recorded at a total of 81 sites (measurements began in 1920 for one Napa County monitoring well that is still being monitored). **Table 2-2** and **Figure 2-1** summarize the currently conducted monitoring in each subarea. Also shown in **Table 2-2** are the preliminary ranking and priorities for improving or expanding groundwater level monitoring in each of the designated subareas. Six subareas (including the NVF-Calistoga, NVF-MST, NVF-Napa, NVF-St. Helena, NVF-Yountville, and Carneros Subareas) are given a relatively higher priority. This relative prioritization is based on such factors as data scarcity, the need to improve the spatial distribution of the currently collected data, current population and groundwater utilization relative to other parts of the county, and /or the need to improve understanding of groundwater/surface water interactions. Some factors are given greater consideration in areas that currently use more groundwater than other areas. In mountainous areas where less groundwater development has occurred, where geologic conditions are complicated by basement rocks that are complexly deformed by folding and faulting and are well lithified, and overall there is considerable variability (LSCE, 2011a), future monitoring needs could be considered in coordination with potential or planned development in localized areas. Overall, groundwater level monitoring priorities are to identify seasonal and long-term trends and develop the data that facilitate better understanding of groundwater conditions, including response to such factors as climate change and to identify opportunities for enhanced groundwater recharge and storage.

Groundwater level monitoring needs include improved spatial distribution of groundwater level monitoring, additional characterization of subsurface geologic conditions in each subarea to identify aquifer characteristics, further examination of well construction information to define which portion of the aquifer system is represented by water levels measured in the currently monitored wells, and improve the understanding of surface water – groundwater relationships.

Table 2-2 Groundwater Level Monitoring Sites, Napa County (Current¹ and Future)				
Subarea	No. Sites with Current Groundwater Level Data	Future Groundwater Level Monitoring		Monitoring Needs
		Relative Priority	Action (Expand/Refine)	
Napa Valley Floor-Calistoga	6	H	E	SP, SW
Napa Valley Floor-MST	28	H	R	SP, SW
Napa Valley Floor-Napa	19	H	R	SP, SW
Napa Valley Floor-St. Helena	7	H	E	SP, SW
Napa Valley Floor-Yountville	8	H	E	SP, SW
Carneros	5	H	E	B
Jameson/American Canyon	1	M	E	B
Napa River Marshes	1	M	E	SP, SW
Angwin	0	M	E	B
Berryessa	3	L	E	B
Central Interior Valleys	1	L	E	B
Eastern Mountains	0	L	E	B
Knoxville	1	L	E	B
Livermore Ranch	0	L	E	B
Pope Valley ²	1	L	E	B
Southern Interior Valleys	0	L	E	B
Western Mountains	0	L	E	B
Total	81			

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2011 or later. "Future" refers to recommended monitoring locations.

² The relative priority for Pope Valley was changed from "high" in the Groundwater Report to "low" in the Plan based on input from the GRAC on the current population and groundwater use in this subarea.

L = Low Priority; add groundwater level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater level monitoring

H = High Priority; add groundwater level monitoring

E = Expand current monitoring network; possible alternatives for additional monitoring wells include 1) wells historically monitored by DWR/USGS/Others, preferably with well construction information; 2) existing water supply wells (e.g., private/commercial) with well construction information; 3) new dedicated monitoring wells coordinated with recent geologic investigations that are or will be conducted)

R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs:

SP = Improve horizontal and/or vertical spatial distribution of data, including for the purpose of identifying such factors as climate change and to identify opportunities for enhanced groundwater recharge and storage;

SW = identify appropriate monitoring site to evaluate surface water -groundwater recharge/discharge mechanisms;

B = Basic data needed to accomplish groundwater level monitoring objectives

2.3.4.2 Groundwater Quality Monitoring

The current groundwater quality monitoring network consists of 177 monitoring sites (**Table 2-3 and Figure 2-2**). Of these sites, some of the wells, but not all, have well construction information. Current groundwater quality monitoring sites are fairly well distributed throughout the Napa Valley Floor Subarea but are generally sparse elsewhere in the county. Recommended improvements to the groundwater quality monitoring program, and priority timelines for improvements, are summarized in **Table 2-3** and discussed further in the Groundwater Report (LSCE, 2011a).

Table 2-3 includes a ranking and prioritization for improving or expanding groundwater quality monitoring in each of the designated subareas. Three subareas (including NVF-MST, Carneros, and Jameson/American Canyon Subareas) are given a relatively higher priority. This relative prioritization is based on such factors as data scarcity, the need to improve the spatial distribution of the currently collected data, current population and groundwater utilization relative to other parts of the county, and/or the need to improve understanding of groundwater/surface water interactions. Some factors are given greater consideration in areas that currently use more groundwater than other areas. Seven subareas, including Berryessa, Central Interior Valleys, Knoxville, Livermore Ranch, Pope Valley, Southern Interior Valleys, and Western Mountains, are assigned lower priorities for groundwater quality monitoring due to the likely lower levels of projected land and groundwater use. The seven remaining subareas are designated as medium priorities for groundwater quality monitoring. Many of these areas have current monitoring programs, so the emphasis in these areas is to further examine land use with respect to monitoring locations and the units(s) of the aquifer system represented by this monitoring. For example, the Eastern Mountains Subarea appears to include 25 current groundwater quality monitoring sites. However, the source of this data is largely GeoTracker GAMA, which includes California Department of Public Health (DPH) data for community water supply wells. Consequently, these wells are assigned imprecise locations by DPH such that the well locations are accurate to plus or minus one mile. Most likely, these wells are actually located in the main Napa Valley Floor.

Table 2-3 also includes key factors related to monitoring needs. Many subareas outside the Napa Valley Floor have limited spatial distribution of the current groundwater quality monitoring wells/sites. Basic data are described as a key need to accomplish the Plan's groundwater quality monitoring objectives. Importantly, expansion and/or refinement of groundwater quality monitoring conducted in all subareas should be coordinated with efforts to expand or refine groundwater level monitoring to be able to relate water quality trends to constituent transport within the aquifer system.

Table 2-3 Groundwater Quality Monitoring Sites, Napa County (Current¹ and Future)				
Subarea	No. Sites with Current Groundwater Quality Data	Future Groundwater Quality Monitoring		Monitoring Needs
		Relative Priority	Action (Expand/ Refine)	
Napa Valley Floor-Calistoga	20	M	R	SP,C
Napa Valley Floor-MST	16	H	R	SP,C
Napa Valley Floor-Napa	21	M	R	SP,C
Napa Valley Floor-St. Helena	31	M	R	SP,C
Napa Valley Floor-Yountville	14	M	R	SP,C
Carneros	9	H	R	SP,C
Jameson/American Canyon	3	H	E	B,SP,C
Napa River Marshes	6	M	E	B,SP,C
Angwin	4	M	E	B,C
Berryessa	6	L	E	B,C
Central Interior Valleys	6	L	R	B,SP,C
Eastern Mountains	25	M	E/R	B,C
Knoxville	0	L	E	B,C
Livermore Ranch	0	L	E	B,C
Pope Valley ²	6	L	E	B,C
Southern Interior Valleys	1	L	E	B,C
Western Mountains	10	L	R	B,C
Total	177			

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2008 or later. "Future" refers to recommended monitoring locations.

² The relative priority for Pope Valley was changed from "high" in the Groundwater Report to "low" in the Plan based on input from the GRAC on the current population and groundwater use in this subarea. Similarly, some subareas previously in a "medium" category were changed to a relatively low ranking.

L = Low Priority; add groundwater quality and also level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater quality and also level monitoring

H = High Priority; add groundwater quality and also level monitoring

E = Expand current monitoring network; possible alternatives for additional monitoring wells include 1) wells historically monitored by DWR/USGS/Others, preferably with well construction information and as the well may be available for monitoring; 2) existing water supply wells (e.g., private/commercial) with well construction information; 3) new dedicated monitoring wells (coordinate with potential geologic investigations that may be conducted in selected areas)

R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs: SP = Improve horizontal and/or vertical spatial distribution of data; B = Basic data needed to accomplish groundwater level monitoring objectives; C = Coordinate with groundwater level monitoring

Note: Some sites with current groundwater quality data are approximately located and currently may not be counted in the correct subarea. Also, additional sites with current groundwater quality beyond this tabulation exist but the locations are currently unavailable and unable to be counted at this time.

2.3.5 Recommendations from Recent County Studies

2.3.5.1 Groundwater Level Monitoring Recommendations from the Groundwater Report

Below are recommendations from the 2011 Groundwater Report (LSCE, 2011a) in order to implement the expansion and improvement of countywide groundwater level monitoring activities by the County and others.

1. Replace water level monitoring wells that are completed in more than one aquifer with wells completed in (or representative of) a single aquifer (a phased approach is recommended for this effort that considers the historical record for existing wells in the network).
2. Continue groundwater level monitoring on at least a semi-annual basis; increase the spatial and vertical distribution of wells for monthly water level measurements (e.g., in key areas) to allow more comprehensive evaluation of groundwater conditions and stream-aquifer relationships.
3. Perform GPS surveys with higher accuracy instrumentation, as may be needed, to establish updated reference point elevation data.
4. Communicate County groundwater level monitoring objectives to private and commercial landowners and invite voluntary participation in the ongoing program (i.e., access to suitable wells with construction information located in areas of interest to meet subarea-specific monitoring objectives).

2.3.5.2 Groundwater Quality Monitoring Recommendations from the Groundwater Report

Below are recommendations from the 2011 Groundwater Report (LSCE, 2011a) in order to implement the expansion and improvement of countywide groundwater quality monitoring activities.

1. Implement efforts to expand and/or refine the groundwater quality monitoring program such that more wells can be “qualified” with well construction information.
2. Review the historically monitored wells to determine whether some of these may be suited to the objectives of gathering basic data and/or expanding groundwater quality monitoring in the various county subareas.
3. Coordinate expansion of the groundwater quality monitoring program with the

expansion/refinement of subarea groundwater level monitoring.

4. Communicate County groundwater quality monitoring objectives to private and commercial landowners and invite voluntary participation in the ongoing program (i.e., access to suitable wells with construction information located in areas of interest to meet subarea-specific monitoring objectives).
5. As feasible, replace monitoring wells that are completed in more than one zone or aquifer with wells completed in a single unit that meets regional and subarea-specific groundwater quality monitoring objectives.

2.3.5.3 Summary of Overall Groundwater Monitoring Program Recommendations from the 2011 Groundwater Report

1. County establish its role as lead agency for ongoing groundwater monitoring program coordination and database oversight and management.
2. Establish plan for pertinent County departments to coordinate data collection, storage, and analysis efforts.
3. Identify potential collaborators (including local, federal, and state agency representatives) and interested stakeholders for the ongoing program.
4. Annually update the DMS (e.g., groundwater levels and quality and other water-related data), assess network and findings, and make changes to the program where necessary.
5. Discuss monitoring parameters of special interest with collaborators.
6. Review groundwater data annually and revise or make recommendations to revise data collection accordingly, pending changes to network wells and/or specific program objectives.
7. Identify locations for construction of dedicated monitoring wells for water level and/or quality monitoring (e.g., county subareas where more subsurface information is required to better quantify groundwater availability and quality, recharge areas where aquifer-specific monitoring is lacking, surface water-groundwater interaction, etc.).
8. Replace (over time) wells in the monitoring network that have no well construction information (or are perforated in more than one zone) to improve the understanding of aquifer-specific conditions.
9. Coordinate efforts being conducted for water supply investigation work (e.g., test hole construction) with opportunities for constructing zone-specific dedicated monitoring facilities for countywide water level and/or water quality monitoring.
10. Communicate program results to cooperating entities.

11. Provide an overview of program objectives, benefits and results to the general public via web information and other communication vehicles.
12. Seek funding to support program continuation, including DMS, data evaluation, and implementation of priority recommendations.
13. Explore the need to develop guidelines for testing private wells to evaluate potential water quality issues.

2.3.5.4 Napa County CASGEM Plan Recommendations

The County's 2011 CASGEM program (LSCE, 2011b) reported that the County plans to include at least one additional monitoring well in the Pope Valley and Berryessa Valley Groundwater Basins as well as additional wells in other subareas (including the NVF-Calistoga, NVF-MST, NVF-Napa, NVF-St. Helena, NVF-Yountville, and Carneros Subareas) over the coming years. Additional wells in these subareas are of interest for (LSCE, 2011a):

- Improving horizontal and/or vertical spatial distribution of data;
- Identifying appropriate monitoring sites to evaluate surface water-groundwater interaction; and
- Establishing additional basic data needed to accomplish groundwater level monitoring objectives.

2.3.5.5 Summary of Recommendations

Groundwater Level Monitoring

Per the priorities discussed in this section, additional groundwater level monitoring wells are recommended in the following subareas:

- NVF-MST
- NVF-Napa
- NVF-St. Helena
- NVF-Yountville
- NVF-Calistoga
- Carneros
- Pope Valley (CASGEM)
- Berryessa Valley (CASGEM)

Additional monitoring in the subareas in the Napa Valley Floor would be especially to improve the horizontal and spatial distribution of groundwater level data to better understand groundwater conditions, including response to such factors as climate change and to identify opportunities for enhanced groundwater recharge and storage.

Additional groundwater level monitoring is needed to further evaluate surface water-groundwater interaction and recharge/discharge mechanisms. It is especially recommended that

dedicated shallow monitoring wells be constructed at appropriate locations, particularly along the main stem of the Napa River, for this purpose.

Groundwater Quality Monitoring

Per the priorities discussed in this section, additional groundwater quality monitoring wells are recommended in the following subareas:

- NVF-MST
- Carneros
- Jameson/American Canyon

Additional wells in these subareas are to improve horizontal and/or vertical spatial distribution of data and also to establish baseline groundwater quality conditions. Groundwater level monitoring would also occur at any wells added for groundwater quality monitoring in order to evaluate trends in and/or movement of the monitored constituents.

Further examination of the suitability of existing wells for groundwater monitoring (including their location and construction and relevance to meet County and/or CASGEM monitoring objectives) is necessary to determine if any existing wells would be suitable for ongoing evaluation of groundwater conditions. If existing private wells are considered, approval from the property owners to voluntarily participate in the County's groundwater monitoring program would be sought. Additional wells may be added to provide better spatial and/or vertical distribution of monitored locations within the subareas and to enhance the understanding of localized groundwater conditions and availability.

Section 4 outlines steps to optimize additional groundwater monitoring locations that serve to meet the objectives of the County's Comprehensive Groundwater Monitoring Program and the CASGEM monitoring program.

3 GROUNDWATER RESOURCES GOALS AND MONITORING OBJECTIVES

3.1 Napa County Water Resources Goals and Policies

The County's General Plan (2008, amended June 23, 2009) recognizes, "water is one of the most complex issues related to land use planning, development, and conservation; it is governed and affected by hundreds of federal, state, regional, and local mandates pertaining to pollution, land use, mineral resources, flood protection, soil erosion, reclamation, etc. Every year, the state legislature considers hundreds of bills relating to water issues, and in Napa County, more than two dozen agencies have some say in decisions and regulations affecting water quality and water use."

As part of the General Plan update in 2008, and within the Conservation Element, six goals are set forth relating to the County's water resources, including surface water and groundwater. Complementing these goals are twenty-eight policies and ten water resources action items (one of which is "reserved" for later description). The County's six water resources goals are included below (the entire group of water resources goals, policies, and action items is included in LSCE, 2011a).

Goal CON-8: Reduce or eliminate groundwater and surface water contamination from known sources (e.g., underground tanks, chemical spills, landfills, livestock grazing, and other dispersed sources such as septic systems).

Goal CON-9: Control urban and rural storm water runoff and related non-point source pollutants, reducing to acceptable levels pollutant discharges from land-based activities throughout the county.

Goal CON-10: Conserve, enhance and manage water resources on a sustainable basis to attempt to ensure that sufficient amounts of water will be available for the uses allowed by this General Plan, for the natural environment, and for future generations.

Goal CON-11: Prioritize the use of available groundwater for agricultural and rural residential uses rather than for urbanized areas and ensure that land use decisions recognize the long-term availability and value of water resources in Napa County.

Goal CON-12: Proactively collect information about the status of the County's surface and groundwater resources to provide for improved forecasting of future supplies and effective management of the resources in each of the County's watersheds.

Goal CON-13: Promote the development of additional water resources to improve water supply reliability and sustainability in Napa County, including imported water supplies and recycled water projects.

Addressing the six water resources goals above, the County has produced specific General Plan Action Items related to the focus and objective of this Plan. Those action items include:

Action Item CON WR-1: Develop basin-level watershed management plans for each of the three major watersheds in Napa County (Napa River, Putah Creek, and Suisun Creek). Support each basin-level plan with focused sub-basin (drainage-level) or evaluation area-level implementation strategies, specifically adapted and scaled to address identified water resource problems and restoration opportunities. Plan development and implementation shall utilize a flexible watershed approach to manage surface water and groundwater quality and quantity. The watershed planning process should be an iterative, holistic, and collaborative approach, identifying specific drainage areas or watersheds, eliciting stakeholder involvement, and developing management actions supported by sound science that can be effectively implemented. [Implements Policies 42 and 44]

Action Item CON WR-4: Implement a countywide watershed monitoring program to assess the health of the County's watersheds and track the effectiveness of management activities and related restoration efforts. Information from the monitoring program should be used to inform the development of basin-level watershed management plans as well as focused sub-basin (drainage-level) implementation strategies intended to address targeted water resource problems and facilitate restoration opportunities. Over time, the monitoring data will be used to develop overall watershed health indicators and as a basis of employing adaptive watershed management planning. [Implements Policies 42, 44, 47, 49, 63, and 64]

Action Item CON WR-6: Establish and disseminate standards for well pump testing and reporting and include as a condition of discretionary projects that well owners provide to the County upon request information regarding the locations, depths, yields, drilling and well construction logs, soil data, water levels and general mineral quality of any new wells. [Implements Policy 52 and 55]

Action Item CON WR-7: The County, in cooperation with local municipalities and districts, shall perform surface water and groundwater resources studies and analyses and work toward the development and implementation of an integrated water resources management plan (IRWMP) that covers the entirety of Napa County and addresses local and state water resource goals, including the identification of surface water protection and restoration projects, establishment of countywide groundwater management objectives and programs for the purpose of meeting those objectives, funding, and implementation. [Implements Policy 42, 44, 61 and 63]

Action Item CON WR-8: The County shall monitor groundwater and interrelated surface water resources, using County-owned monitoring wells and stream and precipitation gauges, data obtained from private property owners on a voluntary basis, data obtained via conditions of approval associated with discretionary projects, data from the State Department of Water Resources, other agencies and organizations. Monitoring data shall be used to determine baseline water quality conditions, track groundwater levels, and identify where problems may exist. Where there is a demonstrated need for additional management actions to address groundwater problems, the County shall work collaboratively with property owners and other stakeholders to prepare a plan for managing groundwater supplies pursuant to State Water Code Sections 10750-10755.4 or other applicable legal authorities. [Implements Policy 57, 63 and 64]

Action Item CON WR-9.5: The County shall work with the SWRCB, DWR, DPH, CalEPA, and applicable County and City agencies to seek and secure funding sources for the County to develop and expand its groundwater monitoring and assessment and undertake community-based planning efforts aimed at developing necessary management programs and enhancements.

3.2 Overarching Groundwater Monitoring Objectives

The following Plan subsections describe a number of water level and quality objectives to be accomplished with the current and refined countywide groundwater level and quality monitoring program. The overarching groundwater monitoring objectives are linked to the County's General Plan goals and action items presented above and also to hydrogeologic conditions and issues of interest, including (but not limited to):

- Monitoring trends in groundwater levels and storage (e.g., groundwater balance) to assess and ensure long-term groundwater availability and reliability;
- Monitoring of groundwater-surface water interactions to ensure sufficient amounts of water are available to the natural environment and for future generations;
- Monitoring in significant recharge areas to assess factors (natural and human-influenced) that may affect groundwater recharge (including climate change) and also aid the identification of opportunities to enhance groundwater recharge and storage;
- Monitoring to establish baseline conditions in areas of potential saline water intrusion;
- Monitoring of general water quality to establish baseline conditions, trends, and protect and preserve water quality.
- Identify where data gaps occur in the key subareas and provide infill, replacement, and/or project-specific monitoring (e.g., such as may occur for planned projects or expansion of existing projects) as needed; and
- Coordinate with other entities on the collection, utilization, and incorporation of groundwater level data in the countywide DMS.

3.2.1 Groundwater Level Monitoring Objectives

The focus of the countywide groundwater level monitoring program includes the following objectives:

- Expand groundwater level monitoring in priority County subareas to improve the understanding of the occurrence and movement of groundwater; monitor local and regional groundwater levels including seasonal and long-term trends; and identify vertical hydraulic head differences in the aquifer system and aquifer-specific groundwater conditions, especially in areas where short- and long-term development

of groundwater resources are planned (this includes additional monitoring in the area between the NVF-MST Subarea and the northeastern part of the NVF-Napa Subarea to determine whether groundwater water conditions in the NVF-MST are affecting other areas);

- Detect the occurrence of, and factors attributable to, natural (e.g., direct infiltration of precipitation, surface water seepage to groundwater, groundwater discharge to streams) or induced factors (e.g., pumping, purposeful recharge operations) that affect groundwater levels and trends;
- Identify appropriate monitoring sites to further evaluate surface water-groundwater interaction and recharge/discharge mechanisms, including whether groundwater utilization is affecting surface water flows;
- Establish a monitoring network to aid in the assessment of changes in groundwater storage; and
- Generate data to better estimate groundwater basin conditions and assess local current and future water supply availability and reliability; update analyses as additional data become available.
-

Based on the analysis of existing groundwater data and conditions described in the Groundwater Report (LSCE, 2011a) and with input received from the GRAC, the key objectives for future groundwater level monitoring for each subarea are summarized in Appendix A.

3.2.2 Groundwater Quality Monitoring Objectives

The primary objectives of the countywide groundwater quality monitoring program include:

- Evaluate groundwater quality conditions in the various county subareas and identify differences in water quality spatially between areas and vertically in the aquifer system within a subarea;
- Detect the occurrence of and factors attributable to natural (e.g., general minerals and trace metals) or other constituents of concern;
- Establish baseline conditions in areas of potential saltwater intrusion, including the extent and natural occurrence and/or causes of saltwater beneath the Carneros, Jameson/American Canyon and Napa River Marshes Subareas;
- Assess the changes and trends in groundwater quality; and
- Identify the natural and human factors that affect changes in water quality.

Based on the analysis of existing groundwater data and conditions described in the Groundwater Report (LSCE, 2011a) and with input received from the GRAC, the key objectives for future groundwater quality monitoring for each subarea are summarized in Appendix A.

3.3 Collaboration and Funding for Groundwater Monitoring

As described above, the County wishes to promote interagency collaboration and coordination on the collection, utilization, and incorporation of groundwater monitoring data into the DMS and to achieve countywide groundwater resources goals and monitoring objectives. As also noted above, the County has an existing Action Item (CON WR-9.5) that sets forth its interest in working with the SWRCB, DWR, DPH, CalEPA, and applicable County and City agencies to seek and secure funding sources for the County to develop and expand its groundwater monitoring and assessment, and undertake community-based planning efforts aimed at developing necessary management programs and enhancements.

The Groundwater Management Act adopted in 2002 (SB 1938) amended and expanded AB 3030 groundwater management plans. As discussed in the technical memorandum prepared for the County on *Groundwater Planning Considerations and Review of Napa County Groundwater Ordinance and Permit Process* (LSCE, 2011), the California Water Code requires public agencies seeking priority for state funds administered through DWR (e.g., Local Groundwater Assistance (LGA) grant program) for the construction of groundwater projects or groundwater quality projects to prepare and implement a groundwater management plan with certain required components (Water Code Section 10753.7). Previously, all plans were voluntary, and there were no required plan components. The requirements now include establishing basin management objectives, preparing a plan to involve other local agencies in the basin in a cooperative planning effort, and more comprehensive monitoring programs (including groundwater levels and quality; surface water flows and quality; and inelastic land surface subsidence for basins where it is identified as a potential concern) to assess changes in basin conditions and “generate information that promotes efficient and effective groundwater management” (Water Code Section 10753.7).

As described above, on November 6, 2009, SBx7-6 (e.g., the CASGEM program) was enacted. This revised Water Code Section 10920 et seq. and established a groundwater monitoring program designed to monitor and report groundwater elevations in all or part of a basin or subbasin. These new requirements also limit counties and various entities’ (Water Code Section 10927.(a)-(d), inclusive) ability to receive state grants or loans in the event that DWR is required to perform groundwater monitoring functions pursuant to Water Code 10933.7 (DWR, 2012). The goal of the LGA grant program is to improve groundwater resource management and the knowledge of various groundwater basins throughout the state by funding projects that will provide long-term benefit to the management of groundwater (DWR, 2012). A comprehensive groundwater monitoring program is an integral part of this goal. As such, this Plan would greatly improve the County’s ability to apply for state and possibly federal funds in the future.

4 GROUNDWATER MONITORING NETWORK DESIGN AND DEVELOPMENT

This section describes the existing well monitoring network and well qualification efforts concurrently being conducted to attempt to link well construction information to wells with historical groundwater level and/or groundwater quality monitoring records. This section will also discuss data gaps identified as a result of the well qualification efforts and the monitoring wells needed to achieve the groundwater monitoring objectives described in Section 3. The means by which the monitoring network gaps might be addressed include:

- 1) Investigating the potential to restart monitoring where historical records are available but monitoring was discontinued;
- 2) Identification of existing wells of suitable construction that might be volunteered for inclusion through County and GRAC education and outreach efforts; and
- 3) Construction of new dedicated monitoring wells if suitable existing wells either do not exist in the area of interest or are otherwise not available.

This section includes monitoring protocols to meet program objectives (i.e., including developing a program capable of tracking changes in groundwater level and quality conditions and groundwater/surface water interrelationships). In support of the County's General Plan Goal CON-12 and Action Item CON WR-7 (see Section 3), the monitoring protocols are designed to generate information that promotes efficient and effective groundwater management.

This section also includes recommendations for filling spatial/vertical groundwater monitoring data gaps. Finally, this section includes recommended monitoring frequencies for groundwater levels and quality and recommended groundwater quality monitoring parameters.

4.1 Groundwater Level Monitoring

This section describes existing groundwater level monitoring and recommended locations for wells for groundwater level monitoring to fill data gaps. As additional monitoring facilities are considered, or existing facilities are further evaluated, the objectives provided in **Section 3** will be used to evaluate the suitability of the existing or proposed facilities to ensure that the data being (or planned to be) collected can address these objectives.

4.1.1 Monitoring Network

4.1.1.1 Existing Groundwater Level Monitoring Wells

Figure 4-1 illustrates the distribution of current groundwater level monitoring locations, which is primarily located in the Napa Valley Floor-Napa and MST Subareas. Very little groundwater level monitoring is currently conducted elsewhere in Napa County outside these two subareas. A few scattered locations of groundwater level monitoring occur in the Berryessa, Pope Valley, the southern portion of the Central Interior Valleys, Jameson/American Canyon, and in the NVF-Calistoga, NVF-St. Helena, and NVF-Yountville Subareas. Groundwater level monitoring is not currently conducted in the Carneros, Livermore Ranch, Angwin, Southern Interior Valleys, and Western Mountains Subareas. **Table 4-1** summarizes the number of wells in each subarea that are currently monitored for groundwater levels (a detailed list is included in **Appendix A**).

Groundwater level measurements have been recorded at a total of 81 sites) through 2011. Of these sites where groundwater levels are measured, some type of well construction information (depth and/or perforated interval(s)) is readily available for 45 sites. Most current groundwater level monitoring occurs on a semi-annual frequency.

4.1.1.2 Recommendations to Expand Monitoring Well Network

As presented above in **Table 2-2**, and summarized in Section 2, a preliminary ranking and priorities for improving or expanding groundwater level monitoring were prepared for each county subarea. Six subareas are given a relatively higher priority for improving the groundwater level monitoring network based on factors of current population and groundwater utilization relative to other parts of the county, and/or the need to improve understanding of groundwater/surface water interactions. Some factors are given greater consideration in areas that currently use more groundwater than other areas. These areas include:

- NVF-Calistoga,
- NVF-St. Helena,
- NVF-Yountville,
- NVF- MST,
- NVF-Napa, and
- Carneros Subareas

The monitoring network gaps in these six subareas might be addressed by:

- 1) Investigating the potential to restart monitoring where historical records are available but monitoring was discontinued;
- 2) Identifying existing wells of suitable construction that might be volunteered for inclusion through County and GRAC education and outreach efforts (this may include wells that are already being monitored for groundwater quality); and
- 3) Constructing new dedicated monitoring wells if suitable existing wells either do not exist in the area of interest or are otherwise not available.

Monitoring in other subareas with relatively medium to lower priorities is suggested to be addressed with volunteered wells.

The Napa County CASGEM Network Plan submitted to DWR in September 2011 (LSCE, 2011) also describes the County's intent to include at least one additional monitoring well in the Pope Valley and Berryessa Valley Groundwater Basins, as noted above.

The County will conduct additional public outreach to inform more private well owners of the value of understanding the groundwater resources in the County and to encourage their voluntary participation in the Comprehensive Groundwater Monitoring Program and/or CASGEM program. The County anticipates additional wells to be included in the CASGEM program over the coming years. Wells will be included based upon input from the County's GRAC and in concert with their work to meet the objectives of the County's Comprehensive Groundwater Monitoring Program and the CASGEM program.

For each county subarea, **Table 4-1** shows the existing monitoring sites, provides recommendations for the number and location of additional monitoring areas, and describes the key groundwater level monitoring objectives to be addressed. Altogether, it is recommended that approximately 6 six groundwater/surface water monitoring sites for purposes of evaluating groundwater/surface water interactions and about 18 other areas of interest (AOIs) be added to the network (**Figure 4-1**).

Subarea	No. Sites with Current Groundwater Level Data	Future GW Level Monitoring (Relative Priority)		Monitoring Needs	Recommend Addn'l Sites ² (Number of Areas of Interest; Additional Volunteered Sites)	Proposed Areas of Interest for Monitoring	Key Monitoring Objectives ³
Napa Valley Floor-Calistoga	6	H	E	SP, SW	2 AOIs; V	14, 15	Conditions, Trends, Wtr Budget, SW
Napa Valley Floor-MST	28	H	R	SP, SW	V		Conditions, Trends, Wtr Budget, SW
Napa Valley Floor-Napa	19	H	R	SP, SW	2 SW; 4 AOIs; V	5, 6, 7, 8	Conditions, Trends, Wtr Budget, SW
Napa Valley Floor-St. Helena ⁴	7	H	E	SP, SW	2 SW; 3AOIs; V	11, 12, 13	Conditions, Trends, Wtr Budget, SW
Napa Valley Floor-Yountville	8	H	E	SP, SW	2 SW; 2 AOIs; V	9, 10	Conditions, Trends, Wtr Budget, SW
Carneros	5	H	E	B	1 AOI; V	4	Conditions, Trends, Wtr Budget, Saltwater
Jameson/American Canyon	1	M	E	B	3 AOIs; V	1, 18	Conditions, Trends, Wtr Budget, Saltwater
Napa River Marshes	1	M	E	SP, SW	1 AOI; V	2, 3	Conditions, Trends, Wtr Budget, Saltwater
Angwin	0	M	E	B	1 AOI; V	16	Conditions, Trends, Wtr Budget
Berryessa	3	L	E	B	V		Conditions, Trends (includ. CASGEM)
Central Interior Valleys	1	L	E	B	V		Conditions, Trends
Eastern Mountains	0	L	E	B	V		Conditions, Trends
Knoxville	1	L	E	B	V		Conditions, Trends
Livermore Ranch	0	L	E	B	V		Conditions, Trends
Pope Valley	1	L	E	B	1 AOI; V	17	Conditions, Trends (includ. CASGEM)
Southern Interior Valleys	0	L	E	B	V		Conditions, Trends
Western Mountains	0	L	E	B	V		Conditions, Trends
Total	81				6 SW; 18 AOIs; V		

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2011 or later. "Future" refers to recommended monitoring locations.

² The numbers shown in this column refer to the number of areas of interest for additional monitoring. SW in this column refers to recommended sites for groundwater/surface water monitoring. “V” refers to additional water supply wells (private or other) that may be volunteered for participation in the County program. “AOI” refers to the Area of Interest for monitoring; see Figure 4-1 for AOI locations.

³ The Groundwater Level Monitoring Objectives shown in this column are “shorthand” descriptors for the objectives explained in Section 3.

⁴ The wells shown in the Recommended Additional Sites column include one or more of the City of St. Helena’s wells.

L = Low Priority; add groundwater level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater level monitoring

H = High Priority; add groundwater level monitoring

E = Expand current monitoring network; possible alternatives for additional monitoring wells include 1) wells historically monitored by DWR/USGS/Others, preferably with well construction information and as the well may be available for monitoring; 2) existing water supply wells (e.g., private/commercial) with well construction information; 3) new dedicated monitoring wells (coordinate with potential geologic investigations that may be conducted in selected areas)

R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs: SP = Improve horizontal and/or vertical spatial distribution of data; SW = identify appropriate monitoring site to evaluate surface water -groundwater interrelationships; B = Basic data needed to accomplish groundwater level monitoring objectives

The six proposed groundwater monitoring sites are located along the main Napa Valley Floor from the City of Napa north to St. Helena adjacent to the Napa River system (**Figure 4-1**). These facilities are planned to be located near to existing stream gauging stations and/or near areas where stream monitoring can also be conducted. The proposed groundwater monitoring facilities are also being sited, where possible, adjacent to existing groundwater monitoring facilities (i.e., typically water supply wells constructed to greater depths in the aquifer system). The proposed monitoring wells will enable focused data collection regarding groundwater elevations and water quality to identify and characterize interactions with surface water.

4.1.1.3 Frequency of Monitoring

Historically, the County has measured the newly designated CASGEM wells semi-annually in the spring (April) and fall (October) of each year. Historical hydrographs show that these measurement periods generally correspond to the seasonal high and low groundwater elevations observed in their respective county subareas. The County will continue to measure the CASGEM wells semi-annually during similar periods.

Monthly water level monitoring is limited and does not currently provide adequate data to evaluate the effects of hydrologic events or stresses on the aquifer system. In particular, 3 wells are monitored monthly by DWR. These wells are located in the NVF-Calistoga; NVF- St. Helena, and NVF-Napa Subareas, respectively, and are also located generally near the Napa River. It is recommended that selected additional wells (existing and new) be measured monthly to evaluate hydrologic effects and particularly the wells at the six sites recommended to assess surface water and groundwater interrelationships (Napa County, 2012).

4.1.1.4 Field Methods

Napa County has documented field procedures for the collection of groundwater level measurements which were updated as part of the County's Comprehensive Groundwater Monitoring Program (LSCE, 2010b). These procedures and an example form for recording water level measurements are included in **Appendix C**. The County uses these procedures for the CASGEM program as well as continued monitoring of wells where water level data are submitted to DWR semi-annually for inclusion in DWR's Water Data Library, and the monitoring of other wells measured for County information.

4.2 Groundwater Quality Monitoring

This section describes existing groundwater quality monitoring and recommended locations for wells for groundwater quality monitoring to fill data gaps. As additional monitoring facilities are considered, or existing facilities are further evaluated, the objectives provided in Section 3 will be used to evaluate the suitability of the existing or proposed facilities to ensure that the data being (or planned to be) collected can address these objectives.

4.2.2 Monitoring Network

4.2.2.1 Existing Groundwater Quality Monitoring Wells

The current groundwater quality monitoring network consists of 177 sites (**Table 4-2; see detailed list in Appendix B**). Current groundwater quality monitoring sites are fairly well distributed throughout the Napa Valley Floor Subarea (**Figure 4-2**). Recommended improvements to the groundwater quality monitoring program, and priority timelines for improvements are discussed below.

4.2.2.2 Recommendations

As presented above in **Table 2-2**, and summarized in Section 2, a preliminary ranking and priorities for improving or expanding groundwater quality monitoring were prepared for each of the county subareas. Three subareas are given a relatively higher priority for improving the groundwater quality monitoring network based on the lack of spatially distributed groundwater quality monitoring. Although other areas also lack baseline groundwater quality data, these areas are given a relatively higher priority due to interest in better understanding naturally occurring metals (MST) and naturally occurring elevated salinity levels (e.g., Jameson/American Canyon and Napa River Marshes). These areas include:

- NVF-MST;
- Carneros; and
- Jameson/American Canyon Subareas.

Seven subareas, including Berryessa, Central Interior Valleys, Knoxville, Livermore Ranch, Pope Valley, Southern Interior Valleys and Western Mountains, are assigned relatively lower priorities for groundwater quality monitoring due to lower levels of land and groundwater use and/or there appear to be additionally available groundwater quality data from DPH that can be further examined for completeness and ongoing evaluation. The seven remaining subareas are

designated as medium priorities for groundwater quality monitoring. Many of these areas have current monitoring programs, so the emphasis is to periodically examine the groundwater quality data to assess changes in conditions, including any trends in constituent concentrations.

Many subareas outside the Napa Valley Floor have limited spatial distribution of the current groundwater monitoring wells (or monitoring locations). Basic data are described as a key monitoring need and expansion and/or refinement of groundwater monitoring conducted in all subareas should be coordinated with efforts to provide additional characterization of subsurface geologic conditions and well construction information. This effort was undertaken as part of the updated characterization and conceptualization of hydrogeologic conditions for linking groundwater levels to construction data. Over time, it is recommended a similar effort occur for water quality data. Initial efforts to link water quality data to representation of the aquifer system could focus on the MST, Carneros, and Jameson/American Canyon Subareas. This will allow for the evaluation of groundwater conditions specific to an aquifer rather than composite information which limits the ability to fully understand groundwater conditions in the County and in individual subareas.

The monitoring network gaps in the three subareas given a relatively higher priority might be addressed by:

- 1) Investigating the potential to restart monitoring where historical records are available but monitoring was discontinued;
- 2) Identifying existing wells of suitable construction that might be volunteered for inclusion through County and GRAC education and outreach efforts; and
- 3) Constructing new dedicated monitoring wells if suitable existing wells either do not exist in the area of interest or are otherwise not available (this is not likely to be necessary for groundwater quality monitoring purposes only; the six recommended sites with dedicated wells constructed for groundwater level monitoring to evaluate groundwater/surface water interactions could also be added to the groundwater quality monitoring network).

Groundwater quality monitoring is recommended in the 18 AOIs discussed above for groundwater level monitoring. This addresses specific groundwater quality monitoring needs for the relatively higher priority subareas, as well as broader assessment of groundwater quality conditions and trends in other subareas.

Monitoring in other subareas with relatively medium to lower priorities is suggested to be addressed with volunteered wells.

For each county subarea, **Table 4-2** shows the existing monitoring sites, provides recommendations for the number and location of additional monitoring sites, and describes the key groundwater quality monitoring objectives to be addressed.

Table 4-2
Groundwater Quality Monitoring Sites, Napa County
(Current¹ and Recommended Additional Monitoring Sites)

Subarea	No. Sites with Current GW Quality Data	Future GW Quality Monitoring (Relative Priority)		Monitoring Needs	Recommend Addn'l Sites ² (Number of Areas of Interest; Additional Volunteered Sites)	Proposed Areas of Interest for Monitoring	Key Monitoring Objectives ³
		M	R				
Napa Valley Floor-Calistoga	20	M	R	SP,C	2 AOIs; V	14, 15	Conditions, Trends, Nat'l Constituents
Napa Valley Floor-MST	16	H	R	SP,C	V		Conditions Trends, Nat'l Constituents
Napa Valley Floor-Napa	21	M	R	SP,C	2 SW; 4 AOIs; V	5, 6, 7, 8	Conditions, Trends, Nat'l Constituents
Napa Valley Floor-St. Helena	31	M	R	SP,C	2 SW; 3 AOIs; V	11, 12, 13	Conditions, Trends, Nat'l Constituents
Napa Valley Floor-Yountville	14	M	R	SP,C	2 SW; 2 AOIs; V	9, 10	Conditions, Trends, Nat'l Constituents
Carneros	9	H	R	SP,C	1 AOI; V	4	Conditions, Trends, Nat'l Constituents, Saltwater
Jameson/American Canyon	3	H	E	B,SP,C	3 AOIs; V	1, 18	Conditions, Trends, Nat'l Constituents, Saltwater
Napa River Marshes	6	M	E	B,SP,C	1 AOI; V	2, 3	Conditions, Trends, Nat'l Constituents. Saltwater
Angwin	4	M	E	B,C	1 AOI; V	16	Conditions, Trends, Nat'l Constituents
Berryessa	6	L	E	B,C	V		Conditions, Trends, Nat'l Constituents

Subarea	No. Sites with Current GW Quality Data	Future GW Quality Monitoring (Relative Priority)		Monitoring Needs	Recommend Adn'l Sites ² (Number of Areas of Interest; Additional Volunteered Sites)	Proposed Areas of Interest for Monitoring	Key Monitoring Objectives ³
		L	R				
Central Interior Valleys	6	L	R	B,SP,C	V		Conditions, Trends, Nat'l Constituents
Eastern Mountains	25	M	E	B,C	V		Conditions, Trends, Nat'l Constituents
Knoxville	0	L	E	B,C	V		Conditions, Trends, Nat'l Constituents
Livermore Ranch	0	L	E	B,C	V		Conditions, Trends, Nat'l Constituents
Pope Valley	6	L	E	B,C	1 AOI; V	17	Conditions, Trends, Nat'l Constituents
Southern Interior Valleys	0	L	E	B,C	V		Conditions, Trends, Nat'l Constituents
Western Mountains	10	L	R	B,C	V		Conditions, Trends, Nat'l Constituents
Total	177				6 SW; 18 AOIs; V		

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2008 or later. "Future" refers to recommended monitoring locations.

²The numbers shown in this column refer to the number of areas of interest for additional monitoring. SW in this column refers to recommended sites for groundwater/surface water monitoring "V" refers to additional water supply wells (private or other) that may be volunteered for participation in the County program (these volunteered wells for groundwater quality monitoring would be coordinated with those volunteered for groundwater level monitoring). "AOI" refers to Areas of Interest for groundwater monitoring; see Figure 4-2 for AOI locations for groundwater quality monitoring.

³ The Groundwater Level Monitoring Objectives shown in this column are "shorthand" descriptors for the objectives explained in Section 3.

L = Low Priority; add groundwater quality and also level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater quality and also level monitoring

H = High Priority; add groundwater quality and also level monitoring

E = Expand current monitoring network; possible alternatives for additional monitoring wells include 1) wells historically monitored by DWR/USGS/Others, preferably with well construction information and as the well may be available for monitoring; 2) existing water supply wells (e.g., private/commercial) with well construction information; 3) new dedicated monitoring wells (coordinate with potential geologic investigations that may be conducted in selected areas)

R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs: SP = Improve horizontal and/or vertical spatial distribution of data; B = Basic data needed to accomplish groundwater level monitoring objectives; C = Coordinate with groundwater level monitoring

Note: Some sites with current groundwater quality data are approximately located and currently may not be counted in the correct subarea. Also, additional sites with current groundwater quality beyond this tabulation exist but the locations are currently unavailable and unable to be counted at this time.

4.2.2.3 Frequency of Monitoring

With the exception of GeoTracker regulated facility sites in the county, current groundwater quality monitoring for TDS and/or EC typically occurs on a less frequent than annual basis. Nitrate monitoring on an annual or more frequent basis has occurred more often than monitoring for TDS, EC, and chloride (LSCE, 2010a, 2010b, and 2011).

It is recommended that wells added to the monitoring network for groundwater quality monitoring are sampled initially for general minerals and drinking water metals. These wells would include the six sites recommended for the purpose of evaluating groundwater/surface water interactions and also about 18 other sites in AOIs for groundwater quality monitoring as shown in **Table 4-2** and described above. It is also recommended that groundwater quality samples for similar parameters be collected the following year to affirm baseline conditions. It is recommended that groundwater quality monitoring occur on a triennial basis for general minerals and drinking water metals at the six sites recommended for groundwater/surface water evaluation. Following the baseline sampling and the one-year confirmation sampling, a 5-year frequency is recommended for the other 18 AOIs and where wells are volunteered for inclusion for monitoring in other subareas. A subset of analytes is recommended in intervening years (see further discussion below).

4.2.2.4 Field Methods

The methods and procedures used by DWR (1994) and USGS (<http://water.usgs.gov/owq/FieldManual/>) are detailed and extensive and are often used by counties and consultants as guidelines for the collection of water level measurements and water quality samples.

Prior to sampling a monitoring well, the static water level is measured. An electric sounder is used to measure the depth to groundwater from a specified reference point (usually the top of the well casing). Wellhead reference points are typically marked to provide consistency between measurements. Measurements are recorded to the nearest 0.01 foot. The static water level in conjunction with well construction information is used to calculate the volume of water in the well. This information is used to determine the minimum volume of water to be purged prior to sample collection.

Dedicated monitoring wells are typically purged and sampled using a portable submersible sampling pump. A discharge hose is attached to the top of the pump assembly through which purge water is discharged. Smaller-diameter tubing for sample collection is also attached to the top of the pump assembly. Discharge and sample collection tubings are attached to a manifold and are isolated from each other by a check valve.

Private water wells (domestic or agricultural), and also municipal and industrial wells, most often can be sampled using installed pumping equipment. Often these wells are routinely used for their intended purpose so the purging duration may be adjusted accordingly. Samples

collected from existing supply wells should be collected near the wellhead (i.e., prior to any type of water storage tank).

Monitoring wells are purged of at least three well casing volumes and until indicator parameters have stabilized prior to sample retrieval. Stabilization is defined as three consecutive readings at 5-minute intervals where parameters do not vary by more than 5 percent. Purged groundwater is disposed of by spreading it on the ground at a reasonable distance from the sampled well to avoid the potential for purge water to enter the well casing again during the purging process.

The following indicator parameters (or field parameters) are typically monitored during the well purging:

- temperature (°C)
- pH (standard pH-units)
- electrical conductivity (μS/cm)
- dissolved oxygen (percent saturation)
- oxygen reduction potential (mV)
- turbidity (NTU)

Visual (color, occurrence of solids), olfactory (odor) and other observations (e.g., wellhead conditions, well access, ground conditions, and weather) are noted as appropriate.

After completion of purging activities, groundwater quality samples are often filtered in the field to remove turbidity and collected in laboratory-supplied bottles with or without preservative (depending on analyses to be conducted) with or without headspace. Filtering may also be conducted by the laboratory, in which case preservatives are added at the laboratory. Bottles are labeled with laboratory-supplied labels, immediately placed on ice, and kept in a dark ice chest (at 4 °C) until delivered to the laboratory. Samples are delivered to a laboratory certified through the State of California (Department of Public Health Environmental Laboratory Accreditation Program) with the proper chain-of-custody documentation within the required holding time. A chain-of-custody form is used to record sample identification numbers, type of samples (matrix), date and time of sample collection, and analytical tests requested. In addition, times, dates, and individuals who had possession of the samples are documented to record sample custody.

A field sheet is used to document equipment calibration, water level measurements, well purging activities, and the measurement of indicator parameters; an example is provided in **Appendix D**.

4.2.2.5 Quality Assurance Procedures

Quality assurance (QA) is an overall management plan used to guarantee the integrity of data collected by the monitoring program. This includes the discussed guidelines for groundwater level measurements, purging protocol, and sample handling and recordation. Quality control (QC) is a component of QA that includes analytical measurements used to evaluate the quality of the data. A brief discussion of field QC is followed by a discussion of laboratory QC requirements.

Field Quality Control

“Blind” duplicate field samples are collected to monitor the precision of the field sampling process and to assess laboratory performance. Blind duplicates are collected from at least 5 percent (1 in 20) of the total number of sample locations. The true identity of the duplicate sample is not noted on the chain-of-custody form, rather a unique identifier is provided. The identities of the blind duplicate samples are recorded in the field sheet, but the sampling locations of the blind field duplicates will not be revealed to the laboratory. “Field blanks” may also be employed to assure that the field procedures are not introducing any bias or contamination to the samples. The sample water for these is usually provided by the laboratory.

Lab Quality Control

Quality assurance and quality control samples (e.g., spiked samples, blank samples, duplicates) are employed by the laboratory to document the laboratory performance. Results of this testing are provided with each laboratory report.

Review of Laboratory Data Reports

Data validation includes a data completeness check of each laboratory analytical report. Specifically, this review includes:

- Review of data package completeness (ensuring that required QC and analytical results are provided);
- Review of the required reporting summary forms to determine if the QC requirements were met and to determine the effect of exceeded QC requirements on the precision, accuracy, and sensitivity of the data;
- Review of the overall data package to determine if contractual requirements were met; and
- Review of additional QA/QC parameters to determine technical usability of the data.

In addition, the data validation includes a comprehensive review of the following QA/QC parameters:

- Holding times (to assess potential for degradation that will affect accuracy);
- Blanks (to assess potential laboratory contamination);
- Matrix spikes/matrix spike duplicates and laboratory control samples (to assess accuracy of the methods and precision of the method relative to the specific sample matrix);
- Internal standards (to assess method accuracy and sensitivity);
- Compound reporting limits and method detection limits; and
- Field duplicate relative percent differences.

4.2.2.5 Parameters of Interest

The recommended water quality monitoring parameters are described below.

Baseline

During the initial groundwater sampling campaign (i.e., when “new” wells are added to the groundwater quality monitoring network), samples will be laboratory analyzed for general minerals and drinking water metals.

- General Minerals: Specific conductance (or electrical conductivity, EC), total dissolved solids, pH, sodium (Na), potassium (K), magnesium (Mg), calcium (Ca), chloride (Cl), sulfate (SO₄), nitrate (NO₃), fluoride (F), alkalinity series (total, carbonate (CO₃), bicarbonate (HCO₃), hydroxide (OH)), and hardness;
- Drinking Water Metals: silver (Ag), aluminum (Al), arsenic (As) (total and dissolved), boron (B), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr) (total and dissolved), Hexavalent Cr, copper (Cu), iron (Fe), mercury (Hg), manganese (Mn), nickel (Ni), lead (Pb), antimony (Sb), selenium (Se), thallium (Tl), vanadium (V), and zinc (Zn).

Affirm Baseline

During the second year of a monitoring well’s inclusion in the groundwater quality monitoring network, samples will again be collected and analyzed for general minerals and drinking water metals to affirm the findings of the baseline sampling event.

Annual

It is recommended that samples be collected annually for analysis of field parameters and laboratory analyses for at least TDS, nitrate, and chloride. Additional analyses may be appropriate in selected subareas. The groundwater quality sampling locations/AOIs listed in **Table 4-2** are also locations where groundwater levels would be measured at least semi-annually. Therefore, it is recommended that groundwater quality sampling be coordinated with the spring water level measurements.

Triennial and/or Every Five Years

It is recommended that samples be collected triennially from the wells in the groundwater quality monitoring network for the six sites recommended for groundwater/surface water evaluation. A 5-year frequency is recommended for the other 18 AOIs, including the main NVF, Carneros, Jameson/American Canyon, and Napa River Marshes Subareas and also where wells are volunteered for inclusion in other subareas, and analyzed for general minerals and drinking water metals.

Special Studies or Areas of Interest

Some county subareas may have naturally occurring compounds or human-influenced compounds that are of special interest. Special studies may be appropriate to determine the presence, concentration, persistence and potential effects of such compounds, particularly when site-specific factors may potentially affect groundwater quality (e.g., mining areas, wastewater disposal, recycled water use, etc.).

5 GROUNDWATER DATA MANAGEMENT

This section describes how groundwater data obtained by the County will be managed, used, and shared. Specifically, this section discusses the types of data to be collected, the County's Data Management System (DMS), and which data may be shared with the State (e.g., DWR or other entities) and/or reported to the public.

5.1 Data Management Overview

An overview of the County's data management approach is provided in **Figure 5-1**. Data will be collected from a variety of sources and programs. The groundwater monitoring program includes public and volunteered wells² and also permit-required monitoring. Therefore, it is important that guidelines are established to ensure that data are managed according to the well owner's permission and/or as it relates to applicable permit conditions.

5.2 Data Management System (DMS)

The Napa County DMS has been constructed to incorporate existing and new data about groundwater resources in Napa County (LSCE, 2010a). The data incorporated in the DMS will be used on an ongoing basis by the County to evaluate countywide groundwater supply and quality conditions and functions as a secure central data storage location.

In order to ensure security and user flexibility, the database was designed using Microsoft Access 2000 and the .mdb database format. Access has the capacity to store historical and future data, up to a total of 2 GB of data, and the DMS can be transitioned to an enterprise database software system as necessary.

5.3 Data Use and Disclosure

In this section, the County's use and disclosure of collected data are described. A tiered participation approach in the volunteer groundwater monitoring program will be followed which allows property owners to choose their level of participation, including what data can be shared versus what data are to be kept confidential as required by State law (Water Code §13751, §13752). Well owners that volunteer their well for inclusion in the County's program would receive the groundwater information collected from their well. This may be provided on an annual basis and/or in periodic reports produced by the County.

5.3.1 Protected Data

The DMS contains certain protected information that will not be made publicly available. For example, drillers' reports and the specific well construction information contained therein are

² As described in Section 4, the County has identified areas of interest where additional groundwater level and/or quality monitoring will help address data gaps. The County will be seeking well owners interested in volunteering their wells for inclusion in this program. All groundwater level and/or quality monitoring will be done by the County or representatives on behalf of the County (i.e., the monitoring is at no cost to participants and participants will receive information about groundwater beneath their property).

confidential. This data will be held as confidential unless permission is received from the well owner.

5.3.2 Data Sharing and Disclosure

The County is planning to implement an education and outreach program that includes communication to the public about opportunities to volunteer to have their well monitored as part of the County's groundwater monitoring program. The County is providing a tiered participation program as described below.

Napa County Program

Property owners interested in participating in the County program but who wish to keep their information confidential may elect to not have their well data (e.g., groundwater levels) reported to DWR's Water Data Library or as part of the CASGEM program. This means the County would only use the collected groundwater data (levels and/or quality) for public education and information but would display the data in publically distributed reports which ensure the owner's privacy.

Water Data Library

DWR maintains groundwater information in a database called the Water Data Library (WDL). Napa County reports groundwater level elevation data to DWR for inclusion in the WDL. Although well location information is included in the WDL, well construction information is not reported. This level of participation will be offered to property owner's volunteering their well for the County groundwater monitoring program. This will authorize the County to release water level information, but State mandated protected information will continue to be held as confidential.

CASGEM Program

Property owners interested in participating in the County's groundwater monitoring program and who are willing to provide the information required by the CASGEM program could also become participants in that program. Particularly, owners would recognize that if the County elects to include their well in the CASGEM program, the construction information for their well would be available online on DWR's site.

5.3.3 Reporting of Data

The County has historically routinely reported groundwater level data to DWR for inclusion in the WDL. Beginning in 2012, the County is also now reporting a subset of the groundwater level data collected by the County to DWR as part of the CASGEM program. Any maps prepared from data in the DMS should represent well locations with large symbols. Names and addresses of well owners would be kept confidential. Additional information related to reporting is contained in **Section 6**.

5.3.4 Data from Other Sources

In addition to the groundwater level and quality data directly collected by the County, other groundwater data are available for the County to download and include in the evaluation of countywide groundwater conditions. Several different public agencies collect and maintain groundwater data, including DWR, the USGS, the California Department of Public Health (DPH; GeoTracker-GAMA), and the State Water Resources Control Board (SWRCB; GeoTracker) (LSCE, 2010a). These sources can be accessed through the SWRCB website that summarizes the current data and databases available on the web at www.waterboards.ca.gov/resources/data_databases/. These programs and publicly available databases are continually evolving to expand and merge to create a more useful and powerful network of information. During the development of the County DMS, these data sources were combined with Napa County's own records in order to populate the Napa County DMS (LSCE, 2010a).

For gathering data that is collected by external agencies, a timeframe of about 2 to 3 years is a reasonable span between obtaining updates. This can be a sizeable effort to integrate multiple datasets, and planning should be done to avoid inconsistencies, gaps or duplications of data over a historical record.

6. REPORTING

6.1 Annual Update and Review of Monitoring Plan and Well Network

It is recommended that the groundwater monitoring program and network be regularly reviewed. Based on the data gathered from the current monitoring year, review of the historical record, water level and quality trend analyses, and consideration of issues of interest to the County and collaborating entities, the program may be adjusted as needed to accomplish the countywide groundwater resources goals and monitoring objectives.

Interagency coordination is important for the ongoing program. Specifically, the local participants will benefit from efforts made toward systematic data collection and analyses and maintaining the DMS in a standardized format.

6.2 Annual CASGEM Reporting

It is recommended that the County prepare an annual report summarizing the results and findings of the countywide CASGEM program. Each annual report will describe any changes to the current monitoring network and program, including recommended additions to the CASGEM program network.

6.3 Triennial Countywide Reporting

It is also recommended that the County prepare on a regular basis, approximately triennially, a report on countywide groundwater conditions and any other monitoring network modifications per the recommendations in this Plan which are for the purpose of meeting the County's groundwater level and quality monitoring objectives.

7. REFERENCES

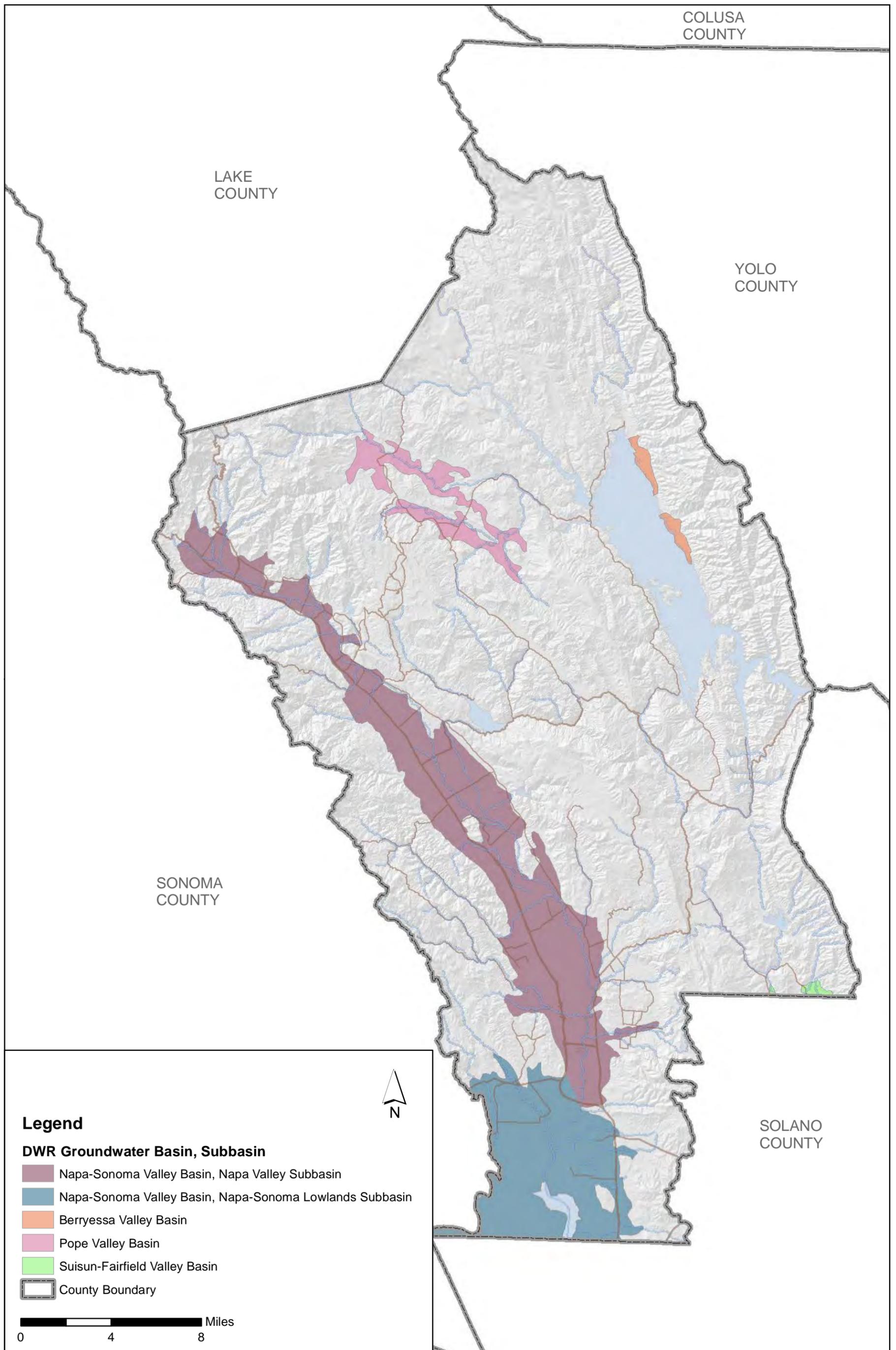
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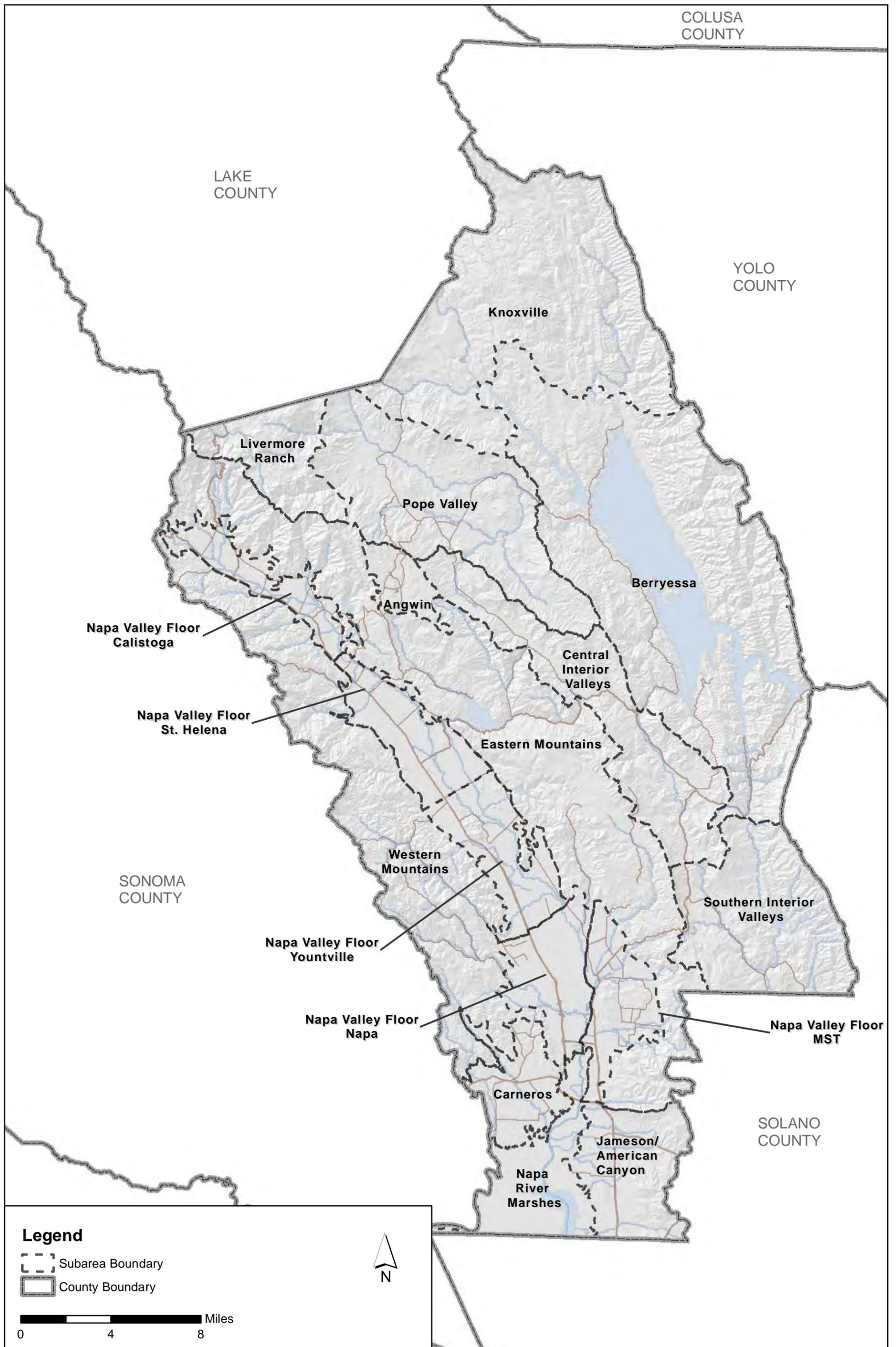
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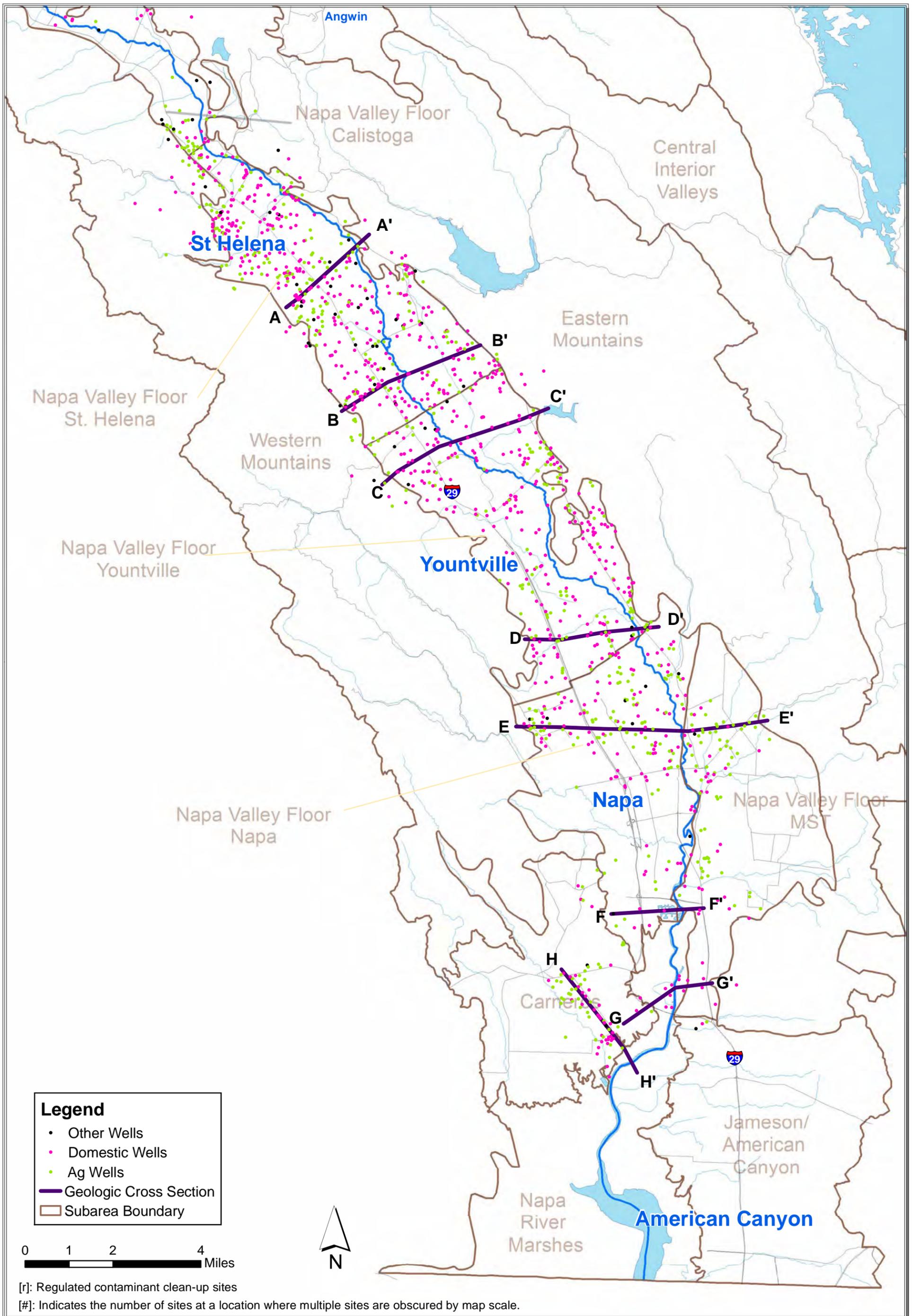
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Figure 2-1
Napa County Groundwater Basins
Napa County, CA



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Figure 2-2
Napa County Subareas
Napa County, CA



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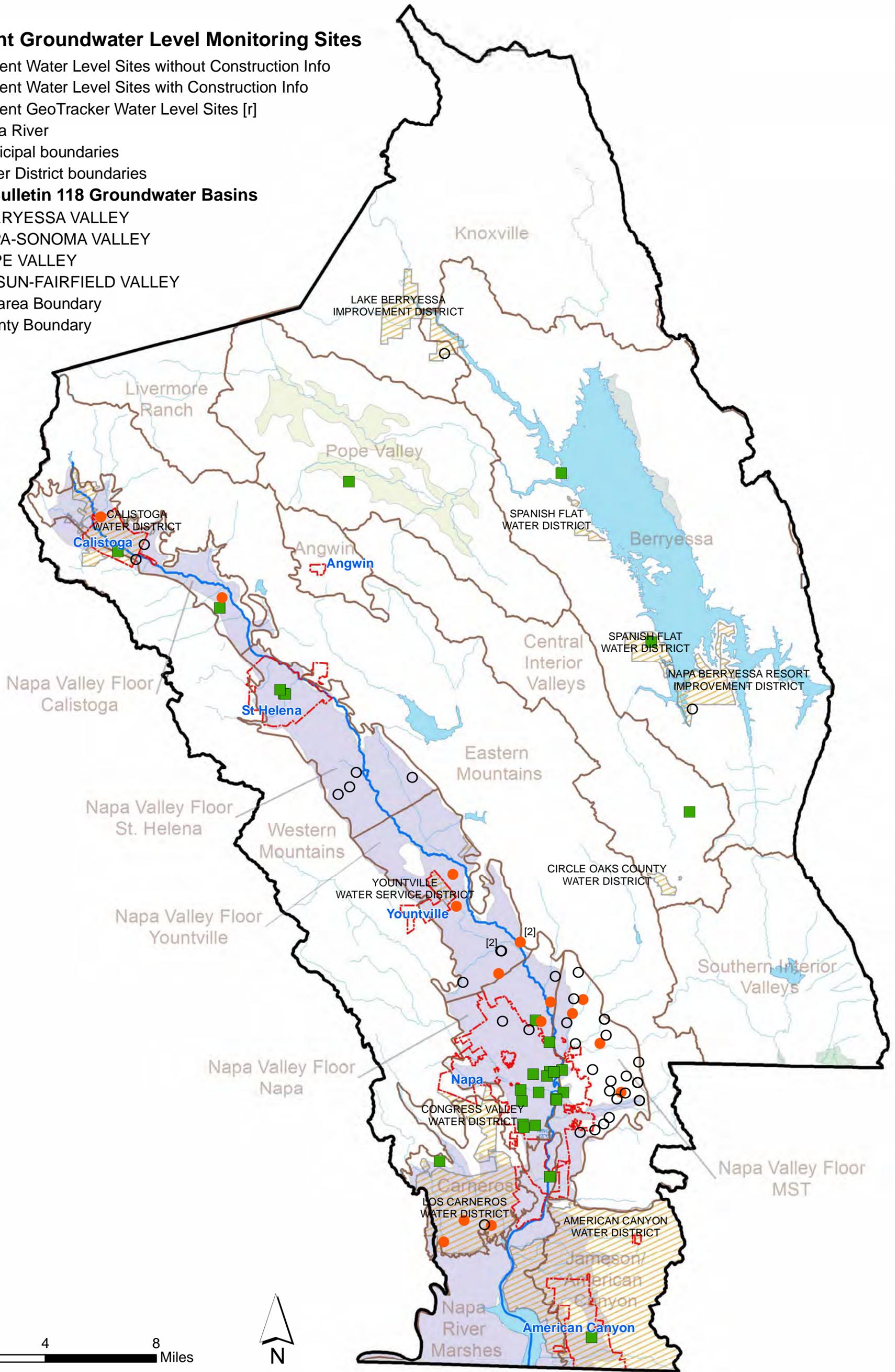
Current Groundwater Level Monitoring Sites

- Current Water Level Sites without Construction Info
- Current Water Level Sites with Construction Info
- Current GeoTracker Water Level Sites [r]
- Napa River

- ▭ Municipal boundaries
- ▭ Water District boundaries

DWR Bulletin 118 Groundwater Basins

- BERRYESSA VALLEY
- NAPA-SONOMA VALLEY
- POPE VALLEY
- SUISUN-FAIRFIELD VALLEY
- ▭ Subarea Boundary
- ▭ County Boundary

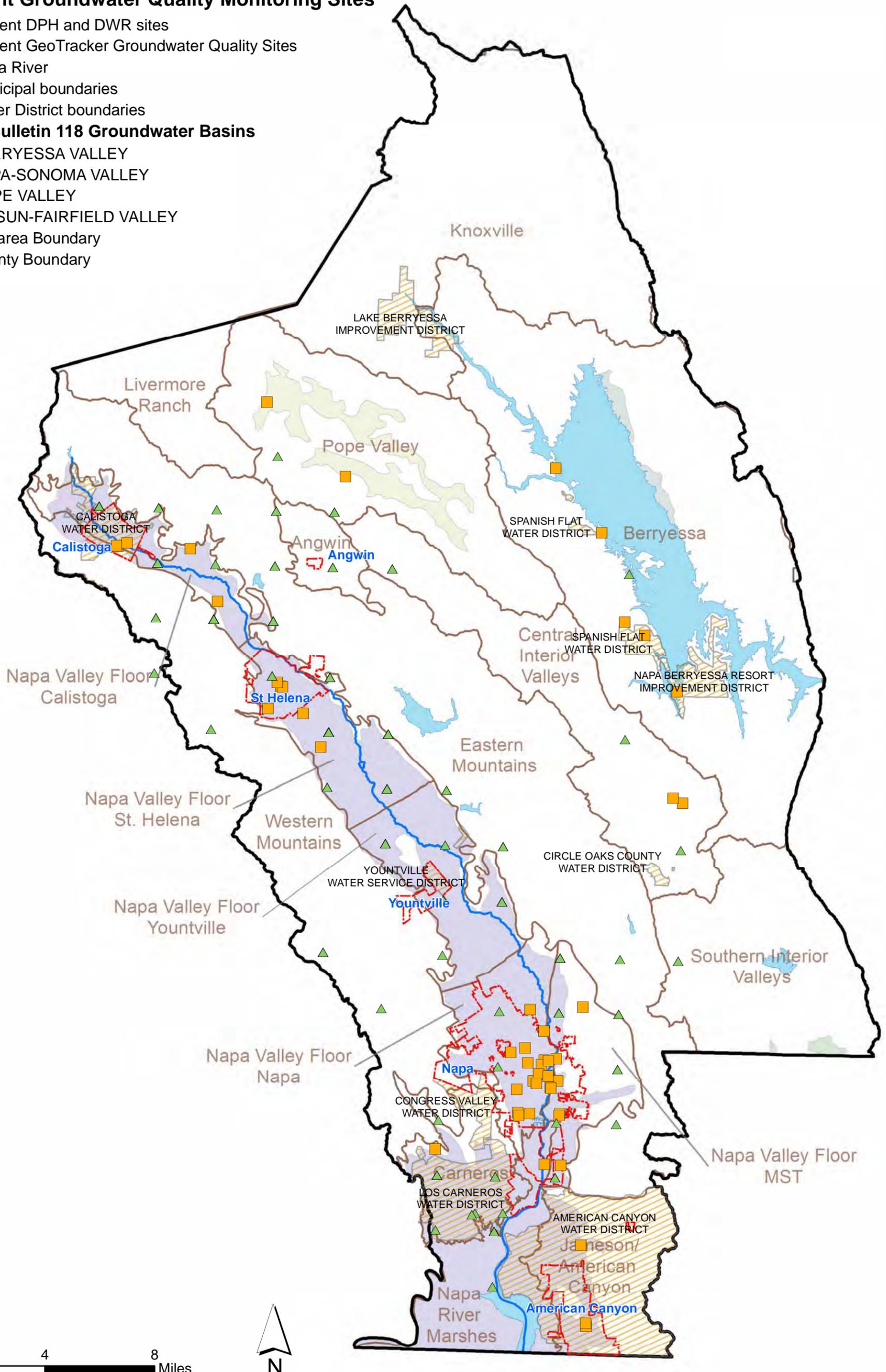


[r]: Regulated contaminant clean-up sites

[#]: Indicates the number of sites at a location where multiple sites are obscured by map scale.

Current Groundwater Quality Monitoring Sites

- ▲ Current DPH and DWR sites
 - Current GeoTracker Groundwater Quality Sites
 - Napa River
 - ▭ Municipal boundaries
 - ▨ Water District boundaries
- DWR Bulletin 118 Groundwater Basins**
- BERRYESSA VALLEY
 - NAPA-SONOMA VALLEY
 - POPE VALLEY
 - SUISUN-FAIRFIELD VALLEY
 - ▭ Subarea Boundary
 - ▭ County Boundary



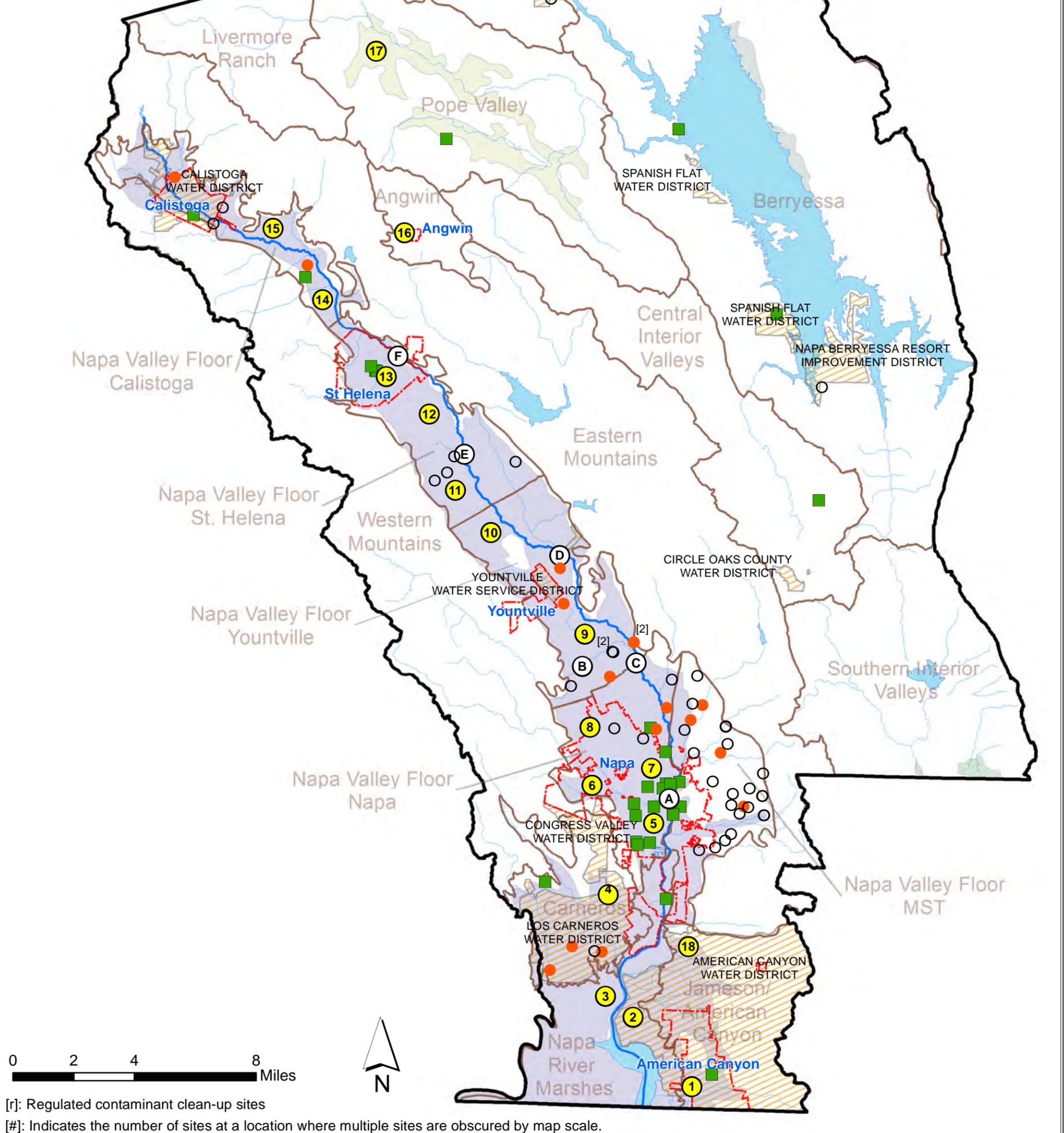
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Current Groundwater Level Monitoring Sites

- Current Water Level Sites without Construction Info
- Current Water Level Sites with Construction Info
- Proposed GW Monitoring Sites
- Proposed GW/SW Monitoring Sites
- Current GeoTracker Water Level Sites [r]
- Napa River
- ▭ Municipal boundaries
- ▭ Water District boundaries

DWR Bulletin 118 Groundwater Basins

- BERRYESSA VALLEY
- NAPA-SONOMA VALLEY
- POPE VALLEY
- SUISUN-FAIRFIELD VALLEY
- ▭ Subarea Boundary
- ▭ County Boundary



[r]: Regulated contaminant clean-up sites

#[#]: Indicates the number of sites at a location where multiple sites are obscured by map scale.

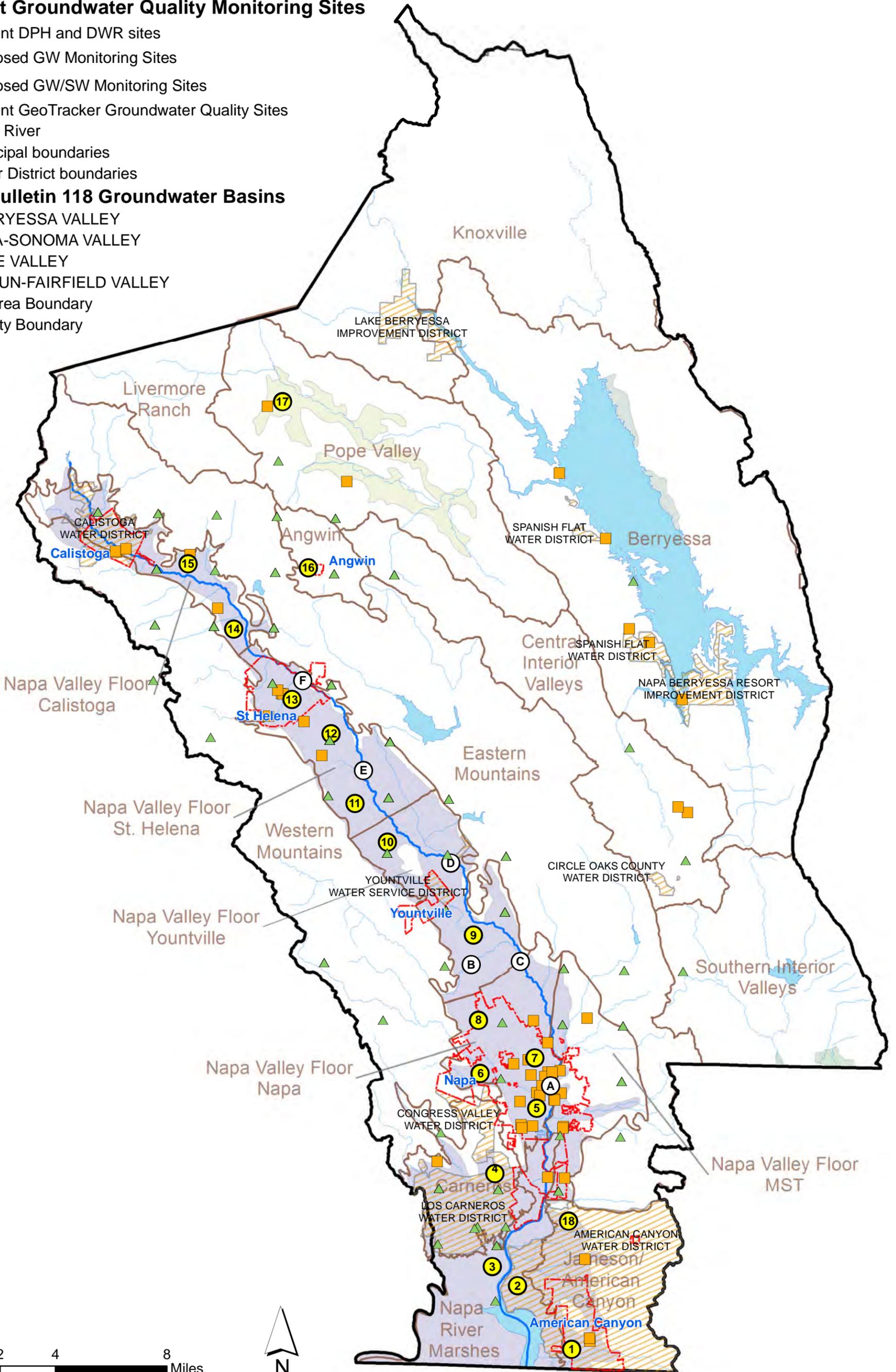
Figure 4-1
Current and Proposed Groundwater Level
Monitoring Sites in Napa County

Current Groundwater Quality Monitoring Sites

- ▲ Current DPH and DWR sites
- Proposed GW Monitoring Sites
- Proposed GW/SW Monitoring Sites
- Current GeoTracker Groundwater Quality Sites
- Napa River
- ▭ Municipal boundaries
- ▭ Water District boundaries

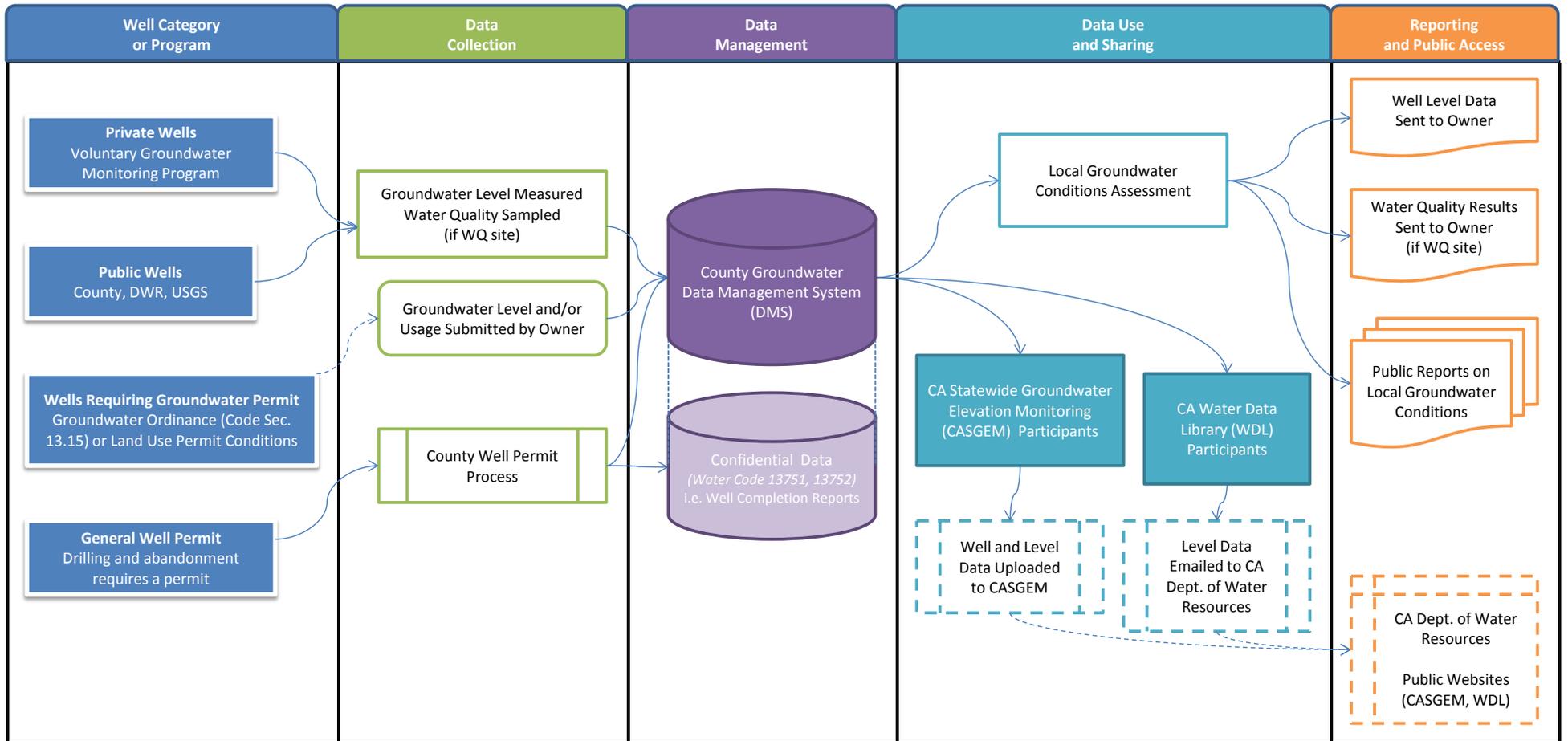
DWR Bulletin 118 Groundwater Basins

- BERRYESSA VALLEY
- NAPA-SONOMA VALLEY
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- SUISUN-FAIRFIELD VALLEY
- ▭ Subarea Boundary
- ▭ County Boundary

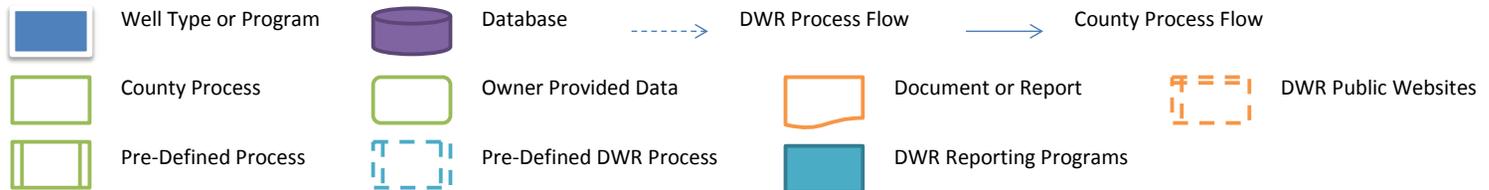


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Figure 5-1 Groundwater Data Collection, Management, Use, and Reporting



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APPENDIX A

Summaries of 2011 Groundwater Report Findings and Future Groundwater Level and Quality Monitoring Objectives

Summary of 2011 Groundwater Report Findings and Objectives Groundwater Level Monitoring Sites, Napa County

Subarea	No. Sites with Current GW Level Data	Future Groundwater Level Monitoring		Monitoring Needs	Findings on GW Level Conditions (Report Feb. 2011)	General Comments re Monitoring Needs	Improve understanding of occurrence and movement	Factors affecting levels & trends	Fill Data Gaps	Develop/refine GW budget (include recharge)	Further evaluate sw/gw potential exchange	Potential for saltwater intrusion
		Relative Priority (2011 Prelim)	Action (Expand/Refine)									
Napa Valley Floor-Calistoga	6	H	E	SP, SW	<i>Water levels are generally stable and depths to gw are shallow; 156 wells provide data, about 3/4 of the wells have limited records.</i>	Need to optimize current monitoring locations to ensure that the existing monitoring locations are adequately distributed throughout the subarea in aquifers of interest.	X	X	X	X	X	
Napa Valley Floor-MST	28	H	R	SP, SW	<i>Wells with records show long term declining water levels; some have a repeating pattern of declining then stabilizing and never recovering, while others have a recent steady continuous decline; 286 wells provide data, half with limited records and more than half measured recently.</i>	Need to optimize current monitoring locations to ensure the northern, central, and southern areas of MST have representative distribution of MWs in aquifers of interest. Would provide essential data to assess how existing gw development regulations are effective in managing gw resources in this area.	X	X	X	X	X	
Napa Valley Floor-Napa	19	H	R	SP, SW	<i>Water levels are generally stable except toward the east where declines of 20 feet have been observed close to the northern MST; 273 wells provide data, most with limited records.</i>	Need to optimize current monitoring locations to ensure that the existing monitoring locations are adequately distributed throughout the subarea in aquifers of interest.	X	X	X	X	X	

Subarea	No. Sites with Current GW Level Data	Future Groundwater Level Monitoring		Monitoring Needs	Findings on GW Level Conditions (Report Feb. 2011)	General Comments re Monitoring Needs	Improve understanding of occurrence and movement	Factors affecting levels & trends	Fill Data Gaps	Develop/refine GW budget (include recharge)	Further evaluate sw/gw potential exchange	Potential for saltwater intrusion
		Relative Priority (2011 Prelim)	Action (Expand/Refine)									
Napa Valley Floor-St. Helena	7	H	E	SP, SW	Water levels are generally stable and depths to water are shallow; 70 wells provide data, most wells have good records.	Need to optimize current monitoring locations to ensure that the existing monitoring locations are adequately distributed throughout the subarea in aquifers of interest.	X	X	X	X	X	
Napa Valley Floor-Yountville	8	H	E	SP, SW	Water levels are generally stable with seasonal fluctuations; fewer wells have data (31 wells) compared to the rest of the Valley Floor, and fewer wells have good records or recent data.	Need to optimize current monitoring locations to ensure that the existing monitoring locations are adequately distributed throughout the subarea in aquifers of interest.	X	X	X	X	X	
Carneros	5	H	E	B	No current groundwater level data, but a good record exists for 7 wells with data between 1962 and 1978.	Very limited historical data and no current data. Additional data collection is recommended to investigate groundwater conditions under existing development conditions and for any planned additional use of groundwater resources.	X	X	X	X		X
Jameson/American Canyon	1	M	E	B	Limited groundwater level data; all recent data are from regulated facility monitoring wells.	Very limited data for the most part, however, short term development of groundwater resources are not anticipated on a significant scale.	X	X	X	X		X
Napa River Marshes	1	M	E	SP, SW	Limited groundwater level data; all data are from regulated facility monitoring wells; no historical data pre-2000.	Very limited data for the most part, however, short term development of groundwater resources are not anticipated on a significant scale.	X	X	X	X		X

Subarea	No. Sites with Current GW Level Data	Future Groundwater Level Monitoring		Monitoring Needs	Findings on GW Level Conditions (Report Feb. 2011)	General Comments re Monitoring Needs	Improve understanding of occurrence and movement	Factors affecting levels & trends	Fill Data Gaps	Develop/refine GW budget (include recharge)	Further evaluate sw/gw potential exchange	Potential for saltwater intrusion
		Relative Priority (2011 Prelim)	Action (Expand/Refine)									
Angwin	0	M	E	B	<i>No current groundwater level data; 10 wells are from one regulated facility site with data over three years; no historical data pre-2002.</i>	No data; short term development of gw resources are not anticipated on a significant scale.	X	X	X	X		
Berryessa	3	M	E	B	<i>Limited record and spatial distribution; most wells with data are monitoring wells on three different regulated facilities; no historic data pre-2002.</i>	Very limited data for the most part, however, short term development of groundwater resources are not anticipated on a significant scale.	X	X	X			
Central Interior Valleys	1	M	E	B	<i>Limited data; all data from three regulated facilities' monitoring wells; no historical data pre-2002.</i>	Very limited data for the most part, however, short term development of groundwater resources are not anticipated on a significant scale.	X	X	X			
Eastern Mountains	0	M	E	B	<i>Limited data and spatial distribution; one well near the MST shows recent declines similar to those found in the MST.</i>	No data; short term development of gw resources are not anticipated on a significant scale.	X	X	X			
Knoxville	1	M	E	B	<i>Limited record and spatial distribution; no historic groundwater level data and a very short period of record.</i>	Very limited data for the most part, however, short term development of groundwater resources are not anticipated on a significant scale.	X	X	X			
Livermore Ranch	0	L	E	B	<i>No data.</i>	No data; short term development of gw resources are not anticipated on a significant scale.	X	X	X			

Appendix A. Summaries of 2011 Groundwater Report Findings and Future Groundwater Level and Quality Monitoring Objectives

Subarea	No. Sites with Current GW Level Data	Future Groundwater Level Monitoring		Monitoring Needs	Findings on GW Level Conditions (Report Feb. 2011)	General Comments re Monitoring Needs	Improve understanding of occurrence and movement	Factors affecting levels & trends	Fill Data Gaps	Develop/refine GW budget (include recharge)	Further evaluate sw/gw potential exchange	Potential for saltwater intrusion
		Relative Priority (2011 Prelim)	Action (Expand/Refine)									
Pope Valley	1	H	E	B	<i>Limited groundwater level data; all data are from two regulated facilities' monitoring wells; no historical data pre-2002.</i>	Very limited existing data. Additional data collection is recommended to investigate groundwater conditions for planned use of groundwater resources.	X	X	X			
Southern Interior Valleys	0	L	E	B	<i>No data.</i>	No data; short term development of gw resources are not anticipated on a significant scale.	X	X	X			
Western Mountains	0	L	E	B	<i>No data.</i>	No data; short term development of gw resources are not anticipated on a significant scale.	X	X	X			
Total	81											

Groundwater Level Notes

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2011 or later. "Future" refers to recommended monitoring locations.

L = Low Priority; add groundwater level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater level monitoring

H = High Priority; add groundwater level monitoring

E = Expand current monitoring network; possible alternatives for additional monitoring wells include 1) wells historically monitored by DWR/USGS/Others, preferably with well construction information; 2) existing water supply wells (e.g., private/commercial) with well construction information; 3) new dedicated monitoring wells coordinated with recent geologic investigations that are or will be conducted)

R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs:

SP = Improve horizontal and/or vertical spatial distribution of data;

SW = identify appropriate monitoring site to evaluate surface water -groundwater recharge/discharge mechanisms;

B = Basic data needed to accomplish groundwater level monitoring objectives

Groundwater Quality Notes

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2008 or later. "Future" refers to recommended monitoring locations.

L = Low Priority; add groundwater quality and also level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater quality and also level monitoring

H = High Priority; add groundwater quality and also level monitoring

E = Expand current monitoring network; possible alternatives for additional monitoring wells include 1) wells historically monitored by DWR/USGS/Others, preferably with well construction information and as the well may be available for monitoring; 2) existing water supply wells (e.g., private/commercial) with well construction information; 3) new dedicated monitoring wells (coordinate with potential geologic investigations that may be conducted in selected areas)

R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs: SP = Improve horizontal and/or vertical spatial distribution of data; B = Basic data needed to accomplish groundwater level monitoring objectives; C = Coordinate with groundwater level monitoring

Note: Some sites with current groundwater quality data are approximately located and currently may not be counted in the correct subarea. Also, additional sites with current groundwater quality beyond this tabulation exist but the locations are currently unavailable and unable to be counted at this time.

Summary of 2011 Groundwater Report Findings and Objectives for Groundwater Quality Monitoring Sites, Napa County

Subarea	No. Sites with Current GW Quality Data	Future Groundwater Quality Monitoring		Monitoring Needs	Findings GW Quality Conditions (Report Feb. 2011)	Constits. of Concern	Baseline conditions & spatial differences	Fill Data Gaps	Occurrence & factors related to natural or other constituents	Baseline conditions in areas of potential saltwater intrusion	Assess changes, trends, factors contrib. to change	Other
		Relative Priority (2011 Preilm)	Action (Expand/Refine)									
Napa Valley Floor-Calistoga	20	M	R	SP,C	<i>Limited data record, minimal historical record</i>	As, B	X	X	X		X	
Napa Valley Floor-MST	16	H	R	SP,C	<i>Very limited long-term records</i>	As, B, Fe, Mn, Na	X	X	X		X	
Napa Valley Floor-Napa	21	M	R	SP,C	<i>Generally good water quality; most wells have limited data records and very little historical data</i>	Na, As, NO3	X	X	X		X	
Napa Valley Floor-St. Helena	31	M	R	SP,C	<i>Generally good water quality; most wells have limited data records and very little historical data</i>	As, NO3	X	X	X		X	
Napa Valley Floor-Yountville	14	M	R	SP,C	<i>Generally good water quality; most wells have limited data records and very little historical data</i>	As, NO3	X	X	X		X	
Carneros	9	H	R	SP,C	<i>Limited data record; minimal historic and recent records; poor water quality common; possible increasing recent trend seen in EC, chloride, and TDS</i>	Cl, EC, TDS	X	X	X	X	X	

Subarea	No. Sites with Current GW Quality Data	Future Groundwater Quality Monitoring		Monitoring Needs	Findings GW Quality Conditions (Report Feb. 2011)	Constits. of Concern	Baseline conditions & spatial differences	Fill Data Gaps	Occurrence & factors related to natural or other constituents	Baseline conditions in areas of potential saltwater intrusion	Assess changes, trends, factors contrib. to change	Other
		Relative Priority (2011 Prelim)	Action (Expand/Refine)									
Jameson/American Canyon	3	H	E	B,SP,C	No recent data post-1998; generally poor water quality from a very limited data set; increasing chloride and EC levels	Cl, EC, Na, NO3, TDS	X	X	X	X	X	
Napa River Marshes	6	M	E	B,SP,C	Very limited long-term records; one well with historic data; generally poor water quality	Cl, EC, Na, NO3, TDS	X	X	X	X	X	
Angwin	4	M	E	B,C	No historic records; all measurements from two sites (ten wells total); generally good water quality	Fe, Mn	X	X	X		X	
Berryessa	6	M	E	B,C	Poor coverage for majority of constituents; no long-term records	EC, TDS	X	X	X		X	
Central Interior Valleys	6	M	R	B,SP,C	No historic records pre-2001; poor coverage for majority of constituents; no long-term data	TDS	X	X	X		X	
Eastern Mountains	25	M	E	B,C	Limited historic records; poor spatial distribution; generally good water quality	Fe, Mn	X	X	X		X	
Knoxville	0	M	E	B,C	Limited to one site with five monitoring wells; generally poor quality and no long-term records	B, Cl, EC, Na, TDS	X	X	X		X	
Livermore Ranch	0	L	E	B,C	No groundwater quality data available	unknown	X	X	X		X	
Pope Valley	6	L	E	B,C	No historic records; all measurements from two sites (seven wells total); generally good water quality from constituents with data	Fe, Mn	X	X	X		X	

Subarea	No. Sites with Current GW Quality Data	Future Groundwater Quality Monitoring		Monitoring Needs	Findings GW Quality Conditions (Report Feb. 2011)	Constits. of Concern	Baseline conditions & spatial differences	Fill Data Gaps	Occurrence & factors related to natural or other constituents	Baseline conditions in areas of potential saltwater intrusion	Assess changes, trends, factors contrib. to change	Other
		Relative Priority (2011 Prelim)	Action (Expand/Refine)									
Southern Interior Valleys	0	L	E	B,C	<i>No historic records; poor spatial coverage (only three wells with data); generally good quality</i>	As, Na	X	X	X		X	
Western Mountains	10	L	R	B,C	<i>Very limited historic and current records (12 wells total); generally good quality</i>	Fe, Mn	X	X	X		X	
Total	177											

As = Arsenic

B = Boron

Cl = Chloride

Fe = Iron

Mn = Managanese

Na = Sodium

NO3 = Nitrate

TDS = Total Dissolved Solids

EC= Electrical Conductivity

Groundwater Level Notes

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2011 or later. "Future" refers to recommended monitoring locations.

L = Low Priority; add groundwater level monitoring based on areas of planned future groundwater development

M = Medium Priority; add groundwater level monitoring

H = High Priority; add groundwater level monitoring

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R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs:

SP = Improve horizontal and/or vertical spatial distribution of data;

SW = identify appropriate monitoring site to evaluate surface water -groundwater recharge/discharge mechanisms;

B = Basic data needed to accomplish groundwater level monitoring objectives

Groundwater Quality Notes

¹ "Current" refers to monitored sites with wells measured for levels and/or any water quality parameter with a period of record extending to 2008 or later. "Future" refers to recommended monitoring locations.

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R = Refine current monitoring network (link well construction information to all monitored wells, as possible)

Monitoring Needs: SP = Improve horizontal and/or vertical spatial distribution of data; B = Basic data needed to accomplish groundwater level monitoring objectives; C = Coordinate with groundwater level monitoring

Note: Some sites with current groundwater quality data are approximately located and currently may not be counted in the correct subarea. Also, additional sites with current groundwater quality beyond this tabulation exist but the locations are currently unavailable and unable to be counted at this time.

APPENDIX B

Summaries of Current Groundwater Level and Groundwater Quality Monitoring Locations

Summary of Current Groundwater Level Monitoring Locations

	WellID	SWN	SITE_TYPE	SRC	Construction Date	WellDepth (feet, bgs)	HoleDepth (feet, bgs)	Top_Perf (feet, bgs)	Bot_Perf (feet, bgs)	Drillers_Log_No
Napa Valley Floor-Calistoga	T0605500250HP-4		Unk_MW	Geotracker						
	T0605500272EB		Unk_MW	Geotracker						
	08N06W10Q001M	08N06W10Q001M	Unused	DWR		200				28410
	NapaCounty-127	009N007W25N001M	Dom	NapaCounty	19580310	149	149			28513
	NapaCounty-128	009N006W31Q001M	Unk_GW	NapaCounty	19620719	50	50			unk
	NapaCounty-129	008N006W06L004M	Dom	NapaCounty	19620719	253	253			unk
Napa Valley Floor-St. Helena	T0605500061B-1		Unk_MW	Geotracker						
	T0605500168DOMESTIC		Unk_MW	Geotracker						
	T0605500190B-10		Unk_MW	Geotracker						
	07N05W09Q002M	07N05W09Q002M	Unused	DWR		232				
	NapaCounty-131	007N005W16L001M	Dom	NapaCounty	19490701	221	221			
	NapaCounty-132	007N005W14B002M	Irr	NapaCounty	19620717	265	265			
NapaCounty-138	007N005W16N002M	Dom_Irr	NapaCounty	20230101?	321	321				
Napa Valley Floor-Yountville	06N04W17A001M	06N04W17A001M	Dom	DWR		250				
	NapaCounty-125	006N004W09Q001M	Unk_GW	NapaCounty	19710823	160	163	63	160	59015
	NapaCounty-126	006N004W09Q002M	Dom_Irr	NapaCounty	19710823	345	345	140	345	59036
	NapaCounty-133	007N004W31M001M	Dom	NapaCounty	19720415	120	120	20	120	72852
	NapaCounty-134	006N004W06L002M	Irr	NapaCounty	19630411	180	180			23607
	NapaCounty-135	006N004W19B001M	Irr	NapaCounty	19620720	125	125			
	NapaCounty-139	006N004W17R002M	Dom	NapaCounty	19770125	120	120	40	120	34158
	NapaCounty-151	006N004W17Ax								
Napa Valley Floor-Napa	SL0605536682MW-1		MW	Geotracker		24				
	T0605500008BC-1		MW	Geotracker		14.8				
	T0605500009EW-1		MW	Geotracker		13				
	T0605500035AMES WELL		Unk_MW	Geotracker						
	T0605500044MW-9		Unk_MW	Geotracker	19901030	30	30	10	30	
	T0605500110MW-1		Unk_MW	Geotracker	19900815	24.19	26	9.5	24.5	
	T0605500124MW-4		MW	Geotracker		30				
	T0605500164MW-1		Unk_MW	Geotracker	19930122	25	25	5	25	
	T0605500212MW-4		Unk_MW	Geotracker	20040224	20	20	4	20	
	T0605500261MW-2		MW	Geotracker						
	T0605514064B10		BH	Geotracker						
	T06055472002285DW		Unk_MW	Geotracker						
	T0605575085B-1		Unk_MW	Geotracker						
	T0605598080MW-1		MW	Geotracker						
	06N04W27L002M	06N04W27L002M	Dom	DWR		120		60	120	117720
	NapaCounty-136	006N004W27N001M	Dom	NapaCounty	19620720	120	120			
	NapaCounty-152	006N004W28Mx								
	NapaCounty-75	006N004W22R001M	Unk_GW	NapaCounty	19710719	205	208	45	205	59006
NapaCounty-76	006N004W15R003M	Unk_GW	NapaCounty							

	WellID	SWN	SITE_TYPE	SRC	Construction Date	WellDepth (feet, bgs)	HoleDepth (feet, bgs)	Top_Perf (feet, bgs)	Bot_Perf (feet, bgs)	Drillers_Log_No
Napa Valley Floor-MST	T0605500138S-6		Unk_MW	Geotracker	20030428	30	30	4	15	
	T0605500140MW-1		MW	Geotracker		24.86				
	NapaCounty-10	005N003W05M001M	Unk_GW	NapaCounty		320				
	NapaCounty-118	005N003W07B00_My	Unk_GW	NapaCounty			0			
	NapaCounty-122	006N004W26L00_M	Unk_GW	NapaCounty			0			
	NapaCounty-137	005N004W13H001M	Irr	NapaCounty	19620716	364	364			
	NapaCounty-142	006N004W25G00_M	Dom	NapaCounty						
	NapaCounty-148	005N003W05M00_M	Unk_GW	NapaCounty	20090805					
	NapaCounty-149	005N003W08E00_M	Unk_GW	NapaCounty						
	NapaCounty-18	005N004W13G004M	Unk_GW	NapaCounty	19760714	189	210			
	NapaCounty-2	006N004W23J001M	Unk_GW	NapaCounty		700				28291
	NapaCounty-20	005N003W07C003M	Unk_GW	NapaCounty	19771208	207	208	130	207	143816
	NapaCounty-22	005N003W08E001M	Dom	NapaCounty	19680416	135	140			
	NapaCounty-29	005N004W01F003M	Unk_GW	NapaCounty			0			
	NapaCounty-35	005N003W18D001M	Unk_GW	NapaCounty			0			
	NapaCounty-4	006N004W14Q001M	Unk_GW	NapaCounty	19890913	385	390	55	315	324082
	NapaCounty-43	006N004W23Q003M	Unk_GW	NapaCounty		310				
	NapaCounty-49	005N004W14J003M	Unk_GW	NapaCounty						
	NapaCounty-51	006N004W25G001M	Unk_GW	NapaCounty			0			38367?? (VERIFY LOC)
	NapaCounty-56	006N004W26G001M	Dom	NapaCounty	19760828	210	210	30	210	121090
NapaCounty-69	006N004W35G005M	Unk_GW	NapaCounty			0				
NapaCounty-72	005N003W07D003M	Dom	NapaCounty	19971007	245	245				
NapaCounty-74	005N003W06M001M	Dom	NapaCounty	19880818	300	300				
NapaCounty-81	005N003W07F003M	Dom	NapaCounty	19880725	290	290				
NapaCounty-91	005N003W06B002M	Dom	NapaCounty	19860815	415	415				
NapaCounty-92	005N003W06A001M	Unk_GW	NapaCounty			0				
NapaCounty-95	006N004W36G001M	Unk_GW	NapaCounty		340		155	185	34178	
NapaCounty-98	006N004W36A001M	Unk_GW	NapaCounty			0				
Carneros	T0605517802MW-1		MW	Geotracker						
	NapaCounty-150	004N004W05C001M	Unk_GW	NapaCounty						
	NapaCounty-153	004N004W05Bx			19780512	200	210	60	200	121508
	NapaCounty-154	005N004W31Rx			19900828	300	320	60	295	370535
	NapaCounty-155	004N004W06Ex			20030821	220	220	80	220	770075
Jameson/American Canyon	T0605500240B-1		Unk_MW	Geotracker						
Napa River Marshes	L10002804480DUP-1		Unk_MW	Geotracker						
Berryessa	T0605500304C-1		Unk_MW	Geotracker						
	T0605591908B-1		Unk_MW	Geotracker						
	NBRID_MW1		MW	NapaCounty						
Central Interior Valleys	T0605500279DW1		Unk_MW	Geotracker						
Knoxville	LBRID_MW1		MW	NapaCounty						
Pope Valley	T0605593602021909		Unk_MW	Geotracker						

Summary of Current Groundwater Quality Monitoring Locations

	WellID	SRC	SYS_NO	SITE_TYPE
Napa Valley Floor - Calistoga	2800026	DPH	TRINCHERO WINERY	
	2800030	DPH	ENVY WINES	
	2800508	DPH	CUVAISON VINEYARD	
	2800516	DPH	TUCKER ACRES MUTUAL WATER CO.	
	2800555	DPH	TWOMEY CELLARS	
	2800587	DPH	DUFFY S MYRTLEDALE RESORT	
	2800648	DPH	WINE COUNTRY INN	
	2800741	DPH	ST. HELENA PREMIUM OUTLETS	
	2800742	DPH	GOLDEN HAVEN MOTEL	
	2801004	DPH	CHATEAU MONTELENA WINERY	
	2801007	DPH	CLOS PEGASE WINERY	
	2801015	DPH	FRANK FAMILY VINEYARDS	
	2802715	DPH	NORMAN ALUMBAUGH CO., INC.	
	2810002	DPH	CALISTOGA, CITY OF	
	2810300	DPH	CSP-BALE GRIST MILL STATE PARK	
	L10001344067B-11	Geotracker	L10001344067	
	T0605500196MW-1	Geotracker	T0605500196	
T0605500250MW-1	Geotracker	T0605500250		
T0605500259EB1	Geotracker	T0605500259		
T0605500272EB	Geotracker	T0605500272		

Napa Valley Floor - St. Helena

WellID	SRC	SYS_NO	SITE_TYPE
2800027	DPH	NICKEL & NICKEL WINERY	
2800035	DPH	RIVER RANCH FARM WORKER CENTER	
2800536	DPH	GRGICH HILLS	
2800556	DPH	BROKEN HILL 1 LLC	
2800562	DPH	FRANCISCAN WINERY	
2800589	DPH	WHITEHALL LANE WINERY	
2800609	DPH	PHELPS VINEYARDS	
2800749	DPH	KENT RASMUSSEN WINERY	
2801012	DPH	ALPHA AND OMEGA WINERY	
2801022	DPH	MILAT WINERY	
2801026	DPH	OPUS ONE WINERY	
2801027	DPH	PEJU PROVINCE	
2801031	DPH	RAYMOND VINEYARD & CELLAR	
2801037	DPH	SEQUOIA GROVE VINEYARDS	
2801038	DPH	SILVER OAKS WINE CELLARS	
2801045	DPH	ST. CLEMENT VINEYARDS INC.	
2801046	DPH	ST. SUPERY WINERY	
2801049	DPH	THE RANCH WINERY	
2801070	DPH	BERINGER VINEYARDS	
2801073	DPH	PROVENANCE VINEYARDS	
2801075	DPH	CAKEBREAD CELLAR	
2801088	DPH	V. SATTUI WINERY	
2803886	DPH	RUTHERFORD GROVE WINERY	
2803912	DPH	BEAULIEU VINEYARD	
2810004	DPH	ST. HELENA, CITY OF	
L10003472156MW-1	Geotracker	L10003472156	
SL0605506371MW-1	Geotracker	SL0605506371	
T0605500061EW-1	Geotracker	T0605500061	
T0605500143MW-1	Geotracker	T0605500143	
T0605500168EW-1	Geotracker	T0605500168	
T0605500190MW-1	Geotracker	T0605500190	

	WellID	SRC	SYS_NO	SITE_TYPE
Napa Valley Floor - Yountville	2800299	DPH	FAR NIENTE WINERY	
	2800302	DPH	HARTWELL WINERY	
	2800557	DPH	CASTLE TROVE, INC.	
	2800736	DPH	DOMAINE CHANDON	
	2801006	DPH	CLOS DU VAL WINE CO.	
	2801010	DPH	COSENTINO WINERY	
	2801028	DPH	CARDINALE ESTATE	
	2801029	DPH	PINE RIDGE WINERY	
	2801041	DPH	SILVERADO VINEYARDS	
	2801042	DPH	SINSKEY WINERY	
	2801047	DPH	STAG S LEAP WINE CELLARS	
	2801077	DPH	CHIMNEY ROCK WINERY	
	2803911	DPH	DOMINUS ESTATE WINERY	
2810007	DPH	TOWN OF YOUNTVILLE		
Napa Valley Floor - Napa	2800635	DPH	STRACK W.D. WATER	
	2801020	DPH	ESPINOZA WATER SYSTEM	
	SL0605536682MW-1	Geotracker	SL0605536682	
	T0605500008BC-1	Geotracker	T0605500008	
	T0605500009EW-1	Geotracker	T0605500009	
	T0605500044C-4	Geotracker	T0605500044	
	T0605500110MW-1	Geotracker	T0605500110	
	T0605500124MW-1	Geotracker	T0605500124	
	T0605500164EFF	Geotracker	T0605500164	
	T0605500165EFF	Geotracker	T0605500165	
	T0605500212MW-1	Geotracker	T0605500212	
	T0605500256MW-1	Geotracker	T0605500256	
	T0605500261MW-2	Geotracker	T0605500261	
	T0605514064MW1	Geotracker	T0605514064	
	T0605522317DP-1	Geotracker	T0605522317	
	T06055472002285DW	Geotracker	T0605547200	
	T0605575085B-1	Geotracker	T0605575085	
	T0605591205MW-1	Geotracker	T0605591205	
	T0605597251K-1	Geotracker	T0605597251	
	T0605598080MW-1	Geotracker	T0605598080	
05N04W15E001M	DWR	005N004W15E001M	Dom_Irr	

	WellID	SRC	SYS_NO	SITE_TYPE
Napa Valley Floor - MST	2800025	DPH	HAGAFEN CELLARS	
	2800548	DPH	SILVERADO PINES MOBILE HOME	
	2800554	DPH	GENE NORRIS PLAZA	
	2800564	DPH	SODA CANYON STORE	
	2800580	DPH	SYAR INDUSTRIES	
	2800717	DPH	NAPA PIPE REDEVELOPMENT PARTNERS	
	2800848	DPH	NVUSD: MT. GEORGE SCHOOL	
	2801039	DPH	SILVERADO HILL CELLARS	
	2801055	DPH	WILLIAM HILL WINERY	
	2801081	DPH	MT. GEORGE ESTATES	
	T060550007BC-10	Geotracker	T060550007	
	T0605500135UST-GW	Geotracker	T0605500135	
	T0605500138DM-1	Geotracker	T0605500138	
	T0605500140MW-1	Geotracker	T0605500140	
T0605500166DW-1019	Geotracker	T0605500166		
T10000000413MW-1	Geotracker	T10000000413		
Carneros	2800538	DPH	CARNEROS INN	
	2800847	DPH	NVUSD: CARNEROS SCHOOL	
	2801002	DPH	ETUDE WINES	
	2801011	DPH	DOMAINE CARNEROS	
	2801089	DPH	DI ROSA ART PRESERVE	
	T0605517802MW-1	Geotracker	T0605517802	
	04N04W05C001M	DWR	004N004W05C001M	Unk_GW
	04N04W05D002M	DWR	004N004W05D002M	Dom
04N04W04C002M	DWR	004N004W04C002M	Unk_GW	
Jameson/ American Canyon	T0605500012MW 1	Geotracker	T0605500012	
	T0605500077MW-1	Geotracker	T0605500077	
	T0605500240MW-4	Geotracker	T0605500240	
Napa River Marshes	2800530	DPH	MEYERS WATER CO.	
	2800531	DPH	MOORE S RESORT	
	2800592	DPH	NAPA VALLEY MARINA	
	2800811	DPH	ACACIA WINERY	
	2801080	DPH	MILTON ROAD WATER COMPANY	
	L10002804480DUP-1	Geotracker	L10002804480	

	WellID	SRC	SYS_NO	SITE_TYPE
Angwin	2800527	DPH	LINDA FALLS TERRACE MUTUAL	
	2800528	DPH	LINDA VISTA MUTUAL WATER CO	
	2801936	DPH	O SHAUGHNESSY WINERY	
	2810001	DPH	HOWELL MOUNTAIN MUTUAL WATER COMPANY	
Berryessa	2800129	DPH	STERLING VINEYARDS	
	T0605500257061808	Geotracker	T0605500257	
	T0605500298MW-1	Geotracker	T0605500298	
	T0605500304	Geotracker	T0605500304	
	T0605500312EFF	Geotracker	T0605500312	
	T0605591908B-10	Geotracker	T0605591908	
Central Interior Valleys	2800297	DPH	CATACULA LAKE WINERY	
	2800521	DPH	CIRCLE WATER DISTRICT	
	2800584	DPH	LAS POSADAS 4-H CAMP	
	2800593	DPH	R RANCH AT THE LAKE	
	T0605500279MW1	Geotracker	T0605500279	
	T0605592744MW-1	Geotracker	T0605592744	

	WellID	SRC	SYS_NO	SITE_TYPE
Eastern Mountains	2800023	DPH	RUTHERFORD HILL MUTUAL WATER	
	2800024	DPH	DUCKHORN VINEYARDS	
	2800029	DPH	AUGUST BRIGGS WINERY	
	2800298	DPH	DBA SILVER ROSE CELLARS	
	2800525	DPH	LA TIERRA HEIGHTS MUTUAL	
	2800532	DPH	VAILIMA ESTATES MUTUAL WATER	
	2800561	DPH	FREEMARK ABBEY PROPERTIES	
	2800575	DPH	CALISTOGA RANCH	
	2800583	DPH	WELCOME GRANGE HALL	
	2800588	DPH	NAPA VALLEY COUNTRY CLUB	
	2800625	DPH	ST. HELENA HOSPITAL	
	2800719	DPH	MUND S MOBILE HOME PARK	
	2801009	DPH	CONN CREEK WINERY	
	2801014	DPH	RUDD WINES, INC., DBA RUDD	
	2801024	DPH	MUMM OF NAPA VALLEY	
	2801033	DPH	ROMBAUER VINEYARDS	
	2801035	DPH	ROUND HILL WINERY	
	2801043	DPH	SKYLINE PARK	
	2801056	DPH	Z D WINES	
	2801076	DPH	CAYMUS VINEYARDS	
	2801084	DPH	RUTHERFORD HILL WINERY	
	2801086	DPH	STAGS LEAP WINERY	
	2803697	DPH	STELTZNER WINERY	
2803879	DPH	JARVIS VINEYARD		
2803907	DPH	MINER FAMILY WINERY		
Pope Valley	2800569	DPH	AETNA SPRINGS GOLF COURSE	
	2800970	DPH	HOWELL MTN SCHOOL	
	2810012	DPH	PACIFIC UNION COLLEGE	
	T0605593602021909	Geotracker	T0605593602	
	T10000000436MW-1	Geotracker	T10000000436	

	WellID	SRC	SYS_NO	SITE_TYPE
Southern Interior Valleys	2800845	DPH	NVUSD: WOODEN VALLEY SCHOOL	
Western Mountains	2800301	DPH	LAIRD FAMILY ESTATE	
	2800613	DPH	LOKOYA REDWOODS	
	2800621	DPH	MAYACAMAS VINEYARDS	
	2801008	DPH	ARTESA VINEYARDS & WINERY	
	2801016	DPH	HESS WINERY	
	2801036	DPH	SCHRAMSBERG WINERY	
	2801054	DPH	WHITE SULPHUR SPRINGS RESORT	
	2810301	DPH	CSP-BOTHE-NAPA STATE PARK	
	2800032	DPH	TERRA VALENTINE	

APPENDIX C

Napa County Procedure for Measuring Groundwater Levels

NAPA COUNTY PROCEDURE FOR MEASURING THE DEPTH TO WATER IN MONITORING AND PRODUCTION WELLS

Purpose

To obtain an accurate dated and timed measurement of the static depth to water in a well that can be converted into a water level elevation in reference to a commonly used reference datum (e.g., NAVD 1988). In this context, static means that the water level in the well is not influenced by pumping of the well. For comparability, measurements should be obtained according to an established schedule designed to capture times of both highest and lowest seasonal water level elevations. Also for comparability, measurements during a particular field campaign should be obtained consecutively and without delay within the shortest reasonable time.

Measurement Procedure

- If well is being pumped, do not measure; return later, but not sooner than 60 minutes.
- Turn on water level indicator signaling device and check battery by hitting the test button.
- Remove access plug or well cap from the well cover and lower probe (electric sounder) into the well.
- When probe hits water a loud “beep” will sound and signal light will turn red.
- Retract slightly until the tone stops.
- Slowly lower the probe until the tone sounds.
- Note depth measurement at rim (i.e., the surveyed reference point for water level readings) of well to the nearest 0.01 foot and rewind probe completely out of well.
- Remove excess water and lower probe once again into well and measure again.
- If difference is within ± 0.02 foot of first measurement, record measurement.
- If difference is greater repeat the same procedure until three consecutive measurements are recorded within ± 0.02 foot.
- Rewind and remove probe from well and replace the access plug or well cap in the well cover.
- Clean and dry the measuring device/probe and continue to next well.

Special Circumstance – Oil Encountered in Well

If oil is detected in the well structure, the depth to the air-oil interface is measured. To obtain such a measurement, the electric sounder is used similar to the way chalked steel tapes were traditionally used for depth-to-water measurements.

1. Lower the cleaned probe well below the air-oil interface (e.g., 1 foot). Read and record the depth at the reference point (since this depth is chosen somewhat arbitrarily by the field technician, an even number can be chosen, e.g., 37.00 feet). This measurement is the length of cable lowered into the well and corresponds to a line that the oil leaves on the probe or cable (i.e., the oil inundation line). Above this line, smudges of oil may appear on the cable. Below this line, the cable/probe is completely covered with oil. If the probe is lowered too far, completely penetrates the oil, and is far submerged in the water below the oil, parts of the probe/cable below the oil inundation line may also appear smudgy.
2. Retrieve probe, identify and record the oil inundation line on the cable (e.g., 2.72 feet). This measurement does not reflect the thickness of the oil. It reflects the length of the cable below the air-oil interface.
3. Compute the depth to oil by subtracting the length of line below the air-oil interface from the corresponding measurement at the reference point: $\text{Depth to oil} = 37.00 \text{ feet} - 2.72 \text{ feet} = 34.28 \text{ feet}$.

Since oil has a slightly smaller density than water, a depth-to-oil measurement will always be smaller than a corresponding depth-to-water measurement in the same well if oil were not present. Depth-to-oil measurements yield a reasonable approximation to depth-to-water measurements unless the oil thickness is great. For each foot of oil in the well casing, the depth-to-oil measurement will be approximately 0.12 foot smaller than a corresponding depth-to-water measurement if oil were not present.

Recordation

1. Name of field technician
2. Unique identification of well
3. Weather and site conditions (e.g., clear, sunny, strong north wind, intense dust blowing over wellhead from nearby plowed field; dry ground, easy access)
4. Condition of well structure (e.g., well cap cracked – replaced with new one; wasp hive between well casing and well housing; no action, discuss with project manager)
5. Time and date of depth-to-water reading

6. Any other pertinent comments (e.g., sounder hangs up at 33 feet, thus no measurement; or: fifth measurement of ~55.68 feet in a row...residual water in end cap?; or: oil in well...measurement is depth to oil; or: intense sulfur odor upon opening well cap; or: nearby (west ~100 feet) irrigation well pumping)

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APPENDIX D

Example Field Sheet for Groundwater Quality Sampling

Groundwater Resources Advisory Committee

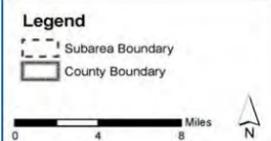
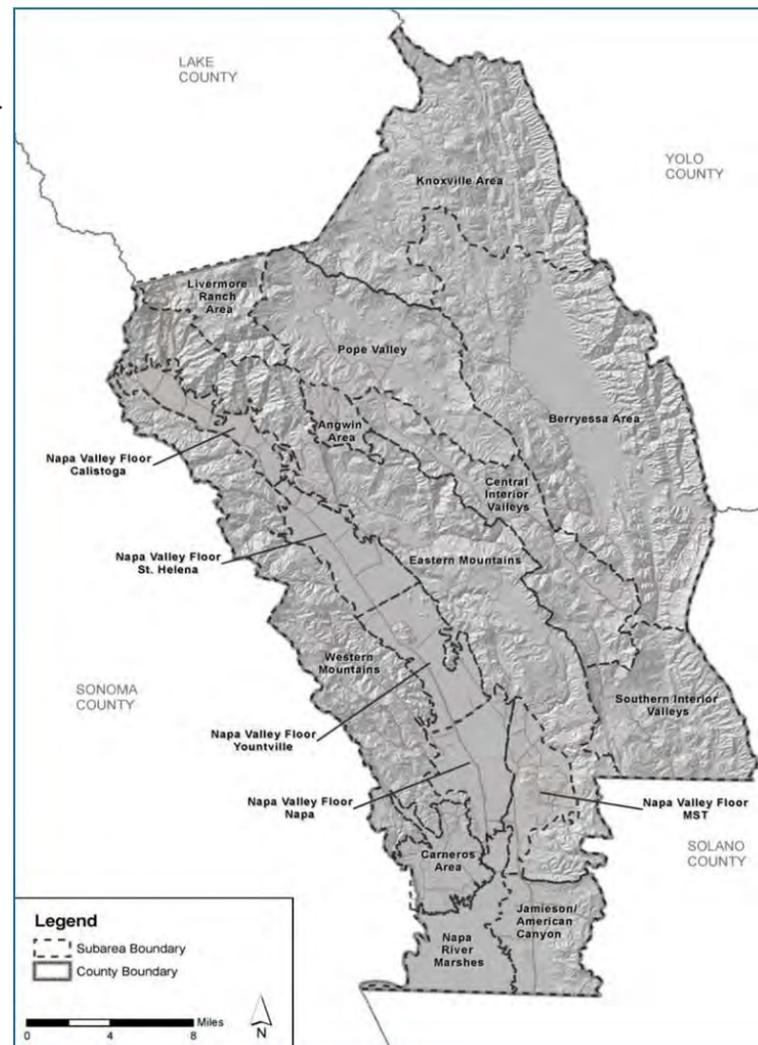
- Michelle Benvenuto
- Tucker Catlin
- Alan Galbraith
- Donald Gleason
- David Graves
- Michael Haley
- Peter McCrea
- Charles Slutzkin
- Steve Soper
- Marilee Talley
- William Trautman
- James Verhey
- Susanne von Rosenberg
- Duane Wall
- Dale Withers



Who We Are

The GRAC was appointed by the Napa County Board of Supervisors to assist County staff and technical consultants with recommendations regarding: (a) Synthesis of existing information and identification of critical data needs; (b) Development and implementation of an ongoing non-regulatory groundwater monitoring program; (c) Development of revised well pump test protocols and related revisions to the County's groundwater ordinance; (d) Conceptualization of hydrogeologic conditions in various areas of the County and an assessment of groundwater resources as data be-

comes available; (e) Development of groundwater sustainability objectives that can be achieved through voluntary means and incentives; and (f) Building community support for these activities and next steps. The GRAC works collaboratively to fulfill its charge.



Our Groundwater Resources in Napa County



Monitoring for Sustainability

What we know

Napa County and other public agencies have been monitoring our groundwater resources since the mid 1900's. This brochure provides important facts concerning groundwater supply and the importance of groundwater to our cities and agricultural community.

Groundwater Levels:

In general, groundwater levels within the Napa Valley Floor sub-area have shown stable long-term trends and a shallow depth to groundwater level, (10-30 feet). The northern Milliken-Sarco-Tulucay MST sub-area showed declining levels in the 1960s to 1970s, then stabilized. The central MST sub-area exhibits general long-term declines, with increasing decline since 1990. The southern MST sub-area is historically stable with shallow groundwater depth.



Groundwater Quality:

Less is known about groundwater quality. Overall quality is good except in very select areas in the most northern and southern parts of the County.

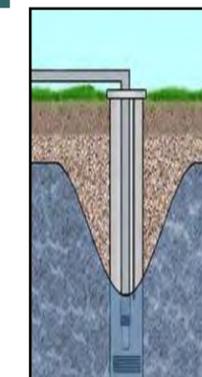
Groundwater Subareas:

To help better our understanding of groundwater conditions within Napa County, seventeen (17) groundwater Subareas have been delineated, five (5) of which are located on the floor of the Napa Valley (see [map inside](#)).



What we don't know

- How does groundwater move through our aquifer system?
- What is the overall groundwater reliability within the County?
- What are the amounts of recharge, discharge to creeks/streams, and storage?
- What are the key relationships between surface water in our creeks, rivers and lakes and groundwater?
- How do drought conditions affect groundwater levels and supplies?



Illustrated cone of depression near an active well

Current Efforts

- Expanding voluntary groundwater monitoring in key locations.
- Developing better data collection procedures.
- Estimating groundwater recharge, discharge and storage.
- Studying groundwater and surface water interaction.
- Identifying groundwater recharge areas.
- Reporting annual groundwater conditions.

GRAC Meetings

Meetings are held bi-monthly on the fourth Thursday of each month at 2:00pm at the Napa County Agriculture Commissioner's Office/ UC Cooperative Extension located at 1710 Soscol Avenue, Suite 3, Napa CA.

GRAC Contact Information

804 First Street
Napa, CA 94559-2623
Tel: 707-259-8600

Patrick Lowe
Natural Resources Conservation
Program Manager
Department of Public Works
Patrick.Lowe@countyofnapa.org
or

Phil Miller
Flood Control & Water Resources
Deputy Director
Department of Public Works
Phillip.Miller@countyofnapa.org

Napa County's Voluntary Groundwater Level Monitoring Program

Overview

The **Voluntary Groundwater Level Monitoring Program** provides elevation measurements to well owners twice per year (spring and fall). These measurements improve the understanding of groundwater for the owner and the County. A comprehensive network of privately owned volunteer wells, along with publically owned wells, provide a greater understanding of Napa County aquifers. The primary purpose of expanding the voluntary well network is to establish baseline information in areas where data is lacking or nonexistent.

What Participation Means for Well Owners

A well owner that decides to participate in the voluntary groundwater level monitoring program will:

- Receive accurate groundwater level readings twice per year (*spring and fall*);
- See seasonal and long-term groundwater level trends for their well;
- Receive water quality data for their well (*if testing is agreed to and conducted*); and
- **Help improve overall** understanding of groundwater resources **countywide**.

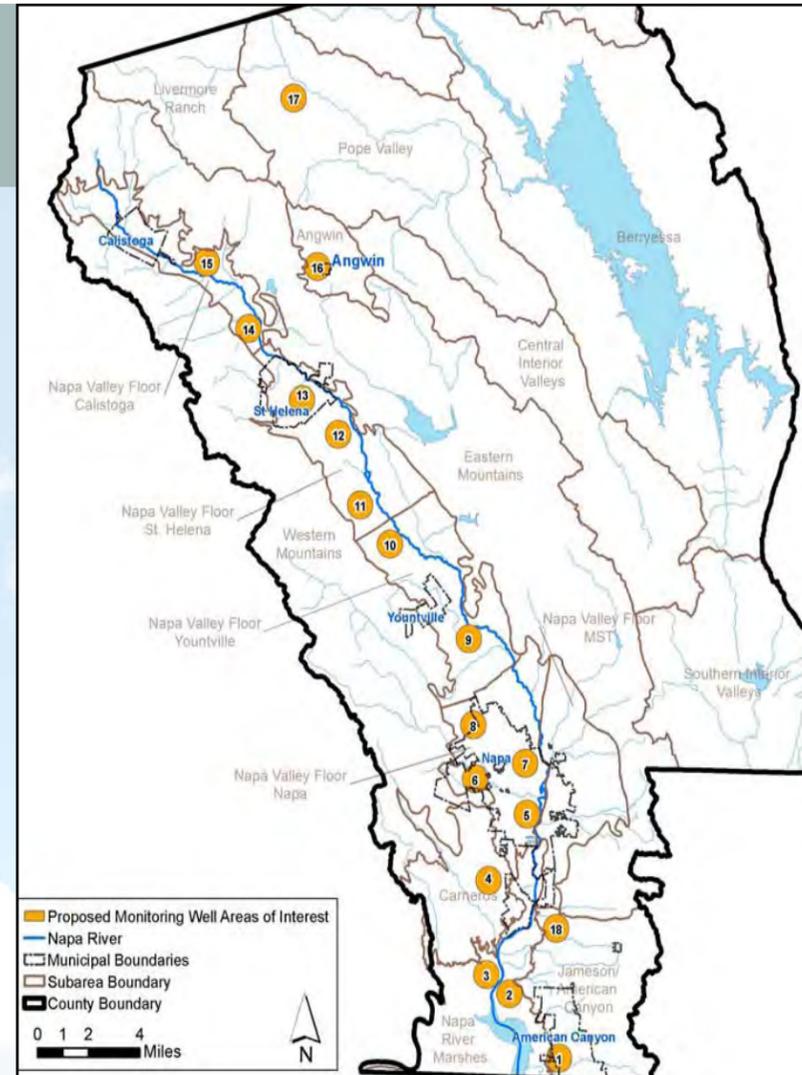


Groundwater and its Importance in Napa County

Groundwater is water below ground surface, contained in formations know as aquifers, that supplies significant quantities of water to wells and springs. **Groundwater is a vital source of water supply in Napa County.** Many residents, businesses and agriculturalists rely on groundwater. Both groundwater and surface water of good quality and quantity are necessary to meet **agricultural, commercial and residential water demands.**

Residents of Napa County face many water-related challenges, including:

- Preserving the quality and availability of local and imported water supplies;
- Sustaining groundwater recharge capacity and supplies;
- Meeting challenges arising during drought conditions;
- Potential environmental effects due **to groundwater use**;
- Changes in long-term **groundwater** availability; and
- Increased **demand** for current and future available supplies (**beneficial use for all**)



Proposed Monitoring Well Areas of Interest

Answers to Questions

Will someone curtail my use if I participate?
No. The Voluntary Groundwater Level Monitoring Program is a non-regulatory, volunteer program that measures the depth to groundwater (level only). Groundwater use is not being measured or monitored as part of this program.

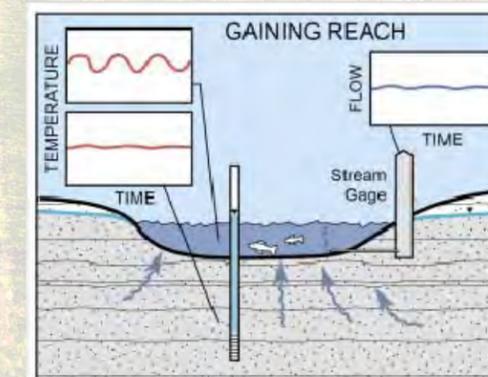
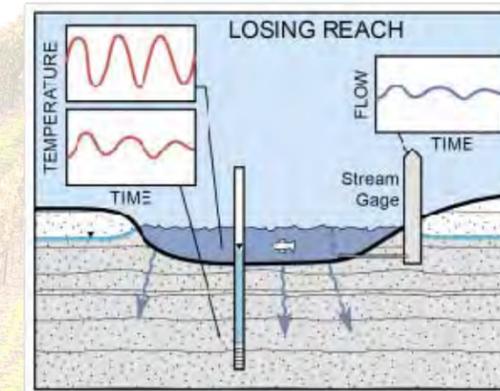
How long is the voluntary groundwater level monitoring program going to last?
The monitoring program will last as long as funding is available (**well owners may leave the program at anytime**).

Where is additional groundwater level data needed?
Priority water level monitoring Areas of Interest (AOI) have been determined (**See map of Proposed Monitoring Well Areas of Interest at left**).

Who is eligible to participate?
If your well is within a priority sub-basin and well construction information is available, your well may be eligible to participate in the program.

How will the collected information be used?
The information will be used to: monitor and track groundwater levels; understand relationships between surface water and groundwater; maintain a centralized data management system; and improve the accuracy and reliability of relevant water resource models.

Where can I find additional information?
For more information about the Voluntary Groundwater Level Monitoring Program, please visit the GRAC website: www.countyofnapa.org/bos/grac.



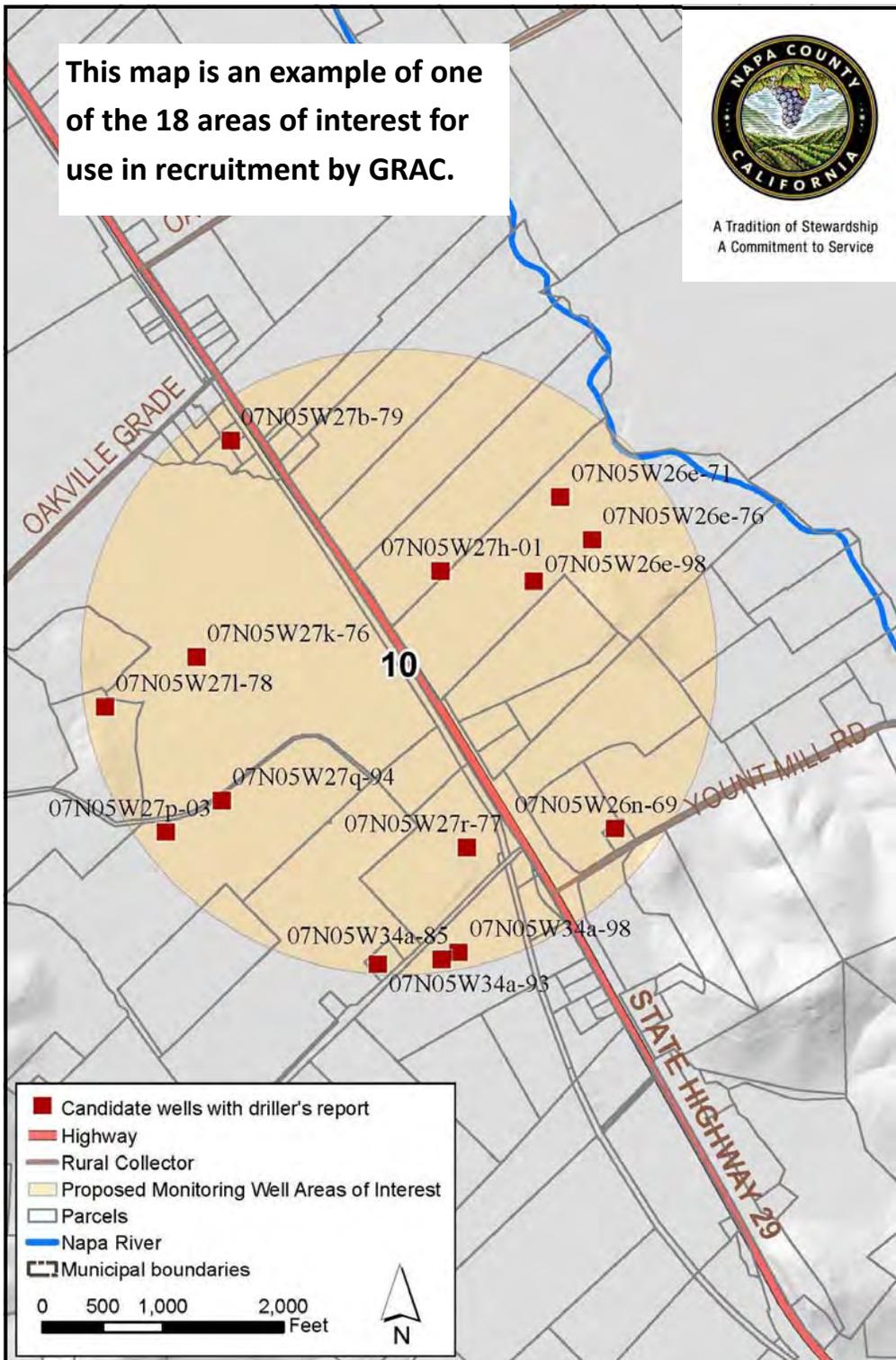
Napa County's Voluntary Groundwater Level Monitoring Program

Proposed Groundwater Monitoring Areas of Interest

This map is an example of one of the 18 areas of interest for use in recruitment by GRAC.



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The Napa County Groundwater Monitoring Plan, recommends 18 Areas of Interest (AOI) for additional groundwater monitoring to better understand groundwater resources in Napa County. The AOIs are located in 9 of the 17 County Subareas. In each of the AOIs, at least one well is desired for both groundwater level and groundwater quality monitoring.

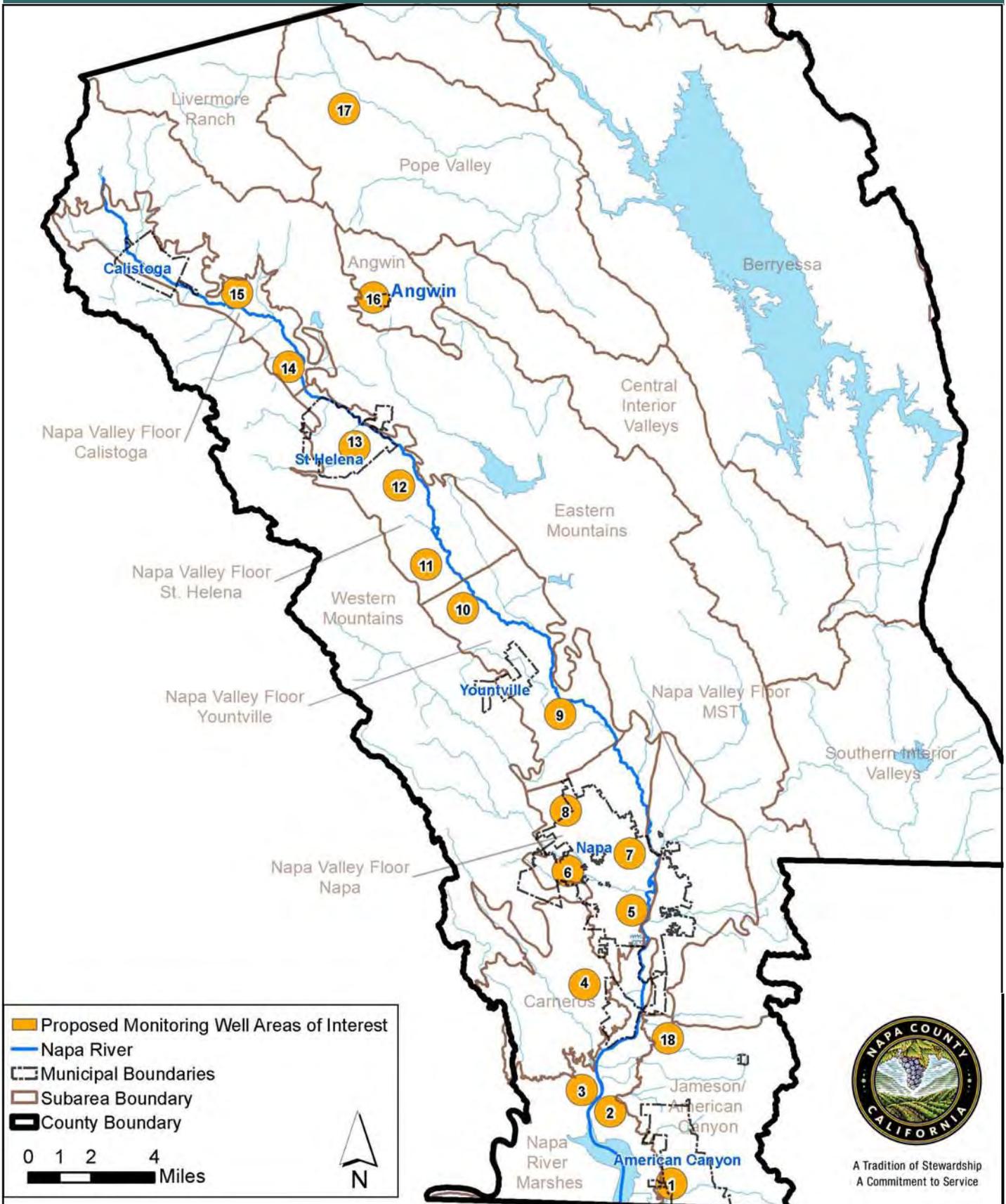
Napa County is currently looking for volunteer wells to monitor groundwater elevation in the area between Oakville Grade and Yount Mill Road, near Highway 29.

The red squares on the map indicate wells that are potential candidates for the voluntary groundwater monitoring program. Minimum criteria for a well selected for inclusion in the monitoring program include: a driller's report that shows the depth and screened interval(s) of the well; access at the wellhead that accommodates equipment for measuring water levels; and a location near the wellhead for the collection of groundwater quality samples (or owner's permission to install a valve/tap).

DRAFT - October 25, 2012

<http://www.countyofnapa.org/bos/grac/>

Proposed Monitoring Well Areas of Interest





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Napa County's Voluntary Groundwater Level Monitoring Program

Data Management and Disclosure

There are three levels in the Napa County's groundwater data management and disclosure procedures. Voluntary well owners participating in the Napa County program may opt in to the other programs if desired.

1) Napa County Program

- Groundwater level measurements are collected twice a year (spring and fall) and reported to the well owner.
- Well construction detail, well location, reference and ground surface elevation, water elevation data will **NOT** be made available to the public. The water elevation data will be used internally by the County to gain an understanding of general groundwater level fluctuations across the basin.
- Groundwater quality testing (if applicable) is conducted twice a year (spring and fall) and reported to the well owner.
- The County cannot guarantee that data provided will be kept confidential if a public records request is filed in a court of law (California Water Code §13751, §13752 prohibits distributing well completion reports to anyone but the landowner, his or her designee, or a government agency without the owner's permission).

2) Water Data Library

- Groundwater level measurements are collected twice a year (spring and fall) and reported to the well owner.
- Well location information (coordinates), the well type (i.e., domestic, monitoring, irrigation, etc.), reference and ground surface elevation, water elevation data and historic water level measurements will be made available to the public via websites (State and County) or through other means. This data is currently available on the Water Data Library website (<http://www.water.ca.gov/waterdatalibrary/>) for many of the County's monitoring wells.
- The County cannot guarantee that data provided will be kept confidential if a public records request is filed in a court of law (California Water Code §13751, §13752 prohibits distributing well completion reports to anyone but the landowner, his or her designee, or a government agency without the owner's permission).

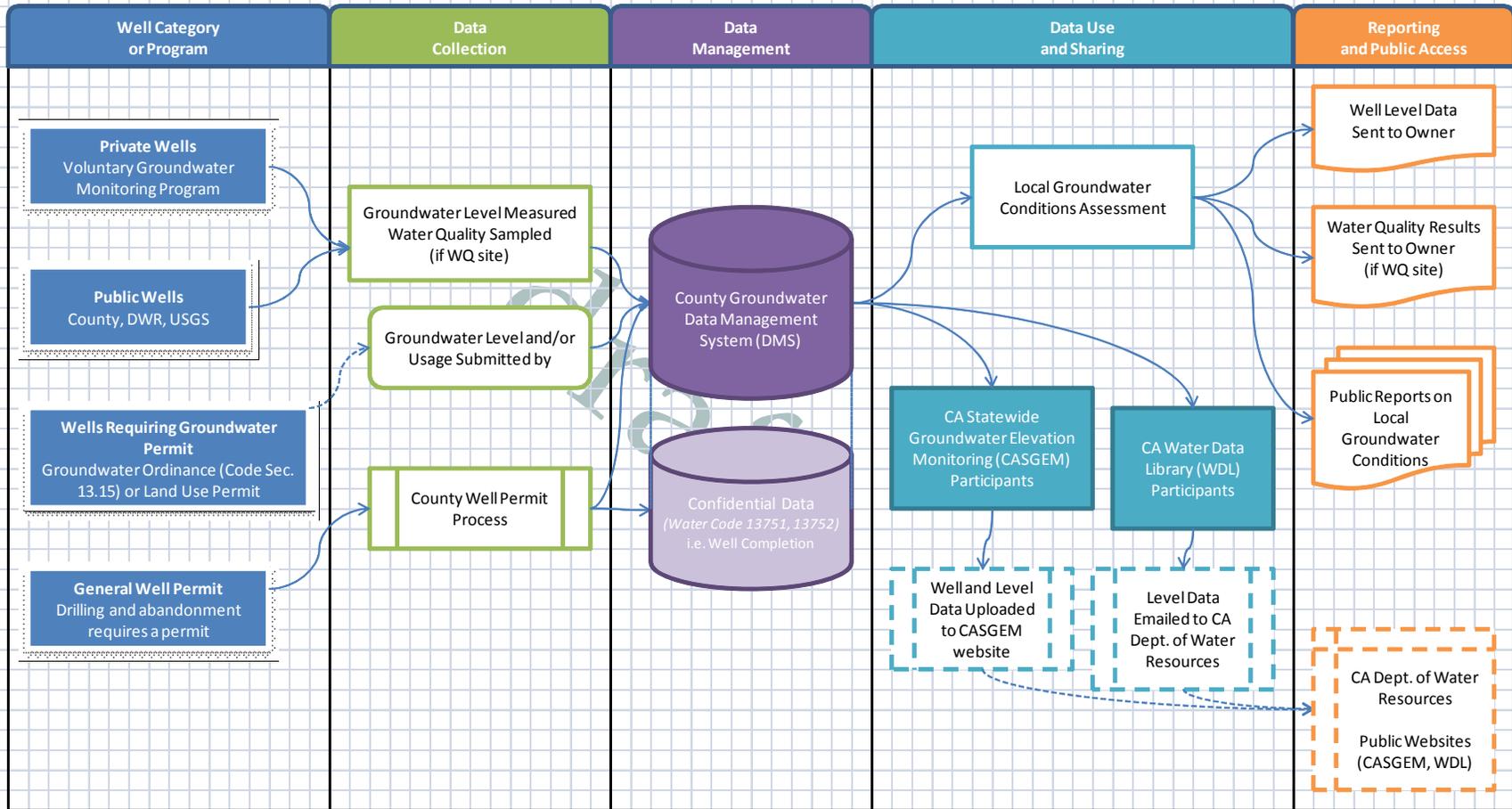
3) California Statewide Groundwater Elevation Monitoring Program (CASGEM)

- Groundwater level measurements are collected twice a year (spring and fall) and reported to the well owner.
- Well construction detail (including: completion type, total depth, construction data, screen intervals (if available), if a well completion report available (y/n), report # (if available), well location, reference and ground surface elevation, and water elevation data will be made available to the public via websites (State and County) or through other means. Data is available on the CASGEM website at <http://www.water.ca.gov/groundwater/casgem/>.
- The County cannot guarantee that data provided will be kept confidential if a public records request is filed in a court of law (California Water Code §13751, §13752 prohibits distributing well completion reports to anyone but the landowner, his or her designee, or a government agency without the owner's permission).

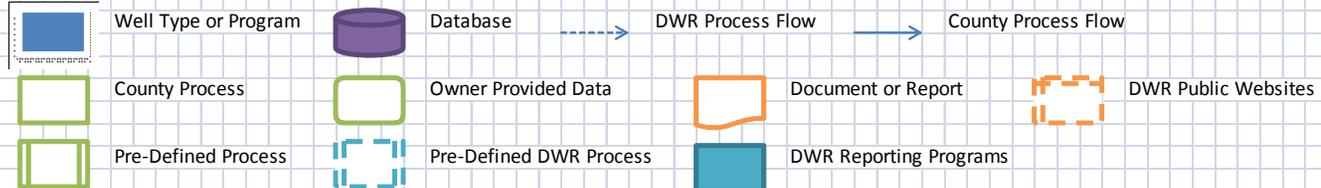


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Groundwater Data Collection, Management, Use, & Reporting



Legend





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Napa County's Voluntary Groundwater Level Monitoring Program

Frequently Asked Questions for Well Owners

What is the Voluntary Groundwater Level Monitoring Program and why is it important?

The Voluntary Groundwater Level Monitoring Program allows well owners to have the depth to groundwater level measured in their wells twice per year to improve understanding of groundwater in the County. A network of privately owned volunteer wells augments County and publicly monitored wells tracking overall groundwater elevations. Monitoring groundwater elevation helps assess the overall status of Napa County aquifers.

What is required to participate?

Participating well owners must sign an agreement allowing the release of depth to groundwater data and access to the property, allowing Napa County Department of Public Works or its contractor to access the well to measure the groundwater elevations twice per year (in the spring and fall).

How will the collected information be used?

The information will be used to monitor and track groundwater level elevations; understand the relationship between surface water and groundwater; maintain a central data management system of monitoring; and improve the accuracy and reliability of relevant water resource models.

What does participation mean to well owners?

Volunteers will: receive accurate groundwater level readings twice per year (spring and fall); be able to see seasonal and long-term groundwater level trends of their well; receive water quality data if testing is agreed to and conducted; and gain improved understanding of our groundwater resources community-wide.

Who collects the well measurements and how often are measurements taken?

Groundwater measurements are taken by the Napa County Department of Public Works or its contractor. Measurements generally take place twice per year in April and October.

Will the County measure how much water I use?

No. The amount of groundwater used is not measured. The only measurement taken is the depth to groundwater in the well (water level).

Will someone try and curtail my groundwater use if I participate in the program?

No. The Voluntary Groundwater Level Monitoring Program is a non-regulatory, volunteer program that only measures the groundwater elevation/level in volunteer wells. Groundwater use is not being measured or monitored as part of this program.



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September 2012

Groundwater Resources Advisory Committee

Committee Members

Michelle Benvenuto
Tucker Catlin
Alan Galbraith
Don Gleason
Dave Graves
Michael Haley
Peter McCrea
Charles Slutzkin
Steve Soper
Marilee Talley
Bill Trautman
Jim Verhey
Susanne von Rosenberg
Duane Wall
Dale Withers

On September 20, 2011 the Napa County Board of Supervisors appointed 15 residents to the Groundwater Resources Advisory Committee (GRAC). The members represent diverse interests including, environmental, agricultural, development, and community interests.

The GRAC was created to assist County staff and technical consultants with recommendations regarding: (a) Synthesis of existing information and identification of critical data needs; (b) Development and implementation of an ongoing non-regulatory groundwater monitoring program; (c) Development of revised well pump test protocols and related revisions to the County's groundwater ordinance; (d) Conceptualization of hydrogeologic conditions in various areas of the County and an assessment of groundwater resources as data becomes available; (e) Development of groundwater sustainability objectives that can be achieved through voluntary means and incentives; and (f) Building community support for these activities and next steps. The GRAC works collaboratively to fulfill its charge.

To date the GRAC has spent most of its time reviewing and providing feedback on consecutive draft chapters of a voluntary Groundwater Monitoring Plan, the centerpiece of its work. This includes characterization of current groundwater conditions in sub-areas of the County, refinement of criteria used to identify priority monitoring areas, and a proposed monitoring network. To fulfill its mission and garner community interest and support, the GRAC developed a Communication and Education Plan, designed to implement the Groundwater Monitoring Plan through voluntary participation. This effort includes the development of an outreach brochure and a series of fact sheets on specific topics. The GRAC adopted its Communication and Education Plan in August 2012, and anticipates adopting the Groundwater Monitoring Plan in early 2013. Up to date information on the GRAC's activities can be found on the GRAC's website: www.countyofnapa.org/bos/grac.

Meetings are held bi-monthly on the fourth Thursday of every other month at 2:00pm at the Napa County Agriculture Commissioner's Office/UC Cooperative Extension located at 1710 Soscol Avenue, Suite 3, Napa, CA.

1195 Third Street,
Suite 210
Napa, CA
94559

Tel: 707-253-4417
Fax: 707-253-4336

<http://www.countyofnapa.org/bos/grac/>