



NORTH MARIN WATER DISTRICT
AGENDA - REGULAR MEETING
 July 16, 2024 – 4:00 p.m.
 Location: 100 Wood Hollow Dr., Suite 300
 Novato, California

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Item	Subject
	CALL TO ORDER
1.	APPROVE MINUTES FROM REGULAR MEETING June 18, 2024
2.	GENERAL MANAGER’S REPORT
3.	OPEN TIME: (Please observe a three-minute time limit) This section of the agenda is provided so that the public may express comments on any issues not listed on the agenda that are of interest to the public and within the jurisdiction of the North Marin Water District. When comments are made about matters not on the agenda, Board members can ask questions for clarification, respond to statements or questions from members of the public, refer a matter to staff, or direct staff to place a matter of business on a future agenda. The public may also express comments on agenda items at the time of Board consideration.
4.	STAFF/DIRECTORS REPORTS
	CONSENT CALENDAR The General Manager has reviewed the following items. To his knowledge, there is no opposition to the action. The items can be acted on in one consolidated motion as recommended or may be removed from the Consent Calendar and separately considered at the request of any person.
5.	Consent - Approve: Resolution Declaring Governing Body Members as Employees for the Purpose of Providing Workers’ Compensation Coverage Resolution
6.	Consent - Approve: Notice of Completion for the NMWD HQ RW Extension from Redwood Blvd (Golden State Construction & Utility, Inc.)
7.	Consent - Approve: Records Retention – Destruction of Records Resolution
8.	Consent - Approve: Salary Schedule for Temporary/Seasonal Employees
	ACTION ITEMS
9.	Approve: Reimbursement Agreement between NMWD and NSD for Waterline Relocation Resulting from Conflicts with New Facilities Proposed by NSD’s Arthur Street Sanitary Sewer Upgrade (Budgeted FY24/25)
10.	Approve: Declaration of End of Local Emergency Related to Redwood Blvd Landslide Resolution
11.	Approve: Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan and the North Marin Water District Annex Resolution

Item	Subject
	<i>INFORMATION ITEMS</i>
12.	Lynwood Pump Station Replacement Project Update
13.	TAC Meeting – April 8, 2024
14.	NBWA Meeting Agenda – July 12, 2024
15.	MISCELLANEOUS Disbursements – Dated June 20, 2024 Disbursements – Dated June 27, 2024 Disbursements – Dated July 3, 2024 Disbursements – Date July 11, 2024 Auditor-Controller’s Monthly Report of Investments for May 2024 Monthly Progress Report NOAA Seasonal Drought Outlook – June 20, 2024 Statement from AWWA and AMWA on petition for judicial review of PFAS regulation NBWA Thank you letter for sponsorship support WUE Fact Sheet, July 2024 <u>News Articles:</u> Marin IJ – Extreme Novato housing approved – APARTMENT-COMMERCIAL PLAN Marin IJ – Water district revisits desalination – MARIN MUNICIPAL Marin IJ – Reservoir connection plan delayed by creek concerns – MARIN MUNICIPAL Marin IJ – Cautious looks at desal plant can be routine – EDITORIAL Marin IJ – State approves key regulations for water policy – LANDMARK DECISION Pt. Reyes Light – Lagunitas Creek Bridge State Project – PUBLIC NOTICE Pt. Reyes Light – Ranchers decry reservoir expansion plan <u>Social Media Posts:</u> NMWD Web and Social Media Report – June 2024
16.	<i>ADJOURNMENT</i>

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1 **DRAFT**
2 **NORTH MARIN WATER DISTRICT**
3 **MINUTES OF REGULAR MEETING**
4 **OF THE BOARD OF DIRECTORS**
5 June 18, 2024

6 **CALL TO ORDER**

7 President Baker called the regular meeting of the Board of Directors of North Marin Water
8 District to order at 4:00 p.m. at the District Headquarters and the agenda was accepted as
9 presented. Present were Directors Jack Baker, Rick Fraites, Michael Joly, and Stephen Petterle
10 Director Ken Eichstaedt was absent. Also present were General Manager Tony Williams, District
11 Secretary Eileen Mulliner, Auditor-Controller Julie Blue and AGM/Chief Engineer Eric Miller.

12 District employees Chris Kehoe, Construction Superintendent, Robert Clark, Operations and
13 Maintenance Superintendent, and Tim Fvette, Senior Engineer, were also in attendance.

14 Mark Hildebrand, Hildebrand Consulting, was also in attendance.

15 **MINUTES**

16 On motion of Director Petterle, seconded by Director Joly, the Board approved the minutes
17 from the June 4, 2024 meeting as presented by the following vote:

18 AYES: Director(s) Baker, Fraites, Joly and Petterle

19 NOES: None

20 ABSENT: Director Eichstaedt

21 ABSTAIN: None

22 **GENERAL MANAGER'S REPORT**

23 Tony Williams gave a brief update on the Potter Valley Project. He said that an updated draft
24 of the decommissioning and surrender plan from PG&E had been expected soon but PG&E has
25 submitted for a 6-month schedule extension to the Federal Energy Regulatory Commission (FERC).
26 He said that District counsel attorney Bob Maddow believes that technically FERC can deny the
27 request but if the extension is approved the new deadline for a final plan would be in July 2025. Mr.
28 Williams said that he will continue to track this and report back to the Board.

29 Mr. Williams noted that next week, on Monday morning there will be an NBWRA Board
30 meeting, the first in over a year. Project updates and the proposed next years' budget are on the
31 agenda.

32 **OPEN TIME**

33 President Baker asked if anyone in the audience wished to bring up an item not on the
34 agenda and there was no response.

35 **STAFF/DIRECTORS REPORTS**

36 President Baker asked if staff or Directors wished to bring up an item not on the agenda.

1 Director Fraites said that when the District attends events, that there should be more
2 representation and suggested we have more brochures at the table. He asked if we were going to
3 be in the July 4th parade again. Mr. Williams said that the District will not be in the parade this year
4 but that we are co-sponsoring the water exhibit at the Marin County Fair. He said that we will try to
5 have people there. He also mentioned that the fair said there are to be no giveaways at the exhibit,
6 it is about zero waste. He said that because of the fair event, it would overlap the parade so the
7 decision was to not do the parade this year. He also said that the parade does involve staff costs
8 but we will consider doing it next year. Director Petterle suggested the Art and Wine Festival next
9 year. Directors Fraites, Joly and Petterle all said they could volunteer. Director Joly said that he
10 thinks the Directors should volunteer more often and be more visible to the community. Mr. Williams
11 said his only concern about being at events is that we don't have staff whose job it is to attend these
12 events but said we can look into it moving forward. Director Joly asked if staff is paid if they attend
13 and Mr. Williams that they are. He also said that we would appreciate the Board's participation.
14 Robert Clark mentioned that we did attend Western Weekend in Pt. Reyes. He said that he was
15 there and we didn't have a booth but we had water stations. Director Joly thanked him for attending.

16 President Baker mentioned that Marin Water is testing its water and asked if we knew
17 anything about it. Mr. Williams said it could be on the wastewater side. Mr. Clark said they are
18 looking at avian flu. President Baker asked Mr. Williams to look into the details.

19 President Baker also mentioned that he will be on vacation the first two weeks of September
20 and will miss the September 3rd meeting.

21 **PUBLIC HEARING/APPROVE CONSIDER PROPOSED NOVATO SERVICE AREA WATER**
22 **RATE INCREASE**

23 Tony Williams called Sharon Nagle, legal counsel, so she could attend via phone. He
24 clarified that the prop 218 rate hearing was for a 3-year period, an 8.5% rate increase the first year
25 with 6% rate increases the following two years.

26 The public hearing to consider the proposed Novato Service Area Water Rate Increase was
27 opened by President Baker at 4:18 p.m.

28 Mark Hildebrand gave a presentation of the Novato and Recycled Water Rate Study. He
29 went over the rate setting process which consists of revenue requirements, cost of service, and rate
30 design. He mentioned Prop. 218 and how the law dictates how utilities have to charge rates to
31 customers but that they cannot be charged more than the cost of providing service. He showed a
32 survey of different water utilities' rates and that NMWD fell in the lower third to mid-range in the
33 survey. He went over the reasons for rate increase drivers: capital spending, escalation of operating
34 costs such as water purchases (increase by Sonoma Water), chemicals, supplies, and

1 salaries/benefits. Director Joly noted that because Sonoma Water's water is 30% of our costs,
2 NMWD is willing to absorb 3% of the rate increase by SW.

3 Mr. Hildebrand went over capital spending and mentioned reserve policies. We have
4 minimum reserves of \$11.2M with target reserves of \$17.2M. He said that if rates were not
5 increased we would be in a deficit and reserves would go down quickly. He showed the proposed
6 rate increases over the next 3 years and that another rate study will be done in 2029. He said that
7 with the proposed rate increases reserves would be drawn down over a few years but would then
8 rebound. He said the rate increases help maintain a reserve cushion. Mr. Hildebrand said that
9 NMWD is depending on SW for 80% of the water supply and when their rates increase, ours do as
10 well.

11 Director Joly asked about Tier 1 customers and Mr. Williams clarified that all customers are
12 in Tier 1 but if they use more water they will move into Tier 2.

13 Mr. Hildebrand then reviewed the Recycled Water service area and rates. He said that
14 capital spending went from \$0 to \$300K. He noted that because it is a newer system capital
15 spending has been modest. He said that debt service will go down in a few years and the system
16 will then be able to support itself. Director Joly asked if recycled water can be used for irrigation. Mr.
17 Williams said it is used for irrigation by commercial customers but not residential. He said the
18 primary customers are commercial, some city parks, and any new multi-family units in the common
19 areas. Director Joly asked if there is any plan to expand to residential customers but Mr. Williams
20 said that there are many restrictions and requirements for testing and is not economical for
21 residential customers.

22 Mr. Hildebrand went over existing water rates for potable water, raw water, recycled water,
23 elevation surcharges, drought surcharges (that only happen during droughts), and fixed meter
24 service charges.

25 He compared fixed and variable revenues with variable revenues at 31% and fixed at 69%.
26 By coincidence, it is the opposite for variable and fixed costs, i.e., 69% and 31%. He said that
27 recycled water fixed revenues increased from 31% to 34% and conversely variable revenue
28 decreased from 69% to 66%.

29 Mr. Hildebrand said that currently commercial customers have seasonal rates but the rate
30 study recommends them to be uniform rates throughout the year.

31 Ms. Blue went over the Low Income Rate Assistance (LIRA) program stating that there are
32 371 customers enrolled and to be eligible a customer must have PG&E CARE program eligibility.
33 She said we are proposing to increase the bill reduction to \$30 per bill (from the current \$15)
34 beginning July 1, 2024.

35 Mr. Hildebrand showed a slide outlining the rate hearing and budget review schedule. Mr.
36 Williams said the schedule had run in the Marin IJ several times and twice in the Pt. Reyes Light.

1 Also, there has been a banner and FAQs on the website, as well as a good deal of information
2 pushed out on social media. Director Joly asked how many protest letters have been received and
3 Mr. Williams said 18 for Novato to date.

4 Mr. Williams asked if the Board had any questions and President Baker invited the public to
5 address the Board. One member of the public asked about the 19% increase in salaries and who
6 sets those. Director Joly said that we have an Employee Association and they negotiate when
7 contracts are nearing expiration which is approximately every 5 years, depending on the contract,
8 and that a salary survey is done every 5 years. He said that after the negotiations concluded earlier
9 this year, an agreement was made and he also explained that due to the salary survey several
10 positions had salary increases and some positions had to be adjusted to keep the compaction
11 percentage in place. He said that the current contract has an overall 7% increase over the next 5
12 years, the first year being the highest increase. Director Petterle added that a number of employees
13 were being paid below the median rate compared to other similar districts. Director Joly noted that
14 the Board has a very good relationship with staff and it's important to them. Mr. Williams noted that
15 we have one staff member per every 1,000 customers and other agencies have a lower ratio.
16 Director Petterle noted that the Board does not receive a salary, only a small payment per meeting.
17 Director Joly also noted that the Board does not receive benefits, the job is a public service, not for
18 money.

19 Another customer spoke to the Board and said they were pleasantly surprised that we were
20 able to keep the rate increase down as much as we did and thanked the District for its excellent
21 service.

22 Director Joly mentioned that we have the AMI (Advanced Metering Infrastructure) system for
23 customer water meters and how great it is. A customer can look at their use every day. Director
24 Petterle added that if there is an increase in usage, the system will notify the customer and they can
25 call NMWD customer service and confirm if they have a leak which can save money and water.
26 Director Joly mentioned that he has neighbors thanking him that NMWD has this system. Director
27 Fraites said he had received a notice of a leak through the AMI. He had it checked by a plumber
28 and he was able to fix the problem on his side of the meter. He said he really likes the AMI system.

29 The public hearing was closed at 5:07 p.m.

30 Mr. Williams said that legally the Board can approve the rate increase, that there was not a
31 protest consisting of over 50% of customers.

32 Director Joly asked Mr. Hildebrand if other agencies have a pass-through increase. Mr.
33 Hildebrand said that others have but stopped because Sonoma Water said several years ago that
34 they would be more consistent when increasing their rates. Because of the volatility in recent years,
35 he said that some agencies will now implement a pass through or have one in place. President
36 Baker said that Sonoma Water said they have too much deferred maintenance and have to deal

1 with that and it costs more and more each year. Mr. Williams said that he spoke with Jennifer Burke
2 of the City of Santa Rosa and said they were previously locked into a 5-year rate structure and it
3 really hurt them with Sonoma Water's recent increases and they are looking to do a pass through in
4 the coming years. Director Petterle noted that we had several members of the public attend the
5 meeting and it was nice to have customers attend and be able to explain directly to them. He said
6 we are trying to keep the costs reasonable. He also said he hopes we can go to monthly billing at
7 some point in time. Director Joly agreed that monthly billing would be good but understands it will
8 take quite a bit of effort. He mentioned that he read all the protest letters and was glad that people
9 wrote in their thoughts. He reiterated that they don't like to raise rates but they have to do what they
10 believe is right for the customers. He mentioned again that we absorbed 3% of the rate increase
11 from Sonoma Water.

12 On the motion of Director Petterle, and seconded by Director Fraites, the Board approved
13 the Resolution that approves the changes to Regulation 54 for the Novato and Recycled service
14 areas water rate increase by the following vote:

15 AYES: Director(s) Baker, Fraites, Joly, and Petterle

16 NOES: None

17 ABSENT: Director Eichstaedt

18 ABSTAIN: None

19 Mr. Hildebrand left the meeting and the call with Ms. Nagle was ended.

20 **PUBLIC HEARING /APPROVE: PROPOSED WEST MARIN WATER RATE INCREASE**

21 The public hearing to consider the proposed West Marin service area water rate increase
22 was opened at 5:18 p.m. There was no public in attendance.

23 Tony Williams went through the presentation for the proposed West Marin rate increase. He
24 said that public notification was published twice in the Pt. Reyes Light as well a Prop. 218 notice
25 sent out to all customers notifying them of the proposed 6% rate increase. In the presentation, he
26 showed the water demand trends over the years, which have been consistent but below the average
27 usage. He said that West Marin is a small enterprise with 4 supply wells, 13 tanks, 16 pump
28 stations, and one treatment plant. He said that the long-term capital issues are water supply
29 resiliency, significant capital improvement projects, and treatment plant upgrades. He noted that
30 the West Marin minimum reserves are \$400K and target reserves are \$480K. Mr. Williams said that
31 West Marin customers are eligible to apply for the LIRA program in addition to the Novato
32 customers. He noted that we received only 1 rate protest letter. He also noted that the resolution
33 for the West Marin rate increase is only for one year. President Baker asked if the LIRA application
34 is for an individual and Mr. Williams said it is. Director Fraites said that he went on a tour in West
35 Marin and was taken aback by the condition of the treatment plant and asked if it will take a lot of

1 money to refurbish. Mr. Williams said that staff is looking at the possibility of relocating it or
2 rehabilitating in place. Mr. Williams also said a project of that size is a struggle with trying to keep
3 rates down while keeping infrastructure in good condition. Director Joly said that when Novato
4 customers read the minutes they will see that West Marin does not have the added benefit of
5 Sonoma Water, West Marin relies only on water from the groundwater wells there. Mr. Williams
6 said that the Gallagher well No. 1 has had issues in the past and production has dropped off some.
7 He said that a replacement well will probably have to be drilled soon which is very expensive. Mr.
8 Miller noted that Gallagher Well No. 2 cost approximately \$1M.

9 The public hearing was closed at 5:35 p.m.

10 On the motion of Director Joly, and seconded by Director Fraiters, the Board approved the
11 West Marin water rate increase by the following vote:

12 AYES: Director(s) Baker, Fraiters, Joly, and Petterle

13 NOES: None

14 ABSENT: Director Eichstaedt

15 ABSTAIN: None

16 **PUBLIC HEARING/APPROVE CONSIDER PROPOSED OCEANA MARIN SEWER RATE**
17 **INCREASE**

18 The public hearing to consider the proposed Oceana Marin Sewer Rate Increase was
19 opened at 5:36 p.m. There were no public in attendance.

20 The public hearing was closed at 5:37 p.m.

21 On the motion of Director Petterle, and seconded by Director Joly, the Board approved the
22 Oceana Marin sewer rate increase and Ordinance 109 by the following vote:

23 AYES: Director(s) Baker, Fraiters, Joly, and Petterle

24 NOES: None

25 ABSENT: Director Eichstaedt

26 ABSTAIN: None

27 **CONSENT CALENDAR**

28 On the motion of Director Joly, and seconded by Director Petterle, the Board approved the
29 following item on the consent calendar by the following vote:

30 AYES: Director(s) Baker, Fraiters, Joly, and Petterle

31 NOES: None

32 ABSENT: Director Eichstaedt

33 ABSTAIN: None

34 **APPROVE RESOLUTION RE CONSOLIDATION OF DISTRICT ELECTION AND FILING**
35 **INFORMATION – DISTRICT ELECTION, NOVEMBER 5, 2024**

1 There are four seats on the Board that are up for re-election in 2024. Three are full term
2 seats for Divisions 2, 3 and 4. The fourth is for Division 1, which is for a two-year, short term, seat
3 on the Board. This seat was appointed in 2022 after the passing of Director Grossi, and was
4 approved for two years until the next General Election per the Election Code. The elected Director
5 for Division 1 will serve to the end of the original term, which is 2026.

6 **ACTION CALENDAR**

7 **FY 24/25 BUDGETS NOVATO & WEST MARIN SERVICE AREAS**

8 Julie Blue gave a presentation on the FY 23/24 Budgets for the Novato and West Marin
9 Service Areas. She said that the budget is essentially the same as what was presented at the June
10 4 meeting. She briefly covered the Key Assumptions, Historical Billed Water Consumption, Budget
11 Summary, Financial Forecast, Outstanding Debt, and Budget Review. Under Key Assumptions, she
12 said that there has been a slight rebound in West Marin water sales and we will continue to watch
13 when going into the next rate study. She said that Historical Billed Consumption is a large revenue
14 source and there was a decline with the drought. There has been a slight rebound however
15 consumption has not returned to the levels seen in previous years. She said that sales are
16 flattening out at 2.1BG (billion gallons) for the Novato Service Area. Ms. Blue said regarding
17 recycled water, sales are hard to predict but 215MG (million gallons) is budgeted. President Baker
18 asked how many customers have opted out of AMI meters and Ms. Blue said there are 30 but that
19 when any of these customers move out, an AMI is then installed. She said that as far as Operating
20 Revenues, Novato is budgeted at \$25.8M, \$1.8M for Recycled Water, \$1M for West Marin Water
21 and \$347K for Oceana Marin Sewer. She said that the sources of operating revenues are 74% from
22 water sales, 2% from FRCs, 12% from grants and loans, 8% from reserves, and miscellaneous of
23 4%. Ms. Blue said that Operating Expenses are \$23.6M with sources of supply costing \$7.1M. She
24 said that the largest expense categories are Operations & Maintenance at 32% and Capital Projects
25 at 23%. For Capital Improvements Projects, there are 43 budgeted in FY 24/25, of those 27 are for
26 Novato, 3 are Recycled Water projects, 7 for West Marin Water, and 6 for Oceana Marin Sewer.
27 She said that Studies and Special Projects are a little higher than in prior years with a total of \$860K
28 budgeted. She noted that the Novato Master Plan is the costliest item at \$400,000.

29 Ms. Blue went over the District-wide Financial Forecast which shows the budget will provide
30 cash reserves above the minimum target and the debt service coverage ratio is estimated to be
31 approximately 1.5. In reviewing the debt-service she indicated that there is a balance of \$38.2M.
32 The last slide presented was a summary of the Rate Study and Budget Hearing Schedule which was
33 run in the Marin IJ, Pt. Reyes Light and posted on our website.

34 Director Petterle said he was very impressed with Ms. Blue's work. Ms. Blue noted that the
35 rest of her accounting team contributed as well. Director Joly agreed that she and her staff do a

1 very good job and thanked her. Mr. Williams noted that it is a small but very efficient team. Ms.
2 Blue also mentioned the input by the management team.

3 On the motion of Director Joly, and seconded by Director Petterle, the Board approved by
4 the following vote:

5 AYES: Director(s) Baker, Fraites, Joly, and Petterle

6 NOES: None

7 ABSENT: Director Eichstaedt

8 ABSTAIN: None

9 **MARIN LOCAL AGENCY FORMATION COMMISSION 2024 MUNICIPAL SERVICE REVIEW**

10 **DRAFT STUDY**

11 Tony Williams said that Marin LAFCo's 2024 Municipal Service Review Draft Study was on
12 the Agenda for the Board at the May 21 meeting and that a significant portion of the Study was
13 about NMWD. He said that Drew McIntyre had assisted in reviewing the report and staff does have
14 comments for LAFCo. Mr. Williams noted that the period for public comments closes on June 28.
15 In response to a question from the Board, Mr. Williams said that LAFCo was formed to evaluate
16 public agencies including special districts to ensure there are proportional services, by agency and
17 to identify any gaps and overlaps in services and to confirm that the appropriate agency is managing
18 a public service or activity. He said the report included recommendations for NMWD which included
19 that Marin LAFCo, Sonoma LAFCo, NMWD, and the City of Petaluma should meet and discuss who
20 should be responsible for providing water service to the Sonoma County properties, that are
21 currently NMWD customers but out of NMWD service territory. Another recommendation in the
22 study is to adjust the NMWD boundary so that the Inverness Public Utility District is not within
23 NMWD's boundary.

24 On the motion of Director Joly, and seconded by Director Fraites, the Board approved by the
25 following vote:

26 AYES: Director(s) Baker, Fraites, Joly, and Petterle

27 NOES: None

28 ABSENT: Director Eichstaedt

29 ABSTAIN: None

30 **MISCELLANEOUS**

31 The Board received the following miscellaneous items: Disbursements Dated June 6 and
32 June 13, 2024, Monthly Progress Report.

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**MEMORANDUM**

To: Board of Directors July 16, 2024
From: Julie Blue, Auditor/Controller *JB*
Subject: Resolution Declaring Governing Body Members as Employees for the Purpose of Providing Workers' Compensation Coverage

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RECOMMENDED ACTION: Board Approve the Resolution Declaring Governing Body Members as Employees for the Purpose of Providing Workers' Compensation Coverage

FINANCIAL IMPACT: Approximately \$2,600 Annually (Included in FY 24/25 Budget)

The District recently was audited by our workers' compensation carrier, Zenith. The audit found that current workers' compensation policies do not explicitly cover Governing Body members (known as the Board of Directors). Zenith recommended, that to ensure comprehensive coverage and mitigate any potential liability, the Board of Directors should be officially designated as employees for the purposes of providing workers' compensation coverage. The resolution formalizes that arrangement, ensuring continuous coverage for the Board of Directors. The associated costs are consistent with prior year's expenses and do not represent a new cost to the District. Adopting this resolution will align our policies with best practices and ensure that all individuals performing duties on behalf of the District are adequately protected.

ATTACHMENTS:

1. Resolution Declaring Governing Body Members as Employees for the Purpose of Providing Worker's Compensation Coverage

RESOLUTION 24-XX

**RESOLUTION OF THE BOARD OF DIRECTORS OF
NORTH MARIN WATER DISTRICT
DECLARING THAT GOVERNING BODY MEMBERS SHALL BE DEEMED TO BE
EMPLOYEES OF THE DISTRICT FOR THE PURPOSE OF PROVIDING WORKERS'
COMPENSATION COVERAGE FOR SAID INDIVIDUALS
WHILE PROVIDING THEIR SERVICES**

WHEREAS, the North Marin Water District utilizes the services of Governing Body Members, known as the Board of Directors; and

WHEREAS, the Governing Body wishes to extend Workers' Compensation coverage as provided by State law to all Members of the Governing Body of the North Marin Water District as presently or hereafter constituted.

NOW, THEREFORE, BE IT RESOLVED that duly elected or appointed replacements of any Governing Body Member and other designated individuals be deemed to be employees of the North Marin Water District for the purpose of Workers' Compensation coverage as provided in Division 4 of the Labor Code while performing such service. However, said Governing Body Members and other designated individuals will not be considered an employee of the North Marin Water District for any purpose other than for such Workers' Compensation coverage, nor grant nor enlarge upon any other right, duty, or responsibility of such Governing Body Members or other designated individuals, nor allow such persons to claim any other benefits or rights given to paid employees of the North Marin Water District.

* * * * *

I hereby certify that the foregoing is a true and complete copy of a resolution duly and regularly adopted by the Board of Directors of NORTH MARIN WATER DISTRICT at a regular meeting of said Board held on the 16th day of July, 2024, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

(SEAL)

Eileen Mulliner, District Secretary
North Marin Water District

6

**MEMORANDUM**

To: Board of Directors July 16, 2024
From: Eric Miller, Assistant General Manager/Chief Engineer *EM*
Avram Pearlman, Associate Engineer *AP*
Subject: Notice of Completion for the NMWD HQ RW Extension from Redwood Blvd
(Golden State Construction & Utility, Inc.)

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RECOMMENDED ACTION: Authorize the General Manager to execute and file a Notice of Completion for the NMWD HQ RW Extension from Redwood Blvd project

FINANCIAL IMPACT: None

Pursuant to and in conformance with contract requirements for the NMWD HQ RW Extension from Redwood Blvd project, the contractor, Golden State Construction & Utility, Inc. (GSCU), has fulfilled their obligations under the contract. All work performed by GSCU has been inspected by District staff, and corrections of all work deficiencies and punch list items have been completed. GSCU's work was completed on April 19, 2024.

Per the contract documents, GSCU has furnished written notice that the work is complete and that all subcontractors and equipment suppliers have been paid (Attachment 1). GSCU has released the District of all claims. A Notice of Completion is provided as Attachment 2 which, if approved, will be filed with Marin County on July 17, 2024. Final payment (for monies held in retention) in the amount of \$10,005.17 will be processed for release during the next disbursement cycle.

PROJECT COST SUMMARY

The Board approved award of the contract to GSCU for \$224,000 for the NMWD HQ RW Extension from Redwood Blvd project, along with a contingency amount of \$22,400, which represented approximately 10% of the base contract value (\$300,000 included in FY 23/24 budget). Total payment, including retention, to Golden State Construction will be \$200,103.45 which is 10% below the base contract budget approved by the Board at the time of award. Final pavement restoration was removed from GSCU's contract and deferred until a time that the District and the City of Novato agree on terms to complete a joint paving project along Rush Creek Place. For this reason, costs for the District's portion of pavement restoration will be realized under a separate capital improvement project.

RECOMMENDATION

Authorize the General Manager to execute and file the Notice of Completion for the NMWD HQ RW Extension from Redwood Blvd project.

- ATTACHMENTS:
1. Conditional Waiver Release and Certificate of Final Payment
 2. Notice of Completion

NORTH MARIN WATER DISTRICT CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT’S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: Golden State Construction & Utility, Inc.	Job: NMWD HQ RW Extension from Redwood Blvd
Name of Customer: North Marin Water District	Job No.: 5.6501.48
Job Location: 999 Rush Creek Place, Novato, CA	Contract Dated: April 3 rd , 2024

Certification of Final Payment

With reference to said contract, as amended, between the undersigned contractor and the North Marin Water District (District), the undersigned hereby certifies and represents that it has made full payment of all costs, charges and expenses incurred by it or on its behalf for work, labor, services, materials and equipment supplied to the foregoing site and/or used in connection with its work under said contract.

The undersigned further certifies that to its best knowledge and belief, each of its subcontractors and materialmen has made full payment of all costs, charges and expenses incurred by them or on their behalf for work, labor, services, materials and equipment supplied to the foregoing site and/or used by them in connection with the undersigned’s work under said contract.

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant’s receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: North Marin Water District
Amount of Check: \$10,005.17
Check Payable to: Golden State Construction & Utility, Inc.

Exceptions

This document does not affect any of the following:
Disputed claims for extras in the amount of: \$

If none, write “NONE” in the space above. If the space above is left blank, it is interpreted that “NONE” is claimed. Any claims excepted must be described and the specific amount claimed must be set forth.

Signature

The foregoing shall not relieve the undersigned of its obligations under the provisions of said contract, as amended, which by their nature survive completion of the work including, without limitation, warranties, guarantees and indemnities.

Claimant’s Signature
Conor Leo - Project Manager

Printed Name and Title of Claimant
6/24/24

Date of Signature

Distribution:
Original: Contractor
Copy: Job File

Consistent with
Civil Code Section 8136

Posting requested by:

NORTH MARIN WATER DISTRICT

After Posting Time has Expired Mail To:

North Marin Water District
P. O. Box 146
Novato, CA 94948-0146

NORTH MARIN WATER DISTRICT
NOVATO, CALIFORNIA

NOTICE OF COMPLETION

To: Marin County Clerk
3501 Civic Center Dr., Rm 234
San Rafael, CA 94903

Date: July 17, 2024
File No.: 5.6501.48
Date of Completion: April 19, 2024

Owner: North Marin Water District
999 Rush Creek Place
Novato, CA 94947

OWNER'S ESTATE OR INTEREST:

Easement _____ Fee Title X Encroachment Permit _____
Other (describe) _____

CONTRACTOR:

Golden State Construction & Utility, Inc.
1222 Funston Avenue
San Francisco, CA 94122

TITLE OF PROJECT: NMWD HQ RW Extension from Redwood Blvd Project

DESCRIPTION OF PROJECT: In general, the Work consisted of but was not limited to: Installation of approximately 375 linear feet of 4-inch PVC recycled water main, including 50 feet through existing steel casing under SMART railway tracks. Removal of existing abandoned gas line from within the existing steel casing and when in conflict with water main. Excavate hole for tap by NMWD in Redwood Blvd. Bulk materials, including trench and paving restoration materials.

DESCRIPTION OF SITE (LOCATION): 999 Rush Creek Place, Novato CA

Final payment will be made to the above contractor on or after 35 days from the recording date of this notice of completion, except where otherwise provided for by law.

The undersigned under penalty of perjury says that he is the General Manager of the North Marin Water District, the public agency authorizing the work or improvement referred to in the foregoing notice of completion; that he has executed such notice of completion on behalf of such public agency and likewise makes this verification on behalf of said public agency pursuant to authority granted by the District's Board of Directors; and that he has read said notice of completion and knows the contents thereof and that the facts therein stated are true.

Anthony Williams, General Manager

**VERIFICATION
STATE OF CALIFORNIA)
COUNTY OF MARIN)**

THE UNDERSIGNED, declares that he has read the foregoing notice, knows the contents thereof, and the same is true of his own knowledge. I certify under penalty of perjury that the foregoing is true and correct.

SEAL:

Anthony Williams, General Manager

Date and Place

Disposition:
Original: County Recorder
Copy: Contractor
Copy: Project File


7



MEMORANDUM

To: Board of Directors

July 16, 2024

From: Eileen Mulliner, District Secretary and Records Retention Manager 

Subject: Records Retention Program – Destruction of Records

T:\GM\Admin Secty\Record Retention\2024\Board Memo 7.16.2024.doc

RECOMMENDED ACTION: Approve Resolution Authorizing Destruction of Certain Records

FINANCIAL IMPACT: Estimated at \$1,000 for document shredding

The District's Policy for the Retention of Documents and Destruction of Specified Documents was approved by the Board in 2002 and revised in 2003. The Policy states that once a year, after Board approval, the documents designated as eligible will be destroyed in an appropriate manner.

Attached is a proposed resolution for the Board to approve the destruction of certain records for years 2023 and 2024. Exhibit A of the proposed resolution is the Request for Destruction of Records forms for documents to be eliminated. The lists of files to be destroyed have been reviewed and approved by the: (1) Applicable Department Head, (2) Records Retention Manager, (3) Auditor-Controller, and (4) General Manager.

RECOMMENDATION

Approve Resolution 24-xx authorizing the destruction of certain records in the manner consistent with District Policy.

ATTACHMENT:

1. Draft Resolution 24-xx approving destruction of certain records

RESOLUTION 24-xx

**RESOLUTION OF THE BOARD OF DIRECTORS OF
NORTH MARIN WATER DISTRICT TO
APPROVE DESTRUCTION OF CERTAIN RECORDS**

WHEREAS, California Government Code §60200, et seq., authorizes the legislative body of a district to authorize the destruction of certain documents without retaining copies and authorizes the destruction of documents not expressly required by law to be maintained, if conditions are complied with as specified in Government Code §60203, and

WHEREAS, The Board of Directors of the North Marin Water District adopted Resolution 02-20 on June 4, 2002 establishing a policy for retention of documents and destruction of specified documents, and

WHEREAS, revisions to said policy were approved by the Board of Directors on July 15, 2003, and

WHEREAS, the Request for Destruction of Record forms describing the document or documents to be destroyed, with the written approval of the District's Department Heads, Records Retention Manager, Auditor-Controller and General Manager appearing thereon, is attached as Exhibit A.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the North Marin Water District, that the records described in Exhibit A attached are hereby approved for destruction as soon as possible in an appropriate manner.

* * * * *

I hereby certify that the foregoing is a true and complete copy of a resolution duly and regularly adopted by the Board of Directors of NORTH MARIN WATER DISTRICT at a regular meeting of said Board held on the 16th day of July, 2024 by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

(SEAL)

Eileen Mulliner, District Secretary

ORTH MARIN WATER DISTRICT RECORDS RETENTION

REQUEST FOR DESTRUCTION OF RECORDS

Retention periods for the listed records have expired. Please indicate your approval by signing where indicated. If you disapprove for any reason, mark through the record, initial and state reason for disapproval.

Table with columns: Dept, RECORD NAME, DATE RANGE (From, To), NMWD Retention Period. Includes rows for Chem QA PE 2012, Micro for MMWD (COCs) 2012, Lab work for NSD (COCs) 2012, Chem QA 2012, Micro EC maps 2017, Micro QA 2017, COCs 2013 for NSD, MMWD, LGVSD, Chem QA PE 2013, Micro QA 2018.

Request prepared by: Stacie Goodpaster
Date: 03-21-24

DESTRUCTION APPROVALS SIGNATURES

Department Head: [Signature] Date Approved: 6/25/24
Auditor-Controller: Julie Blue Date Approved: 7/8/24
Records Retention Manager: [Signature] Date Approved: 7-8-24
General Manager: [Signature] Date Approved: 7/9/24

BOD Meeting Approval
Date:

Certificate of Destruction completed:
Date: _____ No. _____ By: _____

SUGGESTED METHOD OF DESTRUCTION
[] Shredding [] Other _____
[] Waste Paper (Recycled) Note: Confidential records will be destroyed by shredding

**NORTH MARIN WATER DISTRICT RECORDS RETENTION
REQUEST FOR DESTRUCTION OF RECORDS**

Retention periods for the listed records have expired. Please indicate your approval by signing where indicated. If you disapprove for any reason, mark through the record, initial and state reason for disapproval.

Box No. or Dept.	RECORD NAME	DATE RANGE		NMWD Retention Period
		From	To	
AC-16-08	Original Journal Entries 6987-6427	11/14	7/15	CY+6
AC-16-09	Original Journal Entries 5822-5986	9/14	11/14	CY+6
AC-16-10	Original Journal Entries 6798-7245	11/15	7/16	CY+6
AC-16-11	Original Journal Entries 7246-7522 & Job Posting Registers 7/15-1/16	7/16	10/16	CY+6
AC-17-05	Banking Treasury Transactions & wire Trsfs 2015 and Monthly OH Alloc Registers 10-15-6-16	2015	2016	CY+6
AC-17-12	Disbursements MISCA-BAKE01	7/15	6/16	CY+6
AC-17-13	Disbursements BANK04-CORE01	7/15	6/16	CY+6
AC-17-14	Disbursements COST04-FURL02	7/15	6/16	CY+6
AC-17-15	Disbursements G-MISC-HYDE01	7/15	6/16	CY+6
AC-17-16	Disbursements I MISC-MARI12	7/15	6/16	CY+6
AC-17-17	Disbursements MARI47-NOVA07	7/15	6/16	CY+6
AC-17-18	Disbursements NOVA29-PETT02	7/15	6/16	CY+6
AC-17-19	Disbursements PGE001-SEQU03	7/15	6/16	CY+6
AC-17-20	Disbursements SHAM01-USDE01	7/15	6/16	CY+6
AC-17-21	Disbursements USBA002-AXIA01	7/15	6/16	CY+6
AC-18-3	Disbursements, AP Check Registers, Payroll Posting Register, WIP Posting Register, Vision, AFLAC	8/13	8/16	CY+6

AC-18-5	EE Retirement Plans (Lincoln, Nationwide) Dental (Shirrell), Mutual of Omaha Life Inc, CalPERS Unfunded Liab Lump sum (715), CalPERS Retirement & Health, AFLAC, Vision, Employee Attendance Records	1/08	7/16	CY+6
AC-18-9	Original Journal Entries 7523-7958 and Treasury Trans/Wire Trfs 11/16-6/17	9/16	6/17	CY+6
AC-18-10	AR invoices #12700-12999	9/14	4/16	CY+6
AC-18-11	Disbursements A-BAY	7/16	6/17	CY+6
AC-18-12	Disbursements BEA-COR	7/16	6/17	CY+6
AC-18-13	Disbursements COS-FERG	7/16	6/17	CY+6
AC-18-14	Disbursements FIL-G	7/16	6/17	CY+6
AC-18-15	Disbursements H-L	7/16	6/17	CY+6
AC-18-16	Disbursements M-NMWD	7/16	6/17	CY+6
AC-18-17	Disbursements NA-O	7/16	6/17	CY+6
AC-18-18	Disbursements P-PG&E	7/16	6/17	CY+6
AC-18-19	Disbursements PI-SOL	7/16	6/17	CY+6
AC-18-20	Disbursements SO-TOW	7/16	6/17	CY+6
AC-18-21	Disbursements TP-XYZ	7/16	6/17	CY+6
AC-19-1	Daily Cash Reports, A/R Cash Reports, Advance for Construction Book, A/R Invoices #13000-13199, US Bank Safekeeping Statements, Treasury Transactions	1/15	12/19	CY+6
AC-19-6	Equipment Inventory	1/99	1/14	CY+4
AC-19-7	Daily Job transaction Registers, Coastal Area Water/Sewer Cost Comparison Surveys	1/93	7/18	CY+4
AC-19-11	Payroll Posting Registers, Cancelled A/P Checks, A/P Payment Selection List	7/13	10/17	CY+4

AC-19-12	A/P Check Registers, Accounts Payable Posting Register & Payroll-Direct Deposit Register	9/11	6/17	CY+6
AC-20-4	A/R Cash Receipts #20238-20597, Tax Proceeds/Receipts & Reports FY 14-FY16 and US Bank Safekeeping Statements	1/14	6/19	CY+6
AC-20-5	A/P Vendor Additions FY17 & FY18, job Cost Work Order Changes, A/P manual Check & Payment Register, A/R-Daily Cash Report and Monthly overhead Allocation Registers	1/17	6/19	CY+4
AC-20-6	Job Posting Registers, Monthly Overhead Allocation Registers	1/16	12/19	CY+4
AC-20-8	A/R Sales journal 7/18-6/19, Bank Reconciliation Transaction Register 7/18-6/19 and Bank Statements=Investments Pro Equities	7/18	6/19	CY+4
AC-20-11	Fixed Assets FY14-FY17, Additions, Deletions, Reconciliations, Invoice Copies	1/14	12/17	CY+6
AC-20-14	Accounts Payable Posting Registers 7/19/17 – 9/24/18	7/17	9/18	CY+4
AC-20-15	Accounts Payable Posting Registers, Deduction Registers, Payroll Posting Registers, WIP Registers and Disbursements-Payment selection List	9/16	12/18	CY+4
AC-21-6	Bank Reconciliations/Statements 7/16-6/19 and County of Marin Tax Proceeds-FY17	7/16	6/19	CY+4
AC-22-9	Payroll Period Ending Reports, Job Cost Work Order Changes and Bank Reconciliation Transaction Register	8/16	12/19	CY+4
AC-22-28	Benefit Enrollment Forms	1/15	12/16	ACT+6
AC-22-38	Employee Personnel Files Years 2014-2016	1/14	12/16	ACT+6
AC-22-40	Employee Termination Personal Files Terminations Prior to 2014 (N-Z)	01/01	12/14	ACT+6

AC-22-41	Employee Termination Personal Files Terminations Prior to 2014 (A-M)	01/2001	12/14	ACT+6
AC-22-57	1998 MOU, Duplicate Budgets FY83-99 and Misc Bentley Files No Historical Value	1/83	12/99	ACT+06
AC-22-33	Benefit Plan Information and Evaluations	01/01	12/14	ACT+06

Request prepared by: Nancy W / Karen Clyde	Date: 6/20/24
DESTRUCTION APPROVALS SIGNATURES	
Department Head <i>Julie Blue</i>	Date Approved 6/28/24
Auditor-Controller <i>Julie Blue</i>	Date Approved 6/28/24
Records Retention Manager <i>John Mark</i>	Date Approved 7-8-24
General Manager <i>[Signature]</i>	Date Approved 7/9/24
BOD Meeting Approval	
Date:	
Certificate of Destruction completed:	
Date: _____ No.	
_____ By:	

SUGGESTED METHOD OF DESTRUCTION	
<input type="checkbox"/> Shredding	<input type="checkbox"/> Other _____
<input type="checkbox"/> Waste Paper (Recycled)	Note: Confidential records will be destroyed by shredding

NORTH MARIN WATER DISTRICT RECORDS RETENTION REQUEST FOR DESTRUCTION OF RECORDS

Retention periods for the listed records have expired. Please indicate your approval by signing where indicated. If you disapprove for any reason, mark through the record, initial and state reason for disapproval.

Box No. or Dept.	RECORD NAME	DATE RANGE		NMWD Retention Period
		From	To	
B-24-01	Closed LIRA Applications 2020	2020	2020	CY+02
B-24-01	Closed LIRA Applications 2021	2021	2021	CY+02
B-24-01	Closed Acct Mail Returns 2021	2021	2021	CY+02
B-24-01	Deposit Slips Duplicate Copy 2021	2021	2021	CY+02
B-24-01	Customer Service Questionnaire 2021	2021	2021	CY+01
B-24-01	Customer Service Questionnaire 2022	2022	2022	CY+01
B-24-02	Consumer Applications 2021	2021	2021	CY+02
B-24-03	Meter Edits 2021	2021	2021	CY+02
B-24-03	Hydrant Meter Applications 2020	2020	2020	ACT+03
B-24-03	New Customer Letter 2021	2021	2021	CY+01
B-24-03	Shut-Off Lists 2022	2022	2022	CY+01
B-24-03	Bills Over \$100	2021	2021	CY
B-24-03	Customer Correspondence	2021	2021	CY+02
B-24-03	Old Close List	2021	2021	CY+02
B-24-03	New Customer Letter 2022	2022	2022	CY+01
B-24-03	Bills Over \$100	2022	2022	CY

Request prepared by: Haylee De Martini	Date: 04/15/2024
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DESTRUCTION APPROVALS SIGNATURES

Department Head <i>Julie Blue</i>	Date Approved 06/28/24
Auditor-Controller <i>Julie Blue</i>	Date Approved 06/28/24
Records Retention Manager <i>Ed M...</i>	Date Approved 7-8-24
General Manager <i>[Signature]</i>	Date Approved 7/9/24

BOD Meeting Approval		
Date:		
Certificate of Destruction completed:		
Date: _____	No. _____	By: _____

B-24-04	Payment Stubs 2021	2021	2021	CY+02

SUGGESTED METHOD OF DESTRUCTION	
<input type="checkbox"/> Shredding	<input type="checkbox"/> Other _____
<input type="checkbox"/> Waste Paper (Recycled)	Note: Confidential records will be destroyed by shredding



Page ____ of ____

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MEMORANDUM

To: Board of Directors

Date: July 16, 2024

From: Tony Williams, General Manager 
Julie Blue, Auditor-Controller 

Subj: Salary Schedule for Temporary/Seasonal Employees

T:\AC\Board Reports\Board Memos\2024\Salary Schedule and Side Letter Effective 07.01.24\Board Memo Salary schedule Temps Effective 070124.docx

RECOMMENDED ACTION: Approve the updated Temporary/Seasonal Salary Schedule to be effective July 1, 2024**FINANCIAL IMPACT:** Included in FY 24/25 Budget

From time to time, the District hires temporary and seasonal workers on an as-needed basis to meet operational demands. The duration of employment of these workers varies and can range from a few weeks to several months, depending on the needs of the District. These temporary and seasonal employees do not receive benefits and in most cases, they are not CalPERS members. However, CalPERS membership is required for those temporary employees that previously worked for a CalPERS agency or who work 1,000 hours for the District in any given fiscal year.

Title 2 of the California Code of Regulations, section 570.5, requires that the pay schedule of every CalPERS agency be approved and adopted by the agency's governing body pursuant to public meeting law. The District's Salary Schedule for temporary and seasonal employees is included as Attachment 1, for the Board's review and approval. The approval of this salary range is intended to comply with CalPERS regulations and to formalize a set salary for the District's temporary and seasonal workers. The full salary schedule for all other positions was approved at the May 21, 2024 Board Meeting.

RECOMMENDATION

Approve the updated Temporary and Seasonal Salary Schedule effective July 1, 2024.

ATTACHMENTS:

1. Temporary and Seasonal Salary Schedule Effective July 1, 2024

North Marin Water District

Temporary/Seasonal Employee Hourly Ranges and Job Classifications - Effective 07/1/2024

Draft for Board of Director's approval at the July 16, 2024 Board Meeting

	Step 1 Hourly	Step 2 Hourly	Step 3 Hourly	Step 4 Hourly	Step 5 Hourly
Temporary/Seasonal Worker	\$ 27.00	\$ 28.00	\$ 29.00	\$ 30.00	\$ 32.00

9



MEMORANDUM

To: Board of Directors Date: July 16, 2024

From: Eric Miller, Assistant General Manager/Chief Engineer *EM*
 Tim Fuelle, Senior Engineer *TAF*

Subj: Reimbursement Agreement between NMWD and NSD for Waterline Relocation Resulting from Conflicts with New Facilities Proposed by NSD's Arthur Street Sanitary Sewer Upgrade (Budgeted FY24/25)

R:\Folders by Job No\7000 jobs\7211 Arthur St Main Relocation\BOD Memos\2024 0716 Cost Share NSD\7211 Arthur St BOD Memo 2024 0716.doc

RECOMMENDED ACTION: That the Board authorize the General Manager to execute a Reimbursement Agreement with Novato Sanitary District.

FINANCIAL IMPACT: Estimated \$190,000 (\$400,000 included in FY24/25 budget)

Discussion

The Novato Sanitary District (NSD) has awarded a contract to construct approximately 1,200 linear feet of new sanitary sewer facilities along Arthur Street between South Novato Boulevard and Hayes Street in the City of Novato. During the design phase of NSD's project, North Marin Water District staff identified conflicts between the existing waterline facilities and the proposed sanitary sewer facilities.

District staff identified an opportunity to make improvements to the water distribution system at the intersection of Arthur Street and Cambridge Street in conjunction with the waterline relocations necessary to accommodate the new NSD facilities. Due to the close proximity of the projects to Novato High School, work was phased and scheduled to take place during the Novato Unified School District's winter break, spring break, and summer break.

Phase 1 of the District's relocation work includes new isolation valves at each of the four legs of the intersection. Phase 2 of the District's relocation work includes new watermains through the intersection. NSD is proposing to reimburse the District for the full cost of Phase 1 of the District's relocation work. Both District's identified an opportunity to simplify trench restoration by combining final roadway paving of both projects into the same effort. NSD's contractor will complete road restoration for both projects and the District is proposing to reimburse NSD for the proportional cost of pavement restoration associated with the District's Phase 2 work.

Both the District's Legal Counsel and NSD General Counsel have reviewed, modified and agreed to the current language in the Agreement. NSD's Board of Directors will consider the proposed Agreement at their July 15, 2024 Board meeting.

Budget

Phase 1 of the District's relocation work is estimated to cost \$190,000, which would be fully reimbursed by NSD under the proposed agreement. Phase 2 of the District's relocation work is estimated to cost \$390,000, which includes an allowance of \$40,000 for road restoration. Actual costs associated with the District's portion of the road restoration work is unknown until the City of Novato identifies the required limits of paving. These costs were anticipated and staff included a budget of \$400,000 in the FY 24/25 CIP budget (Item 1a2). Additional budget is available in pipeline contingency of the CIP budget (Item 1d2) in the event that costs exceed staff's estimates.

RECOMMENDATION

That the Board authorize the General Manager to execute a Reimbursement Agreement with Novato Sanitary District for waterline relocation work in support of the Arthur Street Sanitary Sewer Upgrade Project.

ATTACHMENTS:

1. Reimbursement Agreement Between North Marin Water District and Novato Sanitary District for Waterline Relocation Resulting from Conflicts with New Facilities Proposed by Novato Sanitary District's Arthur Street Sanitary Sewer Upgrade, Project No. 72706-2022-01.

REIMBURSEMENT AGREEMENT BETWEEN NORTH MARIN WATER DISTRICT AND NOVATO SANITARY DISTRICT FOR WATERLINE RELOCATION RESULTING FROM CONFLICTS WITH NEW FACILITIES PROPOSED BY NOVATO SANITARY DISTRICT'S ARTHUR STREET SANITARY SEWER UPGRADE, PROJECT NO. 72706-2022-01.

This Reimbursement Agreement Between NORTH MARIN WATER DISTRICT and NOVATO SANITARY DISTRICT For Waterline Relocation Resulting from Conflicts with New Facilities Proposed by Novato Sanitary District's Arthur Street Sanitary Sewer Upgrade, Project No. 72706-2022-01 (the "AGREEMENT") is made and entered into this ____ day of ____, 2024, by and between NORTH MARIN WATER DISTRICT, a California special district ("NMWD"), and NOVATO SANITARY DISTRICT, a California special district ("NSD"), each located in the State of California, collectively referred to as the "PARTIES," and individually referred to as a "PARTY."

RECITALS

- A. NSD plans to construct approximately 1,200 linear feet of new sanitary sewer facilities along Arthur Street between South Novato Boulevard and Hayes Street in the City of Novato, California. The planned improvements have been designed and will be constructed as NSD's Capital Improvement Project No. 72706-2022-01, hereinafter the "NSD PROJECT."
- B. NMWD identified conflicts between its existing waterline facilities and the NSD PROJECT within the intersection of Arthur Street and Cambridge Street in the City of Novato, California (the "conflicting waterline facilities"). NMWD plans to relocate the conflicting waterline facilities prior to, and concurrent with, the NSD PROJECT as NMWD's Capital Improvement Project No. 1.7211.01, hereinafter the "NMWD PROJECT."
- C. To accommodate the NSD PROJECT, NMWD plans to install isolation valves on all four pipeline legs of the intersection which will allow the pipelines to be abandoned prior to commencement of the NSD PROJECT, hereinafter "PHASE 1" of the NMWD PROJECT.
- D. NMWD plans to install new pipelines after sanitary sewer facilities have been installed in the intersection as part of the NSD PROJECT, hereinafter "PHASE 2" of the NMWD PROJECT.
- E. For their mutual benefit, the PARTIES have agreed to combine trench restoration activities of the NSD PROJECT and PHASE 2 of the NMWD PROJECT resulting in the incurrence of "JOINT PAVING" costs.
- F. The PARTIES have been working together to coordinate designs of the NSD PROJECT and the NMWD PROJECT.
- G. The PARTIES wish to enter into this AGREEMENT to clarify the extent of reimbursement from NSD to NMWD for reasonable costs associated with PHASE 1 of the NMWD PROJECT, and the extent of reimbursement from NMWD to NSD for reasonable costs associated with the JOINT PAVING.

NOW THEREFORE, in consideration of the promises and mutual covenants set forth herein, the PARTIES hereby agree as follows:

SECTION 1: RECITALS.

- A. The PARTIES agree that the Recitals constitute the factual basis upon which the PARTIES have entered into this AGREEMENT. The PARTIES each acknowledge the accuracy of the Recitals and agree that the Recitals are incorporated into this AGREEMENT, as though fully set forth herein.

SECTION 2: PROJECT COORDINATION

- A. All notices and other communications required or permitted to be given under this AGREEMENT shall be in writing and delivered either by personal delivery or by depositing the notice or other communications with the United States Postal Service, postage prepaid, addressed to the appropriate Party in accordance with Section 2.B, below. Notice shall be deemed given as of the date of personal delivery, or if mailed, upon the date of deposit with the United States Postal Service.
- B. The designated project coordinators for the PARTIES, to whom all notices and other communications shall be addressed, shall be as follows:
 - 1. Sandeep Karkal, General Manager-Chief Engineer for NSD at 500 Davidson Street, Novato, CA 94945.
 - 2. Eric Miller, Chief Engineer for NMWD at P.O. Box 146, Novato, CA 94948.

SECTION 3: SCOPE OF THE AGREEMENT

- A. The PARTIES acknowledge and agree that the sole purpose of this AGREEMENT is to set forth the PARTIES responsibilities regarding the extent of reimbursement from NSD to NMWD for costs associated with PHASE 1 of the NMWD PROJECT, and the extent of reimbursement from NMWD to NSD for costs associated with the JOINT PAVING.
- B. The PARTIES acknowledge that they are solely responsible for their respective PROJECTS and the quality of work therein.
- C. NSD acknowledges that they agree to reimburse NMWD for 100% of the reasonable costs associated with PHASE 1 of the NMWD PROJECT, as further described in Section 4, based on actual costs incurred by NMWD, including, but not limited to, NMWD staff time, equipment, parts and material used and/or installed. NMWD estimates the cost of the PHASE 1 work to be \$190,000.
- D. The PARTIES acknowledge that no Party has any reimbursement obligation for the cost associated with or incurred with PHASE 2 of the NMWD PROJECT or the NSD PROJECT.
- E. NMWD acknowledges that they agree to reimburse NSD a proportionate share of reasonable trench restoration costs associated with the JOINT PAVING based upon the percentage or ratio of the area of paving associated with the NMWD PROJECT versus or compared with the percentage or ratio of the area of paving associated with the NSD PROJECT. Actual percentage or ratio will be calculated and agreed upon by both PARTIES subsequent to paving requirements being identified by the City of Novato.

SECTION 4: DUTIES OF EACH AGENCY

- A. NSD shall administer all contracts for the NSD PROJECT, including the JOINT PAVING. NMWD shall administer all contracts for the NMWD PROJECT.
- B. NSD and NMWD shall review any and all change order requests associated with the JOINT PAVING and provide written approval or disapproval within three (3) business days of receipt of each change order request.
- C. NSD shall be solely responsible for receiving and processing NSD PROJECT project invoicing. Within thirty (30) business days of completion of the NSD PROJECT, NSD will transmit a summary of proportional responsibility and a copy of all invoices and all supporting documentation associated with the JOINT PAVING to NMWD pursuant to Section 2. NSD shall include with the invoice a summary of the PARTIES proportional responsibility of all amounts invoiced.

- D. NMWD shall be responsible for approving or disapproving, in writing, of that invoicing within ten (10) business days of receipt of the invoice(s) and supporting documentation and the summary of proportional responsibility.
- E. NMWD shall be solely responsible for tracking all costs associated with PHASE 1 of the NMWD PROJECT. Within thirty (30) business days of completion of the NSD PROJECT, NMWD will transmit a copy of all invoices and supporting documentation for all costs incurred in PHASE 1 of the NMWD PROJECT to NSD pursuant to Section 3.
- F. NSD shall be responsible for approving or disapproving, in writing, of that invoicing within ten (10) business days of receipt of the invoice(s) and supporting documentation for all costs incurred.
- G. The PARTIES agree to and shall be responsible for reimbursing each other for the approved amounts of each invoice within thirty (30) calendar days of the PARTIES' approval of the invoicing.
- H. If NSD and/or NMWD dispute an invoice, the disputing PARTY or PARTIES shall provide the written basis for the dispute no later than ten (10) business days after their receipt of the invoice. The PARTIES shall negotiate in good faith to resolve any such dispute. Each PARTY shall maintain all accounting records related to this AGREEMENT for a minimum of three (3) years after the completion of the NSD PROJECT.
- I. NSD and NMWD shall make all payments to each other pursuant to this AGREEMENT without deduction or offset, and NMWD and NSD waive any right of offset they now have or may have against each other and its successors and assigns with respect to NMWD'S and NSD'S reimbursement requirements described within this AGREEMENT.

SECTION 5: MISCELLANEOUS TERMS

- A. Term of AGREEMENT: This AGREEMENT shall terminate upon the ending of warranty of work provided for in the contract agreements for the NSD PROJECT and the JOINT PAVING.
- B. Amendment and Merger: This AGREEMENT contains all the terms and conditions made between the PARTIES to this AGREEMENT and may only be modified by a written agreement signed by all the PARTIES to this AGREEMENT or their respective successors in interest.
- C. No Agency, Joint Venture, or Partnership: This AGREEMENT shall in no way be construed to create, and shall not be deemed to have created, any relationship of employer/employee, master/servant, principal/agent, partnership, joint venture, or otherwise. No PARTY shall have authority, whether express or implied, to bind the other to any contractual or other third-party relationship, obligation, or liability.
- D. Indemnification of NMWD. To the fullest extent allowed by law, NSD agrees to defend, indemnify, and hold NMWD, and its directors, officers, employees, agents, and volunteers harmless from all liabilities, damages, losses, claims, suits, judgments, costs and expenses, including reasonable attorneys' fees (collectively, "Liabilities"), incurred by NMWD resulting from and/or arising out of and/or in connection with the NSD PROJECT, including the JOINT PAVING. NSD shall not be liable under this provision for any Liabilities caused by NMWD's negligence or willful misconduct.
- E. Indemnification of NSD. To the fullest extent allowed by law, NMWD agrees to defend, indemnify, and hold NSD, and its directors, officers, employees, agents, and volunteers harmless from all liabilities, damages, losses, claims, suits, judgments, costs and expenses, including reasonable attorneys' fees (collectively, "Liabilities"), incurred by NSD resulting from and/or arising out of and/or in connection with the NMWD PROJECT. NMWD shall not be liable under this provision for any Liabilities cause by NSD's negligence or willful misconduct.
- F. Agreement Binding: The terms and provisions of this AGREEMENT shall extend to and be binding upon and inure to the benefit of the heirs, executors, receivers, trustees, and/or administrators or

to any approved successor, as well as to any assignees or legal successors to any PARTIES to the AGREEMENT.

- G. Cooperation: The PARTIES pledge cooperation during the term of this AGREEMENT.
- H. No Third-Party Beneficiaries: Nothing contained in this AGREEMENT shall be constructed to create, and the PARTIES do not intend to create, any rights in third parties.
- I. Severability: If any term, covenant, or condition of this AGREEMENT or the application thereof to any person or circumstance is determined to be invalid or unenforceable, the remainder of this AGREEMENT of the application of such term, covenant and condition to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term, covenant and condition of this AGREEMENT shall be valid and enforced to the fullest extent permitted by law.
- J. No Waiver: The waiver by any of the PARTIES of any default under this AGREEMENT shall not operate as a waiver of any subsequent breach of the same or any other provision of this AGREEMENT.
- K. Time is of the Essence: Time is of the essence with respect to the performance of every provision of this AGREEMENT for which time or performance is a factor. The PARTIES agree to adhere to all deadlines mutually agreed upon in writing throughout the course of the NSD PROJECT and the NMWD PROJECT.
- L. Mediation: The PARTIES agree to first attempt to resolve any dispute or claim in law or equity between the PARTIES through informal negotiation between the PARTIES. If the dispute or claim is not resolved by an informal negotiation between the PARTIES, then the PARTIES agree that they will attempt to resolve the dispute or claim by private, non-binding mediation. The PARTIES will agree upon the selection of a mediator. If the PARTIES cannot agree upon the selection of a mediator, then the Presiding Judge of the California Superior Court for the County of Marin shall select the mediator. The PARTIES shall each be responsible for their own attorneys' fees for the mediation, and the cost of the mediation shall be split and shared equally amongst and between the PARTIES. The completion of the mediation shall be a prerequisite to the filing of any lawsuit, litigation, and/or demand for arbitration. The non-binding mediation process shall continue until the case is resolved or until such a time as the mediator makes a finding that there is no possibility of resolution. If mediation is unsuccessful, the PARTIES may avail themselves of any other remedies.
- M. Applicable Law and Venue: This AGREEMENT shall be constructed and enforced in accordance with the laws of the State of California. The PARTIES hereto agree that venue of any action or proceeding regarding this AGREEMENT, or the breach or performance thereof, shall be in the Superior Court for the County of Marin, California.
- N. Attorneys' Fees: In the event any action at law or in equity is initiated to enforce or interpret the terms of this AGREEMENT or arises out of or pertains to this AGREEMENT, each party shall pay its own attorneys' fees.
- O. Remedies: The remedies specified in this AGREEMENT shall be in addition to and not exclusive of any other remedies available to a PARTY at law or in equity.
- P. No Presumption Regarding Drafter: The PARTIES acknowledge and agree that the terms and provisions of this AGREEMENT have been negotiated and discussed between the PARTIES and their attorneys, and this AGREEMENT reflects their mutual AGREEMENT regarding the same. Because of the nature of negotiations, and discussions it would be inappropriate to deem any Party to be the drafter of this AGREEMENT. Therefore, no presumption for or against validity, or as to any interpretation thereof, based upon the identity of the drafter, shall be applicable in interpreting or enforcing this AGREEMENT.
- Q. Assistance of Counsel: Each Party to this AGREEMENT warrants as follows:

1. That each Party had the assistance of counsel in negotiation and the execution of this AGREEMENT and all related documents; and
 2. That each Party has lawfully authorized the execution of the AGREEMENT.
- R. Section Headings: The section headings contained in this AGREEMENT are for convenience and identification only and shall not be deemed to limit or define the contents of the sections to which they relate.
- S. No Right to Assign: No PARTY shall assign, transfer, or sell all or any part of its rights or obligations hereunder, by operation of law or otherwise, without the prior written consent of the other PARTIES.
- T. Counterparts: This AGREEMENT may be executed in two or more counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument. Photocopies and pdf versions of signature pages shall be deemed to be an original signature.

[Signatures on following page]

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT by their duly authorized officers of the day and year first above written.

NOVATO SANITARY DISTRICT

NORTH MARIN WATER DISTRICT

By: _____
Sandeep Karkal, General Manager

By: _____
Anthony Williams, General Manager

Date: _____

Date: _____

ATTEST:

ATTEST:

By: _____
Lynda Farmery, Administrative Secretary

By: _____
Eileen Mulliner, District Secretary

Date: _____

Date: _____

10

**MEMORANDUM**

To: Board of Directors

July 16, 2024

From: Tony Williams, General Manager *TW*
Eric Miller, Assistant GM/Chief Engineer *EM*Subject: Declaration of End of Local Emergency Related to Redwood Blvd Landslide
T:\GMBOD Memos 2024\6-18-24 Meeting\Rescind Local Emergency\XX-XX-24 BOD memo Rescind Local Emergency Reso.doc**RECOMMENDED ACTION:** Adopt Resolution 24-XX proclaiming the End of a Local Emergency in the Novato Service Area**FINANCIAL IMPACT:** \$240,212 (total charges to J-1.4098)

On March 22, 2023, the District became aware of a landslide event on Redwood Boulevard, south of the Olompali State Park entrance. The landslide severely damaged the roadway and caused significant movement of both roadway pavement materials and landslide soil and debris materials within the location of the District's North Marin Aqueduct (NMA) pipeline (a 30-inch diameter steel pipe). District staff initially isolated the NMA within the slide area while maintaining service to customers north of the slide area via the unimpacted portion of the NMA. The District's Stafford Treatment Plant (STP) was at times the only potable supply for distribution to the Novato area in the months of March and April 2023. Because of these conditions, the Board of Directors approved Resolution 23-05 declaring a local emergency for the Novato Service Area on April 4, 2023.

Between the period of March 23, 2023 and early May 2023, District staff deployed emergency operations procedures including conducting regular coordination meetings, conducting a series of engineering assessments and evaluations of the NMA and the development of Operations Plans for water supply. Staff also participated in incident coordination meetings with the North Bay Incident Management Team during the initial response phase of the landslide event (first 10 days) and subsequent incident coordination meetings managed by Caltrans. In addition, staff provided regular updates to the Board of Directors and provided communications to our customers via the District's website and social media pushes. Attachment 1 provides a comprehensive detail of the actions described above as well as other details for this initial period. This information was also presented to the Board at the July 18, 2023 Regular Meeting.

The engineering assessments and evaluations of the NMA within the landslide area consisted of visual observations and documentation of site conditions, video-camera inspections of the inside of the NMA pipeline, test pit excavations and observations around and near the pipeline,

installation of ground movement monitors, and monitoring of pipeline flow and pressures. These efforts were constrained by limited-access to the site because PG&E had response priority and needed to reconstruct their gas transmission system which was impacted by the landslide. During this period, two 40-foot lengths of replacement pipe were purchased in case the investigations indicated significant pipe damage that warranted replacement.

Caltrans, as the current owner of the Redwood Boulevard right-of-way was responsible for repairing the area and designed and constructed an upper retaining wall (landslide upslope) as well as a previously planned retaining structure on the downslope area of the landslide along the Highway 101 right-of-way as part of the Marin-Sonoma Narrows project. District staff participated in design coordination meetings with Caltrans and provided feedback on the retaining wall designs. Beginning in September 2023, landslide repair and construction of the retaining structures began and continued into April 2024. Once Caltrans construction crews restored the roadway and allowed access, the District installed new vaults on the NMA pipeline to facilitate physical access of the pipeline interior for future inspection needs. This work was completed in early November 2023.

The initial evaluations of the NMA pipeline indicated that the landslide debris materials did impact the pipeline and caused a slight distortion of the pipe's shape. The original pipeline installation photo documentation was used to confirm this change. Subsequent inspections performed after the landslide debris was removed and upslope and roadway were reconstructed indicated a slight "rebound" of the pipe cross-sectional shape which was expected. The conditions observed and the calculated pipe strains were reviewed with the pipe manufacture as well as experts from other water agencies (EBMUD and SCWA). It was determined that full replacement of the pipe in the landslide impact area was not needed, and therefore not performed. The purchase of the pipe material was still prudent and is stored at the District's Corporation Yard for any future emergency response needs.

In summary, as part of the landslide response, evaluations, and subsequent improvements made on the NMA pipeline described above, the District relied on the following third-party entities: Miller Pacific Engineering Group; DRS Marine, Ghilotti Construction, Northwest Pipe Company, Tap Masters, Core & Main; Jensen Precast; and the Marin Municipal Water District. The total cost related to the emergency response, investigations, evaluations and improvements made to the NMA pipeline was \$240,212.46. Since no physical damage to the NMA occurred that required direct repairs (pipe replacement), these costs are not eligible for reimbursement under the declared state emergency. Approximately \$43,000 of this cost represents the purchase of 80 feet of 30-inch diameter aqueduct pipe and as previously noted, having this pipe material available is beneficial.

Staff would also like to acknowledge the support received from the North Bay Incident Management Team, the Novato Fire Protection District (especially Chief Bill Tyler), the Marin County Sheriff's Office and Office of Emergency Management, and the City of Benicia Public Works Department¹.

Based on the events described above as well as observations of the performance of the reconstructed hillside and roadway, including the new Caltrans retaining structures, staff is recommending that the Board end the local emergency. The attached resolution has been prepared and reviewed by District counsel that acknowledges the end of the local emergency.

Looking forward and learning from this event, the Engineering Department's work plan for this fiscal year includes a new Master Plan for the Novato Service Area. The goal of this Master Plan is to include an analysis of known natural hazards such as landslides and the potential impacts on the District's water infrastructure as well as identifying subsequent capital projects designed to mitigate any of those impacts.

RECOMMENDATION

Adopt Resolution 24-XX, declaring the end of a local emergency condition in the Novato Service Area resulting from the impacts of the Redwood Blvd landslide on the District NMA pipeline.

ATTACHMENTS:

1. Summary of Initial Response Memorandum dated June 30, 2023
2. Draft Resolution 24-XX Declaring the End of a Local Emergency

¹ A similar landslide occurred on a frontage road along I-680 that damaged a raw water transmission line serving the City of Benicia. NMWD staff and City staff exchanged information and visited each other sites.



MEMORANDUM

To: *Tony Williams, General Manager* Date: June 30, 2023

From: *Eric Miller, Chief Engineer / Assistant General Manager (AGM)*

Subject: *Summary of North Marin Water District Staff Response Following the Redwood Landslide near Olompali* *EM*

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Summary

The purpose of this memorandum is to memorialize the efforts made by North Marin Water District (District) staff over the weeks following the landslide that occurred along Redwood Blvd in unincorporated Marin County area between the former Birkenstock building and Olompali State park (Redwood Landslide).

District staff became aware of the Redwood Landslide on the morning of March 22, 2023. At approximately 8am, senior staff of the District visited the site to assess the potential damage to the nearby 30-inch welded steel North Marin Aqueduct (NMA) that transmits approximately 75% of the annual water supply for the District's Novato Service Area. Additionally, the adjacent water district to the south, Marin Municipal Water District (MMWD), receives approximately 25% of their annual water supply through the NMA.

During the six (6) weeks following March 22, 2023, District staff conducted numerous internal discussions, met with local and regional stakeholders, performed various field tests, and collaborated with other industry experts to determine the best approach to assess the condition, and ultimately resume operations of the NMA.

Senior staff involved on a daily basis were; Tony Williams (General Manager), Chris Kehoe (Construction Superintendent), Robert Clark (Operations Superintendent), Brad Stompe (Distribution and Treatment Supervisor), Tim Fuelle (Senior Engineer), Pablo Ramudo (Water Quality Supervisor), Ryan Grisso (Water Conservation and Communication Manager), and Eric Miller (Chief Engineer and AGM). Many other District staff members contributed to critical aspects of the response and resources were spread thin across all working groups. Each member of the District team deserves acknowledgement for the way they handled the situation.

Contributing Weather

Marin County experienced above-average precipitation during the 2022/23 winter, after several years of drought conditions in the region. Table 1 below includes monthly and cumulative precipitation totals from the rain gauge used as a benchmark in this memo, located at the Marin County Library on Novato Blvd. in Novato.

Table 1 – Rainfall Totals at Novato Library Gauge¹

Month, Year	Monthly Total (inches)	Cumulative Total (inches)
October 2022	0.0	0.0
November 2022	1.18	1.18
December 2022	7.92	9.10
January 2023	11.65	20.75
February 2023	3.43	24.18
March 2023 (prior to 3/22/23)	8.11	32.29
March 2023 (after 3/22/23)	1.22	33.51
April & May 2023	1.38	34.89

In January 2023 alone, Novato experienced 6 separate atmospheric rivers that registered 11.65 inches of rain at the benchmark rain gauge. February 2023 registered 3.43 inches, and the first 22 days of March 2023 registered an additional 8.11 inches. The cumulative rainfall total on the date of the landslide was 32.29 inches, which represents 118% of the 27.28-inch average annual rainfall for Novato². As a result of the consecutive atmospheric rivers, the Federal Emergency Management Agency (FEMA) declared a disaster (DR-4683-CA) for several counties across California.

In the weeks following the landslide, the benchmark rain gauge registered an additional 2.6 inches of rainfall, largely resulting from two distinct rain events, one on March 28, 2023 and the other on May 3, 2023.

¹ marin.onerain.com

² nmwd.com/your-water/stats/

Initial Evaluation

Upon learning of the landslide on the morning of March 22, 2023, District staff arrived onsite to assess the situation. Throughout the day, District staff had various discussions with the following organizations; MMWD, County and Novato Fire Departments, California Highway Patrol, Caltrans, Pacific Gas & Electric (PG&E), Sonoma County Water Agency, and the Marin County Department of Public Works (MCDPW).

Based on a visual assessment by District’s senior staff, the decision was made at approximately 10am on March 22, 2023 to shut off water flow through the NMA by closing two butterfly valves, one north and one south of the landslide. Closing the two valves isolated the segment of NMA within the landslide area in an effort to mitigate water loss and impact to the adjacent Highway 101 should a pipe break occur at this location. It’s important to note that water production began at Stafford Treatment Plant on Thursday, March 16, less than one week before the NMA was shut off due to this landslide.

Staff returned to the District's temporary offices at 100 Wood Hollow and met with MMWD engineers and operations staff to discuss potential mitigation measures. Staff discussed the implications of the landslide and concluded that it would likely be months until a permanent slide restoration was going to take place. Given the importance of the NMA to both North Marin Water District and MMWD, staff of both agencies focused on ideas such as temporary bypass piping and other potential water sources.

At approximately 12:30pm District staff met at the landslide with a local geotechnical engineering firm, Miller Pacific Engineering Group, which has an existing on-call contract in place with the District. Discussions during this preliminary visual observation noted that the slide appeared to be surficial, and may not have a deep plane of failure. However, there was no way to confirm these ideas without geotechnical investigations, such as test pits and bores, within the active landslide

It was noted by the geotechnical engineer that the landslide was still active at this time which ruled out any assessment beyond visual observation. District staff installed a pressure gauge on a fire hydrant located within the isolated segment of the NMA as a way to monitor in-line pressures of the segment of concern. The initial pressure reading stabilized at approximately 82 psi, which is within the normal range of operating pressures for the NMA. The pressure gauge was monitored twice daily over the following days and consistent readings indicated the isolated segment of the NMA had not ruptured.

Figure 1 is a plan view aerial photo of the landslide that indicates the alignment of the NMA in relation to the earth movement.



Emergency Phase

At 9am on the following day, March 23, the North Bay Incident Management Team (NB-IMT), led by the Novato Fire Department, convened a meeting that was attended by several agency stakeholders including; County Fire, MCDPW, County Office of Emergency Services, County Parks & Open Space, Novato Police, California Highway Patrol, PG&E, Caltrans, Novato City Manager, Buck Institute, and California State Parks.

The NB-IMT meetings were held daily during the emergency response portion of the incident and were critical in facilitating stakeholder communication and cooperation. The meeting agendas consisted of a round table report-out from each stakeholder with brief updates from the previous 24 hours, followed by targeted discussions, information sharing, and desired needs of each stakeholder.

PG&E was designated as the lead agency for site work during the emergency response period, due to the vulnerability of the dual 16-inch gas transmission lines in the vicinity of the landslide. Traffic control was stationed on both ends of Redwood Blvd and PG&E controlled and monitored access to the site. PG&E quickly determined that a temporary relocation of one of the gas lines was the best course of action to maintain gas service to Marin County and allow for deactivation of both transmission lines within the landslide area.

Southbound lanes on Highway 101 were closed beginning at 9pm on Saturday March 25 and reopened at 2pm on Sunday March 26. During the closure PG&E completed work on a temporary bypass pipeline approximately 2,000 feet long that was installed under southbound Highway 101 in two locations and above ground through the median. PG&E allowed District staff to access the site to verify the temporary bypass crossing over the NMA. With the bypass pipe in-place, PG&E deactivated both of the 16-inch gas transmission lines within the landslide area.

On Friday March 31, the NB-IMT closed the Emergency Phase of this incident which signified the beginning of the Recovery Phase. PG&E remained as the lead agency for site work, but Caltrans took over coordination efforts as they were identified as the underlying property owner where the landslide occurred. Caltrans established weekly coordination meetings that focused on recovery efforts including; permanent relocation of the dual 16-inch gas transmission lines, ongoing assessment of impacts to the NMA, rehabilitating Redwood Blvd, and slope stability both uphill and downhill of Redwood Blvd.

North Marin Water District Response

In addition to the meetings led by the NB-IMT, District staff also conducted internal coordination meetings on a daily basis during the initial 10-day period following the landslide. During those daily meetings staff focused on three distinct areas; 1) NMA vulnerability, 2) water supply, and 3) recovery, which included developing contingency plans for both short (30 day) and medium (90 day) scenarios.

Ultimately it was determined that a bypass was not needed nor was one implemented. However, staff developed drawings and a list of materials for a bypass around the landslide in preparation had the NMA been compromised to an extent where water deliveries were impacted long-term. The bypass plans were finalized to the point that they could be used in emergency situations in the future should they arise.

Understanding daily water demands was also paramount to staff's ability to plan for various scenarios. On an annual basis, 75% of the District's water supply is delivered from Sonoma County south to Novato, through the NMA. However, during months with cooler temperatures and lower demands the District can produce 100% of daily water needs from the water treatment plant at Stafford Lake (STP). *See the section below for more details on the water supply impacts.*

In addition to water supply and bypass contingencies, discussions also included planning for public notifications, water quality monitoring, and further evaluation of impacts to the NMA. Following the initial 10-day period, internal coordination meetings were scheduled twice weekly (on Tuesdays and Thursdays). After the initial 6-week period, internal coordination meetings were scheduled at a frequency of once per week.

District staff also immediately established a landslide job number (4098.00) for cost tracking and potential reimbursement of costs related to the landslide. Additionally, staff began logging hours using the appropriate FEMA activity log form, ICS 214. In the event that the District seeks reimbursement from the California Office of Emergency Services (Cal OES) or FEMA, proper documentation of resources expended is essential.

Local Emergency Declaration

At the April 4, 2023 Board of Directors meeting the Board approved a resolution declaring a local emergency within the Novato service area. The resolution gave the general manager authority to implement water reduction measures as described in the District's Water Shortage Contingency Plan 2020 Update, suspend personnel rules, administrative procedures and work restrictions for District staff, and to take measures deemed necessary to remediate the

emergency situation. Extreme measures have not been needed to date, but the local emergency remains in-place until rescinded by the Board at a future meeting.

In addition to the local emergency declaration, District staff released a series of social media posts and updated the District website to include public noticing to limit water use and outdoor irrigation short-term until further assessment of the NMA could be completed. Staff also coordinated with other public agencies and large irrigation-using customers in Novato to minimize their water use by keeping irrigation turned off and not washing public fleet vehicles.

Video Inspection

The first significant piece of information about the potential impacts on the NMA was collected on Thursday, April 6 when District staff hired a company to perform a video inspection inside the pipeline using a remote operated vehicle (ROV). Performing this inspection involved coordination with all of the stakeholders and dewatering the isolated segment of the NMA to allow the ROV to capture more accurate footage. The ROV was deployed via an access hatch north of the landslide and was able to travel 900 feet to the south. Staff was unable to locate an access hatch south of the landslide that would've allowed for video inspection of remaining portion of isolated NMA. However, review of the footage indicated that the portion of the NMA within the influence zone of the landslide was fully captured in the extent that was videoed from the north.

The ROV footage revealed that the cement mortar lining within the pipe appeared to be in-tact with no areas of steel pipe exposed. Staff identified one pipe joint that appeared to be deformed in the horizontal direction. The oblong joint corresponded with the center of the landslide influence zone, which indicated to staff that the slide plane of the landslide was likely deep enough to apply potential damaging horizontal pressure on the NMA. Additional video inspection is being planned to take place this fall, following removal of landslide debris.

Geotechnical Investigation

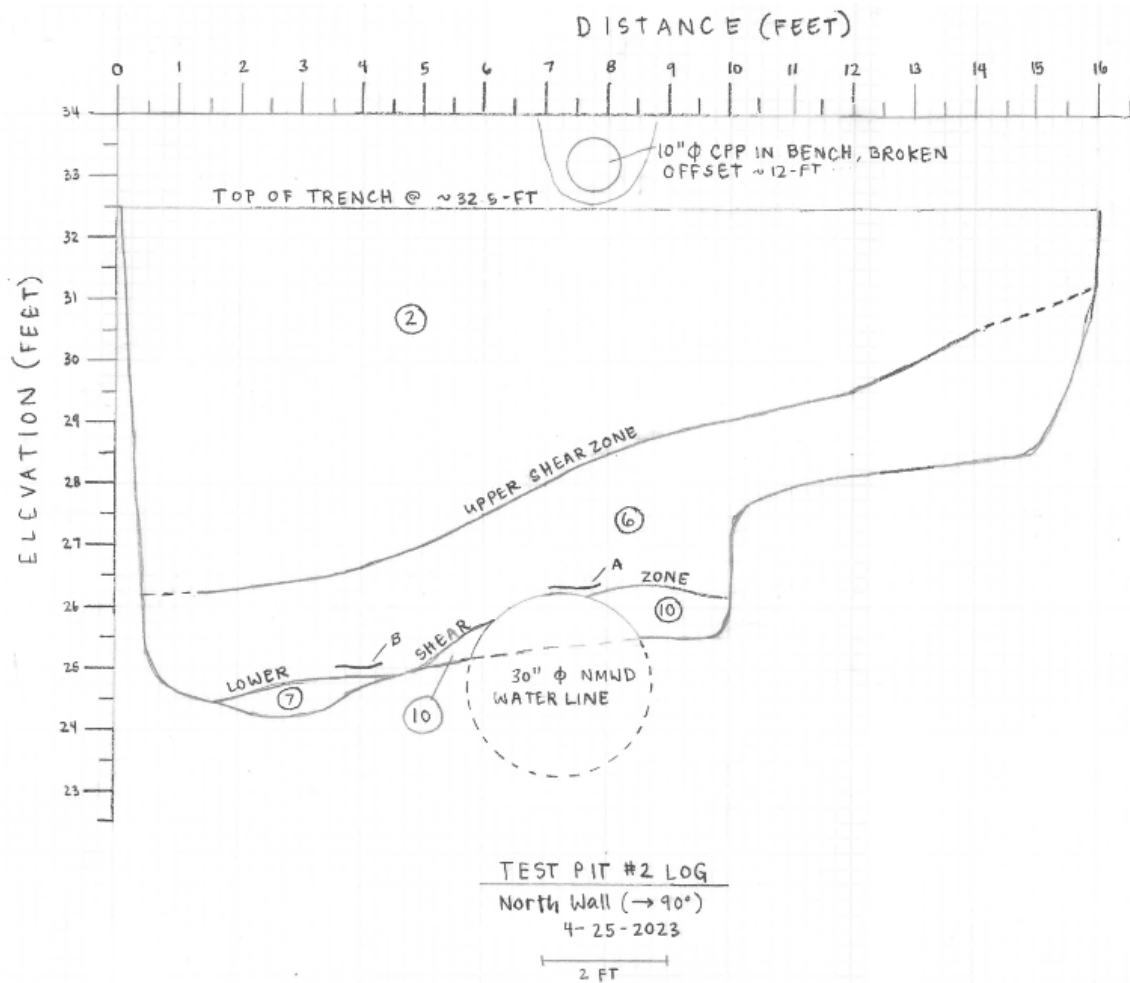
On Thursday April 6, Caltrans installed an inclinometer at the center of the landslide mass, along the centerline of Redwood Blvd. Measurements from the inclinometer on April 7 indicated that the landslide had moved a couple of inches overnight. Attempts to re-measure on April 8 were unsuccessful because the extent of earthen movement had exceeded what the device was capable of reading. The inclinometer was then abandoned in-place.

On Monday April 10, Caltrans excavated a test pit (TP1) at the northern limit of the landslide, along the centerline of Redwood Blvd. Representatives from the District and Miller Pacific Engineering Group were on-site to visually observe the excavation. Based on the

differences of material observed in the trench walls, the group concluded that the plane of failure was relatively shallow, but measurements indicated that the slide plane and the depth of the NMA were similar. Caltrans encountered groundwater during both the inclinometer and test pit operations. The geotechnical personnel on-site agreed that additional excavations within the landslide area should be avoided until the soils were given more time to dry out.

Two weeks later, on April 25 and April 26, District construction crews were given authorization from Caltrans and the geotechnical experts to conduct another test pit (TP2). TP2 was excavated at the center of the landslide mass where it intersects with the NMA. The goal of TP2 was to expose enough of the NMA to locate the plane of failure relative to the 30-inch welded steel pipe.

Observations of TP2 indicated that there were two separate shear planes and that both likely contributed to the landslide. The lower shear plane was similar in depth to the spring line of the NMA, which is consistent with the horizontal deformation identified in video obtained from the ROV. Miller Pacific Engineering Group logged the results of TP2 and prepared the graphical representation of the results shown below;



Staff also noted that the polyguard pipe wrap that was originally around the NMA had been peeled off within this segment of pipe. This likely occurred as a result of earthen movement into and around the NMA during the initial landslide and in subsequent days.

As a simple way of monitoring further earthen movement, District crews marked the top of the NMA with an “X” using reflective tape and installed a standpipe directly above the mark. Following backfill of TP2, staff was able to see the “X” on the NMA from visual observation down the standpipe. Following the rain event on May 3, one week after TP2 was completed, staff observed that the “X” was off-center within the standpipe, which indicated additional ground movement.

Water Supply Impacts

Stafford Treatment Plant (STP) operations were critical to the District’s ability to respond to the landslide and maintain adequate water supply with shut down of the NMA. The landslide occurred in late March, when daily demands in Novato were still relatively low, at about 4.0 million gallons per day (MGD). Generally speaking, STP produces 2.0–3.0 MGD under normal operations. Therefore, under standard operations there would be a daily shortfall of 1.0 MGD while the NMA remained shut off.

District operation’s staff maintains approximately 22-24 million gallons of storage at all times within the Novato system, with isolated instances as low as 20 million gallons or as high as 26 million gallons. In order to maintain regular storage volumes within the system, STP production was increased to 3.5–4.5 MGD by staggering and lengthening working hours to keep STP running up to 20 hours per day. With a limited number of operators on staff, and accounting for previously scheduled time-off, the District’s operations staff was stretched to their limits during the 6-week period following the landslide, prior to resuming full operation of the NMA.

The table below contains data of Novato’s average daily water demand from 2019 to present. Color-coding the data to indicate differences between daily demands of; less than 6 MGD (green), between 6 and 9 MGD (orange), and greater than 9 MGD (red), reveals that recent historic water use data is a relatively reliable indicator of actual water use. Much of the recent trends can be attributed to drought conditions from 2020-2022. It is important to note that water use so far in 2023 is most similar to that of 2022, which was the third year of the prolonged drought conditions. It may be that water conservation behavior became a normal way of life for residents of Novato and that average daily water use will remain low in the coming years. Alternatively, it may be that residents of Novato are simply continuing to conserve water due to the public outreach that the District performed as part of the landslide recovery efforts.

This data was used by District staff in development of contingency plans for both short (30 day) and medium (90 day) scenarios. District staff met with MMWD staff to discuss demand projections based on historic demands of both systems. This effort resulted in a spreadsheet that showed potential water supply deficits, and was then used to inform the frequency needed for intermittent operations of the NMA.

Month	Average Daily Demand (MG)				
	2023	2022 ¹	2021 ¹	2020	2019
January	3.64	3.80	4.64	5.40	4.47
February	4.66	4.45	5.37 ²	5.83	4.37
March	4.23	4.94	5.32 ²	5.39	4.35
April	5.05	5.04	6.31 ²	6.35	5.53
May	6.36	6.33	7.77	8.07	6.95
June	7.14	6.89	7.93	9.68	9.07
July	n/a	7.45	8.13	10.33	13.43
August	n/a	7.54	7.72	10.11	14.49
September	n/a	7.28	7.45	9.44	9.73
October	n/a	6.39	5.76	8.75	8.27
November	n/a	4.89	3.96	8.15	5.62
December	n/a	4.11	3.72 ²	6.28	5.07

¹ drought conditions
² backfeed values removed

Another aspect that impacts Novato’s water supply is the recycled water system. During periods in which recycled water is not being produced by our northern system recycled water provider, Novato Sanitary District (NSD), the recycled water demand is met using potable water. Due to low demand for recycled water during March, NSD did not begin production until late-April. At its peak, recycled water usage can rise as high as 10% of the total daily demand in Novato, largely due to two of Novato’s three golf courses being served with recycled water. The third golf course, Indian Valley Golf Course, is served using raw lake water.

As shown in the supply and demand summary below, even with the increased water production from STP, Novato’s daily demands were slowly increasing into April and May as temperatures rose and customers started consuming more water. To prevent storage volumes from dropping too low, staff decided to operate the NMA for short periods, 4 to 8 hours at a time, to supplement water production from STP. District staff were stationed at each of the two isolation valves during these short operational periods out of an abundance of caution due to the uncertain condition of the NMA. The timeline summary at the end of this memo indicates which days the NMA was operated with staff at the valves, see (4).

Supply and Demand Summary

Date	Actual Daily Demand (MG)	Daily Supply (MG)			Daily Change in Storage	Supply NMA (MMWD)
		STP	NMA (NMWD)	Subtotal (NMWD)		
March						
3/22	4.32	3.62	0.77	4.39	0.07	0.92
3/23	3.87	4.24	0.00	4.24	0.37	0.00
3/24	4.45	4.14	0.00	4.14	-0.31	0.00
3/25	3.98	4.19	0.00	4.19	0.20	0.00
3/26	4.56	3.97	0.00	3.97	-0.58	0.00
3/27	4.51	4.35	1.13	5.48	0.97	0.00
3/28	3.72	4.48	0.00	4.48	0.76	0.00
3/29	4.20	4.50	0.00	4.50	0.30	0.00
3/30	4.51	4.29	0.00	4.29	-0.22	0.00
3/31	3.73	3.84	1.00	4.84	1.11	0.00
April						
4/1	4.55	3.82	0.00	3.82	-0.74	0.00
4/2	4.27	2.62	0.00	2.62	-1.65	0.00
4/3	2.83	3.99	0.00	3.99	1.17	0.00
4/4	4.51	2.73	1.81	4.54	0.03	0.00
4/5	4.03	4.07	0.00	4.07	0.04	0.00
4/6	4.38	4.08	0.00	4.08	-0.30	0.00
4/7	4.14	4.25	0.00	4.25	0.11	0.00
4/8	5.22	4.33	0.98	5.31	0.09	0.00
4/9	3.81	2.74	0.00	2.74	-1.07	0.00
4/10	4.82	4.27	0.00	4.27	-0.56	0.00
4/11	4.28	4.13	2.02	6.14	1.87	0.00
4/12	4.64	4.24	0.00	4.24	-0.40	0.00
4/13	4.26	4.11	0.00	4.11	-0.15	0.00
4/14	4.73	4.23	0.00	4.23	-0.50	0.00
4/15	4.88	2.27	0.00	2.27	-2.61	0.00
4/16	4.61	2.70	0.00	2.70	-1.91	0.00
4/17	4.81	4.12	3.12	7.24	2.43	1.02
4/18	4.83	4.16	2.55	6.71	1.88	0.00
4/19	5.39	4.25	1.98	6.23	0.84	0.00
4/20	6.14	4.21	0.00	4.21	-1.94	0.00
4/21	6.33	2.46	3.85	6.32	-0.01	0.00
4/22	6.02	2.35	2.01	4.36	-1.66	0.00
4/23	5.35	4.72	0.00	4.72	-0.64	0.00
4/24	6.59	3.95	6.19	10.14	3.55	0.00
4/25	6.10	4.11	0.00	4.11	-1.99	0.00
4/26	6.72	4.28	2.55	6.83	0.11	0.00
4/27	6.20	4.04	3.92	7.96	1.76	1.18
4/28	6.71	4.32	4.78	9.10	2.39	2.02
4/29	6.46	2.25	1.41	3.66	-2.80	2.02
4/30	5.72	2.19	3.29	5.48	-0.24	2.03
May						
5/1	6.05	4.16	0.95	5.11	-0.93	2.02
5/2	5.98	3.87	3.86	7.73	1.75	2.02
5/3	5.50	3.75	0.70	4.45	-1.05	2.02
5/4	5.50	4.20	2.49	6.69	1.20	2.02
5/5	5.78	4.16	1.06	5.22	-0.57	2.02
5/6	5.13	2.68	3.29	5.97	0.84	2.03

Water production at STP is a seasonal activity, as the operations are dependent on many variables that include but are not limited to; lake levels, average daily demand, equipment condition, capital projects, and preventative maintenance work. In 2023, water production began at STP on Thursday, March 16, less than one week before the landslide occurred. With the abrupt increase in water production being critical so early into the season, staff made an operational decision to remove the centrifuge from the process and therefore produce a larger volume of liquid sludge byproduct than what is produced under normal conditions. Waste disposal limits set by the NSD restrict the District from disposing more than 40,000 gallons per day during the time period beginning in November and lasting through April. The disposal limit from May through October is 150,000 gallons per day.

The amount of liquid sludge produced under the increased STP production scenario greatly exceeded the volume limit on sewer discharge of 40,000 gallons per day. For this reason, staff began hauling excess liquid sludge to NSD settling ponds using a tanker truck in 4,000-gallon increments, and an average of 3 loads per day. Hauling took place for 12 days, from March 29 to April 13, with an approximate volume of trucked sludge of 144,000 gallons.

Planning for Future

During the 6 weeks following the landslide, District staff successfully performed emergency planning, short- and mid- term contingency planning, in-situ investigations of the NMA pipeline, and geotechnical investigations to identify location and depth of the slide plane. Several other tasks associated with this emergency were concurrently being taken care of by District staff without hesitation. Continuous communication with stakeholders and regional partners was critical to the District's ability to prepare for next steps.

As of Thursday April 27, the District opened both isolation valves on the NMA and has not closed them since. District operations staff continues to closely coordinate use of the NMA with our partners to the north, Sonoma County Water Agency (SCWA), and our partners to the south, MMWD. In addition to concerns with the landslide, SCWA recently started a project to recoat their Kastania tank located in southern Petaluma. With the Kastania tank out of service for at least the next 12 months, operations staff of all 3 agencies will be monitoring flow rates and pressures.

District staff also continues to coordinate closely with PG&E and Caltrans to ensure restoration efforts of the different stakeholders are not in conflict with one another. After PG&E completes permanent relocation of both of their 16-inch high pressure gas transmission mains, Caltrans will begin efforts on construction of a soldier pile wall west of Redwood Blvd, to stabilize the landslide slope. Additionally, Caltrans will also be constructing a retaining wall on

the downhill side of Redwood Blvd, as part of the scope previously planned for the Highway 101 widening project known as the Marin-Sonoma Narrows project. The NMA is located between these two retaining walls in the shoulder just east of Redwood Blvd. For this reason, District staff remains heavily involved in weekly coordination meetings with the stakeholder agencies to coordinate the designs.

Once both retaining walls are complete, Caltrans will remove all landslide debris within the roadway prism and fully restore Redwood Blvd. Once work on the roadway begins, District staff is planning to conduct additional investigations of the NMA. First, staff plans to install 2 new precast concrete vaults over the NMA, one north and one south of the landslide. The northern vault will be located over the access hatch used to deploy the ROV. The southern vault will be installed in a location that staff plans to install a new access hatch. This new access hatch would be used as-needed for future investigation in the landslide area.

Following installation of the vaults, staff plans to dewater and perform physical inspections from inside the 30-inch pipe to confirm the condition of the NMA. Removal of the horizontal and overburden pressures as a result of the Caltrans' improvements may allow the oblong joint of the NMA to rebound into an acceptable range. If the oblong joint does not rebound within an acceptable range, staff plans to replace approximately 40- to 80-feet of the NMA within the landslide area. Staff has already procured the pipe material required for this replacement. If the NMA does rebound within an acceptable range, the District will store the pipe material such that it is available should a future emergency require its use. Additionally, if the segment of NMA is not replaced, staff is planning to expose the segment of NMA within the landslide area and install new polyguard pipe wrap.

As part of the contingency planning during the emergency phase, District staff identified an existing agreement with MMWD that contained details and commitments related to interconnection between the water distribution systems of the two agencies. Field visits to the various interconnection locations revealed to staff of both agencies that the existing infrastructure was not in a condition to allow for emergency interconnection. Ultimately an interconnection with MMWD was not needed to provide adequate water supply to Novato, but future emergencies could have different circumstances where an interconnection would be beneficial. For this reason, a working group comprised of staff from both agencies has been formed with the collective goal of re-establishing several interconnection locations that could be used in the future if needed.



Timeline Summary

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			3/22 Day of Landslide	(1) (2) 3/23 Novato Fire establishes North Bay IMT	(1) (2) 3/24	(1) (2) 3/25 SR101-SB closed for PG&E bypass beginning at 9pm
(2) 3/26 SR101-SB closed for PG&E bypass ending at 2pm	(1) (2) (4) 3/27	(1) (2) 3/28 Rain Day	(1) (2) 3/29 First day hauling sludge to NSD	(1) (2) 3/30	(2) (4) 3/31 North Bay IMT ends – transitions to Caltrans	4/1 Recovery Phase Begins
4/2	4/3	(1) (4) 4/4 NMWD BOD declares local emergency	(3) 4/5 Dewater NMA	(1) 4/6 ROV in NMA Caltrans Inclinometer	4/7	(4) 4/8
4/9	4/10 Caltrans Test Pit (TP1) – Day 1	(1) (4) 4/11 Caltrans Test Pit (TP1) – Day 2	(3) 4/12	(1) 4/13 Last day hauling sludge to NSD	4/14	4/15
4/16	(4) 4/17 Flushed MMWD section of pipe ~1MGD	(1) (4) 4/18	(3) (4) 4/19	(1) 4/20 Field layout for test pit excavation	(4) 4/21 Intertie mtg w/ consultant	(4) 4/22
4/23	(4) 4/24	(1) 4/25 NMWD Test Pit (TP2) – Day 1	(3) (4) 4/26 NMWD Test Pit (TP2) – Day 2	(1) (5) 4/27 Limited daily supply resumed for MMWD	(5) 4/28	(5) 4/29
(5) 4/30	(5) 5/1	(5) 5/2	(3) (5) 5/3 Rain Day	(3) (5) 5/4	(1) (5) 5/5 Intertie mtg w/ MMWD Visit to Benicia	(5) 5/6

- (1) NMWD internal meeting
- (2) North Bay Incident Management Team meeting
- (3) Caltrans recovery meeting
- (4) Open NMA with valves staffed
- (5) Open NMA with no staff at valves

Shaded days indicate that the NMA was fully isolated with no take from NMWD

RESOLUTION NO. 24-XX

**RESOLUTION OF THE BOARD OF DIRECTORS
OF NORTH MARIN WATER DISTRICT
DECLARING END OF A LOCAL EMERGENCY**

WHEREAS, on April 4, 2023, the North Marin Water District Board of Directors adopted Resolution No. 23-05 Declaring the existence of a Local Emergency in the North Marin Water District’s Novato Service Area due to problems created by a significant landslide on Redwood Boulevard and potential impacts to the North Marin Aqueduct; and

WHEREAS, during the period of March 2023 through June 2024, numerous engineering evaluations and analysis and operational testing was conducted by North Marin Water District engineering staff and outside technical and professional specialists to determine the condition of the North Marin Aqueduct from any impacts caused by the landslide; and

WHEREAS, repairs to Redwood Boulevard, including the upslope and downslope portions of the right-of-way impacted by the landslide were reconstructed and a series of retaining structures were installed by the California Department of Transportation, the owner of the Redwood Boulevard right-of-way, between approximately August 2023 through approximately April 2024; and

WHEREAS, the repairs and retaining structures described above have stabilized the former landslide area so that there no longer are impacts to the North Marin Aqueduct.

NOW, THEREFORE BE IT RESOLVED by the Board of Directors of the North Marin Water District, that the local emergency related to the Redwood Boulevard landslide of 2023 has ended within the North Marin Water District’s Novato Service Area and jurisdiction.

* * * * *

I hereby certify that the foregoing is a true and complete copy of a resolution duly and regularly adopted by the Board of Directors of NORTH MARIN WATER DISTRICT at a regular meeting of said Board held on the sixteenth day of July 2024, by the following vote:

- AYES:
- NOES:
- ABSTAIN:
- ABSENT:

(SEAL)

Eileen Mulliner, District Secretary
North Marin Water District

11

**MEMORANDUM**

To: Board of Directors July 16, 2024
From: Eric Miller, Assistant General Manager/Chief Engineer *EM*
Tim Fuelle, Senior Engineer *TAF*
Subject: Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan and the North Marin Water District Annex
r:\non job no issues\hazard mitigation plan\bod memos\2024 0716 adopt mc mj lhmp\lhmp bod memo 7_16_2024.doc

RECOMMENDED ACTION: Board authorize the North Marin Water District Annex to the Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan
FINANCIAL IMPACT: None

Summary

At the December 20, 2022 meeting, the Board authorized the General Manager to sign a letter of intent to participate in the preparation of the Marin County Multi-Jurisdictional Local Hazard Mitigation Plan (MJ-LHMP). The multi-jurisdictional approach to developing a LHMP minimizes duplicative efforts and maximizes economy of scale benefits for smaller agencies, as opposed to each municipality developing their own LHMP. Beginning with the 2018 LHMP document, Marin County has taken the lead in producing a Multi-Jurisdictional Hazard Mitigation Plan through robust consultation and coordination with various public agencies across Marin County, including the North Marin Water District.

The Marin County 2024 MJ-LHMP was recently approved by both the California Office of Emergency Services (CalOES) and Federal Emergency Management Agency (FEMA). At this time, staff is requesting Board authorization to include the North Marin Water District Annex in the Marin County 2024 MJ-LHMP.

Background/Discussion

Responding to federal mandates in the Disaster Mitigation Act of 2000 (Public Law 106-390), the Marin County 2024 MJ-LHMP updates the previous plan, adopted in 2018. The planning area for this MJ-LHMP encompasses the entire geographic area of Marin County, however, this recommendation is to adopt the North Marin Water District Annex which encompasses the District's various service areas.

The MJ-LHMP development process included the following activities:

1. Identification of potential planning partners. Partners who chose to participate submitted Letters of Intent committing resources to the development effort;
2. Identification and assessment of the risks of natural hazards;

3. Development of actions to mitigate the risks and a plan to implement the actions over the next five years;
4. Public involvement in the development and review of the MJ-LHMP.

The MJ-LHMP has the following purposes and/or benefits:

- Systematically assesses local natural and human-caused hazards, such as flooding, drought, wildfire, landslides, severe weather, terrorism, cyber threats, pandemic, and the impact of climate change.
- Identifies mitigation actions to reduce the level of injury, property damage, and community disruption that might otherwise result from such hazards.
- Pools resources from throughout the County and creates a uniform local hazard mitigation plan that can be consistently implemented.
- Embraces best practices by planning for county-wide mitigation projects, as such, increases likelihood of being awarded grant monies from FEMA for mitigation projects.
- Ensures eligibility for FEMA and CalOES grant opportunities.
- Review and approval of the MJ-LHMP by FEMA and CalOES.

RECOMMENDATION

That the Board adopt Resolution 24-XX that authorizes the North Marin Water District Annex to the Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan.

ATTACHMENTS

1. Resolution 24-XX Adopting the NMWD Annex of the Marin County 2024 MJ-LHMP
2. NMWD Annex of the Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan

RESOLUTION NO. 24-xx

**RESOLUTION OF THE BOARD OF DIRECTORS OF
NORTH MARIN WATER DISTRICT
TO ADOPT THE NORTH MARIN WATER DISTRICT ANNEX TO THE MARIN COUNTY
2024 MULTI JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN**

WHEREAS, natural hazards, such as earthquakes, floods, and wildfires, pose a significant threat to the residents and visitors of Marin County; and

WHEREAS, disasters start and end at the local level, it is the inherent responsibility of local government to lead hazard mitigation and the reduction of risk and vulnerability to hazards; and

WHEREAS, the North Marin Water District, in coordination with neighboring jurisdictions and special districts, produced the North Marin Water District Annex to the Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan to provide a framework for hazard mitigation; and

NOW, THEREFORE, BE IT RESOLVED that the District does hereby adopt the North Marin Water District Annex to the Marin County 2024 Multi-Jurisdictional Local Hazard Mitigation Plan:

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the North Marin Water District held on this 16th day of July, 2024 by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

JACK BAKER
PRESIDENT, BOARD OF DIRECTORS

ATTEST:

Eileen Mulliner, District Secretary

8. NORTH MARIN WATER DISTRICT PROFILE



Marin County Multi-Jurisdictional Hazard Mitigation Plan 2023



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ACKNOWLEDGEMENTS

The North Marin Water District and Preparative Consulting would like to thank those collaborators and partners who participated in the planning and development of this document.

The official Marin County hazard mitigation Steering Committee provided the oversight and dedication to this project that was required, and without their commitment, this project would not be possible.

As with any working plan, this document represents planning strategies and guidance as understood as of the date of this plan's release. This plan identifies natural hazards and risks and identifies the hazard mitigation strategy to reduce vulnerability and make the communities and district of the North Marin Water District more disaster resistant and sustainable.

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SECTION 1.0: INTRODUCTION

1.1 INTRODUCTION

The North Marin Water District Profile has been prepared in conjunction with the Marin County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), establishing an inter-jurisdictional process for the development and implementation of effective hazard mitigation strategies in association with identified hazards that pose real or potential threats to the North Marin Water District (NMWD).

1.2 PLANNING PROCESS

The majority of Marin County Operational Area (OA) is unincorporated sparsely populated rural and protected lands. Most of the 262,000 county population is consolidated into the Eastern portion of the county. The Marin County MJHMP Steering Committee and broader Planning Team approached the development of the Marin County MJHMP and the associated jurisdictional and district profiles from a coordinated and collaborative planning and public engagement unity of effort.

The Steering Committee felt a unified effort, led by the County Office of Emergency Management (OEM), would be the most effective approach for this planning process. This approach allowed the small jurisdictions and districts with limited staffing and resources to take advantage of the combined efforts of the County and other jurisdictions to reach a broader segment of each of their own populations and do so in a way to ensure greater equity and inclusion of the public in this planning process. Extensive and coordinated public outreach was done involving all participating jurisdictions and districts with an eye towards equity, inclusion, openness, accessibility, and ensuring they meet the population where they live, work, or recreate to provide the public convenience of access and ease of participation in this planning process.

The Marin County OA is very different from most California Counties in that the populated portion of the County where the jurisdictions and district's planning areas are located has the same climate, similar topography, and are exposed to many of the same hazards. Only three jurisdictions, Larkspur, Ross, and San Anselmo, are not coastal jurisdictions and are not impacted by Tsunami or Sea Level Rise.

This unity of effort approach allowed the Steering Committee to establish a more robust Planning Team representing local, countywide, regional, state, and federal stakeholders servicing the Marin County OA planning area. These stakeholders were in a unique position to provide informed and specific information and recommendations on hazard mitigation goals and actions, as well as population needs and social vulnerability for each of the jurisdictional and district planning areas. This united effort allowed the planning team to attend fewer meetings than they would have been required to attend if they were required to attend separate meetings for each participating jurisdiction and district. The reduced number of meetings allowed the planning team the opportunity and time to provide more detailed and thoughtful contributions to the planning effort.

In addition to providing representation on the coordinated Marin County OA Multi-Jurisdictional Hazard Mitigation Plan Steering Committee, the North Marin Water District involved additional internal planning team members to support the broader planning process. The North Marin Water District jurisdictional representatives for the coordinated Marin County Multi-Jurisdictional

Hazard Mitigation Plans Steering Committee and the Planning Team Members are represented below.

1.2.1 STEERING COMMITTEE MEMBERS (DISTRICT REPRESENTATIVES)

Primary Point of Contact

Eric Miller, Asst. General Manager
Telephone: 415-897-4133
E-mail Address: emiller@nmwd.com

Alternate Point of Contact

Tim Fuelle, Senior Engineer
Telephone: 415-761-8925
E-mail Address: tfuelle@nmwd.com

This annex was developed by the primary point of contact with assistance from the members of the local mitigation planning team listed in Table 1 and Table 2.

Table 1: Local Hazard Mitigation Planning Team Members				
Jurisdiction	Name	Title/ Department	Phone	Email
North Marin Water District	Eric Miller	Asst. General Manager	415-897-4133	emiller@nmwd.com
North Marin Water District	Robert Clark	Operations & Maintenance Superintendent	415-897-4133	rclark@nmwd.com
North Marin Water District	Anthony "Tony" Williams	General Manager	415-897-4133	twilliams@nmwd.com
North Marin Water District	Tim Fuelle	Senior Engineer	415-761-8925	tfuelle@nmwd.com

Table 171: Local Hazard Mitigation Planning Team Members

This 2023 Marin County Operational Area (OA) MJHMP is a comprehensive update of the 2018 Marin County OA MJHMP. The planning area and participating jurisdictions and organizations were defined to consist of unincorporated Marin County, five special districts, and the eleven incorporated jurisdictions to include the North Marin Water District. All participating jurisdictions and districts are within the geographical boundary of Marin County OA and have jurisdictional or district authority within this planning area.

The Steering Committee led the planning process based on the contribution and input from the whole community stakeholders who identified the community’s concerns, values, and priorities. The Steering Committee met and reviewed the mitigation recommendations and strategies identified within this plan. Each participating local jurisdiction established a mechanism for the development and implementation of jurisdictional mitigation projects, as identified within this plan and associated locally specific supporting documents. As deemed necessary and appropriate, participating jurisdictions will organize local mitigation groups to facilitate and administer internal activities.

The Steering Committee assisted with the planning process in the following ways:

- Attending and participating in the Steering Committee meetings.
- Identification of potential mitigation actions.
- Updating the status of mitigation actions from the 2018 Marin County OA MJHMP.
- Collecting and providing other requested data (as available).
- Making decisions on plan process and content.
- Reviewing and providing comments on plan drafts; including annexes.

- Informing the public, local officials, and other interested stakeholders about the planning process and providing opportunity for them to be involved and provide comment.
- Coordinating, and participating in the public input process.
- Coordinating the formal adoption of the plan by the governing boards.

1.2.2 STEERING COMMITTEE PLANNING PROCESS

The Steering Committee met monthly to develop the plan. Email notifications were sent out to each Steering Committee member to solicit their participation in the Steering Committee meetings. The meetings were conducted using a Zoom platform videoconferencing. Meeting attendees signed in using the chat feature to record their attendance.

The Steering Committee agreed to make and pass plan-based general policy recommendations by a vote of a simple majority of those members present. The Steering Committee will also seek input on future hazard mitigation programs and strategies from the mitigation planning team by focusing on the following:

- Identify new hazard mitigation strategies to be pursued on a state and regional basis, and review the progress and implementation of those programs already identified.
- Review the progress of the Hazard Mitigation program and bring forth community input on new strategies.
- Coordinate with and support the efforts of the Marin County OEM to promote and identify resources and grant money for implementation of recommended hazard mitigation Strategies within local jurisdictions and participating public agencies.

During the planning process, the Steering Committee communicated through videoconferencing, face-to-face meetings, email, telephone conversations, and through the County website. The County website included information for all stakeholders on the MJHMP update process. Hannah Tarling of the Marin County Office of Emergency Management and Preparative Consulting established a Microsoft 365 SharePoint folder which allowed the Steering Committee members and Marin OEM and Preparative Consulting to share planning documents and provide a format for the planning partners to submit completed documents and access other planning related documents and forms. Draft documents were also posted on this platform and the Marin County OES website so that the Steering Committee members and the public could easily access and review them.

1.2.3 COORDINATION WITH STAKEHOLDERS AND AGENCIES

Opportunities for involvement in the planning process must be provided to neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (44 CFR, Section 201.6(b)(2)).

Early in the planning process, the Marin County and NMWD Steering Committee reached out to the following Local and Regional Agencies involved in hazard mitigation activities to invite them to participate in this planning process as a member of the Planning Team. These individuals work with Marin County and the NMWD communities and could provide subject matter expertise and relevant information to the planning process regarding the community history, hazard risk, vulnerability, and impact, mitigations efforts, community needs, demographics, and social vulnerability, economic concerns, ecology, and other

community services and needs.

The Marin County and NMWD Steering also determined that data collection, risk assessment analyses, mitigation strategy development, and plan approval would be greatly enhanced by inviting other local, state and federal agencies and organizations to participate in the process. Based on their involvement in hazard mitigation planning, their landowner status in the County, the NMWD and/or their interest as a neighboring jurisdiction, representatives from the following groups were invited to participate on the Planning Team:

Eighty-seven planning partners participated in this update, as listed in Table 2.

Table 2: 2023 MJHMP Local Planning Team Members			
No.	Agency	Point of Contact	Title
1	Belvedere	Laurie Nilsen	Emergency Svcs, Coord.
2	Belvedere	Rebecca Markwick	Planning Director
3	Belvedere	Samie Malakiman	Associate Planner
4	Bolinas Com. PUD	Jennifer Blackman	General Manager
5	Bolinas Fire Protection Dist.	Stephen Marcotte	Assistant Fire Chief
6	Central Marin Fire District	Matt Cobb	Battalion Chief/Fire
7	Central Marin Fire District	Ezra Colman	Battalion Chief/Fire
8	Central Marin Fire District	Rubin Martin	Fire Chief
9	Corte Madera	RJ Suokko	Director of Public Works
10	Corte Madera	Chris Good	Senior Civil Engineer
11	Sanitary District No. 2	RJ Suokko	District Manager
12	Fairfax	Loren Umbertis	Public Works Director
13	Fairfax	Mark Lockaby	Building Official
14	Larkspur	Dan Schwarz	City Manager
15	Larkspur	Julian Skinner	Public Works Director/ City Engineer
16	Larkspur	Robert Quinn	Public Works Superintendent
17	Las Gallinas Valley Sanitary District	Dale McDonald	Administrative Services Mgr.
18	Las Gallinas Valley Sanitary District	Greg Pease	Safety Manager
19	Marin County	Steven Torrence	OEM Director
20	Marin County	Hannah Tarling	Emergency Management Coordinator
21	Marin County	Chris Reilly	OEM Project Manager
22	Marin County	Woody Baker-Cohn	Senior Emergency Management Coordinator
23	Marin County	Leslie Lacko	Community Development Agency
24	Marin County	Hannah Lee	Senior Civil Engineer
25	Marin County	Felix Meneau	Project Mgr./ FCWCD
26	Marin County	Julia Elkin	Department of Public Works
27	Marin County	Beb Skye	Department of Public Works
28	Marin County	Scott Alber	Battalion Chief, Marin County Fire Dept.
29	Marin County	Lisa Santora	Deputy Public Health Officer, Marin Health & Human Services
30	Marin County	Koblick, Kathleen	Marin Health & Human Services
31	Marin County	Amber Davis	Public Health Preparedness
32	Mill Valley	Patrick Kelly	Department of Public Works

Table 2: 2023 MJHMP Local Planning Team Members

No.	Agency	Point of Contact	Title
33	Mill Valley	Ahmed A Aly	Project Manager
34	Mill Valley	Jared Barrilleaux	Deputy Director of Engineering
35	Mill Valley	Daisy Allen	Senior Planner
36	Southern Marin Fire District	Tom Welch	Deputy Chief/South Marin Fire Dist.
37	Southern Marin Fire District	Marshall Nau	Fire Marshall/South Marin Fire Dist.
38	North Marin Water District	Eric Miller	Asst. General Manager
39	North Marin Water District	Robert Clark	Operations & Maint. Superintendent
40	North Marin Water District	Anthony Williams	General Manager
41	North Marin Water District	Tim Fuelle	Senior Engineer
42	Novato	David Dammuller	Engineering Services Mgr.
43	Novato	Dave Jeffries	Consultant/JPSC
44	Ross	Richard Simonitch	Public Works Director
45	San Anselmo	Sean Condry	Public Works & Building Director
46	San Anselmo	Erica Freeman	Building Official
47	San Anselmo	Scott Schneider	Asst. PW Director
48	San Rafael	Quinn Gardner	Deputy Emergency Services Coord.
49	San Rafael	Cory Bytof	Sustainability
50	San Rafael	Joanna Kwok	Senior Civil Engineer
51	San Rafael	Kate Hagemann	Climate Adaptation & Resilience Planner
52	Sausalito	Andrew Davidson	Senior Engineer/ DPW
53	Sausalito	Kevin McGowan	Director of Public Works
54	Sausalito	Brandon Phipps	Planning Director
55	Tiburon	Sam Bonifacio	Assistant Planner
56	Tiburon	Dina Tasini	Director of Community Development
57	Tiburon	Laurie Nilsen	Emergency Services Coord.
Special Districts & Partner Agencies			
58	County of Marin Disability Access Program	Laney Davidson	Disability Access Manager/ ADA Coordinator
59	County of Marin Disability Access Program	Peter Mendoza	Disability Access Manager/ ADA Coordinator
60	Emergency Medical Services	Chris Le Baudour	EMS Authority
61	Fire Departments	Jason Weber	Fire Chiefs
62	Golden Gate Bridge, Highway & Transportation District	Daniel Rodriguez	Security, Emergency Management Specialist
63	Golden Gate Bridge, Highway & Transportation District	Dennis Mulligan	General Manager & CEO,
64	Marin City Climate Resilience and Health Justice	Terrie Green	Executive Director
65	Marin Center for Independent Living	Peter Mendoza	Director of Advocacy and Special Projects
66	Marin City Community Services District	Juanita Edwards	Interim General Manager
67	Marin County Community Development Agency	Leslie Lacko	Community Development Agency
68	Marin County Flood Control & Water Conservation District	Garry Lion	Advisory Board Member
69	Marin County Office of Education	Michael Grant	Director, Marin County Office of Education
70	Marin County Parks	Max Korten	General Manager and Director

Table 2: 2023 MJHMP Local Planning Team Members

No.	Agency	Point of Contact	Title
71	PG&E	Mark Van Gorder	Government Affairs, North Bay
72	PG&E	Ron Karlen	PG&E Public Safety Specialist
73	Sonoma Marin Area Rail Transit (SMART)	Jennifer McGill	Chief of Police
74	Transportation Authority of Marin (TAM)	Anne Richmond	Executive Director
75	Willow Creek School	Itoco Garcia	Superintendent
State Partners			
76	Cal OES – ESC	Sarah Finnigan	Cal OES Emergency Services Coordinator
77	Cal OES, Division of Safety of Dams	Danielle Jessup	Coordinator/ Dam Safety Planning Division
78	California Department of Public Health	Svetlana Smorodinsky	Disaster Epidemiologist/ Environmental & Occupational Emergency Preparedness Team
79	California Department of Public Health	Patrice Chamberlain	Health Program Specialist II
80	California Department of Water Resources	Julia Ekstrom, PhD	Supervisor, Urban Unit Water Use Efficiency Branch
81	Caltrans	Trang Hoang	Senior Transportation Engr/ Office of Advance Planning
82	Caltrans	Markus Lansdowne	Caltrans D4 Emergency Coordinator
Federal Partners			
83	Army Corps of Engineers	Jessica Ludy	Flood Risk Management, Equity, and Environmental Justice
84	National Park Service	Stephen Kasierski	OneTam
85	US Coast Guard	LT Tony Solares	Sector SF Waterways Safety Branch
86	US Coast Guard	MST1 Brandon M. Ward	Emergency Management Specialist
87	US Coast Guard	LT William K. Harris	USCG SEC San Francisco

Table 172: 2023 MJHMP Planning Team Members

Several opportunities were provided for the groups listed above to participate in the North Marin Water District’s planning process. At the beginning of the planning process, invitations were extended to these groups to actively participate on the Planning Team. Participants from these groups assisted in the process by attending several videoconferencing meetings where hazard vulnerability and risk were discussed along with hazard mitigation strategies and actions. Planning Team members provided data and other applicable information directly as requested in meetings, emails, telephone calls, videoconferencing, worksheets, or through data contained on their websites or as maintained by their offices. This information was used to develop hazard vulnerability and risk profiles along with mitigation actions.

These key agencies, organizations, and advisory groups received meeting announcements, agendas, and minutes by e-mail throughout the plan update process. They supported the effort by attending meetings or providing feedback on issues. All the agencies were provided with an opportunity to comment on this plan update and were provided with a copy of the plan to review and offer edits and revisions. They were also provided access to the Marin County OEM hazard mitigation plan website to review all planning documents and hazard mapping tools.

Each was sent an e-mail message informing them that draft portions of the plan were available for review. In addition, the complete draft plan was sent to the California Governor’s Office of

Emergency Services (Cal OES) and FEMA Region IX for a pre-adoption review to ensure program compliance.

In addition, through the public meetings conducted at the beginning of the planning process, members of the planning team, the public, and other key stakeholders were invited to participate in the planning process through public outreach activities.

Further as part of the public outreach process, all planning areas engaged in public outreach and education by providing information on their website or through press releases directing the public to the main Marin County OEM website that provided coordinated and detailed public information of the planning process and how the public could participate. All planning areas were invited to attend the public meetings and to review and comment on the plan prior to submittal to Cal OES and FEMA. Additional public outreach action is detailed in the 1.2.4 PUBLIC ENGAGEMENT section of this annex.

The following planning meetings were held with the planning team:

Table 3: North Marin Water District & Marin County MJHMP Planning Meetings				
No.	Date	Attendees	Meeting	Planning Meeting Objectives
1	10/26/22	Steering Committee	Project Overview Meeting	<ul style="list-style-type: none"> • Plan Overview – Steps and Timeline • Planning Process • Steering Committee Role
2	11/9/22	Steering Committee	Steering Committee Kickoff Meeting	<ul style="list-style-type: none"> • Hazard Mitigation and Emergency Management Overview • Plan Overview – Steps and Timeline • Community Overview • Planning Process • Hazard Identification and Risk Assessment • Stakeholders and Planning Team Identification
3	12/6/22	Steering Committee, Planning Team	Planning Team Kickoff Meeting	<ul style="list-style-type: none"> • Hazard Mitigation and Emergency Management Overview • Plan Overview – Steps and Timeline • Community Overview • Planning Process • Hazard Identification and Risk Assessment
4	02/07/23	Steering Committee	Steering Committee Hazard Profile Meeting	<ul style="list-style-type: none"> • Jurisdictional Letter of Commitment • Identify Planning Team Members • Hazard Risk Ranking Worksheets • Jurisdictional Profiles • Jurisdictional/ District Capability Assessment

Table 3: North Marin Water District & Marin County MJHMP Planning Meetings

No.	Date	Attendees	Meeting	Planning Meeting Objectives
				<ul style="list-style-type: none"> • 2018 Hazard Mitigation Project Status Update
5	03/07/23	Steering Committee/ Planning Team	Planning Team Public Outreach Strategy Meeting	<ul style="list-style-type: none"> • Planning Goals and Objectives • Hazard Risk Ranking Worksheets • Jurisdictional Profiles • Jurisdictional/ District Capability Assessment • 2018 Hazard Mitigation Project Status Update • Public Outreach Strategy
6	04/04/23	Steering Committee	Steering Committee Meeting	<ul style="list-style-type: none"> • HMGP (DR-4683) Funding Timeline • Public Outreach • Planning Goals and Objectives • Jurisdictional Hazard Vulnerability Maps • Jurisdictional Profiles • Jurisdictional/ District Capability Assessment • 2018 Hazard Mitigation Project Status Update
7	04/13/23	General Public, Steering Committee, Planning Team	Public Outreach Town Hall Meeting #1 (In-person and virtual on Zoom) Thursday, 6:00 pm to 7:30 pm Marin County BOS Chambers	<ul style="list-style-type: none"> • Meeting translated live in Spanish with 29 language subtitle capability for virtual participants. • Meeting also interpreted in American Sign Language • Meeting recorded and posted on Hazard Mitigation website. • Hazard Mitigation and Emergency Management Overview • Planning Process • Hazard Identification and Risk Assessment • Planning Goals and Objectives • Hazard Mitigation Projects • Community Input
8	04/29/23	General Public, Steering Committee, Planning Team	Public Outreach Town Hall Meeting #2 (In-person and virtual on Zoom) Saturday, 10:00 am to 11:30 am Marin County Health and Wellness Center	<ul style="list-style-type: none"> • Meeting translated live in Spanish with 29 language subtitle capability for virtual participants. • Meeting also interpreted in American Sign Language • Meeting recorded and posted on Hazard Mitigation website. • Hazard Mitigation and Emergency Management Overview

Table 3: North Marin Water District & Marin County MJHMP Planning Meetings

No.	Date	Attendees	Meeting	Planning Meeting Objectives
				<ul style="list-style-type: none"> • Planning Process • Hazard Identification and Risk Assessment • Planning Goals and Objectives • Hazard Mitigation Projects • Community Input
9	05/31/23	Steering Committee	Steering Committee Hazard Ranking Meeting	<ul style="list-style-type: none"> • HMGP (DR-4683) Funding Timeline • Public Outreach Status • Jurisdictional Hazard Vulnerability Maps • OEM Overview of Hazard Maps and Marin Maps • Marin Co. MJHMP Risk Assessment Tool Overview • 2018 Hazard Mitigation Project Status Update • Hazard Working Groups
10	06/27/23	Steering Committee, Planning Team	Marin County Planning Team Meeting	<ul style="list-style-type: none"> • HMGP (DR-4683) & BRIC Grant Funding Timeline • Public Outreach Status • Jurisdictional Hazard Risk Assessment Tool • OEM Overview of Hazard Maps and Marin Maps • Marin County Hazards over the Last 5-Years • 2018 Hazard Mitigation Project Status Update • 2023 Hazard Mitigation Projects/Capital Improvement Projects • Hazard Working Groups
11	07/01/23-09/01/23	Steering Committee Members	Steering Committee Members Plan Development Sessions	<ul style="list-style-type: none"> • Individual phone or conference calls with planning jurisdictions and districts to answer specific questions and assist them in developing their profile annex.
12	11/27/23	Steering Committee, Planning Team	Marin County Planning Team Meeting	<ul style="list-style-type: none"> • Presentation and review of the Draft Marin County OA MJHMP and Jurisdictional/District Annexes
13	11/28/23	General Public	Public Outreach Presentation on Marin County Office of	<ul style="list-style-type: none"> • Presentation and review of the Draft Marin County OA MJHMP and Jurisdictional/District Annexes.

Table 3: North Marin Water District & Marin County MJHMP Planning Meetings				
No.	Date	Attendees	Meeting	Planning Meeting Objectives
			Emergency Management Website	<ul style="list-style-type: none"> Opportunity for public comment and questions and answers.

Table 173: North Marin Water District & Marin County MJHMP Planning Meetings

1.2.4 PUBLIC ENGAGEMENT

Early discussions with the Marin County OEM established the initial plan for public engagement to ensure a meaningful and inclusive public process with a focus on equity and accessible to the whole community. The Public Outreach efforts mirrored the Planning Team approach with a unified effort, led by the County OEM, involving all participating jurisdictions and districts. Public outreach for this plan update began at the beginning of the plan development process with a detailed press release informing the community of the purpose of the hazard mitigation planning process for the Marin County OA planning area and to invite the public to participate in the process.

Public involvement activities for this plan update were conducted by the County and all participating jurisdictions and districts and included press releases; website postings; a community survey; stakeholder and public meetings; and the collection of public and stakeholder comments on the draft plan which was posted on the County website. Information provided to the public included an overview of the mitigation status and successes resulting from implementation of the 2018 plan as well as information on the processes, new risk assessment data, and proposed mitigation strategies for the plan update.

Equity and Whole Community Approach

The Marin County OEM and the Steering Committee prioritized equity and engagement of the whole community in the development of the Marin County OA MJHMP by establishing a framework with key actions for each step of the planning process. Elements of the equity approach included:

Engaging hard-to-reach populations

This effort was to ensure the greatest equity and access to the public to enable participation in the process. The Marin County OEM outreach strategy is to “meet people where they are.” The Town Hall meetings were conducted at different familiar locations within the county where people could easily access them and were conducted on both a weekday and weekend, and in the evening and during the daytime. The meetings were offered in-person with a virtual broadcast using Zoom videoconferencing and streamed live on Marin County OEM Facebook account. After the meeting, Marin County OEM uploaded the recorded meeting to their website to allow the public on demand access to the meeting.

Translation and Interpretation Services

The survey and outreach materials were provided in both English and Spanish to improve accessibility among populations with limited English proficiency. The website uses Google Translate for accessibility in multiple languages. Interpretation services were offered for both town hall meetings. Each town hall meeting included live Spanish translation and subtitles, Live American Sign Language (ASL/CDI) interpretation, the ability for the Zoom videoconferencing attendee to activate subtitles in 29 different languages, and vision accessible PowerPoint slide.

Three stakeholder and public meetings were held, two at the beginning of the plan development process and one prior to finalizing the updated plan. Where appropriate, stakeholder and public comments and recommendations were incorporated into the final plan, including the sections that address mitigation goals and strategies. Specifically, public comments were obtained during the plan development process and prior to plan finalization.

All press releases and website postings are on file with the Marin County OEM. Public meetings were advertised in a variety of ways to maximize outreach efforts to both targeted groups and to the public at large. Advertisement mechanisms for these meetings and for involvement in the overall MJHMP development process include:

- Development and publishing of an MJHMP public outreach article
- Providing press releases to local newspapers and radio stations
- Posting meeting announcements on the local County MJHMP website
- Email to established email lists
- Personal phone calls

The public outreach activities were conducted with participation from and on behalf of all jurisdictions participating in this plan.

The Steering Committee has made the commitment to periodically bring this plan before the public through public meetings and community posting so that citizens may make input as strategies and implementation actions change. Public meetings will continue to be held twice a year after the first and third MJHMP meetings. Public meetings will continue to be stand-alone meetings but may also follow a council meeting or other official government meeting. The public will continue to be invited to public meetings via social media messaging, newspaper invitations, and through the website for each jurisdiction participating in the plan. Each jurisdiction is responsible for assuring that their citizenry is informed when deemed appropriate by the Steering Committee.

WEBSITE

At the beginning of the plan update process, Marin County OEM established a hazard mitigation website <https://emergency.marincounty.org/pages/lhmp> on behalf of all the planning areas to ensure consistent messaging and information, to keep the public posted on plan development milestones, and to solicit relevant input. The website also provided information on signing up for Alert Marin, provided detailed information about the hazard mitigation process and plan development, provided a URL and QR code link to the survey in both English and Spanish, and provided information about upcoming town hall meetings. (See Figure 1)

The site's address was publicized in all press releases, surveys and public town hall meetings. Each planning partner also established a link on their own agency website. Information on the plan development process, the Steering Committee, a link to the Hazard Mitigation survey, and drafts of the plan were made available to the public on the site. Marin County intends to keep a website active after the plan's completion to keep the public informed about successful mitigation projects and future plan updates.

Marin County Multi-Jurisdictional Hazard Mitigation Update



The various communities and service providers within Marin County are working together to update our Marin County Multi-Jurisdictional Hazard Mitigation Plan. As part of this update process, we are asking for community insight and input.



<https://emergency.marincounty.org/pages/alerts>

Marin County Local Hazard Mitigation Plan 2023

We need your feedback! The purpose is to assess the risk of natural hazards and propose projects to reduce impacts in our neighborhoods.

Review the projects and provide feedback at [Emergency.MarinCounty.org /pages/mitigation](https://Emergency.MarinCounty.org/pages/mitigation)

northmarinwaterdistrict

northmarinwaterdistrict North Marin Water District participates in the County's Local Hazard Mitigation Plan (LHMP). Every few years the LHMP is updated, and the 2023 Final Draft is currently available for public comment. The plan establishes projects focused on reducing the impacts of natural hazards like sea level rise, wildfires, floods, and more. The community is invited to provide feedback here: Emergency.MarinCounty.org/pages/mitigation



2 likes
1 day ago

Add a comment...

Figure 346: Marin County OEM MJHMP and NMWD Website

PUBLIC MEETINGS

Two separate Marin County MJHMP Public Town Hall Meeting were conducted at different locations within the County, on different days of the week and during different times of the day. This effort was to ensure the greatest equity and access by the public to enable participation in the process. The Marin County OEM outreach strategy is to “meet people

where they are.” Each Town Hall Meeting included, live Spanish translation and subtitles, Live American Sign Language (ASL/CDI) interpretation, the ability for the Zoom videoconferencing attendee to activate subtitles in 29 different languages, and vision accessible PowerPoint slide.

The first Town Hall Meeting was conducted on Thursday, April 13, 2023, from 6:00 pm to 7:30 pm, at the Marin County Board of Supervisors Chambers, Marin County Civic Center, 3501 Civic Center Drive, Room #330 San Rafael, CA 94903. The in-person meeting was also broadcast virtually using Zoom videoconferencing and streamed live on Marin County OEM Facebook account. Each of the jurisdictions participating in the MJHMP released a Press Release on their respective websites announcing the Public Town Hall Meeting and providing the date, time, and URL link to the Zoom Meeting for the public to log in and attend the Zoom Meeting. Marin County OEM also posted a notice for the Public Town Hall Meeting on their Facebook account. At the conclusion of the presentation, a question and answer session was held to answer questions from the attendees.

The second Town Hall Meeting was conducted on Saturday, April 29, 2023, from 10:00 am to 11:30 am, at the Marin County Health and Wellness Center, 3240 Kerner Ave. Rooms #109 and #110 San Rafael, CA. 94903. The meeting followed the same format as the first and hosted the same access level of equity and accessibility.

The Marin County MJHMP Public Town Hall Meeting was recorded and downloaded from Zoom and made available to all of the jurisdictions and districts to place on their websites and local Access TV for the public to view.

Meeting participants were also invited to complete the Hazard Mitigation Survey and were provide the URL link to the Survey Monkey website to complete the survey.



Figure 347: Marin County OEM MJHMP Public Town Hall Meeting

SOCIAL MEDIA

Marin County and its participating jurisdictions utilized several forms of social media to reach residents and customers. Information about the Hazard Mitigation Planning process was communicated to the public via Facebook, Twitter, and local access TV. Residents and

customers were invited to complete the Hazard Mitigation Plan survey which was accessible via an attached URL or QR Code and provide feedback on potential hazard mitigation projects or programs.

The results of the survey were provided to each of the planning partners and used to support the jurisdictional annex process. Each planning partner was able to use the survey results to help identify actions as follows:

- Gauge the public’s perception of risk and identify what citizens are concerned about.
- Identify the best ways to communicate with the public.
- Determine the level of public support for different mitigation strategies.
- Understand the public’s willingness to invest in hazard mitigation.

PRESS RELEASES

Press releases were distributed over the course of the plan’s development as key milestones were achieved and prior to each Marin County MJHMP Public Town Hall Meeting. All press releases were made available to the community in both English and Spanish.

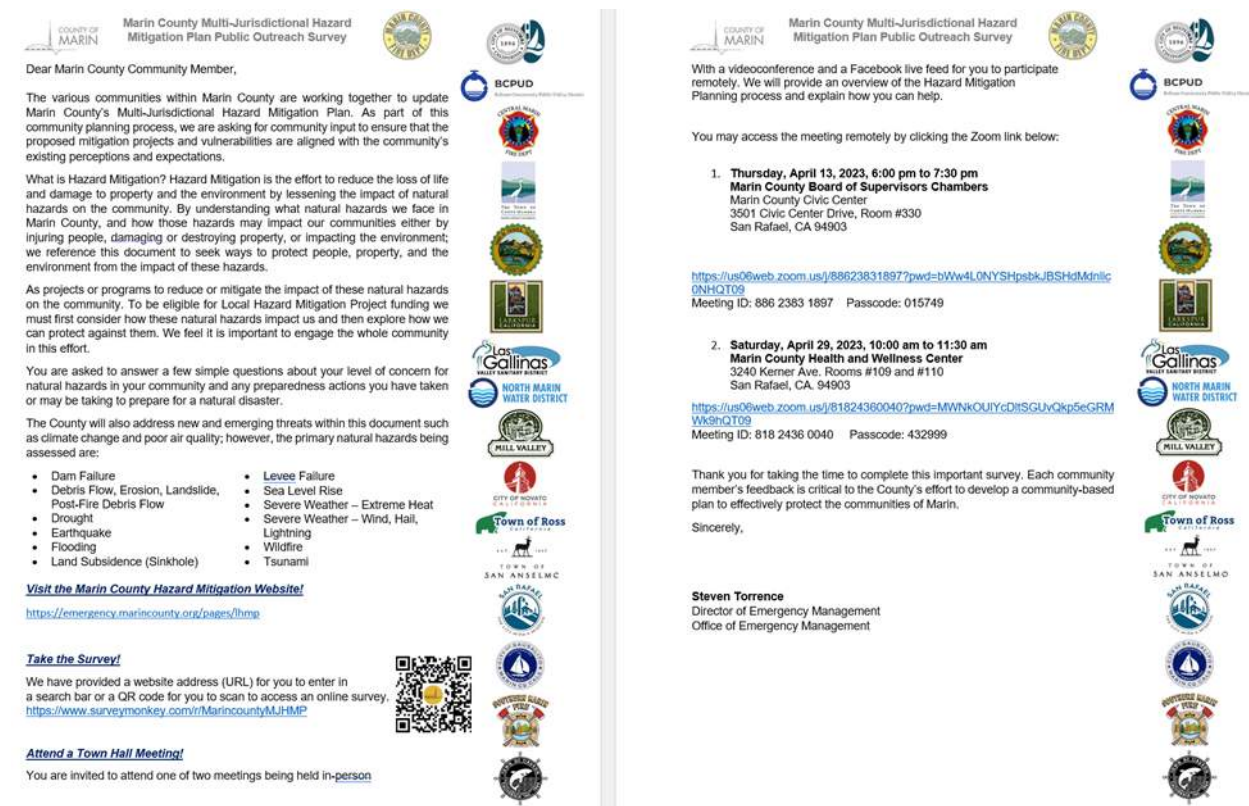


Figure 348: Hazard Mitigation Plan Public Outreach Press Release

SURVEY

A hazard mitigation plan survey (see Figure 4) was developed by the Steering Committee and made available to the public in both English and Spanish. The survey was used to

gauge household preparedness for natural hazards and the level of knowledge of tools and techniques that assist in reducing risk and loss from natural hazards. This survey was designed to help identify areas vulnerable to one or more natural hazards. The answers to its ten questions helped guide the Steering Committee in defining our hazards, and selecting goals, objectives, and mitigation strategies. The survey was available on the hazard mitigation plan website, advertised in press releases, and at town hall meetings. Finally, the survey and the process of public input was advertised throughout the course of the planning process. The survey was available to the public on March 13, 2023, and closed on June 12, 2023. At the conclusion of the planning process 293 surveys were completed by the public.

Public Comments Considered by the Planning Team

The Planning Team used the following information gathered from the Public Outreach Survey to inform decisions regarding hazard mitigation strategies, actions, and priorities.

- Climate Change, Wildfire, and Drought were the top hazards of concern for the public.
- Text messages, mail, and the County website were the preferred methods for receiving hazard mitigation information.
- 48% of respondents expressed that they were “Very Much” concerned and 31% were “Moderately” concerned that a natural disaster could impact their home or place of residence.
- 85% of respondents own their own home.
- 99% of respondents have access to the internet.

Public Outreach Survey



Marin County Multi-Jurisdictional Hazard Mitigation Plan Survey

<https://www.surveymonkey.com/r/MarincountyMJHMP>





Figure 349: Hazard Mitigation Plan Survey

PUBLIC COMMENT ON THE PLAN

To solicit public feedback on the draft plan, Marin OEM engaged in a multi-faceted approach intended to reach as many Marin residents as possible, including members of the community who are under-served and under-represented. All members of the community had the opportunity to provide initial comments on the plan during a two-week period from Wednesday, December 4, 2023, to Wednesday, December 18, 2023. Although the initial comment period was listed as two weeks, the public could submit comments indefinitely via the County’s website to support the County’s continuous improvement efforts. The base plan, as well as city, town and special district annexes, were available for download on emergency.marincounty.org (include photos). The website additionally asked for feedback in a survey in English and Spanish (include photos), the survey was designed to establish where that person lives or works, their top hazards of concern, elicit feedback on the plan and offer a place for them to share projects to reduce risk in their community. The survey collected responses from the community in English and in Spanish.

The website and survey were shared through traditional and social media (photos) The Marin Independent Journal (Marin IJ) used the press release to write an article (hopefully; include photos). Social media accounts were updated four times with an initial ask, two reminders, and a closing announcement. The Marin OEM Public Information Officer coordinated with the Marin County Public Information Officers (MAPIO) working group to distribute information to partner jurisdictions (city, town, and special districts) to share this information on their social media sites and with the communities in the area.

To reach those who may not be engaged digitally, the planning team worked with Marin County Community Response Teams, (CRTs are a collaboration of non-profit organizations supporting underrepresented communities in four zones) to conduct outreach with half-sheet flyers in English and Spanish to share in the 4 CRT zones (southern Marin, north Marin, west Marin, San Rafael). These half sheets were also shared county-wide at libraries, including in areas not covered by CRTs, like at the Fairfax library. CRTs are designed to reach Marin’s

traditionally underserved and underrepresented communities, so by conducting outreach through this method, we were able to inform residents who may not have been engaged otherwise, including residents in Marin City, West Marin, and the Canal District of San Rafael.

After December 18, 2023, the various participating jurisdiction and district profiles remained on the Marin County OEM website for public comments. The NMWD had an additional social media and website postings for final public comment from December 18, 2023 until submission of the profile to Cal OES on February 12, 2024.

The 14-day public comment period gave the public an opportunity to comment on the draft plan update prior to the plan's submittal to Cal OES. Comments received on the draft plan are available upon request. All comments were reviewed by the planning team and incorporated into the draft plan as appropriate.

Public Comments Considered by the Planning Team

The Marin County OEM posted the draft Hazard Mitigation Plan and hazard mitigation actions on their website and solicited public comments on the content. The NMWD distributed press releases directing the community to the Marin County OEM website to review the draft plans. The Planning Team gathered public comments and information on the Marin County OEM website regarding proposed and current Hazard Mitigation Actions. The Planning Team used the comments and suggestions to inform decisions regarding hazard mitigation strategies, actions, and priorities. Most comments included ideas for hazard mitigation projects and comments on the effectiveness of current mitigation projects. These comments were used to revise the proposed hazard mitigation actions which resulted in the final list of hazard mitigation actions listed in 3.5 Hazard Mitigation Actions.

1.3 OVERVIEW AND HISTORY

The North Marin Water District (NMWD) was formed in April of 1948 following voter approval under the State law known as the County Water District Law (Division 12 of the California Water Code). North Marin Water District is an independent special district governed by a five-member Board of Directors elected by division for four-year terms.

Prior to 1948, water service to the Novato area was provided by the Novato Water Company, a privately-owned public utility, operated for many years by the Cain family. In 1947, as Novato began to change and grow from a small agricultural community, Al Tresch acquired the water system. With about 500 customers the Novato Water Company began to experience serious water supply problems, since its existing wells were not producing sufficient high-quality water to meet its customers' needs.

In the fall of 1947, with the specter of limited water supply looming, the town leaders invited Marin Municipal Water District to a meeting to request that it extend its transmission line serving Hamilton Field to also serve the community of Novato. Marin Municipal turned down the request. A committee was then formed to advance the idea of purchasing the Novato Water

Company, developing a new source of water supply, and to upgrade and expand the system to meet the needs of the growing Novato community. The District was originally named North Marin County Water District. (In 1984, the word “County” was dropped from the name to eliminate any possible confusion as to whether or not the District was an agency of the County of Marin.)

1.4 SERVICE AREA

NMWD primarily serves the City of Novato and surrounding unincorporated areas in Marin County, encompassing approximately 20,750 active service connections serving approximately 24,100 dwelling units, as well as commercial, industrial and institutional customers. The NMWD service area covers 100 square miles. The estimated Novato Service Area population is 62,655. NMWD also provides service to several small improvement districts in the West Marin Service Area near the Pacific Ocean, via approximately 800 service connections.

The District has a unique territorial boundary (or boundaries as indicated) that includes: the Novato Water System that covers all of the City of Novato and surrounding unincorporated areas; the West Marin Water System that covers Point Reyes Station, Olema, Bear Valley, Silver Hills, Inverness Park and Paradise Ranch Estates; the Oceana Marin Wastewater System; and an area on the eastern side of Tomales Bay near Marshall that currently has no services available.



Figure 350: Map of the North Marin Water District
Source: Marin County OEM

Figure 6 illustrates the North Marin Water District service area in purple and the jurisdictional boundaries of the Cities of Novato and San Rafael in the black dashed lines.

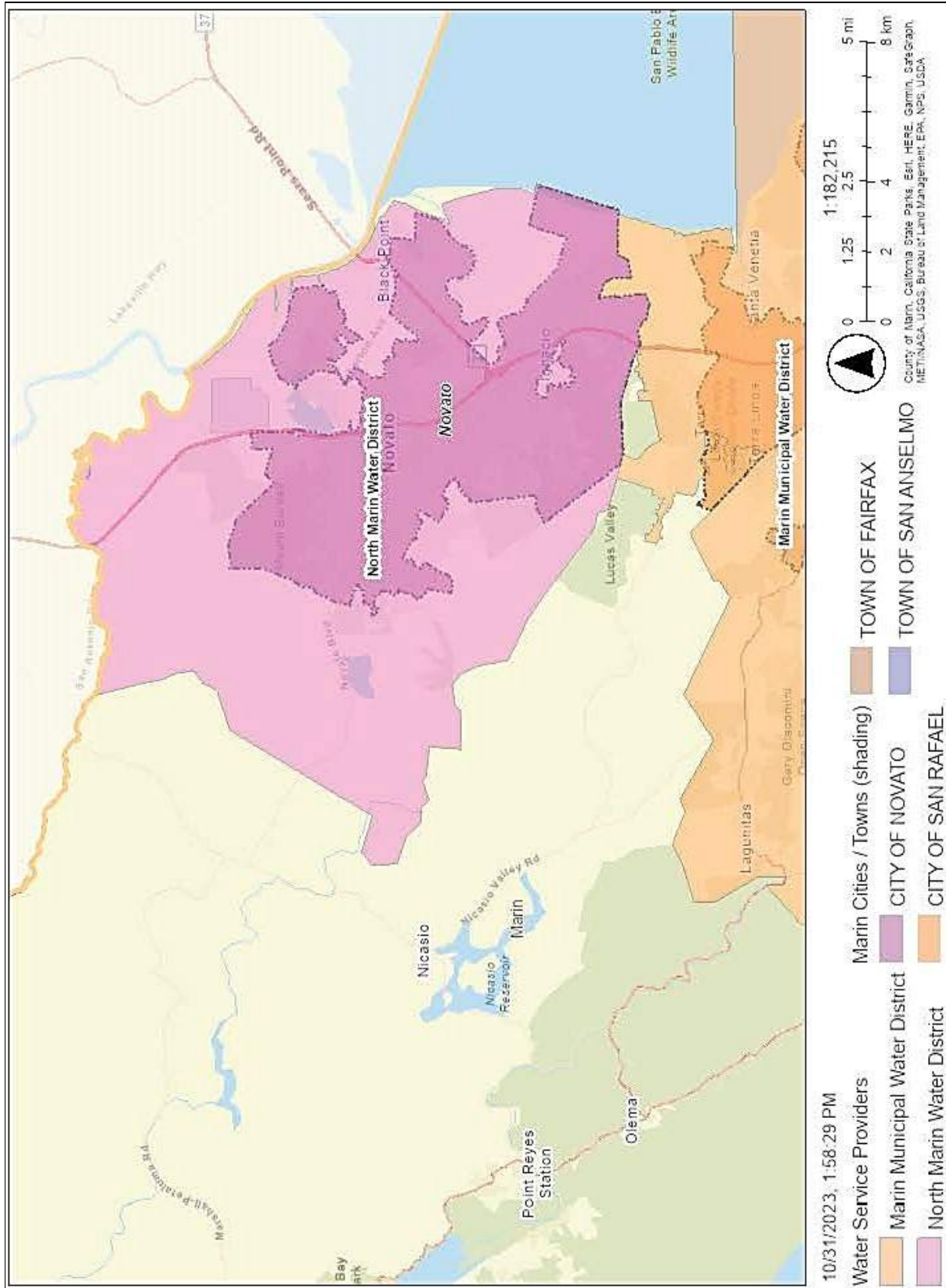


Figure 351: Map of the North Marin Water District and Jurisdictions
Source: Marin County OEM

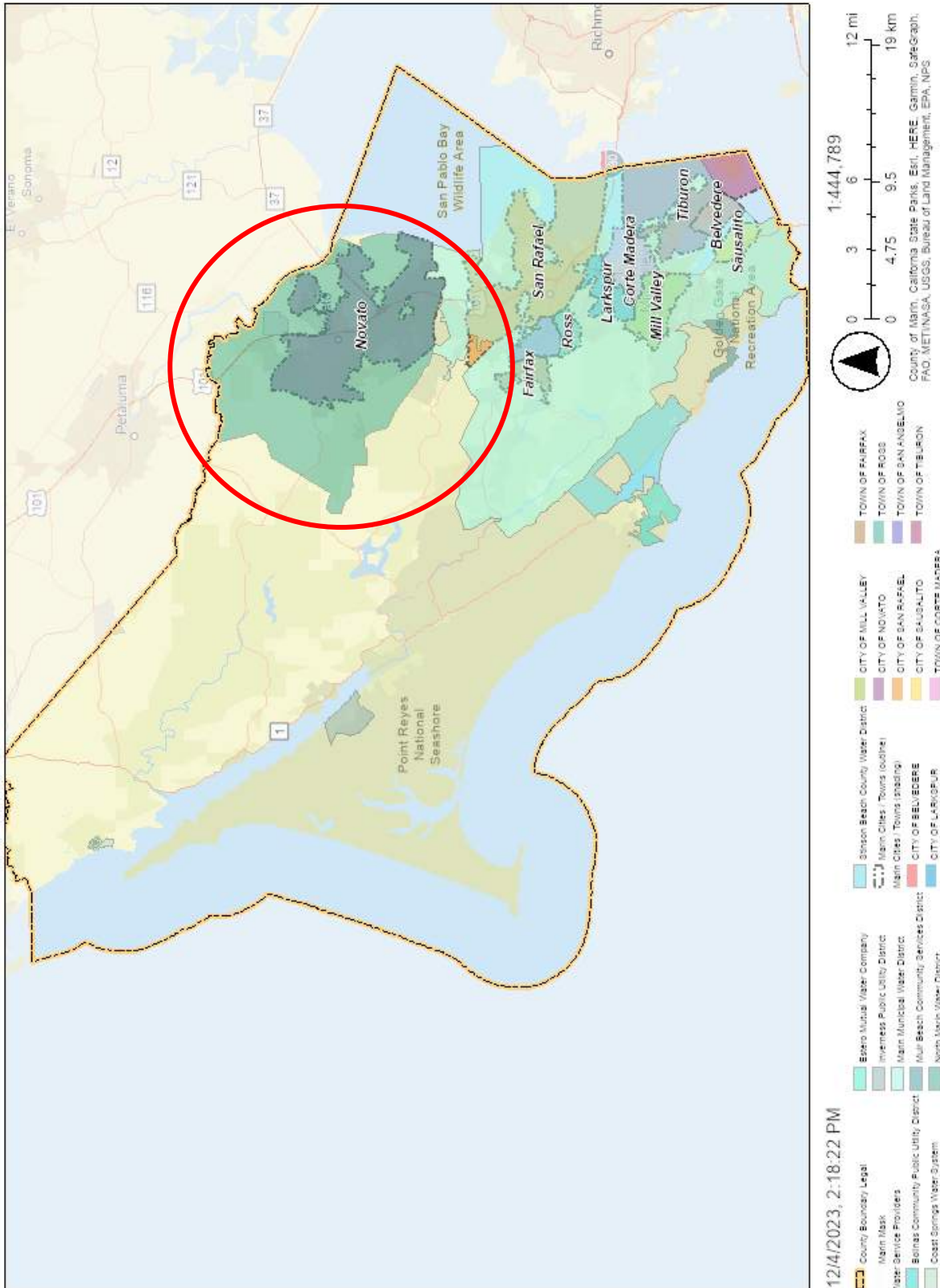


Figure 352: Map of the North Marin Water District within Marin County
Source: Marin County OEM

The North Marin Water District owns and operates Stafford Lake, Stafford Dam (DSOD Dam No. 88-0, National ID No. CA00321) and the associated treatment plant, which provides approximately 20% of Novato's water. The lake lies four miles west of downtown Novato and collects runoff from 8.3 square miles of watershed property located upstream at the upper tributary reaches of Novato Creek. Water from Stafford Lake is drawn by the intake tower and fed by gravity or by pumping (depending on the lake level) into the treatment plant located just below the dam. In addition to providing water supply for domestic needs and firefighting purposes, Stafford Dam provides flood protection for the greater Novato area. The Marin County Flood Control and Water Conservation District has partnered with NMWD to share in the cost of obtaining additional flood liability insurance. Stafford Dam (also known as the Novato Creek Dam) is approximately 71 feet tall with a crest length of 650 feet, is classified as an Extremely High Hazard Dam based on its size and potential for loss of life and property should the dam fail.

Water from the Russian River via connection to the Sonoma County Water Agency's aqueduct provides the remaining 80% of the Novato Service Area supply of water. This water originates from both the Eel River and the Russian River watersheds. The water supply for the West Marin Service Area is derived from groundwater from the Lagunitas Creek watershed.

NMWD maintains and operates approximately 340 miles of pipeline, 42 tanks totaling over 37 million gallons of storage, and associated pump stations, hydropneumatic systems, and regulator valves. NMWD sizes its storage tanks to meet operational, firefighting and emergency requirements. Storage requirements for both the Novato and West Marin Service Areas are updated on a 5-year cycle and are based in part on input provided by Novato Fire Protection District and Marin County Fire Department. NMWD evaluates water supply and consumer consumption on a 5-year cycle via its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) in accordance with state Department of Water Resources (DWR) guidelines and requirements.

Ensuring water quality and protecting public health is one of NMWD's primary goals. Water quality data is routinely collected throughout the distribution systems and at water sources.

1.5 OFFICE OF THE GENERAL MANAGER & ADMINISTRATION

The General Manager is appointed by the Board of Directors to carry out the day-to-day activities of NMWD pursuant to the NMWD Regulations and Board Policies. The Manager has full responsibility for the maintenance, operation and construction of the NMWD water and wastewater systems and authority to determine employee duties to carry out these responsibilities. Refer to NMWD'S website <https://nmwd.com/about/> for the most current organizational and administrative matters related to the Office of the General Manager

1.6 FINANCING

NMWD reports its activities as an Enterprise Fund under the broad category of funds called proprietary funds using the full accrual basis of accounting. Expenditures are tracked by department, with each department delineated by function and specific activity, to provide management and the Board with better cost control measures. At the end of each fiscal year, these costs are combined to arrive at the financial position and results of operations reflected in

NMWD's basic financial statements. For the latest NMWD financial statement, refer to <https://nmwd.com/about/documents> - NMWD Annual Comprehensive Financial Reports.

Fiscal year 2022 financial highlights include:

The District, on a consolidated basis, received 99% of budgeted operating revenue and expended 114% of budgeted operating expenditures, resulting in a net loss of \$3.3 million. Four million (36%) of the Capital Improvement Project Budget was expended. The year ended with a cash balance of \$44.7 million, an increase of \$20 million from the prior year.

Novato potable water consumption decreased 20% from the prior fiscal year. Stafford Lake Water Treatment Plant produced 168MG, down 20% from the prior fiscal year. The net loss of \$3.3 million exceeded the \$34,000 budgeted net loss, and compares to a net income of \$463,000 the prior fiscal year. Novato Water ended the fiscal year with a cash balance of \$37.1 million. A 6% increase applicable to Novato Water customers was approved effective July 1, 2021.

The Novato Sanitary District and Las Gallinas Valley Sanitary District, along with the Deer Island Recycled Facility, combined to produce 252MG of Recycled Water, down 2% from the prior fiscal year. The fiscal year net income of \$83,000 was greater than the \$448,000 budgeted net loss and compares to a net loss of \$52,000 the prior fiscal year. Recycled Water ended the fiscal year with a cash balance of \$6.2 million. A 6% increase applicable to Recycled Water customers was approved effective July 1, 2021.

West Marin Water consumption was down 25% from the prior fiscal year. The \$136,000 net loss compares to a budgeted net income of \$165,000 and to a net loss of \$8,000 from the prior fiscal year. West Marin Water ended the fiscal year with a cash balance of \$793,000. A 6% increase applicable to West Marin Sewer customers was approved effective July 1, 2021.

Oceana Marin Sewer's net income of \$48,000 compares to a budgeted net income of \$92,000 and to net income of \$48,000 from the prior fiscal year. Oceana Marin ended the year with a \$485,000 cash balance. A 5% increase applicable to Oceana Marin Sewer customers was approved effective July 1, 2021.

1.7 WEATHER AND CLIMATE

The North Marin Water District and the City of Novato lie 30 feet above sea level. In the District and Novato, the summers are long, comfortable, arid, and mostly clear and the winters are short, cold, wet, and partly cloudy. Over the course of the year, the temperature typically varies from 41.8°F to 74.7°F and is rarely below 41°F or above 75°F. The difference in precipitation between the driest month and the wettest month is 5 inches. The annual rainfall is 18 inches. The month of highest relative humidity is February (79 %). The month with the lowest relative humidity is June (65 %). The month which sees the most rainfall is January. The driest month of the year is July.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C	8.9 °C	9.7 °C	11 °C	12.2 °C	14.4 °C	16.8 °C	17.1 °C	17.3 °C	17.2 °C	15.4 °C	11.9 °C	9.1 °C
(°F)	(48.1) °F	(49.5) °F	(51.8) °F	(53.9) °F	(57.9) °F	(62.2) °F	(62.8) °F	(63.1) °F	(63) °F	(59.7) °F	(53.3) °F	(48.5) °F
Min. Temperature °C (°F)	5.5 °C (41.8) °F	6.2 °C (43.1) °F	7.3 °C (45.1) °F	8.2 °C (46.8) °F	10.1 °C (50.1) °F	11.8 °C (53.3) °F	12.4 °C (54.4) °F	12.9 °C (55.2) °F	12.6 °C (54.7) °F	11.2 °C (52.1) °F	8.2 °C (46.7) °F	5.9 °C (42.6) °F
Max. Temperature °C	13.7 °C	14.5 °C	16 °C	17.5 °C	20 °C	23.2 °C	23.6 °C	23.7 °C	23.9 °C	21.4 °C	16.8 °C	13.5 °C
(°F)	(56.7) °F	(58.1) °F	(60.8) °F	(63.4) °F	(68.1) °F	(73.8) °F	(74.5) °F	(74.7) °F	(75.1) °F	(70.6) °F	(62.3) °F	(56.2) °F
Precipitation / Rainfall	118	124	88	41	22	5	1	2	2	25	58	114
mm (in)	(4)	(4)	(3)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(4)
Humidity(%)	78%	79%	76%	70%	68%	65%	70%	71%	68%	68%	74%	77%
Rainy days (d)	8	7	6	4	3	1	0	0	0	2	5	7
avg. Sun hours (hours)	5.7	6.4	7.8	9.4	10.0	10.6	9.3	8.5	8.7	7.8	6.7	5.6

Data: 1991 - 2021 Min. Temperature °C (°F), Max. Temperature °C (°F), Precipitation / Rainfall mm (in), Humidity, Rainy days. Data: 1999 - 2019: avg. Sun hours

Figure 353: The North Marin Water District Precipitation and Monthly Temperatures
Source: En.Climate-Data.org

1.8 SOCIAL VULNERABILITY AND RISK

The California Governor’s Office of Emergency Services (Cal OES) has initiated the “Prepare California” grant program focused on building community resilience amongst vulnerable individuals living in the areas of the state most susceptible to natural disasters. The Prepare California Initiative is aimed at reducing long-term risks from natural disasters by investing in local capacity building and mitigation projects designed to protect communities.

Prepare California leverages funds approved in Governor Gavin Newsom’s 2021-22 State Budget and is designed to unlock federal matching funds for community mitigation projects that vulnerable communities would otherwise be unable to access. This program is intended for communities that are the most socially vulnerable and at the highest risk for future natural hazard events. The state identified communities by prioritizing California census tracts according to their estimated hazard exposures and social vulnerability.

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

For purposes of this plan the following National Risk Index (NRI) hazards are profiled in support of eight of the twelve Marin County MJHMP Hazards. NRI data was not available for Dam Failure, Land Subsidence, Levee Failure, or Sea Level Rise.

Table 4: NRI Hazards and Marin County MJHMP Hazards	
NRI Hazards	Marin County MJHMP Hazards
Earthquake	Earthquake
Riverine Flooding	Flooding
Coastal Flooding	Flooding
Wildfire	Wildfire
Landslide	Debris Flow
Drought	Drought
Heat Wave	Severe Weather -Extreme Heat
Tsunami	Tsunami
Strong Wind	Severe Weather – Wind, Tornado

Table 174: NRI Hazards and Marin County MJHMP Hazards

Source: FEMA National Risk Index 2023

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Calculating the Risk Index

Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience:

$$\text{Risk Index} = \text{Expected Annual Loss} \times \text{Social Vulnerability} \div \text{Community Resilience}$$

Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value.

The following Tables and Figures illustrates the NRI Hazard Type Risk Index and the Social Vulnerability Map for the North Marin Water District for the various Census Tracts within their service area.

Tables 5 - 9 illustrate the NRI Hazard Type Risk Index for the NMWD service area Census Tracts

Table 5: NRI Hazard Type Risk Index for Novato Census Tract 1022.03						
Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Score
Earthquake	\$2,722,258	Relatively High	Very High	1.35	\$3,686,835	98.6
Riverine Flooding	\$183,359	Relatively High	Very High	1.35	\$248,329	92.9
Heat Wave	\$8,084	Relatively High	Very High	1.35	\$10,949	53.2
Tornado	\$3,889	Relatively High	Very High	1.35	\$5,267	12.6
Landslide	\$2,470	Relatively High	Very High	1.35	\$3,345	84.4
Strong Wind	\$264	Relatively High	Very High	1.35	\$357	11.5
Wildfire	\$68	Relatively High	Very High	1.35	\$92	35.4
Coastal Flooding	\$0	Relatively High	Very High	1.35	\$0	0
Drought	\$0	Relatively High	Very High	1.35	\$0	0
Tsunami	\$0	Relatively High	Very High	1.35	\$0	0

Table 175: NRI Hazard Type Risk Index for Novato Census Tract 1022.03
Source: FEMA National Risk Index 2023

Figures 9 - 13 illustrate the Social Vulnerability Maps for the NMWD service area Census Tracts.

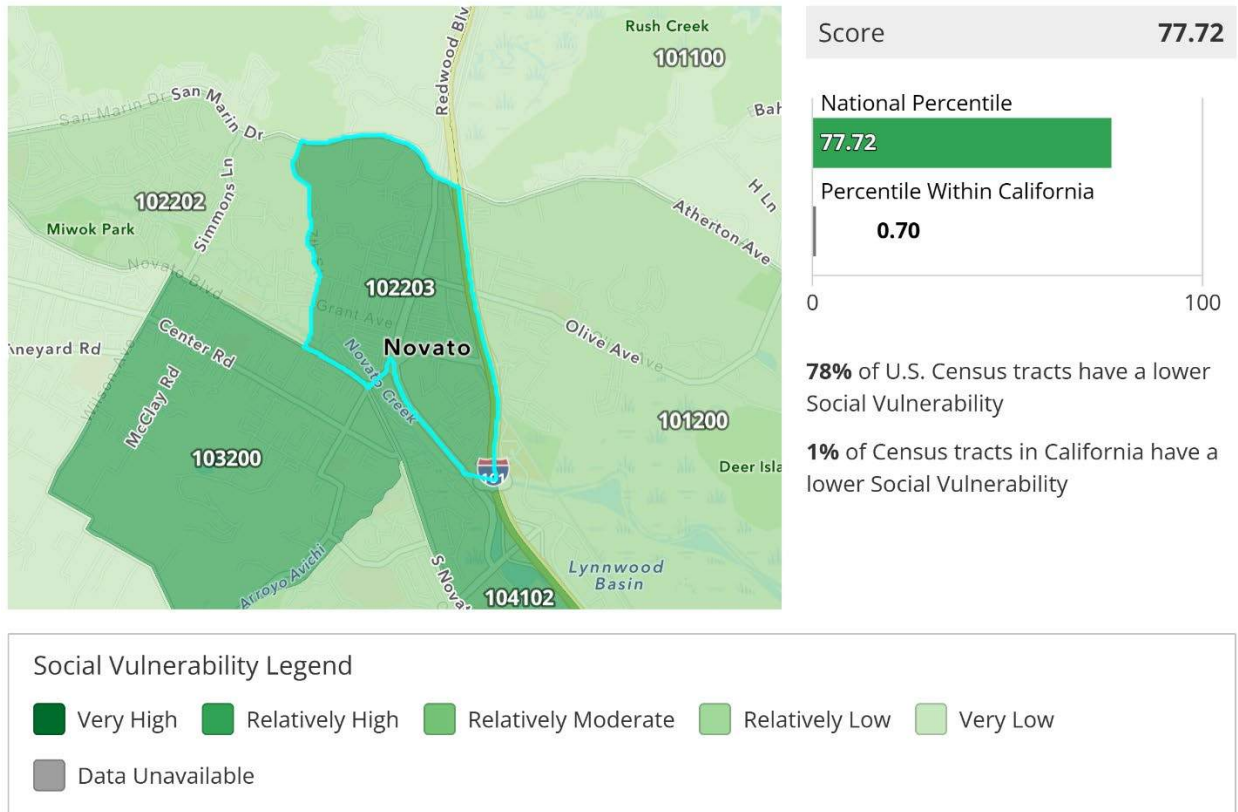
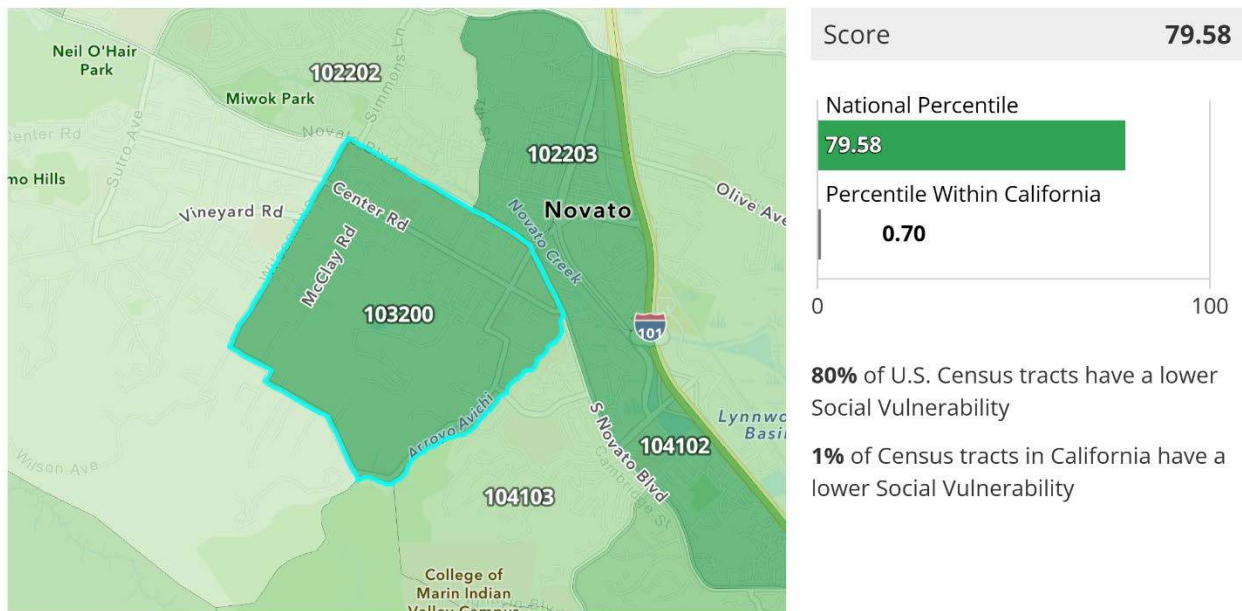


Figure 354: City of Novato Social Vulnerability Map Census Tract 1022.03
Source: FEMA National Risk Index 2023

Table 6: NRI Hazard Type Risk Index for Novato Census Tract 1032.00

Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Score
Earthquake	\$1,889,584	Relatively High	Very High	1.37	\$2,597,248	97.5
Riverine Flooding	\$1,697,035	Relatively High	Very High	1.37	\$2,332,588	99.4
Wildfire	\$43,948	Relatively High	Very High	1.37	\$60,407	91.9
Heat Wave	\$10,500	Relatively High	Very High	1.37	\$14,432	58.7
Tornado	\$5,050	Relatively High	Very High	1.37	\$6,941	16.8
Landslide	\$3,209	Relatively High	Very High	1.37	\$4,411	88.3
Strong Wind	\$342	Relatively High	Very High	1.37	\$471	13.8
Coastal Flooding	\$0	Relatively High	Very High	1.37	\$0	0
Drought	\$0	Relatively High	Very High	1.37	\$0	0
Tsunami	\$0	Relatively High	Very High	1.37	\$0	0

Table 176: NRI Hazard Type Risk Index for Novato Census Tract 1032.00
Source: FEMA National Risk Index 2023



Social Vulnerability Legend

- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- Data Unavailable

Figure 355: City of Novato Social Vulnerability Map Census Tract 10320.00
Source: FEMA National Risk Index 2023

Table 7: NRI Hazard Type Risk Index for Novato Census Tract 1012.00						
Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Score
Earthquake	\$2,569,756	Relatively Low	Very High	0.88	\$2,272,662	96.8
Riverine Flooding	\$154,980	Relatively Low	Very High	0.88	\$137,063	88.1
Coastal Flooding	\$64,204	Relatively Low	Very High	0.88	\$56,781	95
Drought	\$44,177	Relatively Low	Very High	0.88	\$39,070	95.8
Heat Wave	\$4,569	Relatively Low	Very High	0.88	\$4,041	36.7
Wildfire	\$4,251	Relatively Low	Very High	0.88	\$3,760	79
Tornado	\$3,094	Relatively Low	Very High	0.88	\$2,736	6.3
Landslide	\$2,521	Relatively Low	Very High	0.88	\$2,230	77.9
Strong Wind	\$168	Relatively Low	Very High	0.88	\$148	6
Tsunami	\$0	Relatively Low	Very High	0.88	\$0	0

Table 177: NRI Hazard Type Risk Index for Novato Census Tract 1012.00
Source: FEMA National Risk Index 2023

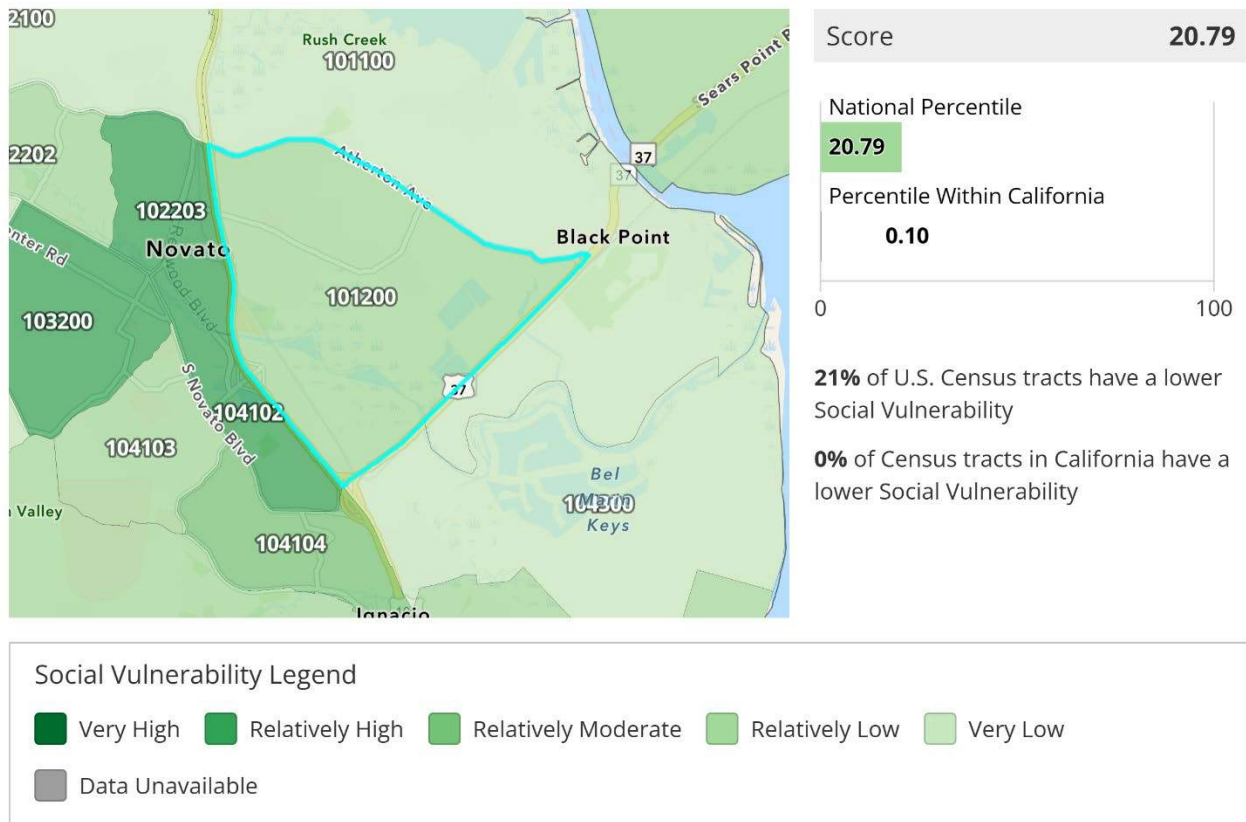


Figure 356: City of Novato Social Vulnerability Map Census Tract 1012.00
Source: FEMA National Risk Index 2023

Table 8: NRI Hazard Type Risk Index for Novato Census Tract 1022.02

Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Score
Earthquake	\$1,255,306	Relatively Low	Very High	0.94	\$1,177,508	92.4
Riverine Flooding	\$375,636	Relatively Low	Very High	0.94	\$352,356	94.9
Heat Wave	\$9,379	Relatively Low	Very High	0.94	\$8,798	49.2
Tornado	\$3,991	Relatively Low	Very High	0.94	\$3,744	8.7
Landslide	\$3,696	Relatively Low	Very High	0.94	\$3,467	85
Wildfire	\$1,511	Relatively Low	Very High	0.94	\$1,417	69.9
Strong Wind	\$295	Relatively Low	Very High	0.94	\$277	9.6
Coastal Flooding	\$0	Relatively Low	Very High	0.94	\$0	0
Drought	\$0	Relatively Low	Very High	0.94	\$0	0
Tsunami	\$0	Relatively Low	Very High	0.94	\$0	0

Table 178: NRI Hazard Type Risk Index for Novato Census Tract 1022.02
Source: FEMA National Risk Index 2023

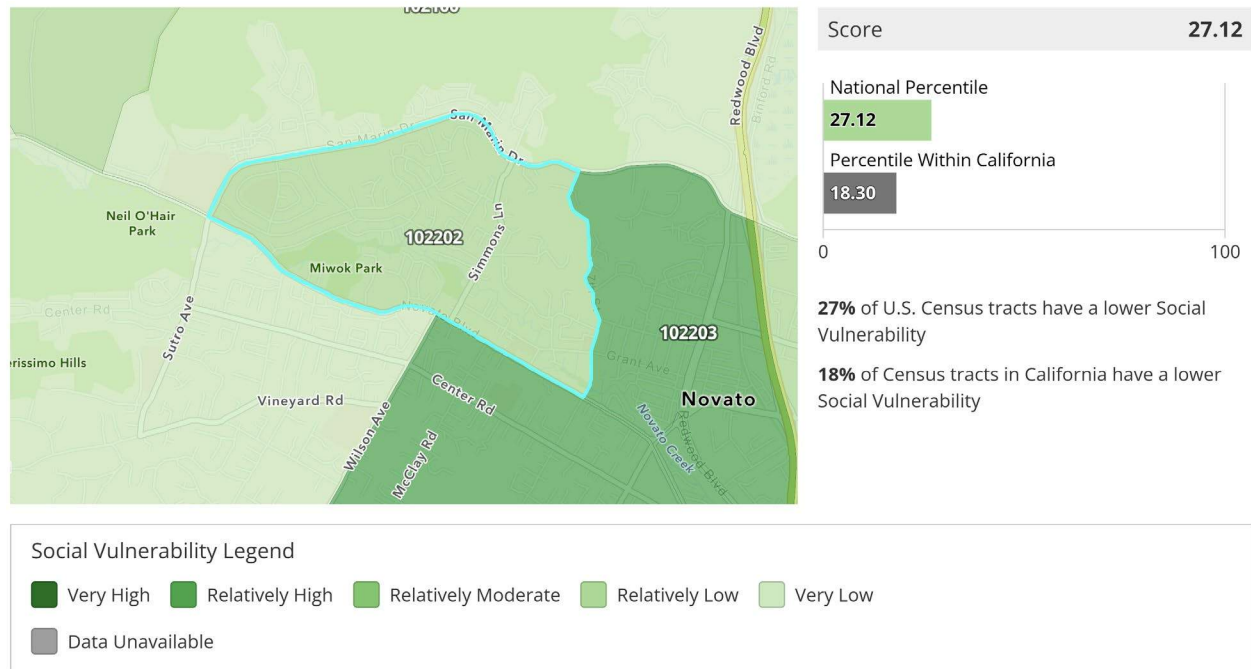


Figure 357: City of Novato Social Vulnerability Map Census Tract 1022.02
Source: FEMA National Risk Index 2023

Table 9: NRI Hazard Type Risk Index for Novato Census Tract 1041.02						
Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Score
Earthquake	\$1,540,791	Relatively High	Very High	1.19	\$1,837,291	95.6
Riverine Flooding	\$690,513	Relatively High	Very High	1.19	\$823,391	98
Heat Wave	\$8,314	Relatively High	Very High	1.19	\$9,914	51.4
Coastal Flooding	\$5,903	Relatively High	Very High	1.19	\$7,038	88.3
Tornado	\$3,151	Relatively High	Very High	1.19	\$3,757	8.8
Landslide	\$2,413	Relatively High	Very High	1.19	\$2,878	82.1
Wildfire	\$282	Relatively High	Very High	1.19	\$337	49.7
Strong Wind	\$254	Relatively High	Very High	1.19	\$303	10.2
Drought	\$0	Relatively High	Very High	1.19	\$0	0

Table 179: NRI Hazard Type Risk Index for Novato Census Tract 1041.02
Source: FEMA National Risk Index 2023

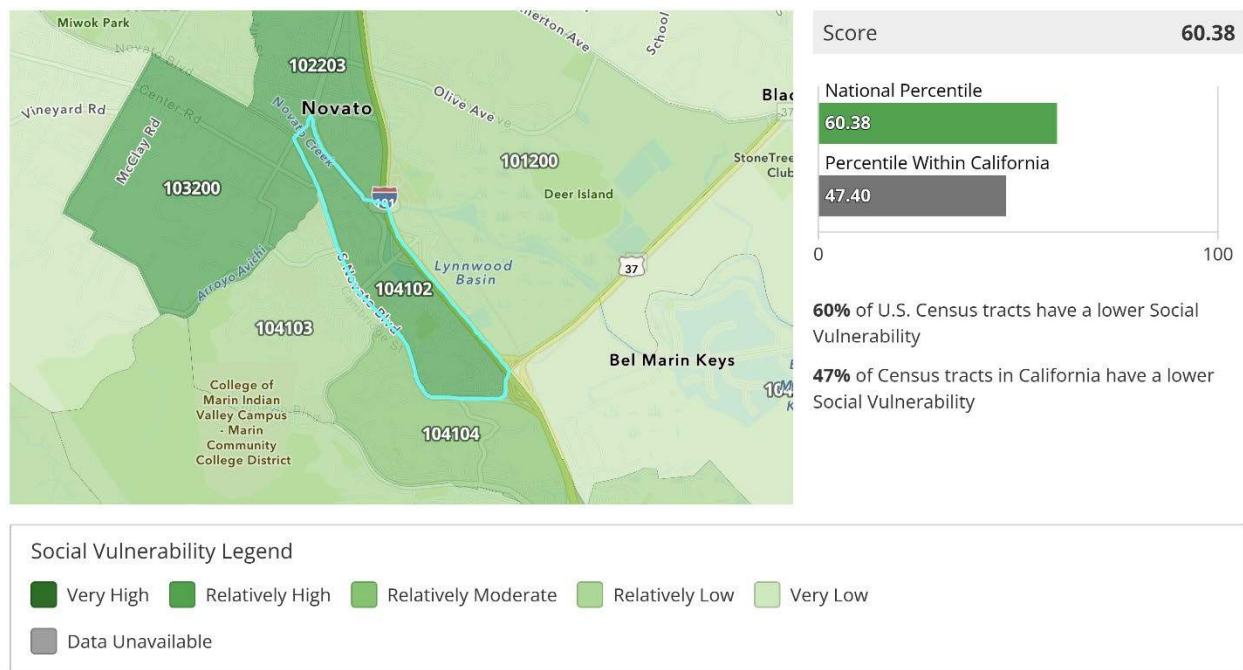


Figure 358: City of Novato Social Vulnerability Map Census Tract 1041.02
Source: FEMA National Risk Index 2023

Social Vulnerability in Marin County and the North Marin Water District

Most socially vulnerable residents in Marin County OA reside in parts of Novato, parts of San Rafael, including in and around the Canal District, the Greenbrae neighborhood of Larkspur, and the unincorporated areas of Marin City and Santa Venetia. This aligns with what the County knows about Marin residents. However, discrepancy lies in the western, more rural area of the county. West Marin is comprised of seven villages, and other populated areas, that are distanced from the centralized resources in the eastern part of the county. At three local elementary school in West Marin (2022-2023 school year), students eligible for free and reduced lunch program are, 62%, 41%, and 52%, a reflection of the financial capacity of local families. West Marin is home to many farms that may employ and house underrecognized workers that may not have taken part in a census survey, what the SVI is calculated from. In the fourth quarter of FY 2021/22 the bus routes traveling to West Marin (Rural Routes) were the only service category to have increased in ridership since pre-COVID (increase 0.1%; Marin Transit, 2022) showing the reliance of West Marin residents on public transportation; however, this data continues to adjust based upon the increase in alternate methods of mass transportation. Considering this, the County of Marin acknowledges that unique social factors in West Marin require different approaches than other parts of the County.

Looking to the community resilience index (CRI) results, the data is only calculated at the county-level and compared across the nation. As a whole, Marin County is considered to have a “very high” ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S. Unfortunately, this metric does not give us the distinct experiences of the diverse communities across Marin.

When the Estimated Annual Loss Index, Social Vulnerability Index, and Community Resilience Index are aggregated as one, final results of the National Risk Index show Marin County as a whole to have “Relatively High” risk, this is due to the financial implications a disaster may have on the county. When broken out by census tract, five tracts are in the highest category (“Very High Risk”), this matches generally with the same tracts that are ranked in as higher social vulnerability; parts of Novato, parts of San Rafael, including in and around the Canal District, the Greenbrae neighborhood of Larkspur, and unincorporated areas of Santa Venetia.

However, Marin City is ranked as “Very Low” risk for the National Risk Index. Previous discussion highlighted why the Expected Annual Loss was low, but further discussion is required. As a County, we know Marin City should not be classified as “Very Low” on the NRI. Marin City residents, for example, only have one way in and out of their community and this road floods frequently, making it unsafe to cross and leave the community for work, school, medical resources. Additionally, there is only one “grocery” store, a Target, in Marin City. Both of these elements contribute to the vulnerability of residents as they may be unable to leave or return home and have limited access to groceries, relying on a single store’s supply chain. At the local elementary school in Marin City, 47% of students are eligible for free and reduced-price meals (2022 – 2023 school year), a reflection of the financial capacity of local families. All this means, we can expect the social and built capacity of Marin City to be limited.

Although, customers within the North Marin Water District reside within census tracts that have a Social Vulnerability Index of “Relatively High” to “Relatively Low”, the North Marin Water District’s ability to serve this community is limited to the potable water they provide. Their

influence may be realized during an emergency by ensuring the continued delivery of potable water which are considered a community lifeline. They may also work with these impacted customers to provide fee relief through local, state, and or federal programs where appropriate. The majority of socially vulnerable population services are provided through the county, state, and federal government or other non-governmental or volunteer agencies or organizations.

1.9 CRITICAL FACILITIES

Novato

Stafford Lake – Local source provides 20-25% of North Marin’s supply. Stafford Lake lies four miles west of downtown Novato and collects the runoff from 8.3 square miles of watershed land adjacent to the upper reaches of Novato Creek. The lake has a surface area of 230 acres and holds 4,450-acre feet or 1,450 million gallons (MG) of water. Water from Stafford Lake is fed into the Stafford Lake Water Treatment Plant, (located just below the dam) at a maximum rate of 6 million gallons per day. In FY 2021-22, 515.8 acre feet (168.1MG) of water was produced from the facility between July and October.

Russian River – Provides 75-80% of North Marin’s annual supply. Russian River water originates from both the Eel River and the Russian River watersheds northeast of the City of Ukiah (Lake Mendocino) and west of Healdsburg (Lake Sonoma). The Coyote Dam at Lake Mendocino impounds the Eel River diversions and winter runoff from the local watershed. Warm Springs Dam at Lake Sonoma impounds winter runoff from the Dry Creek and Warm Springs local watersheds. Lakes Mendocino and Sonoma combined can store 367,500-acre feet to meet regional water supply needs, which totaled 46,200-acre feet in FY 2019 20. Releases from the lakes flow to a point about 10 miles upstream of Guerneville (see map on page 31 of this report), where six collector wells draw river water that has been filtered through 60 to 90 feet of natural sand and gravel to perforated pipes located at the bottom of each well. The thick layer of sand and gravel through which the water must pass before reaching the intake pipes provides a highly efficient, natural filtration process which, with chlorination treatment, produces a clear, potable, bacteria-free water. This water is then fed directly into the SCWA aqueduct system. In FY 21-22, North Marin received 5,797-acre feet (1,889MG) of Russian River water. North Marin has an agreement in place with SCWA to provide sufficient supply and meet Novato’s current and future water supply needs. There continues to be competing interests for Russian River water, principally to protect steelhead and salmon listed as threatened or endangered species under the Endangered Species Act.

West Marin

Groundwater Wells – Local source provides 100% of North Marin’s supply. Four active wells provide water for our West Marin customers: Coast Guard Well #2, Coast Guard Well #4, Gallagher Well No. 1, and Gallagher Well No. 2. In FY 21-22, 176.5-acre feet (57.5MG) of water was produced from a combination of the first three wells listed, as construction of the new Gallagher Well No. 2 was completed in October 2022 which added approximately 180,000 gallons per day to the water system.

The following list of facilities has been determined to be critical to the ability of the North Marin Water District to fulfill the requirements of its mission during an emergency:

Table 10: NMWD Critical Facilities in Fire and Flood Zone				
Category	Name	Address	Fire Severity Zone	Flood Zone
Critical Facilities				
District Building	NMWD Headquarters: Administration, Laboratory, and Corporation Yard	999 Rush Creek Place Novato, CA 94945	Moderate	500-year flood plain (Zone X)
District Building	Stafford Water Treatment Plant	3500 Novato Blvd. Novato, CA 94945	Moderate	n/a
District Building	Point Reyes Water Treatment Plant	101 Commodore Webster Dr. Point Reyes Station, CA 94956	Moderate	100-year flood plain (Zone AE)
High Potential Loss Facilities				
DAM	Novato Creek Dam	3500 Novato Blvd. Novato, CA 94945	Moderate	n/a
Critical Infrastructure				
Water	North Marin Aqueduct, 30"-42" water transmission pipeline	Linear utility –generally paralleling US 101	Various	n/a
Water	San Marin Pump Station	APN 125-411-25	High	n/a
Water	Lynwood Pump Station	Intersection of S. Novato Blvd & Sunset Parkway, Novato, CA 94945	Moderate	n/a
Water	Cherry Hill Pump Station	APN 143-421-33	High	n/a
Water	School Road Pump Station	Intersection of School Road & Sunset Trail, Novato, CA 94945	High	n/a
Water	Black Point @ Hwy 37 Regulating Station	Intersection of Harbor Drive & Hwy 37 Eastbound On-Ramp, Novato, CA 94945	High	AE
Water	Black Point @ Grandview Avenue Regulating Station	Intersection of Harbor Drive & Grandview Avenue, Novato, CA 94945	High	AE
Water	Coast Guard Wells (No. 2 & 4)	101 Commodore Webster Dr. Point Reyes Station, CA 94956	Moderate	AE
Water	Gallagher Well No. 1	APN 119-050-12	Moderate	AE
Water	Gallagher Well No. 2	APN 119-050-17	Moderate	AE
Water	Olema Pump Station	APN 166-220-10	Moderate	AE
Water	Bear Valley Pump Station	APN 166-350-10	Moderate	n/a
Water	Inverness Park Pump Station	APN 114-294-33	High	n/a
Water	Paradise Ranch Estates Pump Station No. 1	APN 114-111-19	Moderate	n/a
Water	Paradise Ranch Estates Pump Station No. 2	APN 114-100-89	High	n/a
Water	Paradise Ranch Estates Pump Station No. 3	APN 114-100-91	High	n/a
Water	Paradise Ranch Estates Tank No. 1	APN 114-111-19	Moderate	n/a
Water	Paradise Ranch Estates Tank No. 2	APN 114-100-89	High	n/a
Wastewater	Tahiti Way Lift Station	APN 100-261-47	Moderate	n/a
Wastewater	Oceana Marin Wastewater Storage and Treatment Ponds	APN 100-100-56	Moderate	n/a

Table 180: North Marin Water District Critical Facilities

Source: North Marin Water District

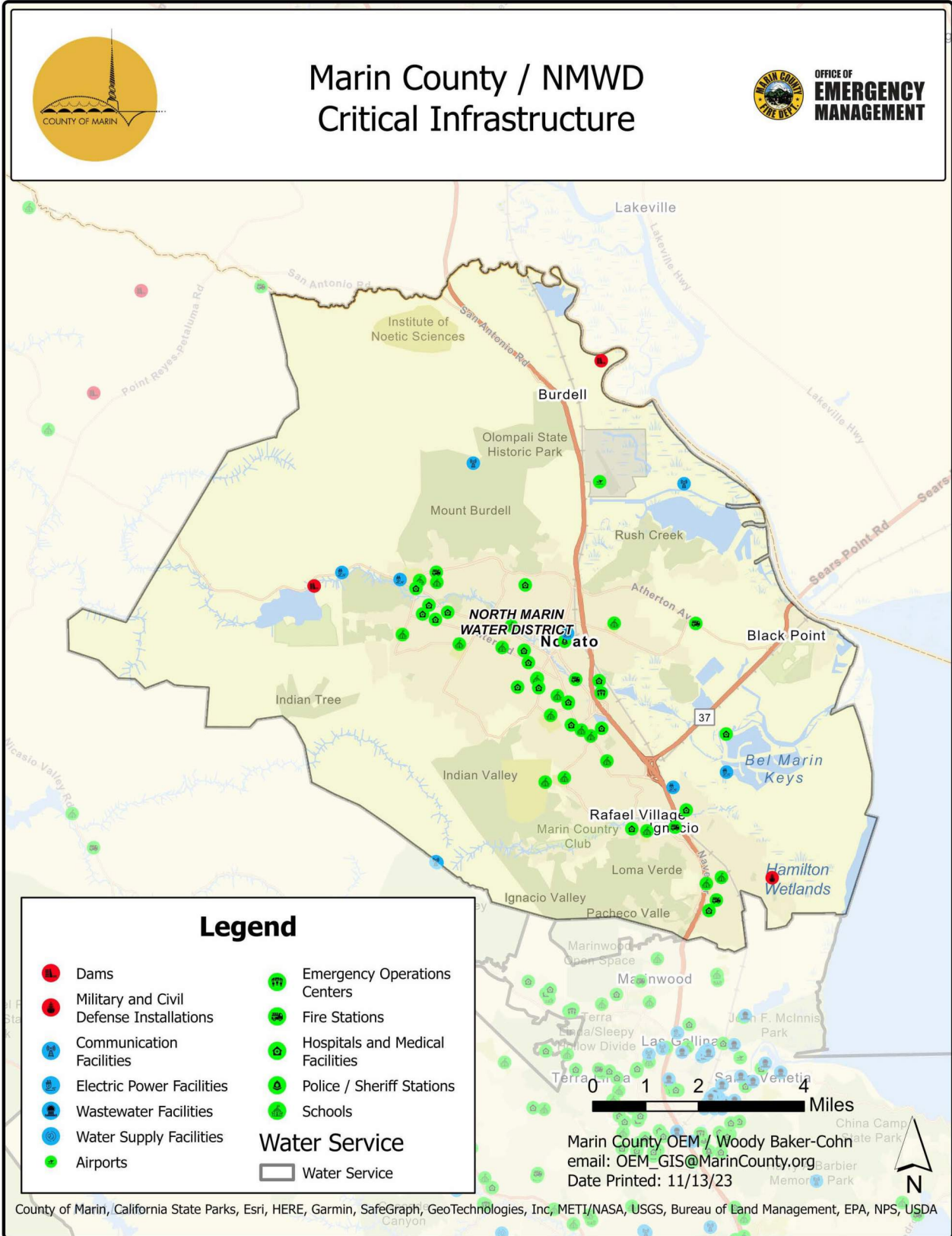


Figure 359: North Marin Water District Critical Facilities
Source: Marin County OEM

SECTION 2.0: HAZARD IDENTIFICATION AND RISK ASSESSMENT

The North Marin Water District identified hazards that affect the District and developed natural hazard profiles based upon the countywide risk assessment, past events and their impacts. Figure 15 shows the top hazards that the Jurisdiction is at risk from according to the hazard mitigation Steering Committee.

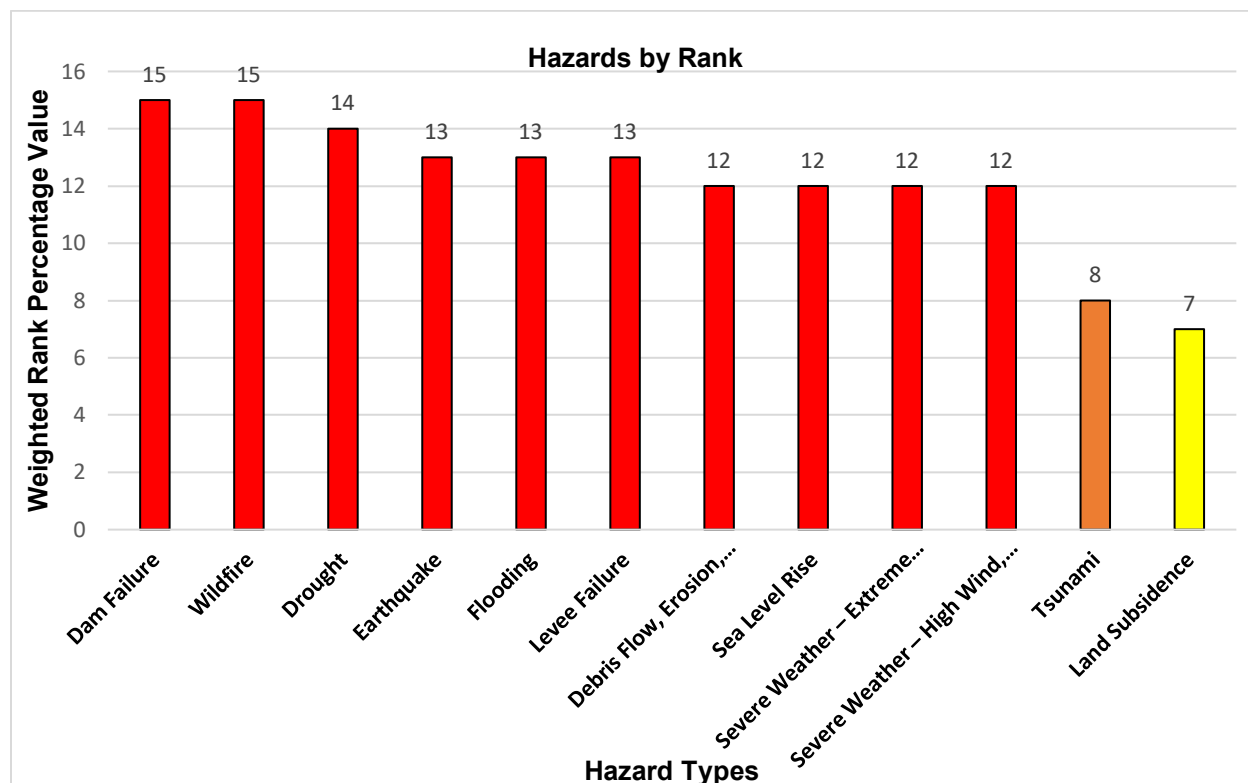


Figure 360: NMWD Risk Assessment – Planning Team Top Hazards

Figure 16: Risk Rank Categorization	
Risk Level	Risk Numerical Score
High Risk	12 - 16
Serious Risk	8 - 11
Moderate Risk	4 - 7
Low Risk	1 - 3

Figure 361: Hazard Risk Categorization

Each Marin County OA MJHMP participating jurisdiction and organization reviewed and approved the Top Hazards identified by the Planning Team. Each participating jurisdiction and district then completed a more complex assessment tool to further develop their hazard assessment and prioritization.

The planning process used the available FEMA tools to evaluate all the possible threats faced. The primary tool selected was the Hazard Assessment and Prioritization Tool. This matrix allowed the participating jurisdiction or organization to assess their own level of vulnerability and

mitigation capability. Each participating Jurisdiction and organization assessed the top hazards for:

- Probability/ Likelihood of Future Events
- Geographic Extent
- Magnitude/ Severity
- Climate Change Influence
- Significance

Probability/ Likelihood of Future Events

- **Unlikely:** Occurs in intervals greater than 100 years - Less than 1% probability of occurrence in the next year or a recurrence interval greater than 100 years.
- **Occasional:** Occurring every 11 to 100 years - 1-10% probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** Occurring every 1 to 10 years - 10-90% probability of occurrence in the next year or recurrence interval of 1 to 10 years.
- **Highly Likely:** Occurring almost every year - 90-100% probability of occurrence in the next year or a recurrence interval of less than 1 year.

Geographic Extent

- **Negligible:** Less than 10% of the planning area
- **Limited:** 10-25% of the planning area
- **Significant:** 25-75% of planning area
- **Extensive:** 75-100% of planning area

Magnitude/ Severity

- **Weak:** Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage.
- **Moderate:** Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days.
- **Severe:** Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
- **Extreme:** Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions.

Table 11: Select Hazards Magnitude and Severity Scale					
Hazard	Scale/Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index	+1.99 to -1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 and below
Earthquake	Modified Mercalli	I to IV	V to VII	VIII	IX to XII
	Richter Magnitude	2,3	4,5	6	7,8
Tornado	Fujita Tornado Damage Scale	FO	F1, F2	F3	F4, F5

Table 181: Select Hazards Magnitude/ Severity Scale or Index

Climate Change Influence

- **Low:** Minimal potential impact
- **Medium:** Moderate potential impact
- **High:** Widespread potential impact

Significance

- **Low:** Minimal potential impact - Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** Moderate potential impact - The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
- **High:** Widespread potential impact - The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with.

2.1 CLIMATE CHANGE

The County of Marin and associated jurisdictions profiled jointly recognize that the earth's climate is forcibly being augmented due to humans' reliance on fossil fuels and non-natural resources which pose negative impacts on the earth's climate. Reliance on fossil fuels and non-natural products results in the climate shifting to include unseasonable temperatures, more frequent and intense storms, prolonged heat and cold events, and a greater reliance on technological advancements to maintain the wellbeing of community members and balance of the environment. The forced adaptation to climatic shifts is necessary for the County and jurisdictions to understand and include with these assessments.

Locally to Marin, drought and rain events have already had devastating impacts to critical infrastructure, agriculture, and water resources; and globally, unseasonable temperatures have been identified as the cause for enhanced wildfires, severe droughts, ice sheets and glaciers disappearing, and persons emigrating from their countries due to a lack of sustainable, local resources. Melting land ice contributes additional water to the oceans and as ocean temperatures rise the water expands, both of which contribute to increase rates of sea level rise. Marin is bordered on the west by the Pacific Ocean and on the east by San Francisco Bay, making it particularly vulnerable to flooding and erosion caused by sea level rise.

The cause of current climate change is largely human activity, burning fossil fuels, natural gas, oil, and coal. Burning these materials releases greenhouse gases into Earth's atmosphere. Greenhouse gases trap heat from the sun's rays inside the atmosphere causing Earth's average temperature to rise. This rise in the planet's temperature was formerly called, "global warming", but climate change has shown to include both intense heat and cold shifts. The warming of the planet impacts local and regional climates. Throughout Earth's history, climate has continually changed; however, when occurring naturally, this is a slower process that has taken place over hundreds and thousands of years. The human influenced climate change that is happening now is occurring at an abnormally faster rate with devastating results.

GLOBAL OBSERVED AND PROJECTED IMPACTS AND RISKS

Source: Intergovernmental Panel on Climate Change, Headline Statements from the Summary for Policymakers, 2022

- Human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability.
- Global warming, reaching 1.5°C in the near-term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans.
- Beyond 2040 and depending on the level of global warming, climate change will lead to numerous risks to natural and human systems.
- The magnitude and rate of climate change and associated risks depend strongly on near-term mitigation and adaptation actions, and projected adverse impacts and related losses and damages escalate with every increment of global warming.
- Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions.

FUTURE TRENDS/ IMPACTS

Source: [Study Confirms Climate Models are Getting Future Warming Projections Right – Climate Change: Vital Signs of the Planet \(nasa.gov\)](#)

Global Warming

- If global warming transiently exceeds 1.5°C in the coming decades or later, then many human and natural systems will face additional severe risks.
- An estimated 60% of today's methane emissions are the result of human activities. The largest sources of methane are agriculture, fossil fuels, and decomposition of landfill waste.
- The concentration of methane in the atmosphere has more than doubled over the past 200 years. Scientists estimate that this increase is responsible for 20 to 30% of climate warming since the Industrial Revolution (which began in 1750).
- According to the most recent National Climate Assessment, droughts in the Southwest and heat waves (periods of abnormally hot weather lasting days to weeks) are projected to become more intense, and cold waves less intense and less frequent.
- The last eight years have been the hottest years on record for the globe.

**ATMOSPHERIC METHANE CONCENTRATIONS
SINCE 1984**

Data source: Data from NOAA, measured from a global network of air sampling sites

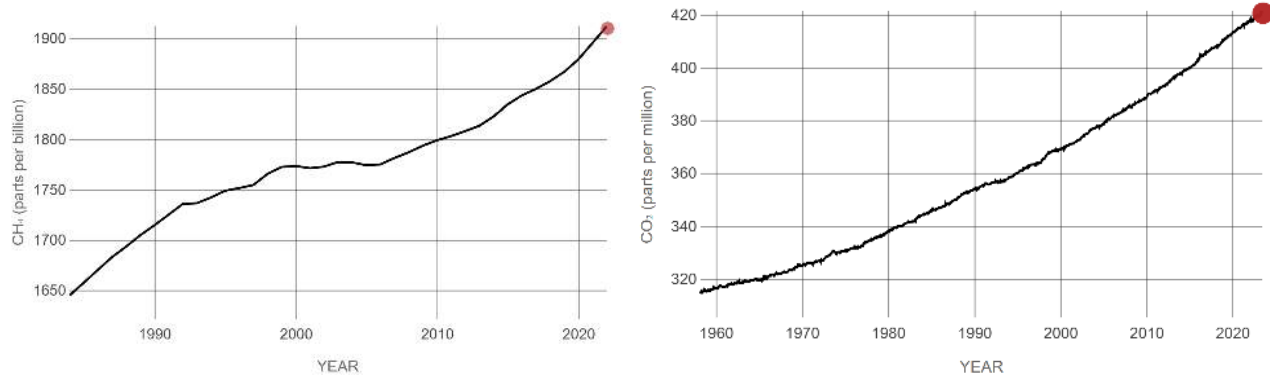


Figure 362: NASA Global Temperature Change CO2 Gas
Source: NASA Global Climate Change, 2022

TIME SERIES: 1884 TO 2022

Data source: NASA/GISS
Credit: NASA's Scientific Visualization Studio

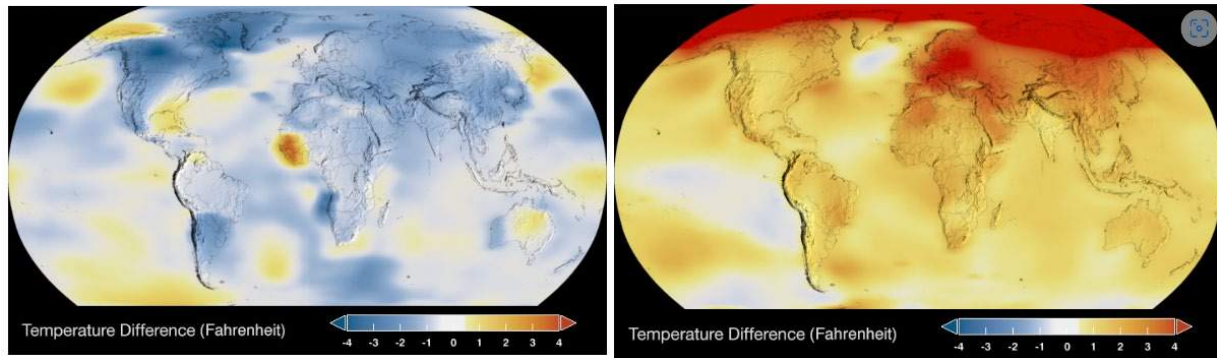


Figure 363: NASA Global Temperature Change 1884 to 2022
Source: NASA Global Climate Change, 2022

Drought

- A NASA-led study in 2022 concluded that the 22-year-long megadrought in southwestern US was the driest the territory had experienced in at least 1,200 years and was expected to persist through at least 2022.

Sea Level Rise

- Global sea levels are rising as a result of human-caused global warming, with recent rates being unprecedented over the past 2,500-plus years.

- U.S. Sea Level Likely to Rise 1 to 6.6 Feet by 2100.
- Global sea level has risen about 8 inches (0.2 meters) since reliable record-keeping began in 1880. By 2100, scientists project that it will rise at least another foot (0.3 meters), but possibly as high as 6.6 feet (2 meters) in a high-emissions scenario.
- Sea ice cover in the Arctic Ocean is expected to continue decreasing, and the Arctic Ocean will very likely become essentially ice-free in late summer if current projections hold. This change is expected to occur before mid-century.
- An indicator of changes in the Arctic sea ice minimum over time. Arctic sea ice extent both affects and is affected by global climate change.

SATELLITE DATA: 1993-PRESENT

RISE SINCE 1993

Data source: Satellite sea level observations.
Credit: NASA's Goddard Space Flight Center

↑ **98.5**
millimeters

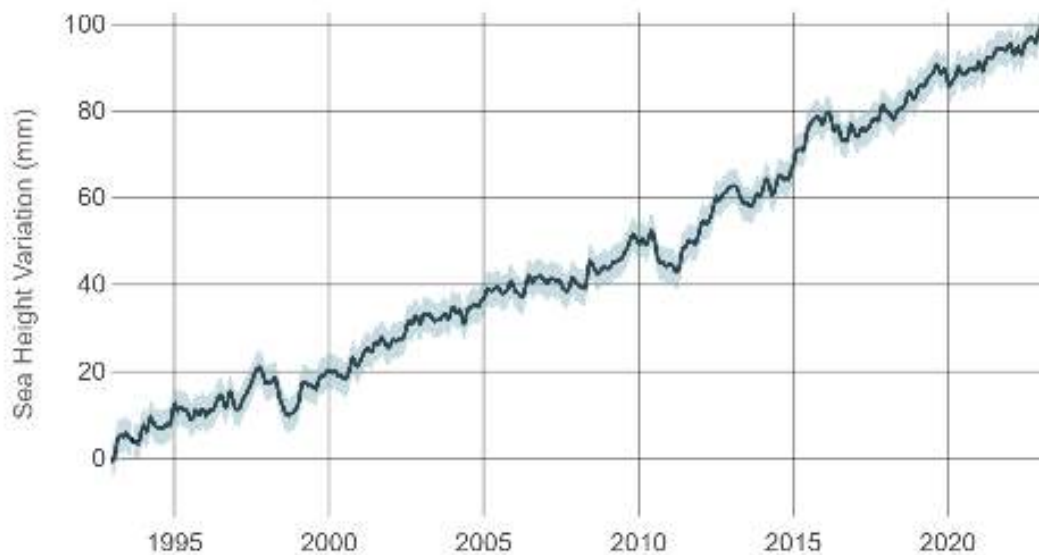


Figure 364: NASA Global Temperature Change Sea Level
Source: NASA Global Climate Change, 2022

Wildfire

- Warming temperatures have extended and intensified wildfire season in the West, where long-term drought in the region has heightened the risk of fires.
- Scientists estimate that human-caused climate change has already doubled the area of forest burned in recent decades. By around 2050, the amount of land consumed by wildfires in Western states is projected to further increase by two to six times.
- Even in traditionally rainy regions like the Southeast, wildfires are projected to increase by about 30%.

Flooding (Precipitation)

- Climate change is having an uneven effect on precipitation (rain and snow) in the United States, with some locations experiencing increased precipitation and flooding, while others suffer from drought.
- On average, more winter and spring precipitation is projected for the northern United States, and less for the Southwest, over this century.
- Projections of future climate over the U.S. suggest that the recent trend toward increased heavy precipitation events will continue. This means that while it may rain less frequently in some regions (such as the Southwest), when it does rain, increased intensity of rain fall may occur and may become more common.

Extreme Cold

- The length of the frost-free season, and the corresponding growing season, has been increasing since the 1980s, with the largest increases occurring in the western United States.

According to the California Natural Resource Agency (CNRA), climate change is already affecting California and is projected to continue to do so well into the foreseeable future. Current and projected changes include increased temperatures, sea level rise, a reduced winter snowpack, altered precipitation patterns, and more frequent storm events. Over the long term, reducing greenhouse gases can help make these changes less severe, but the changes cannot be avoided entirely. Unavoidable climate impacts result in a variety of secondary consequences including detrimental impacts on human health and safety, economic continuity, ecosystem integrity and provision of basic services. Climate change is being profiled in the 2023 Marin County OA MJHMP as a standalone hazard while addressing each of the other natural hazards. The Marin County OA is considering climate change issues when identifying future mitigation actions.

California is experiencing a climate crisis that is increasingly taking a toll on the health and well-being of its people and on its unique and diverse ecosystems. Every Californian has suffered from the effects of record high temperatures, dry winters, prolonged drought, and proliferating wildfires in recent years. California's biodiversity is threatened as alterations to habitat conditions brought about by a changing climate are occurring at a pace that could overwhelm the ability of plant and animal species to adapt.

Indicators of Climate Change in California

Source: [2022 Report: Indicators of Climate Change in California | OEHHA](#)

- Since 1895, annual average air temperatures in California have increased by about 2.5 degrees Fahrenheit (°F). Warming occurred at a faster rate beginning in the 1980s.
- Recent years have been especially warm: Eight of the ten warmest years on record occurred between 2012 and 2022; 2014 was the warmest year on record.
- Of all the Western states, California endured the hottest temperatures for the longest time, driving the average statewide temperature to the second warmest over the past 128 years.

- Extreme heat ranks among the deadliest of all climate-driven hazards in California, with physical, social, political, and economic factors effecting the capacity of individuals, workers, and communities to adapt, and with the most severe impacts often on communities who experience the greatest social and health inequities.
- Glaciers have essentially disappeared from the Trinity Alps in Northern California
- In 2020, wildfire smoke plumes were present in each county for at least 46 days.
- The 2022 fire season saw more fires than the previous fire season along with continued extreme drought and heat conditions.
- The drought, begun in 2019, was the third statewide drought declared in California since 2000.
- This drought has been marked by extreme swings; the state received record-breaking amounts of precipitation in October and December 2021 that were offset by the driest January, February, and March 2022 dating back more than 100 years. The year 2023 opened with California simultaneously managing both drought and flood emergencies.
- A series of storms in late December 2022 and early January 2023 broke rural levees, disrupted power, flooded roads, downed trees, and eroded coastal land.
- Sea level rise accelerates coastal erosion, worsens coastal flooding during large storms and peak tidal events, and impacts important infrastructure positioned along our state’s 1,100-mile coast.
- The western drought which impacted all of California and the western United States was nearly lifted due to unseasonably heavy rains in late 2022 and early 2023.

The graph below shows the relative change, in millimeters, in sea levels at Crescent City (1933-2020), San Francisco (1900-2020), and La Jolla (1925-2020).

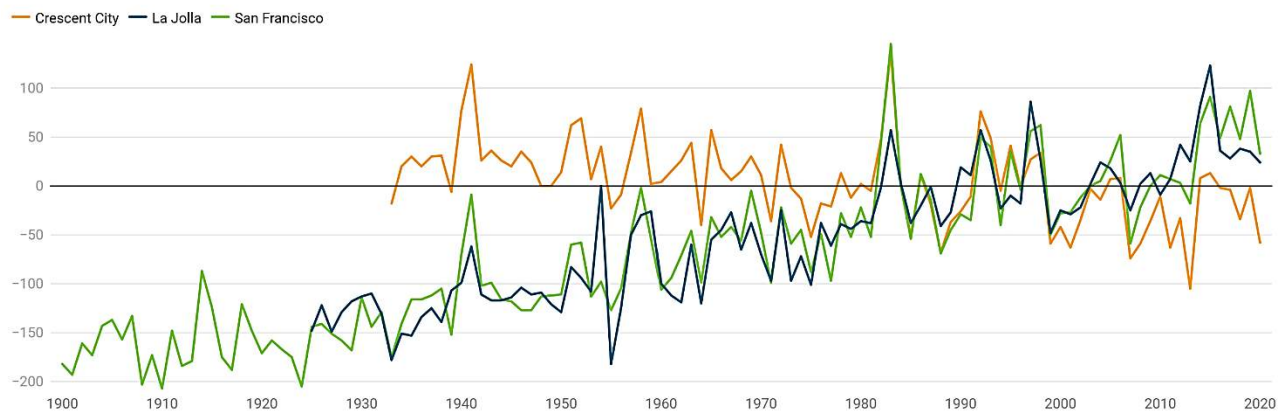


Chart: OEHA Climate Change Indicators of California 2022 • Source: NOAA • [Get the data](#) • [Download image](#) • Created with [Datawrapper](#)

Figure 365: Annual Mean Sea Level Trends
Source: 2022 Report: Indicators of Climate Change in California | OEHA

Climate Change in the Marin County Operational Area

Climate change is already having significant impacts across California. Temperatures are warming, heat waves are more frequent, and precipitation has become increasingly variable. Climate change will continue to alter Marin County OA ecosystems as a result of rising temperatures, changes in precipitation, and sea level rise, which will increase the severity and occurrence of natural hazards across the Marin County OA well into the future. Coastal cooling processes that keep temperatures down, such as fog, will continue to decrease. Rising temperatures will exacerbate drought conditions and raise the potential for significant wildfires and associated smoke as vegetation becomes drier and tree mortality increases. Forested woodlands that play a major role in carbon reduction will gradually transition into chaparral and shrublands. There will be more extreme storms and weather events, including expanded heat waves and increased rain events with changes in precipitation. Significant rain events will lead to an increase in flooding and the potential for severe landslides. Shoreline communities will become inundated with sea level rise, storm surge, and high tide events. Marshlands and wetlands that act as natural storm barriers will disappear as they transition into open water.

Notable impacts from climate change that are already evident in the Marin County OA and surrounding region as identified in a 2020 Marin County Civil Grand Jury Report include:

- From 1895-2018, the average temperature in Marin County increased by 2.3 degrees Fahrenheit.
- Over the past century, sea level rise in the San Francisco Bay Area rose by eight inches and has accelerated rapidly since 2011.
- The threat of wildfires in 2019 was so severe that Pacific Gas and Electric shut off electric power to the County for multiple days.

Climate change will continue to affect homes, businesses, infrastructure, utilities, transportation systems and agriculture across the Marin County OA. The risk to socially vulnerable populations will increase as they feel the immediate impacts of climate change more significantly and are less able to adapt to climate change and recover from its impacts.

The Marin County OA has adopted numerous planning initiatives and mitigation measures to help combat the effects of climate change across the OA. The Marin Climate Energy Partnership (MCEP), which is a partnership program of Marin County jurisdictions, the County, and Marin County regional agencies, adapted a model Climate Action Plan (CAP) that is intended to support countywide implementation efforts and is currently being used to update additional climate action plans for other jurisdictions in Marin County. The CAP supports the Climate Action Plan for the unincorporated County, which was completed in 2020. The MCEP also collects data and report on progress in meeting each County jurisdictions' individual greenhouse gas emission targets. In June 2023, the County published the Greenhouse Gas Inventory for Unincorporated Community Emissions for the Year 2021. Marin County OA jurisdictions have already met their greenhouse reduction goals for 2020 and are about halfway to meeting the statewide goal to reduce emissions 40% below 1990 levels by the year 2030. Marin County also formed a Sea Level Marin Adaptation Response Team in 2018 and had a Sea Level Rise Vulnerability Assessment and associated Adaptation Report completed for the County and each of its jurisdictions in 2017 as part of their Bay Waterfront Adaptation and Vulnerability Evaluation. Additional Marin County OA climate change mitigation initiatives

include Marin Clean Energy, Electrify Marin, the Marin Solar Project, the Marin Energy Watch Partnership, Resilient Neighborhoods, and Drawdown: Marin.

2.2 HAZARDS

Of the hazards profiled in the Marin County MJHMP, those noted in the table are specific for the North Marin Water District as per the planning team.

Table 12: NMWD Hazard Risk Assessment						
Hazard	Probability/ Likelihood of Future Events	Extent	Magnitude/ Severity	Climate Change Influence	Significance	Risk Score
Dam Failure	Unlikely	Extensive	Extreme	High	High	15.00
Debris Flow	Occasional	Significant	Moderate	High	Medium	12.00
Drought	Occasional	Extensive	Severe	High	Medium	14.00
Earthquake	Occasional	Extensive	Extreme	Low	Medium	13.00
Flooding	Occasional	Significant	Severe	High	Medium	13.00
Land Subsidence (Sinkhole)	Occasional	Negligible	Moderate	Medium	None	7.00
Levee Failure	Unlikely	Significant	Extreme	High	Medium	13.00
Sea Level Rise	Occasional	Significant	Moderate	High	Medium	12.00
Severe Weather – Extreme Heat	Likely	Extensive	Weak	Medium	Medium	12.00
Severe Weather – Wind, Tornado	Likely	Extensive	Weak	Medium	Medium	12.00
Tsunami	Unlikely	Negligible	Extreme	Low	Low	8.00
Wildfire	Occasional	Extensive	Extreme	Medium	High	15.00

Table 182: NMWD Hazard Risk Assessment
Source: North Marin Water District

Omitted Hazards

The North Marin Water District does not have any omitted hazards.

Table 13: County of Marin Hazard Risk Assessment						
Hazard	Probability/ Likelihood of Future Events	Geographic Extent	Magnitude/ Severity	Climate Change Influence	Significance	Risk Score
Dam Failure	Unlikely	Negligible	Extreme	Low	Medium	9.00
Debris Flow	Occasional	Extensive	Severe	Medium	Medium	13.00
Drought	Highly Likely	Extensive	Moderate	High	High	16.00
Earthquake	Highly Likely	Extensive	Extreme	None	High	15.00
Flooding	Highly Likely	Limited	Severe	High	Medium	14.00
Land Subsidence	Occasional	Limited	Moderate	Medium	Medium	10.00
Levee Failure	Unlikely	Negligible	Moderate	Medium	High	9.00
Sea Level Rise	Highly Likely	Limited	Extreme	High	High	16.00
Severe Weather – Extreme Heat	Highly Likely	Extensive	Moderate	High	Medium	15.00
Severe Weather – Wind, Tornado	Highly Likely	Extensive	Moderate	High	Medium	15.00
Tsunami	Highly Likely	Limited	Extreme	Medium	High	15.00
Wildfire	Highly Likely	Significant	Severe	High	High	16.00

Table 183: County of Marin Hazard Risk Assessment
Source: Marin County

2.2.1 DAM FAILURE

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped and fail. Overtopping is the primary cause of earthen dam failure in the United States.

Dam failure is the uncontrolled release of impounded water from behind a dam. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause a dam to fail. Dam failure causes downstream flooding that can affect life and property. Dam failures can result from any one or a combination of the following causes:

- Earthquake
- Inadequate spillway capacity resulting in excess overtopping flows
- Internal erosion caused by embankment or foundation leakage, or piping or rodent activity
- Improper design
- Improper maintenance

- Negligent operation
- Failure of upstream dams on the same waterway

Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major loss of life could result as well as potentially catastrophic effects to roads, bridges, and homes. Electric generating facilities and transmission lines could also be damaged and affect life support systems in communities outside the immediate hazard area. Associated water supply, water quality and health concerns could also be an issue. Factors that influence the potential severity of a full or partial dam failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

In general, there are three types of dams: concrete arch or hydraulic fill, earth and rockfill, and concrete gravity. Each type of dam has different failure characteristics. A concrete arch or hydraulic fill dam can fail almost instantaneously, where the flood wave builds up rapidly to a peak then gradually declines. An earth-rockfill dam fails gradually due to erosion of the breach, where a flood wave will build gradually to a peak and then decline until the reservoir is empty. A concrete gravity dam can fail instantaneously or gradually with a corresponding buildup and decline of the flood wave.

The California Department of Water Resources (DWR) Division of Safety of Dams (DSOD) has jurisdiction over impoundments that meet certain capacity and height criteria. Embankments that are less than six feet high and impoundments that can store less than 15 acre-feet are non-jurisdictional. Additionally, dams that are less than 25 feet high can impound up to 50 acre-feet without being jurisdictional. The Cal DWR DSOD assigns hazard ratings to large dams within the State. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. Dams are classified in three categories that identify the potential hazard to life and property:

- **High hazard** indicates that a failure would most probably result in the loss of life
- **Significant hazard** indicates that a failure could result in appreciable property damage
- **Low hazard** indicates that failure would result in only minimal property damage and loss of life is unlikely

Since 1929, the state has supervised all non-federal dams in California to prevent failure for the purpose of safeguarding life and protecting property. Supervision is carried out through the state's Dam Safety Program under the jurisdiction of DWR. The legislation requiring state supervision was passed in response to the St. Francis Dam failure and concerns about the potential risks to the general populace from a number of water storage dams. The law requires:

- Examination and approval or repair of dams completed prior to August 14, 1929, the effective date of the statute.
- Approval of plans and specifications for and supervision of construction of new dams and the enlargement, alteration, repair, or removal of existing dams.
- Supervision of maintenance and operation of all dams under the state's jurisdiction.

The 1963 failure of the Baldwin Hills Dam in Southern California led the Legislature to amend the California Water Code to include within state jurisdiction both new and existing off-stream storage facilities.

Dams and reservoirs subject to state supervision are defined in California Water Code §6002 through §6004, with exemptions defined in §6004 and §6025. In administering the Dam Safety Program, DWR must comply with the provisions of the California Environmental Quality Act (CEQA). As such, all formal dam approval and revocation actions must be preceded by appropriate environmental documentation.

In 1972, Congress moved to reduce the hazards from the 28,000 non-federal dams in the country by passing Public Law 92-367, the National Dam Inspection Act. With the passage of this law, Congress authorized the U.S. Army Corps of Engineers (USACE) to inventory dams located in the United States. The action was spurred by two disastrous earthen dam failures during the year, in West Virginia and South Dakota, that caused a total of 300 deaths.

The Water Resources Development Act of 1986 (P.L. 99-662) authorized USACE to maintain and periodically publish an updated National Inventory of Dams (NID). The Water Resources Development Act of 1996 (P.L. 104-303), Section 215, re-authorized periodic updates of the NID by USACE.

Table 14 shows all the dams in Marin County that could impact the Marin County Operational Area.

Table 14: Dams in Marin County with Potential to Impact to the OA								
Dam Name/ Dam Number	Hazard Class	Latitude	Longitude	Nearest City/ Distance	Population At Risk	Capacity (acre- feet)	Dam Height	Dam Owner
Alpine 33-0	High	37.94	-122.64	Stinson Beach, CA 2.76 miles	10 - 100	8,892	143	Marin Municipal Water District
Big Rock Ranch 437-0	High	38.05	-122.63		> 1,000	91	45	Lucasfilm, LTD
Bon Tempe 33-6	High	37.96	-122.61	Fairfax, CA 2.49 miles	100 – 1,000	4,300	98	Marin Municipal Water District
Lagunitas 33-2	Significant	37.95	-122.60	Kentfield, CA 2.14 miles	100 – 1,000	341	48	Marin Municipal Water District
Novato Creek/ Stafford Lake 88-0	Extremely High	38.12	-122.64	Novato, CA 3.76 miles	10 - 100	140	76	North Marin County Water District
Peters 33-7	High	38.00	-122.70	Lagunitas, CA 1.00 miles	0	32,900	320	Marin Municipal Water District
Phoenix Lake 33-3	High	37.96	-122.58	Kentfield, CA 1.01 miles	10 - 100	612	90	Marin Municipal Water District
Seeger 33-8	High	38.08	-122.76		1 - 10	22,400	115	Marin Municipal Water District
Soulajule 33-9	High	38.15	-122.78	Inverness, CA 5.26 miles	1 - 10	10,700	122	Marin Municipal Water District
Vonsen 430-0	High	38.18	-122.68	Sheep Ranch 6 miles	10 - 100	70	35	Private Property

Table 184: Dams in Marin County with Potential to Impact to the OA
Source: CalOES DSOD

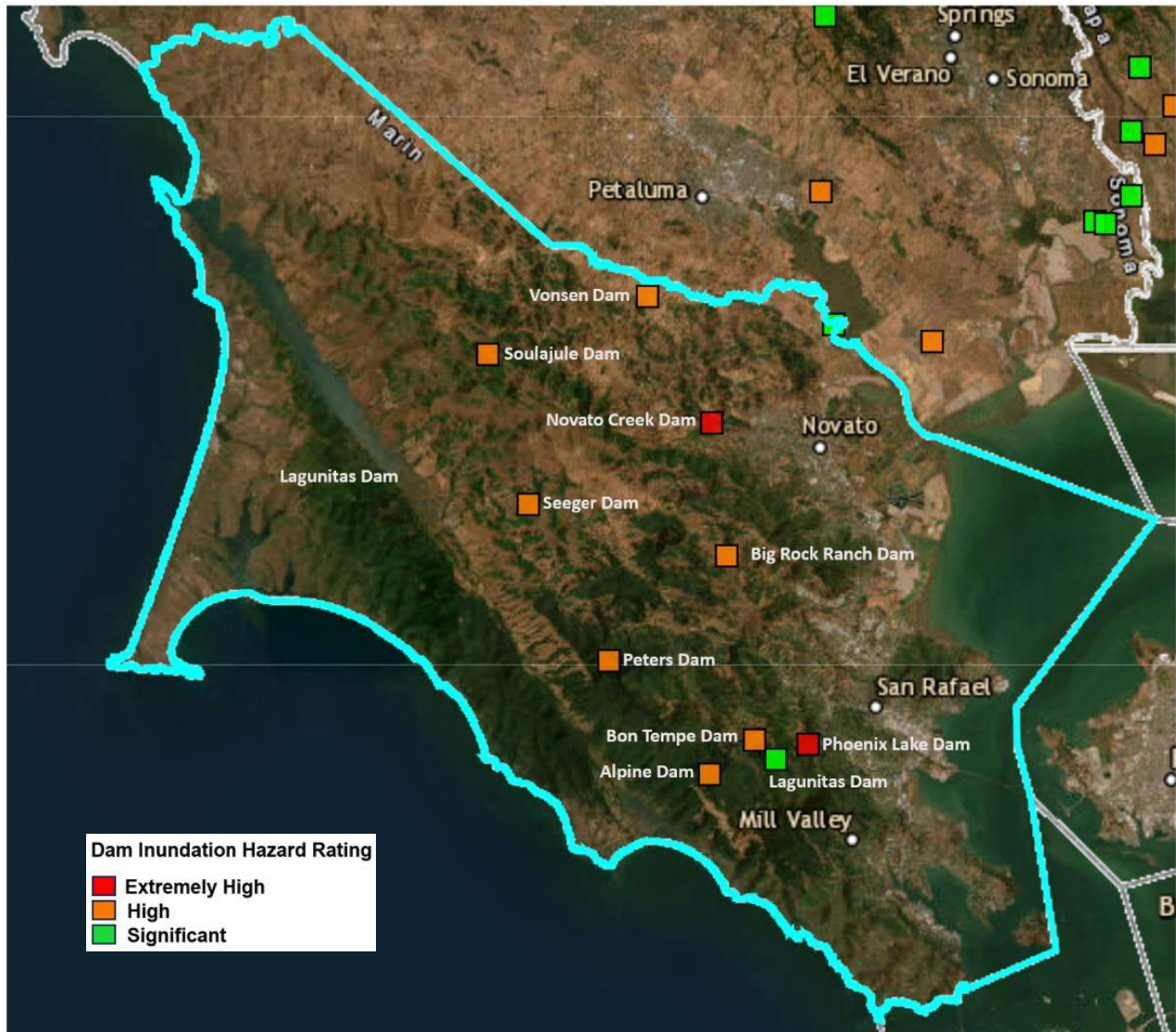


Figure 366: Dams in and around the Marin County OA
Source: Cal OES, Department of Water Resources, DSOD

Figure 22 illustrates the Dam Failure risk to Marin County.

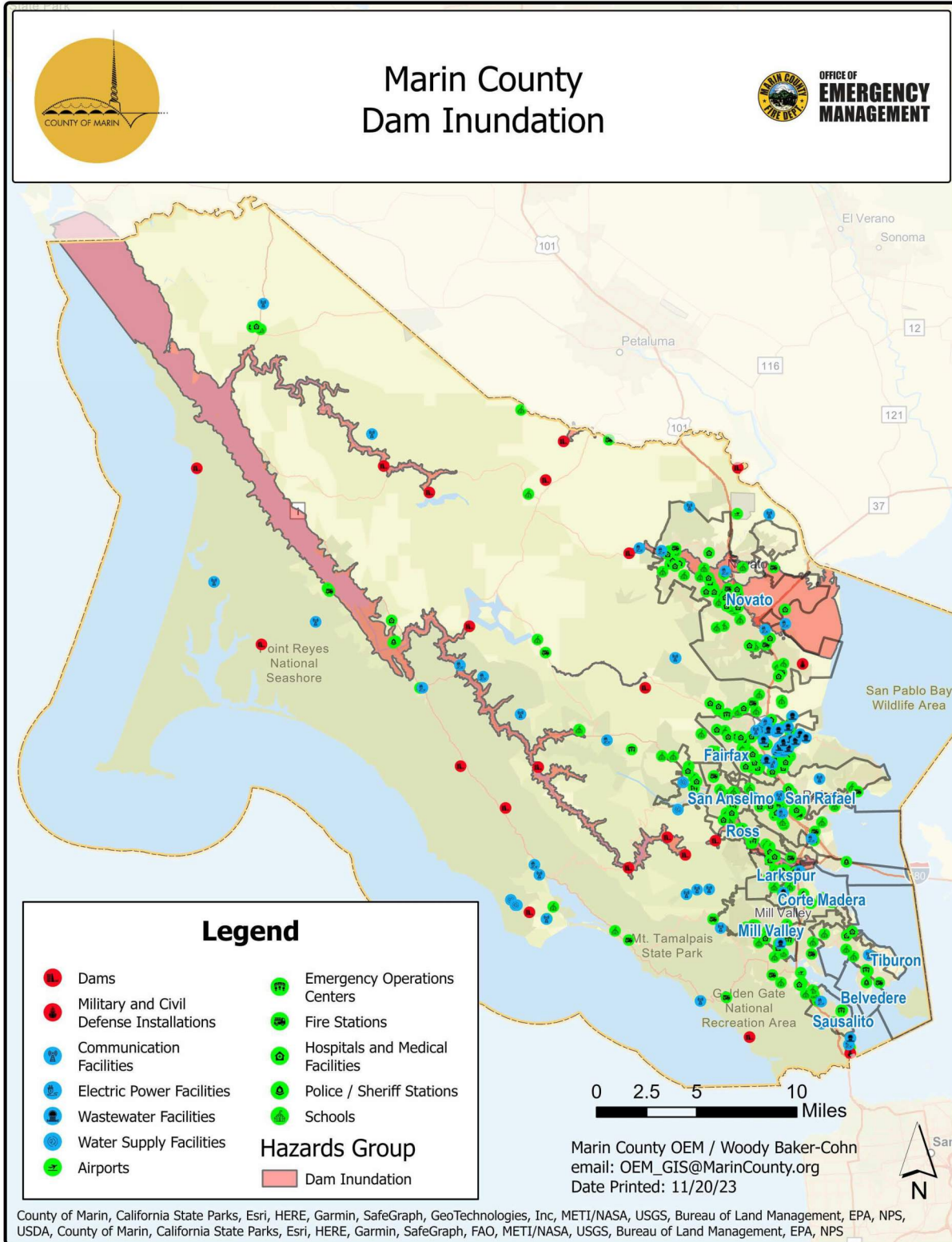


Figure 367: Marin County Dam Inundation Susceptibility to Critical Facilities
Source: Marin County OEM

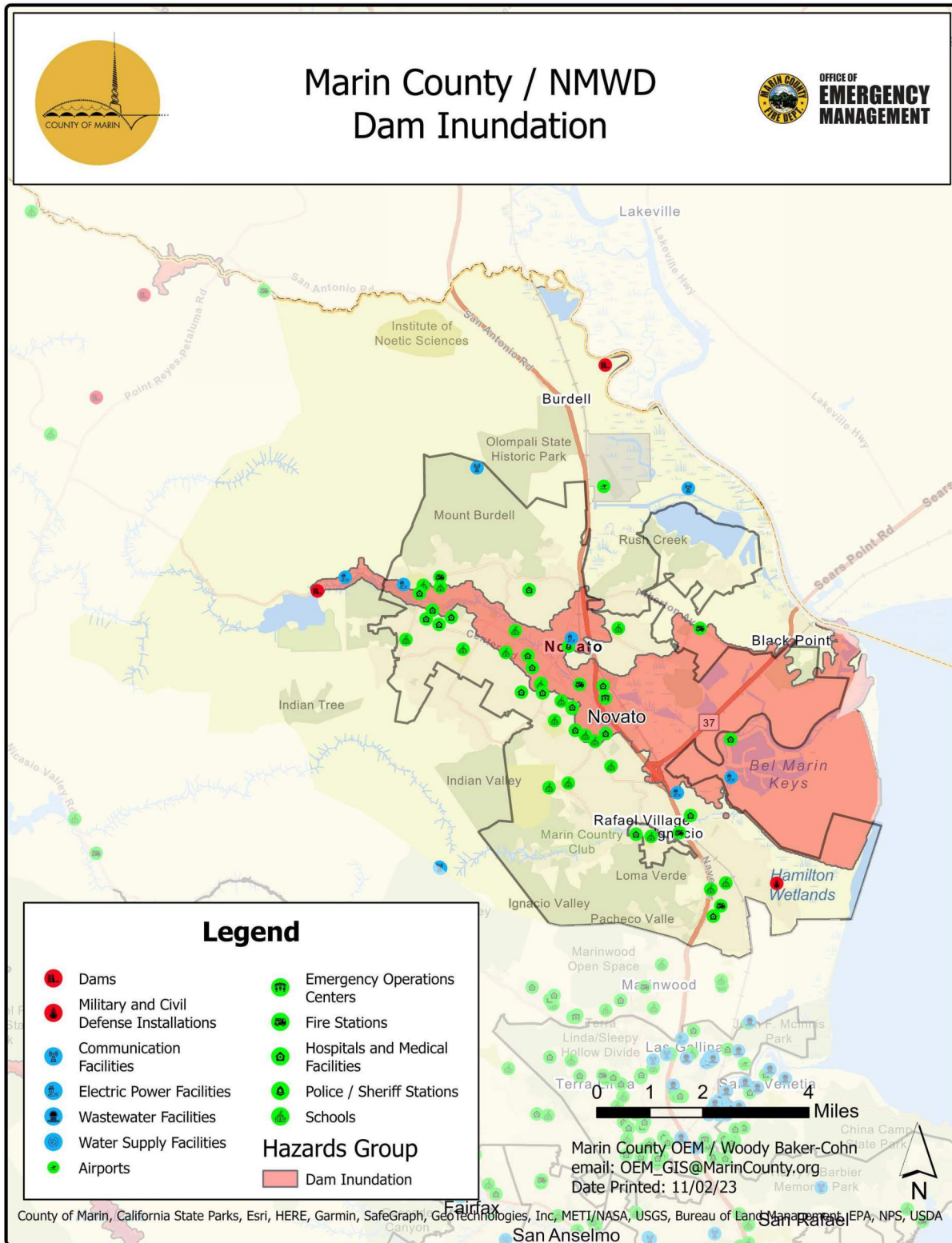


Figure 368: City of Novato Dam Inundation Critical Facilities and Infrastructure
Source: Marin County OEM

Novato Creek/ Stafford Dam

NMWD owns and operates Stafford Lake, Stafford Dam (DSOD Dam No. 88-0, National ID No. CA00321) and the associated treatment plant, which provides approximately 20% of Novato’s water. The lake lies four miles west of downtown Novato and collects runoff from 8.3 square miles of watershed property located upstream at the upper tributary reaches of Novato Creek. Water from Stafford Lake is drawn by the intake tower and fed by gravity or by pumping (depending on the lake level) into the treatment plant located just below the dam.

In addition to providing water supply for domestic needs and firefighting purposes, Stafford Dam provides flood protection for the greater Novato area. The Marin County Flood Control and Water Conservation District has partnered with NMWD to share in the cost of obtaining additional flood liability insurance. Stafford Dam (also known as the Novato Creek Dam) is approximately 71 feet tall with a crest length of 650 feet, is classified as an Extremely High Hazard Dam based on its size and potential for loss of life and property should the dam fail.

Failure of the Novato Creek/Stafford Lake Dam with Stafford Lake at full capacity would affect an area that extends approximately five miles down Novato Creek through parts of the unincorporated County and the City of Novato to San Pablo Bay at Bel Marin Keys.



Figure 369: City of Novato - Nonato Creek Dam Inundation Impact
Source: California Department of Water Resources, DSOD

Stafford Lake has capacity of 4,287-acre feet of water that would cascade down Novato Creek through the unincorporated County into the City of Novato and Bel Marin Keys in the unincorporated County before emptying into San Pablo Bay in the event of a sunny-day dam failure. Parts of Ohair Park in the unincorporated County adjacent to the dam and along Novato Creek could be immediately inundated with up to ten feet of water. Novato is approximately 5,000 feet from the dam (see Figure 25). In up to two hours, water would overtop Novato Creek and could extend up to 500 feet on both sides of the creek, potentially inundating dozens of homes, part of the PG&E substation at Stafford, and part of San Marin High School and San Ramon Elementary School in up to ten feet of water in some areas. In two to five hours, water would continue overtopping Novato Creek extending down Novato Boulevard up to 1,000 feet of both sides of the road to the intersection of Diablo Avenue. Hundreds of homes, numerous commercial businesses and medical facilities, the Lu Sutton Elementary School and Our Lady of Loretto Elementary School lie in this area and could be inundated in up to eight feet of water. In the same amount of time, water would continue overtopping Novato Creek to the City boundary. This area includes most of the downtown commercial core of Novato where hundreds of homes, dozens of businesses and shopping centers, numerous medical facilities, the City of Novato Police Department and Town Hall, the Novato Fire Protection District Headquarters and primary Emergency Operations Center for the City, the Novato Fire Protection District #61, Lynwood Elementary School, Hill Middle School, the Marin Christian Academy and the PG&E substation at Novato could be inundated in up to ten feet of water in some areas. Water would also spread northward along Redwood Boulevard into North Novato in two to five hours where flood depths could be deepest, inundating dozens of homes and parts of Old Town in over ten feet of water in some places. The entire inundation area covers numerous major roads and highways in the City including Highway 101, Novato Boulevard and Redwood Boulevard which could hamper ingress and egress throughout much of central Novato. After passing through Novato, floodwaters could reach the Novato RV Park in approximately two hours and some businesses and the Novato Fire Protection District Station 62 along Atherton Avenue in the Green Point area in approximately ten to fifteen hours, inundating them in over ten feet of water. Floodwaters could reach Bel Marin Keys in ten to fifteen hours. While most homes in Bel Marin Keys should be protected from floodwaters, some homes could be flooded up to several feet. Parts of Bel Marin Keys Boulevard could become flooded in several feet of water, possibly turning Bel Marin Keys into an island temporarily. A PG&E substation at Hamilton Wetlands along with the Bel Marin Gardens Hospital could be inundated with several feet of water.

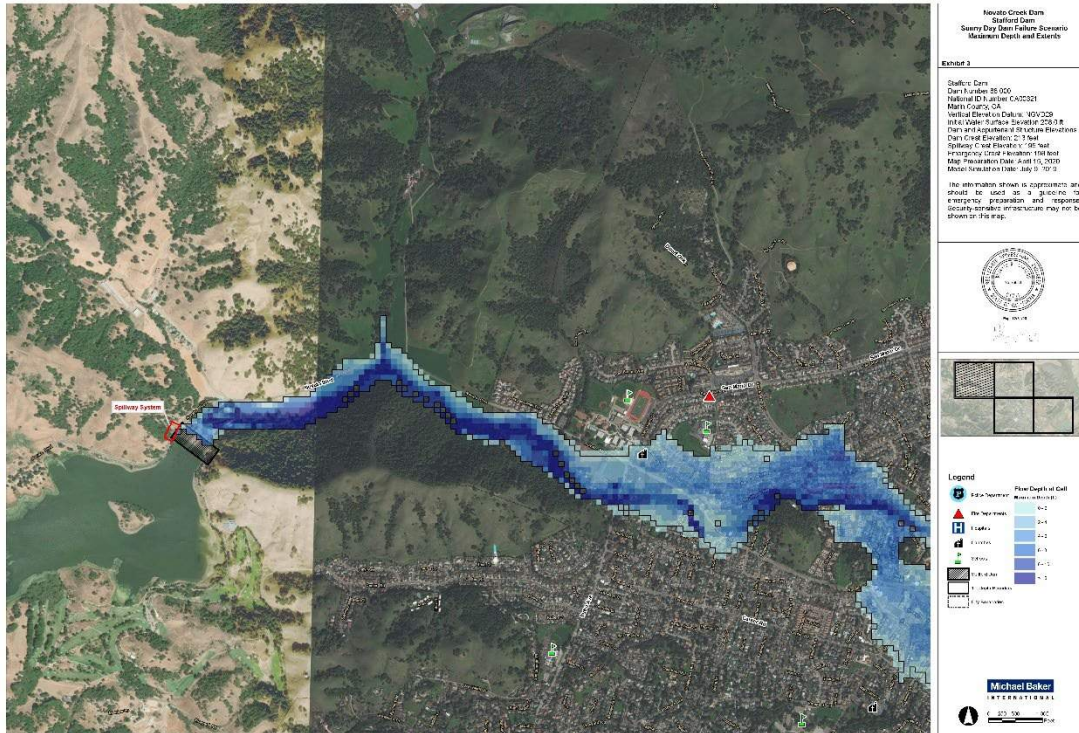


Figure 370: City of Novato - Novato Creek Dam Inundation Impact – West Novato
Source: California Department of Water Resources, DSOD

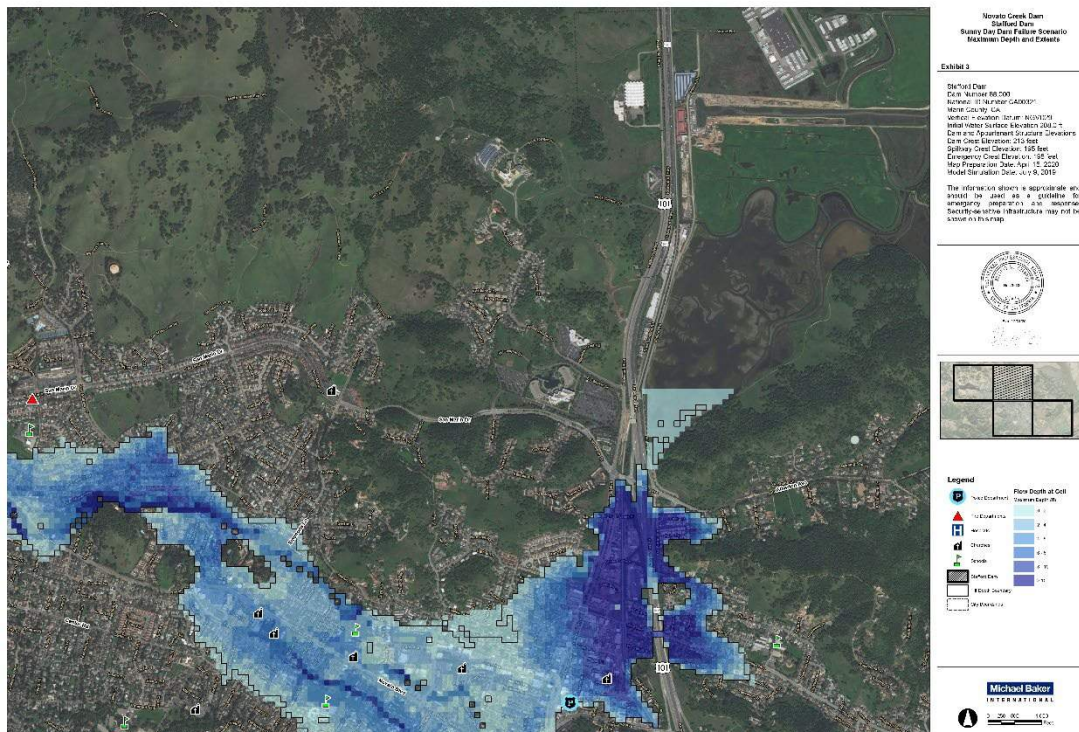


Figure 371: City of Novato - Novato Creek Dam Inundation Impact – North Novato
Source: California Department of Water Resources, DSOD

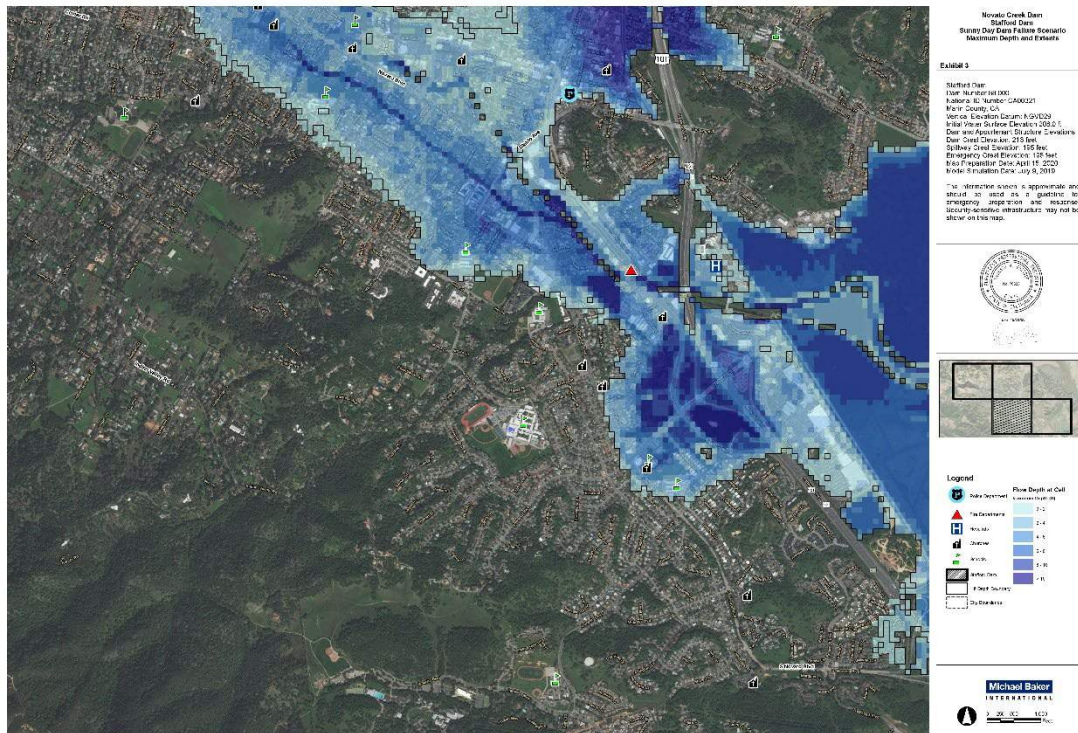


Figure 372: City of Novato - Novato Creek Dam Inundation Impact – Central Novato
Source: California Department of Water Resources, DSOD

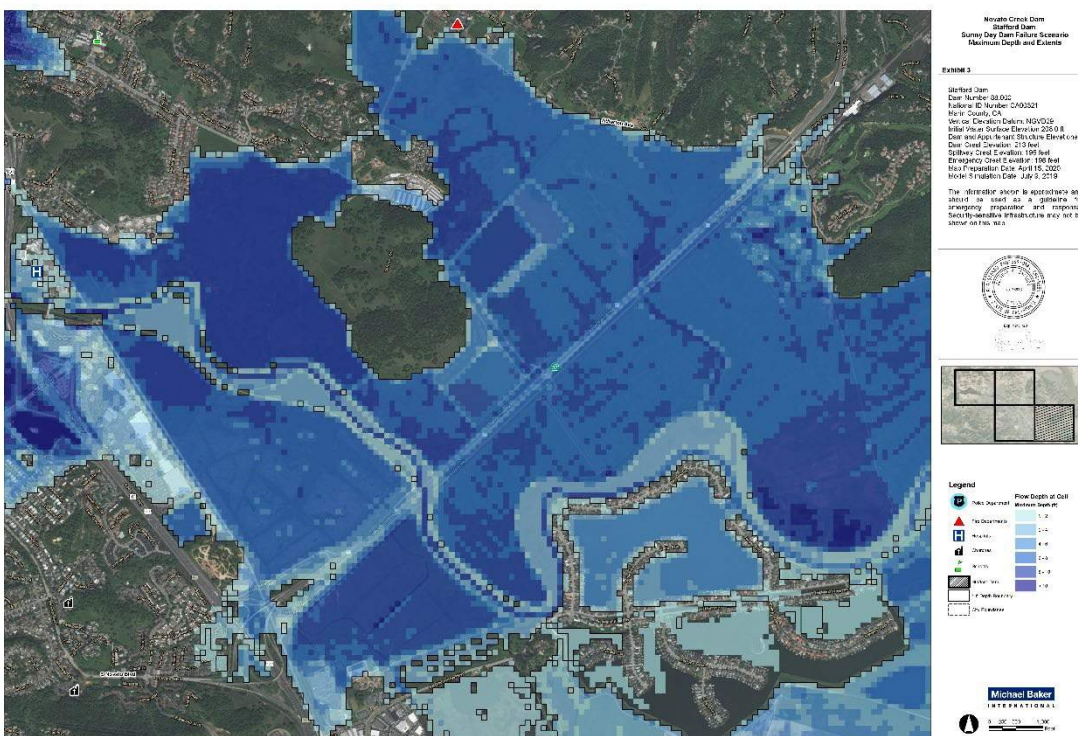


Figure 373: City of Novato - Novato Creek Dam Inundation Impact – East Novato
Source: California Department of Water Resources, DSOD

There is no record of a failure of any regulated dam located in the Marin County OA. On December 29, 2022, Phoenix Lake hit capacity after recent rains and the dam saw some spillover with no impacts.

Climate Change and Future Development Considerations

Most dams in the United States are aging and are at significant risk from increased storm events as a result of climate change. The average dam age in the United States is 60 years, and more than 8,000 dams in the United States including the Phoenix Lake Dam are over 90 years old. More than 200 U.S. dams have failed in bad weather since 2000. As the climate warms, rain events are predicted to become more intense. An increase in rainfall and runoff as a result of climate change will increase the potential for higher water levels in reservoirs across the Marin County OA, placing increased stress on its dams and increasing the potential for a dam failure. As development increases in the populated areas of the Marin County OA downstream of its dams, particularly in the inundation area of the Phoenix Lake Dam, the potential for significant impacts to residents and infrastructure will only increase. This area includes part of the NMWD. Future development along Novato Creek and in the lowland areas of Novato and around the unincorporated communities of Bel Marin Keys and Black Point-Grenn Point could expose additional people and structures to risk of a dam failure.

2.2.2 DEBRIS FLOWS

For the purposes of the Marin County OA MJHMP, debris flows are classified as landslides (including rockslides) and mud flows.

A landslide is the breaking away and gravity-driven downward movement of hill slope materials, which can travel at speeds ranging from fractions of an inch per year to tens of miles per hour depending on the slope steepness and water content of the rock/soil mass. Landslides range from the size of an automobile to a mile or more in length and width and, due to their sheer weight and speed, can cause serious damage and loss of life. The rate of a landslide is affected by the type and extent of vegetation, slope angle, degree of water saturation, strength of the rocks, and the mass and thickness of the deposit. Some of the natural causes of this instability are earthquakes, weak materials, stream and coastal erosion, and heavy rainfall. In addition, certain human activities tend to make the earth materials less stable and increase the chance of ground failure. These activities include extensive irrigation, poor drainage or groundwater withdrawal, removal of stabilizing vegetation and over-steepening of slopes by undercutting them or overloading them with artificial fill. These activities can cause slope failure, which normally produce landslides.

Landslide material types are often broadly categorized as either rock or soil, or a combination of the two for complex movements. Rock refers to hard or firm bedrock that was intact and in place prior to slope movement. Soil, either residual or transported material, means unconsolidated particles. The distinction between rock and soil is most often based on interpretation of geomorphic characteristics within landslide deposits, but can also be inferred from geologic characteristics of the parent material described on maps or in the field. Landslide movements are also based on the geomorphic expression of the landslide deposit and source area, and are categorized as falls, topples, spreads, slides, or flows. Falls are masses of soil or rock that dislodge from steep slopes and free fall. Topples move by the forward pivoting of a mass around an axis below the displaced mass. Lateral spreads move by horizontal extension and shear or tensile fractures. Slides displace masses of material along one or more discrete planes

and can either be rotational or transitional. Flows mobilize as a deforming, viscous mass without a discrete failure plane.

Natural conditions that contribute to landslide include the following:

- Degree of slope
- Water (heavy rain, river flows, or wave action)
- Unconsolidated soil or soft rock and sediments
- Lack of vegetation (no stabilizing root structure)
- Previous wildfires and other forest disturbances
- Earthquake

In addition, many human activities tend to make the earth materials less stable and, thus, increase the chance of ground movement. Human activities contribute to soil instability through grading of steep slopes or overloading them with artificial fill, by extensive irrigation, construction of impermeable surfaces, excessive groundwater withdrawal, and removal of stabilizing vegetation.

Another hazard related to landslide and erosion is the fall of a detached mass of rock from a cliff or down a very steep slope (rockfall). Weathering and decomposition of geological materials produce conditions favorable to rockfalls. Other causes include ice wedging, root growth, or ground shaking (earthquake). Destructive landslides and rockfalls usually occur very suddenly with little or no warning time and are short in duration.

Landslide susceptibility can be characterized by looking at both slope class and rock strength. Landslide susceptibility classes express the generalization that on very low slopes, landslide susceptibility is low even in weak rock, and that landslide susceptibility increases with slope and in weaker rocks. Very high landslide susceptibility includes very steep slopes in hard rocks and moderate to very steep slopes in weak rocks. Figure 29 shows landslide susceptibility classes.

Landslides can cause high mortality and injuries from rapidly flowing water and debris. The most common cause of death in a landslide is trauma or suffocation by entrapment. Broken power, water, gas or sewage pipes can also result in injury or illness in the population affected, such as water-borne diseases, electrocution or lacerations from falling debris. People affected by landslides can also have short- and long-term mental health effects due to loss of family, property, livestock or crops. Landslides can also greatly impact the health system and essential services, such as water, electricity or communication lines.

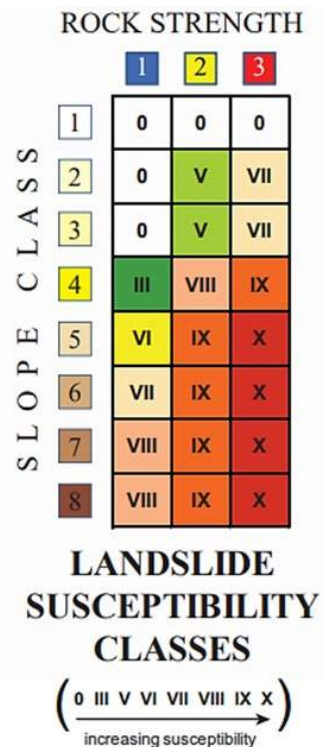


Figure 374: Landslide Susceptibility Classes
Source: USGS

A mud flow is a general term for a mass-movement landform and process characterized by a flowing mass of fine-grained earth material with a high degree of fluidity. Heavy rainfall, snowmelt, or high levels of groundwater flowing through cracked bedrock may trigger a

movement of soil or sediments. Floods and debris flows may also occur when strong rains on hill or mountain slopes cause extensive erosion and/or what is known as "channel scour". Some broad mud flows are rather viscous and therefore slow; others begin very quickly and continue like an avalanche. Mud flows are composed of at least 50% silt and clay-sized materials and up to 30% water.

The point where a muddy material begins to flow depends on its grain size and the water content. Fine grainy material or soil has a smaller friction angle than a coarse sediment or a debris flow, but falling rock pieces can trigger a material flow, too. When a mud flow occurs it is given four named areas, the 'main scarp', in bigger mud flows the 'upper and lower shelves', and the 'toe'. See Figure 30 for the typical areas of a mud flow, with shelves (right) and without (left). The main scarp will be the original area of incidence, the toe is the last affected area(s). The upper and lower shelves are located wherever there is a large dip (due to mountain or natural drop) in the mud flow's path. A mud flow can have many shelves.

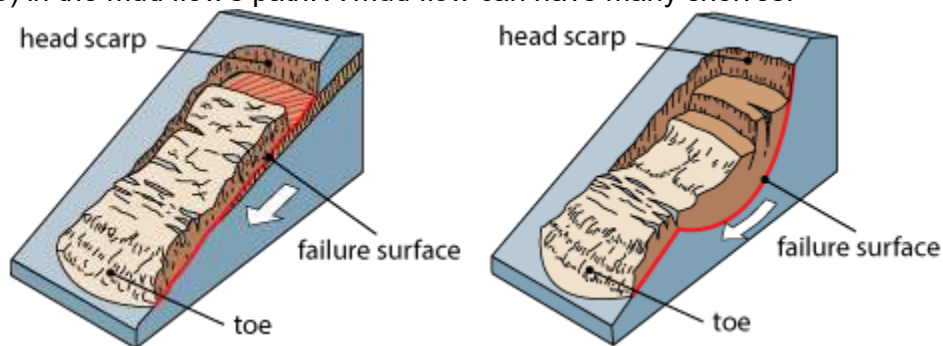


Figure 375: Mud Flow Areas

Source: Washington Department of Natural Resources

If large enough, mud flows can devastate villages and country-sides. Mud flows are common in mountain areas prone to wildfire, where they have destroyed many homes built on hillsides without sufficient support after fires destroy vegetation holding the land. The area most generally recognized as being at risk of a dangerous mud flow are:

- Areas where wildfires or human modification of the land have destroyed vegetation.
- Areas where landslides have occurred before.
- Steep slopes and areas at the bottom of slopes or canyons.
- Slopes that have been altered for construction of buildings and roads.
- Channels along streams and rivers.
- Areas where surface runoff is directed.

A landslide in the NMWD service area would likely occur in steeper terrain areas due to higher susceptibility of hill-side slope material movement. These areas in the district include the northern and southern sides of the City of Novato and the unincorporated communities of Indian Valley, Loma Verde and Black Point-Green Point where the terrain is steeper and is more susceptible to movement of soil. These areas are primarily residential and consists of numerous winding streets and hillside homes that could be damaged or destroyed by a landslide. Residences in or on the fringes of open space areas including the Mount Burdell Open Space Preserve, Miwok Park, Cherry Hill, South Marin Park, the Indian Valley Preserve, the Rush Creek Open Space Preserve and Novato Heights have moderate to high susceptibility to a landslide. There are hundreds of residences in these areas. Of particular concern are

communities in southern Novato south of Novato Boulevard. A landslide impacting Ignacio Boulevard and/or Sunset Parkway could impact ingress and egress into communities in this area that are at high susceptibility of a landslide. Highway 101 also has high landslide susceptibility in this area near Pacheco Hill, and a landslide on the highway could cause significant transportation challenges that could impact the city. The College of Marin-Indian Valley Campus, the Loma Verde Elementary School, the Novato Station #65, the Good Shepherd Lutheran School, Novato High School and the Olive Elementary School all lie in areas of moderate to high landslide susceptibility. The main commercial areas of the city, including the downtown area, have little to no landslide susceptibility. The unincorporated community of Indian Valley has hundreds of homes that have moderate to high susceptibility of a landslide and could be vulnerable to a debris flow from any of the creeks that originate in the mountains. The western side of the Black Point-Green Point area has high landslide susceptibility while the eastern side is more moderately susceptible with pockets of high susceptibility. The entire area is primarily residential and hundreds of homes along with a school have some vulnerability to landslides.

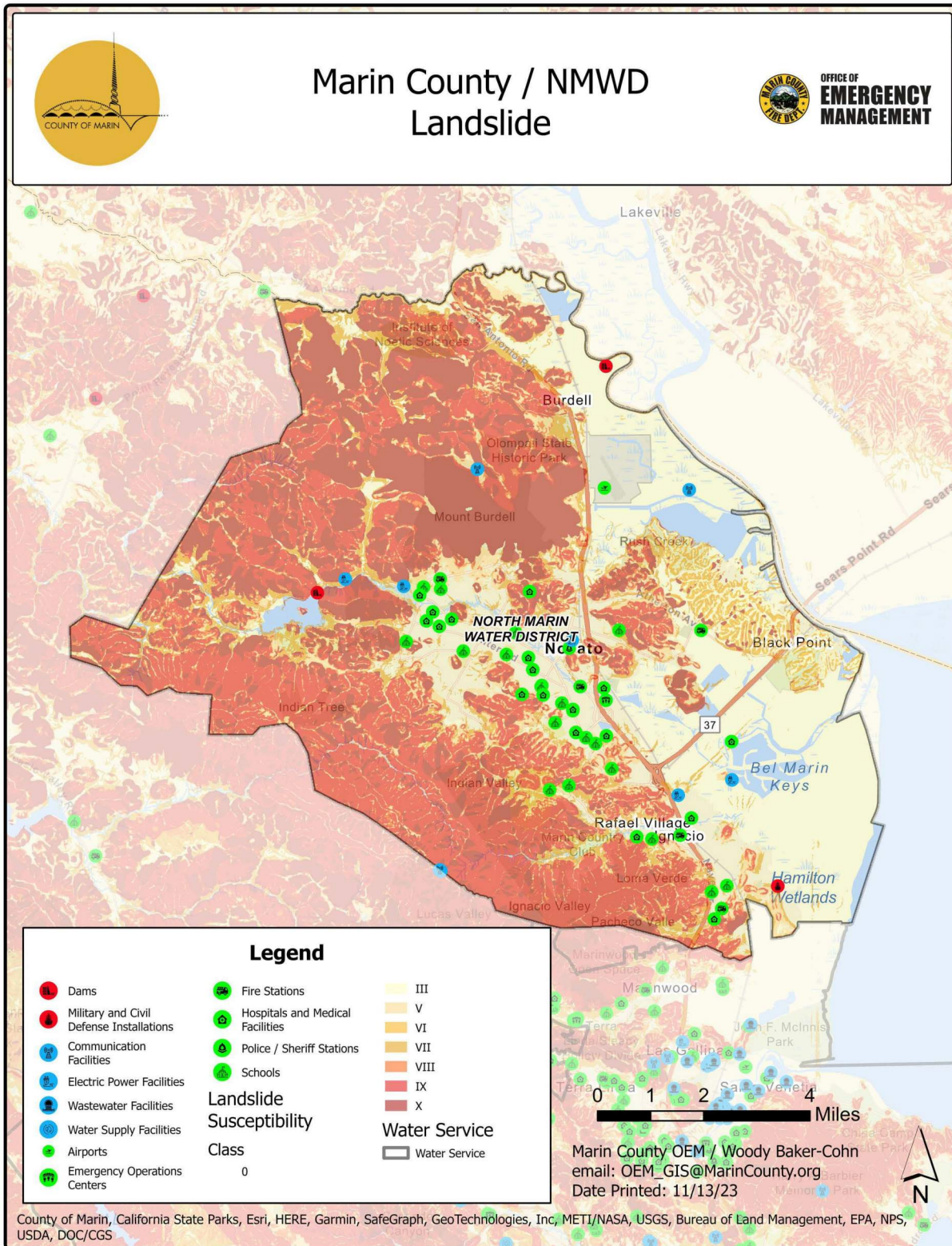


Figure 376: NMWD Debris Flow Critical Facilities and Infrastructure
Source: Marin County OEM

An earthquake has the potential to cause landslides throughout areas of landslide susceptibility. A wildfire and subsequent rain event could cause a landslide in any of the open spaces in and surrounding Novato, including in the Mount Burdell Open Space Preserve, Ohair Park, the Verissimo Hills Preserve, the Indian Tree Open Space Preserve, the Indian Valley Preserve, the Ignacio Valley Preserve, the Loma Verde Preserve and the Rush Creek Open Space Preserve. A debris flow down Novato Creek could impact the city with mud and water that damage bridges and other infrastructure.

Landslides, mudslides, and debris flows can move fast enough to damage or destroy homes or other structures in their path, block roadways (including evacuation routes), and injure or kill people caught in them. Marin County OA populations that are most vulnerable to the effects of landslides, debris flows, and post-fire debris flows include:

- Low-income households
- Households in poverty
- Renters
- Persons living in mobile homes
- Persons living on single access roads
- Persons without access to transportation or telecommunications
- Outdoor workers
- Houseless population
- Persons with disabilities

The most vulnerable populations are those that may be unable to evacuate due to limited mobility, lack of access to a vehicle, or language barriers that may prevent awareness of emergency notifications. Those living on single-access roadways in the hilly areas of the County or those living in less resilient housing may lose access to their homes if roadways or the structures are damaged or destroyed by a landslide.

NMWD maintains and operates approximately 340 miles of pipeline, 42 tanks totaling over 37 million gallons of storage, and associated pump stations, hydropneumatic systems, and regulator valves. NMWD evaluates water supply and consumer consumption on a 5-year cycle via its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) in accordance with state Department of Water Resources (DWR) guidelines and requirements.

On 03/21/23, heavy rains caused a mudslide in Novato severely damaged and buckled a 100-foot section of Redwood Blvd. adjacent State Highway 101, forcing the closure of a nearby state park. The mudslide damaged a section of the NMWD potable water transmission main that is located below the frontage road of Redwood Boulevard, in the area of the mudslide.



Figure 377: Mudflow damage to Redwood Blvd. March 21, 2023

Source: Olompali State Historic Park

12/31/2005 - A mudslide came down on Pacheco Creek Drive, depositing over 2,000 cubic yards of mud and damaging several homes. Novato declared a state of emergency. Nobody was hurt, but mud poured into each home, forcing the residents to evacuate.

2/27/2017 – Heavy rain caused a landslide at Miwok Park along the southeast side of Novato Creek, destroying about 100 feet of a trail that connects the neighborhoods east and west of Miwok Park.

Climate Change and Future Development Considerations

Extreme storm events and more frequent wildfires as a result of climate change have the potential to increase the amount and severity of landslides, including disastrous debris flows. Climate change is leading to more volatile precipitation patterns around the world with very dry stretches punctuated by storms that drop large amounts of rain in a short amount of time. Landslides in wetter regions of California, including the Marin County OA, move on average faster and farther downhill during rainy periods compared to drought years, according to a 2022 study by the American Geophysical Union (AGU)²⁴, showing the increased potential for landslides in the Marin County OA in rainy years. As development increases in the numerous canyons and around the many open spaces of the Marin County OA, the potential for significant impacts from a landslide and/or mudflow increases. Further development of the residential areas of the NMWD including the City of Novato and the unincorporated communities of Indian Valley, Loma Verde and Black Point-Green Point that have a higher landslide susceptibility will expose more people and property to landslide risk. With increased wildfire potential as a result of climate change, more residents in NMWD could be susceptible to post-fire debris flows. This includes areas along Novato Creek, Arroyo San Jose and south of the Mount Burdell Open Space Preserve. Future development should take into account the movement of mud and debris in waterways after a major rain event. Adequate space adjacent to susceptible waterways should be maintained free of development to allow for the passage of mud and debris, and catchment basins should be built in these areas to help capture any excess mud and debris.

²⁴ Landslide Sensitivity and Response to Precipitation Changes in Wet and Dry Climates.
<https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022GL099499>

2.2.3 DROUGHT

A drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. It is a normal recurrent feature of climate that occurs in virtually all climate zones, from very wet to very dry. Drought is a temporary aberration from normal climatic conditions and can thus vary significantly from one region to another. Droughts occur slowly, over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends. Drought is a complex issue involving many factors—it occurs when a normal amount of moisture is not available to satisfy an area’s usual water-consuming activities.

There are several types of drought which can often be defined regionally based on its effects:

- Meteorological drought is usually defined by a period of below average water supply, based on the degree of dryness (in comparison to normal or average) and the duration of the dry period. Drought onset generally occurs with a meteorological drought.
- Agricultural drought occurs when there is an inadequate water supply to meet the needs of the state’s crops and other agricultural operations such as livestock. Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, soil water deficits, reduced ground water or reservoir levels needed for irrigation.
- Hydrological drought is defined as deficiencies in surface and subsurface water supplies. It is generally measured as stream flow, snowpack, and as lake, reservoir, and groundwater levels. Hydrological drought usually occurs following periods of extended precipitation shortfalls.

Socioeconomic drought occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Drought can occur in the NMWD and have a profound effect on the delivery of potable water to the 62,655 population served by the district. Drought can reduce the available water in the Novato Creek/Stafford Lake Dam and other areas of the district reducing the available supply potable water to customers , which will also reduce revenue for the district which is used to operate the water delivery systems to these customers.

West Marin Water consumption was down 25% from the prior fiscal year. The \$136,000 net loss compares to a budgeted net income of \$165,000 and to a net loss of \$8,000 from the prior fiscal year. NMWD evaluates water supply and consumer consumption on a 5-year cycle via its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) in accordance with state Department of Water Resources (DWR) guidelines and requirements.

Drought conditions throughout the District would also be felt in the mountainous areas where the risk of wildfire would increase, including in the City of Novato and in the unincorporated County communities of Indian Valley, Loma Verde and Black Point-Green Point. The wetland areas of Novato and the unincorporated Black Point-Green Point area, particularly the marshlands along San Francisco Bay, could become drier during prolonged period of drought and experience marshland fires that could impact local businesses and residences in the area. Dry trees in public spaces like Novato’s City Park can become a safety hazard to the public due to falling limbs or the toppling of the tree itself.

Climate Change and Future Development Considerations

Climate change increases the odds of worsening drought. Warmer temperatures enhance evaporation, which reduces surface water and dries out soils and vegetation. This makes periods with low precipitation in the summer drier than they would be in cooler conditions. Climate also alters the timing of water availability as warmer winter temperatures cause less precipitation to fall. During droughts, communities in the Marin County OA including NMWD may have limited access to water for household use, including drinking, cooking, cleaning, and watering plants, as well as for agriculture, transportation, and power generation. Drought may lead to higher water costs, rationing, or even the decimation of important water sources like wells in the Marin County OA. As more people move into the Marin County OA and the NMWD, additional strain will be placed on the OA's water supply. Drought can affect livestock and crops in the Marin County OA, impacting its economy. Drought can increase the occurrence and severity of wildfires and tree mortality in the Marin County OA including in the open spaces in and around NMWD. Impacts to residents and infrastructure from wildfire as a result of drought will increase as more development occurs in the mountainous areas of the Marin County OA including the NMWD service area in the unincorporated County and City of Novato where wildfires are more likely to occur. Drought also has the potential to dry out the marshlands along the shoreline of the NMWD, including in the unincorporated County and the City of Novato, increasing the chances of brush fires there. Future development in this area and in the mountainous areas of NMWD could expose people to drier summer conditions that could increase their vulnerability to wildfire. Drought also increases the amount of carbon dioxide in the atmosphere, including by decreasing land productivity, which reduces the amount of vegetation storing carbon dioxide. In addition, increases in drought-related wildfire and soil erosion can release carbon dioxide sequestered in trees and plants back into the atmosphere. This will only worsen climate change for the Marin County OA into the future. When considering future development, the Marin County OA including NMWD can help prepare for both future droughts and climate change by practicing and promoting water conservation and enhancing water efficiency throughout landscapes, city plans, and water infrastructure. The Marin County OA can also identify alternative water supplies, create drought emergency plans, and encourage farmers to plant drought-resistant crops.

2.2.4 EARTHQUAKE

Earthquakes are sudden rolling or shaking events caused by movement under the earth's surface. Earthquakes happen along cracks in the earth's surface, called fault lines, and can be felt over large areas, although they usually last less than one minute.

The amount of energy released during an earthquake is usually expressed as a magnitude and is currently measured by seismologists on the Moment Magnitude (Mw Scale). The Mw Scale was developed to succeed the previously used Richter Scale and is measured on a scale of zero to ten with increasing values reflecting increasing intensity.

The other commonly used measure of earthquake severity is intensity, which is an expression of the amount of shaking at any given location on the ground surface. Intensity is most commonly measured on the Modified Mercalli Intensity (MMI) Scale (see Figure 33).

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Figure 378: Modified Mercalli Intensity Scale

Source: USGS

Figure 34 gives intensities (measured on the MMI scale) that are typically observed at locations near the epicenter or earthquakes of different magnitudes.

Richter Magnitude Scale	Typical Maximum Modified Mercalli Intensity Scale
1.0 – 2.9	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 or higher	VIII or higher

Figure 379: Mercalli Scale vs. Magnitude

Source: USGS

The extent of ground shaking also depends in large part on how soft the underlying soil is. Soft soils amplify ground shaking (see Figure 35). This was observed during the 1989 Loma Prieta Earthquake when the most significant damages experienced in San Francisco were in the Marina District, which was built on fill.

Soil type A	Vs > 1500 m/sec	Includes unweathered intrusive igneous rock. Occurs infrequently in the bay area. We consider it with type B (both A and B are represented by the color blue on the map). Soil types A and B do not contribute greatly to shaking amplification.
Soil type B	1500 m/sec > Vs > 750 m/sec	Includes volcanics, most Mesozoic bedrock, and some Franciscan bedrock. (Mesozoic rocks are between 245 and 64 million years old. The Franciscan Complex is a Mesozoic unit that is common in the Bay Area.)
Soil Type C	750 m/sec > Vs > 350 m/sec	Includes some Quaternary (less than 1.8 million years old) sands, sandstones and mudstones, some Upper Tertiary (1.8 to 24 million years old) sandstones, mudstones and limestone, some Lower Tertiary (24 to 64 million years old) mudstones and sandstones, and Franciscan melange and serpentinite.
Soil Type D	350 m/sec > Vs > 200 m/sec	Includes some Quaternary muds, sands, gravels, silts and mud. Significant amplification of shaking by these soils is generally expected.
Soil Type E	200 m/sec > Vs	Includes water-saturated mud and artificial fill. The strongest amplification of shaking due is expected for this soil type.

Figure 380: Soil Types
Source: USGS

An earthquake fault is defined as “a fracture or fracture zone in the earth’s crust along which there has been displacement of the sides relative to one another.” For the purpose of planning there are two types of faults, active and inactive. Active faults have experienced displacement in historic time, suggesting that future displacement may be expected. Inactive faults show no evidence of movement in recent geologic time, suggesting that these faults are dormant.

Two types of fault movement represent possible hazards to structures in the immediate vicinity of the fault: fault creep and sudden fault displacement. Fault creep, a slow movement of one side of a fault relative to the other, can cause cracking and buckling of sidewalks and foundations even without perceptible ground shaking. Sudden fault displacement occurs during an earthquake event and may result in the collapse of buildings or other structures that are found along the fault zone when fault displacement exceeds an inch or two. The only protection against damage caused directly by fault displacement is to prohibit construction in the fault zone.

An earthquake could occur anywhere in and around the NMWD, including the unincorporated County and the City of Novato, due to the number of active faults within and near Marin County. The NMWD is located directly between the San Andreas and Hayward faults. A moderate to extreme earthquake originating from either of these major faults or any of the other faults in the region could have major impacts on the infrastructure of the district.

NMWD maintains and operates approximately 340 miles of pipeline, 42 tanks totaling over 37 million gallons of storage, and associated pump stations, hydropneumatic systems, and regulator valves.

There is increased risk of shaking and liquefaction in the district from an earthquake, particularly in the central and eastern lowland areas where superficial deposits and fill are more prevalent.

Earthquake Shake Intensity

The colors on Figures 36 and 37 represent the level of ground shaking intensity of a potential future earthquake. The result is expressed as the level of ground shaking (**expressed as a percentage of gravity**) that on average occurs every 500 years.

This map shows the expected relative intensity of ground shaking and damage in California from anticipated future earthquakes. The shaking potential is calculated as the level of ground motion that has a 2% chance of being exceeded in 50 years, which is the same as the level of ground-shaking with about a 2500 year average repeat time. The relatively long-period (1.0 second) earthquake shaking is shown here. Long period-shaking affects tall, relatively flexible buildings, but also correlates well with overall earthquake damage.

Earthquake Shaking Potential Maps for California depict expected intermediate period (1s or 1hz) ground motions with 2% exceedance probability in 50 years.

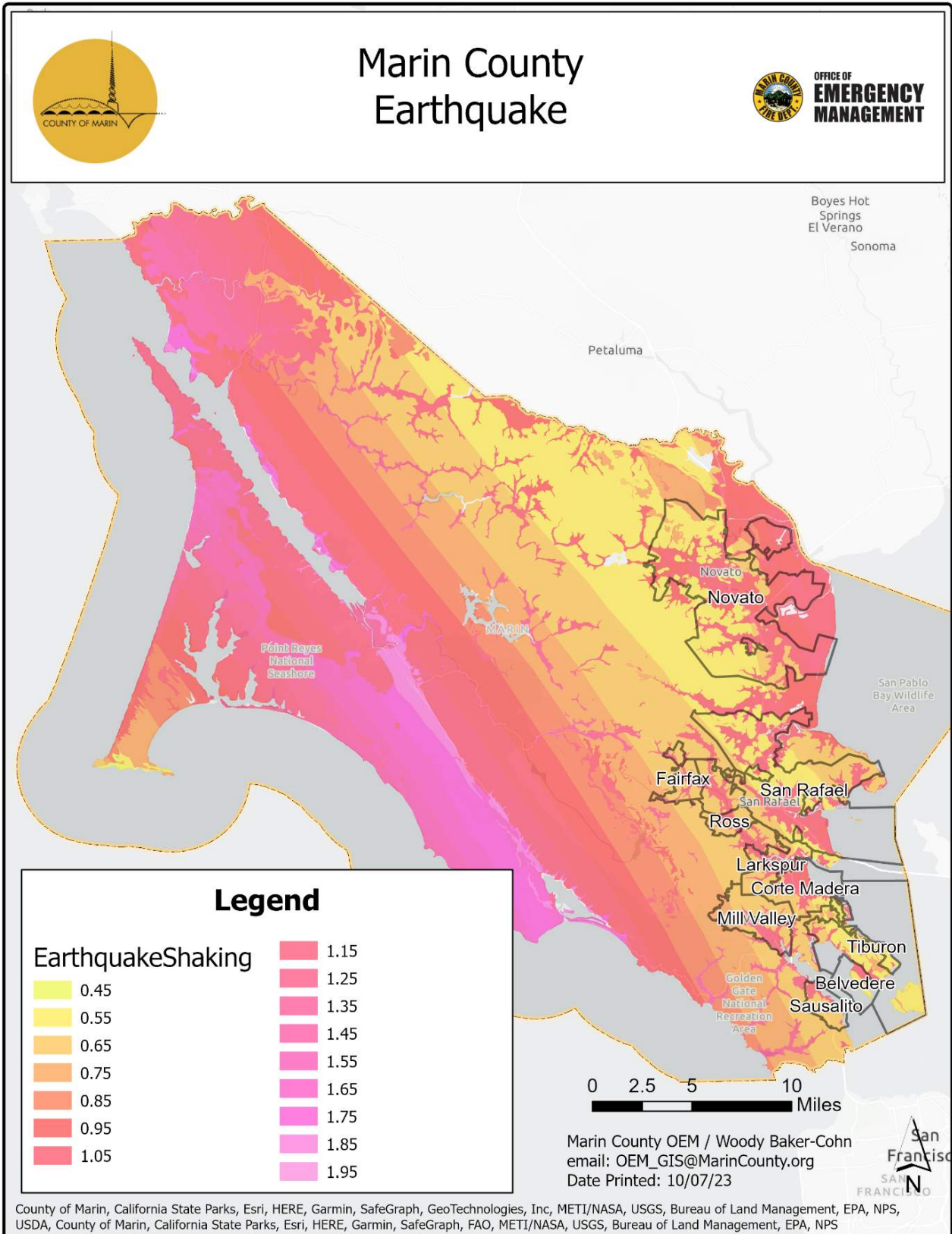


Figure 381: Marin County Earthquake Impact
Source: Marin County OEM

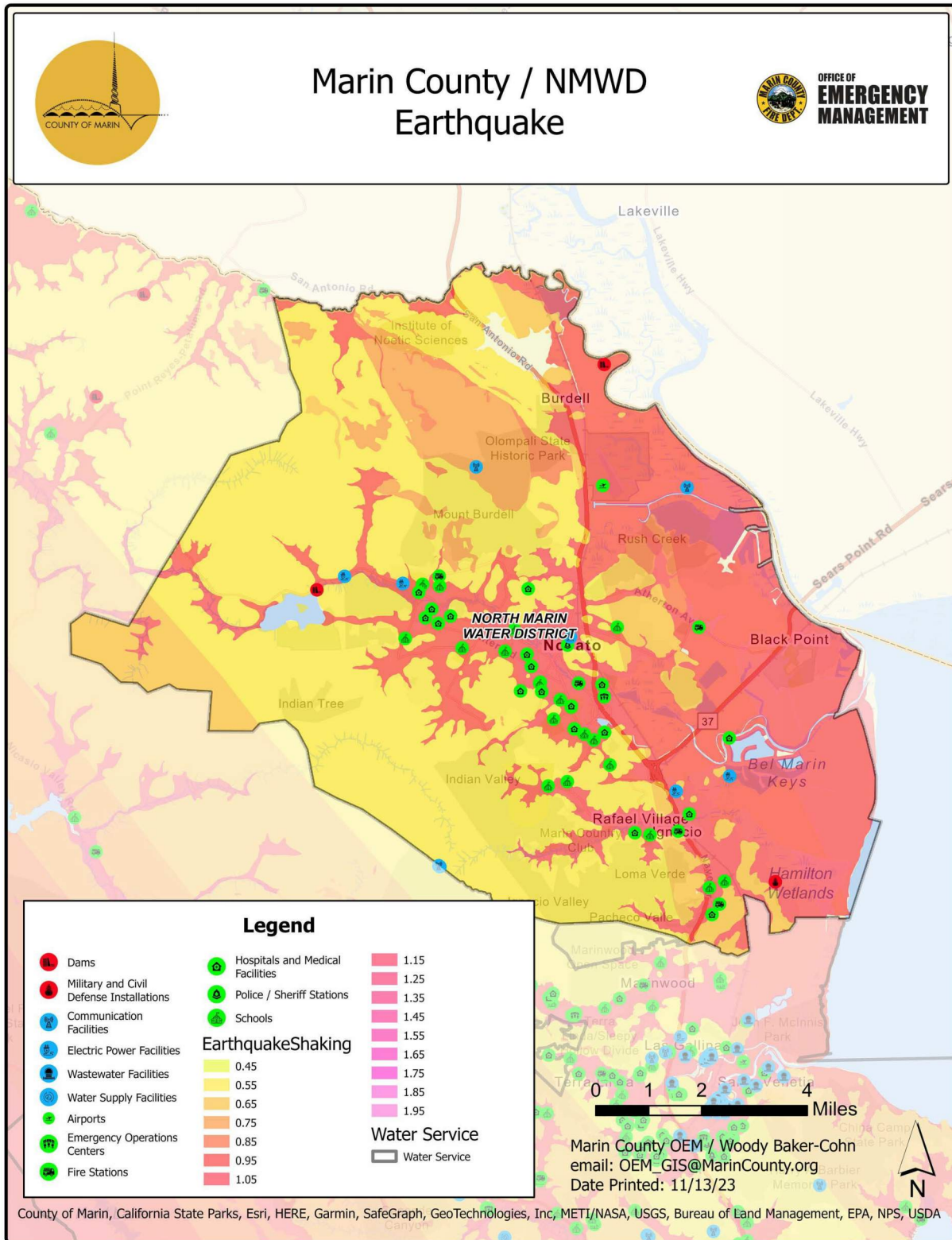


Figure 382: NMWD Earthquake Critical Facilities and Infrastructure
 Source: Marin County OEM

A moderate to extreme earthquake originating from either of these major faults or any of the other faults in the region could have major impacts to the City of Novato and the unincorporated communities of Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point. There is increased risk of shaking and liquefaction in these areas from an earthquake, including in the central and eastern lowland areas of Novato and in the unincorporated communities of Bel Marin Keys and Black Point-Green Point where superficial deposits and fill are more prevalent. This area of Novato includes the primary commercial area of the city along the Highway 101 corridor, and numerous residential neighborhoods and commercial areas with schools and other critical facilities. All of the City's critical facilities with the exception of the Novato Fire Station #63 lie in an area of moderate earthquake shaking potential. The PG&E Substation at Hamilton Wetlands and the Novato Fire Station #62 in the unincorporated County also lie in an area of moderate earthquake shaking potential. Vulnerable structures include bridges and older buildings that have not undergone major seismic retrofitting. Utility infrastructure throughout the city and the unincorporated county in the NMWD could be impacted by an earthquake. Earthquakes could also cause landslides in the western areas of Novato with steeper terrain, causing damage to homes and roads as a result of shifting soils.

Marin County, including the Novato area, was sparsely populated at the time of the 1906 San Francisco Earthquake, and the effects across the County were relatively minimal. Likewise, the 1989 Loma Prieta Earthquake caused minimal impacts across Marin County as the epicenter of the quake was further south in Santa Cruz County. Smaller earthquakes with minimal to no impacts are routinely felt in Novato.

Climate Change and Future Development Considerations

There is no direct link between climate change and seismic activity that could impact the Marin County OA including NMWD, so climate change is not expected to cause any changes to the frequency or intensity of seismic shaking. According to a 2018 study by the Institute of Physics (IOP)²⁵, climate change could result in "isostatic rebounds," or a sudden upward movement of the crust because of reduced downward weight caused by glaciers. As glaciers are known to melt when overall global temperatures increase, climate change could indirectly lead to an increase in seismicity in the Marin County OA including NMWD. Climate change could also impact earthquakes felt in the Marin County OA as droughts can further deteriorate existing fault lines and pumping groundwater can put further pressure on the earth's crust. Future development in the populated areas of Marin County OA where seismic shaking and subsidence are more prevalent could exacerbate the impacts of an earthquake. This includes the areas of the NMWD service area in the City of Novato and the unincorporated communities of Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point where the risk of subsidence and subsequent earthquake shaking are higher. Future development in these areas could expose more people and infrastructure to earthquake shaking as a result of climate change.

2.2.5 FLOODING

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. The area adjacent to a channel is the floodplain. Floodplains are illustrated on inundation maps,

²⁵ An Enhanced Seismic Activity Observed Due to Climate Change: Preliminary Results from Alaska.
<https://iopscience.iop.org/article/10.1088/1755-1315/167/1/012018>

which show areas of potential flooding and water depths. In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program. The 200-year flood is one that has 0.5% chance of being equaled or exceeded each year. The 500-year flood is the flood that has a 0.2% chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity such as construction of bridges or channels. In areas where flow contains high sediment load, such as Easkoot Creek in Stinson Beach (due to an active landslide upstream), the flow carrying capacity of the channel may be reduced dramatically during a single flood event. Coastal floodplains may also change over time as waves and currents alter the coastline (especially wetlands) and sea levels rise.

Flooding can occur in several ways:

Riverine flooding – Riverine flooding, defined as when a watercourse exceeds its “bank-full” capacity, generally occurs because of prolonged rainfall, or rainfall that is combined with snowmelt and/or already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins. The onset and duration of riverine floods may vary from a few hours to many days and is often characterized by high peak flows combined with a large volume of runoff. Factors that directly affect the amount of flood runoff include precipitation amount, intensity of rainfall and distribution of overland flow, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization and geomorphology. In the Marin County OA, riverine flooding can occur anytime from November through April and is largely caused by intense and continued rains, sometimes combined with snowmelt, increased discharges from upstream dams, and intense flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures such as culverts and bridges. Flooding is more severe when antecedent rainfall has resulted in saturated soil conditions. The warning time associated with slow rise riverine floods assists in life and property protection.

Flash flooding – Flash flooding describes localized floods of great volume and short duration. This type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour and thus early threat identification and warning is critical for saving lives.

Localized/Stormwater flooding – Localized flooding problems are often caused by flash flooding, severe weather, or an unusual amount of intense rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.

Tidal flooding – Tidal flooding develops when high tides exceed either the top of bank elevation of tidal sloughs and channels, or the crest of bay levees. An especially high tide event that occurs during alignment of the gravitational pull between the sun and the moon, causing tidal water levels to rise to higher-than normal levels. King tides are normal, predictable events that occur semi-annually during winter months. Typically storms in which high tides coincide with peak stormwater flow may be damaging to municipal infrastructure and private property.

The area is also at risk of flooding resulting from levee failures and dam failures. Dam failure flooding is discussed separately in the Dam Failure Section of this document; levee failure flooding is discussed separately in the Levee Failure Section of this document. Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reach.

A weather pattern called the “Atmospheric River” contributes to the flooding potential of the area. An Atmospheric River brings warm air and rain to the West. A relatively common weather pattern brings southwest winds to the Pacific Northwest or California, along with warm, moist air. The moisture sometimes produces many days of heavy rain, which can cause soil saturation, extensive flooding and other impacts such as landslides. The warm air also can melt the snowpack in the mountains, which further aggravates the flooding potential. In the colder parts of the year, the warm air can be cooled enough to produce heavy, upslope snow as it rises into the higher elevations of the Sierra Nevada or Cascades. Forecasters and others on the West Coast often used to refer to this warm, moist air as the “Pineapple Express” because it comes from around Hawaii where pineapples are grown. A diagram of an atmospheric river event is shown in Figure 38.

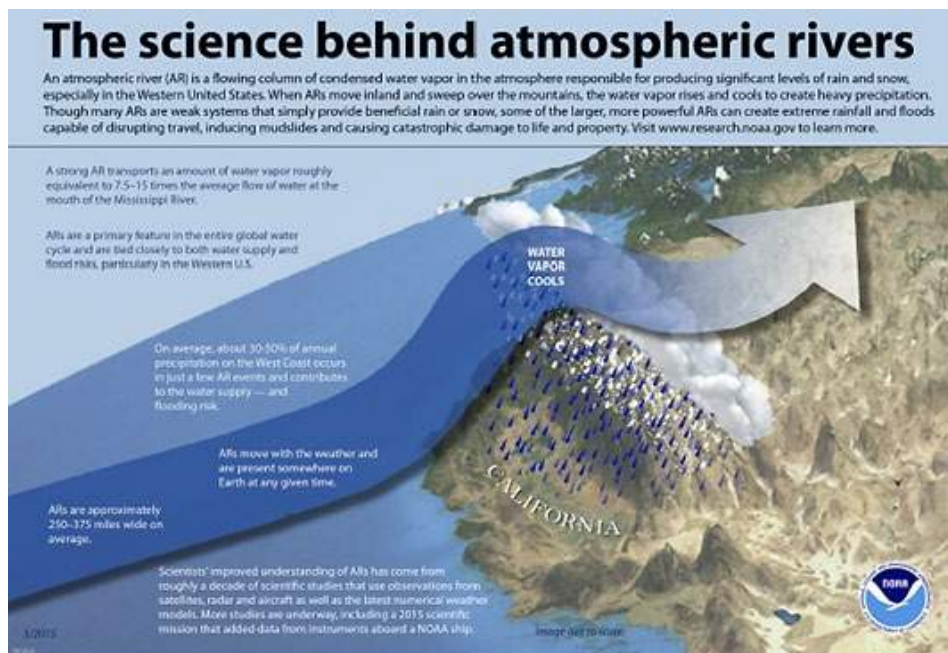


Figure 383: Diagram of an Atmospheric River Event

Source: NOAA

The Marin County OA is susceptible to various types of flood events. In coastal areas, flooding may occur when strong winds or tides result in a surge of seawater into areas that are above the normal high tide line. Other types of flooding in Marin include isolated ponding and

stormwater overflow. Isolated ponding is when pools form on the ground and can occur in any area that doesn't drain effectively – for example, in a natural depression in the landscape. Stormwater overflow is when storm drains back up. Stormwater drainage systems quickly convey rainwater through underground pipes to creeks and the Bay. When the storm drains are obstructed or broken or when the water bodies to which they lead to are already full, water backs up onto the streets. Although stormwater overflow and isolated ponding also occur throughout the County, the effects are typically not widespread or significantly damaging.

Flooding in the NMWD, including in the unincorporated County and the City of Novato, generally results from a combination of high tides from San Pablo Bay and creek flooding from Novato Creek in low-lying areas. Most of the lowland areas in the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point are in the 100-year floodplain, with several areas in the 500-year floodplain.

The 100-year floodplain extends mostly along Novato Creek from Stafford Lake to San Pablo Bay, including a large area along Novato Boulevard for approximately two miles where hundreds of homes, numerous commercial buildings and shopping plazas, several medical facilities, Our Lady of Loretto School and Lynwood Elementary School could be susceptible to flooding. The 100-year floodplain also extends along some of the smaller tributaries in the City include parts of Warner Creek, Vineyard Creek, Wilson Creek, Arroyo Avichi Creek and Rush Creek. There are dozens of residences along these creeks that could be susceptible to flooding. The 100-year floodplain along Vineyard Creek extends through the middle of Sinaloa Middle School and the 100-year floodplain along Arroyo Avichi Creek runs along the edge of the Rancho Elementary School. Other areas with high flood danger include Ignacio and Arroyo San Jose, as well as the Bahia area. The area around Scottsdale Pond that includes a section of Highway 101 and the area north of Bel Marin Keys that includes several miles of State Route (SR) 37 lie in the 100-year floodplain and could be susceptible to flooding, which could cause transportation challenges for the city. The 500-year floodplain also follows Novato Creek for its length through most of the city and is interspersed with the 100-year floodplain. A large section of the 500-year floodplain lies north of downtown and extends along a mile of Redwood Boulevard, including the SMART railroad tracks which could be susceptible to flooding. The 500-year floodplain in Novato includes hundreds of homes, numerous commercial buildings and shopping plazas, Novato Fire Station #1, the PG&E substation at Novato and the Old Town area of downtown that could be susceptible to flooding. Most of downtown Novato, including the Novato Police Department and Novato City Hall, lie outside of the 100 and 500-year floodplains.

Part of the County Redwood Landfill and all of the Marin County airport, including the access road, lie in the 100-year floodplain and could be susceptible to flooding. This area is mostly marshland that could experience coastal flooding. Most of the Green Point-Black Point area lies outside the 100-year floodplain though there are several homes in the Black Point area near marshland that lie in the 100-year floodplain and could be susceptible to flooding.

Numerous homes in Bel Marin Keys and sections of Bel Marin Keys Boulevard lie in the 100-year floodplain and could be susceptible to flooding. A flooding event could affect ingress and egress to Bel Marin Keys.

San Antonio Creek forms part of the boundary between Marin and Sonoma Counties from the area around Chileno Valley Road east to the Petaluma River and there are several homes along it that lie in the 100-year floodplain and that could be susceptible to flooding. There are also several road bridges that cross the creek in the 100-year floodplain and that could be susceptible to flooding.

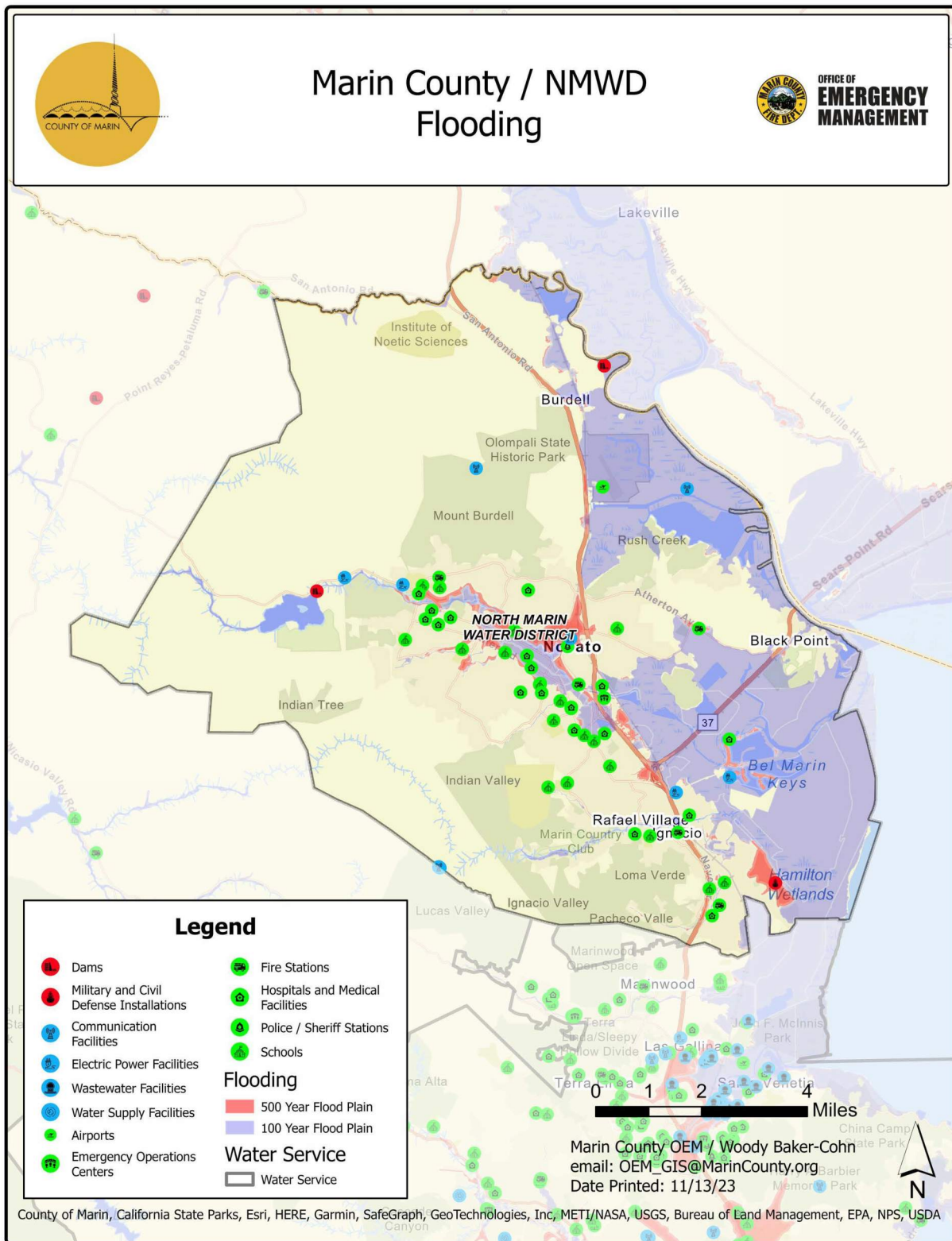


Figure 384: NMWD Flooding Critical Facilities and Infrastructure
 Source: Marin County OEM

Table 15 shows the number of North Marin Water District critical facilities by flood zone.

Table 15: NMWD Critical Facilities by Flood Zone			
Category	Name	Address	Flood Zone
Critical Facilities			
District Building	NMWD Headquarters: Administration, Laboratory, and Corporation Yard	999 Rush Creek Place Novato, CA 94945	500-year flood plain (Zone X)
District Building	Stafford Water Treatment Plant	3500 Novato Blvd. Novato, CA 94945	n/a
District Building	Point Reyes Water Treatment Plant	101 Commodore Webster Dr. Point Reyes Station, CA 94956	100-year flood plain (Zone AE)
High Potential Loss Facilities			
DAM	Novato Creek Dam	3500 Novato Blvd. Novato, CA 94945	n/a
Critical Infrastructure			
Water	North Marin Aqueduct, 30"-42" water transmission pipeline	Linear utility –generally paralleling US 101	n/a
Water	San Marin Pump Station	APN 125-411-25	n/a
Water	Lynwood Pump Station	Intersection of S. Novato Blvd & Sunset Parkway, Novato, CA 94945	n/a
Water	Cherry Hill Pump Station	APN 143-421-33	n/a
Water	School Road Pump Station	Intersection of School Road & Sunset Trail, Novato, CA 94945	n/a
Water	Black Point @ Hwy 37 Regulating Station	Intersection of Harbor Drive & Hwy 37 Eastbound On-Ramp, Novato, CA 94945	AE
Water	Black Point @ Grandview Avenue Regulating Station	Intersection of Harbor Drive & Grandview Avenue, Novato, CA 94945	AE
Water	Coast Guard Wells (No. 2 & 4)	101 Commodore Webster Dr. Point Reyes Station, CA 94956	AE
Water	Gallagher Well No. 1	APN 119-050-12	AE
Water	Gallagher Well No. 2	APN 119-050-17	AE
Water	Olema Pump Station	APN 166-220-10	AE
Water	Bear Valley Pump Station	APN 166-350-10	n/a
Water	Inverness Park Pump Station	APN 114-294-33	n/a
Water	Paradise Ranch Estates Pump Station No. 1	APN 114-111-19	n/a
Water	Paradise Ranch Estates Pump Station No. 2	APN 114-100-89	n/a
Water	Paradise Ranch Estates Pump Station No. 3	APN 114-100-91	n/a
Water	Paradise Ranch Estates Tank No. 1	APN 114-111-19	n/a
Water	Paradise Ranch Estates Tank No. 2	APN 114-100-89	n/a
Wastewater	Tahiti Way Lift Station	APN 100-261-47	n/a
Wastewater	Oceana Marin Wastewater Storage and Treatment Ponds	APN 100-100-56	n/a

Table 185: North Marin Water District Critical Facilities in the Flood Zones

Source: Marin County/FEMA DFIRM

Floodwaters can be deep enough to drown people and move fast enough to sweep people and vehicles away, lift buildings off foundations, and carry debris that smashes into buildings and other property. Flood waters can cause significant erosion which can lead to slope instability, severely damaging transportation and utility infrastructure by undermining foundations or washing away pavement. If water levels rise high enough to get inside buildings, flooding can cause extensive damage to personal property and the structure itself. Flood events that develop very quickly are especially dangerous because there may be little advance warning. Flooding may occur when strong winds or tides result in a surge of seawater into areas that are above the normal high tide line. Tide elevations within San Pablo Bay have the potential to significantly impact the Novato storm drain system. Novato already sees flooding from king tides in San Pablo Bay and this is only expected to increase with sea level rise and climate change. A failure of the Stafford Lake/Novato Creek dam could contribute to flooding in the lowland areas the NMWD service area in the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point.

On 1/14/2023, a storm flooded SR-37 in Novato, including the U.S. 101 connector ramps. SR-37 had to close in both directions near Atherton Avenue for the weekend. The storm also flooded Armstrong Avenue.

On 2/14/2019, Novato police closed several streets and issued at least one shelter-in-place order in the City at Paper Mill Court due to flooding across the City in the midst of a severe winter storm. South Novato Boulevard between Nave and Lark courts, Simmons Lane from San Marin Drive to Lesse Lane and all of Commercial Boulevard were closed.

On 1/19/2019, a storm flooded the westbound lanes of SR-37 in Novato, causing a three-day partial closure of the road.

On 1/22/2017, a storm flooded three miles of SR-37 between Highway 101 and Atherton Avenue with five feet of water, closing it for three days.

On 12/11/2014, a storm flooded several neighborhoods in Novato, including on Garden Court and Chase Street. SR-37 flooded and the westbound lanes had to close.

On 12/31/2005-1/1/2005, a strong storm caused a mobile home park to flood with up to 4 feet of water, forcing the evacuation of about 100 stranded residents.

On 1/3-1/4/1982, torrential rains caused massive power outages, landslides, numerous injuries and over \$14 million in damages throughout Novato. More than 9 inches of rain fell in 36 hours causing water to rush over Stafford Dam, ultimately flooding neighborhoods and roadways including Grant Avenue, Center Road and Novato Boulevard. Flooding shut down the railroad for nearly a month. Novato was declared a disaster area and was soon followed by the largest cleanup effort in the city's history.

Climate Change and Future Development Considerations

Climate change is expected to affect California's precipitation patterns, which are likely to influence future flood events. A 2017 study²⁶ found that the number of very intense precipitation days in California is projected to more than double by the end of the century, increasing 117 percent, making it likely that flood events will become more frequent in the Marin County OA

²⁶ Precipitation in a Warming World: Assessing Projected Hydro-Climate Changes in California and other Mediterranean Regions. <https://www.nature.com/articles/s41598-017-11285-y>

including the NMWD. Climate change is expected to alter rainfall patterns in Northern California, including the Marin County OA. As the climate warms, rain events are predicted to become more intense. The Marin County OA including the NMWD will likely experience more rain inundation events that lead to flooding and increase the potential threat of dam and levee failure, tree mortality, and other potential hazards. Sea level rise as a result of climate change will exacerbate the impacts of tidal flooding in the lowland areas of the Marin County OA including the shoreline areas of the NMWD. Future development in these areas will expose more people and infrastructure to the effects of flooding. Development in the marshland area of the NMWD would expose additional people and infrastructure to flooding as marshlands act as a natural buffer to storm surge. Development in the marshland area of the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point would expose additional people and infrastructure in the NMWD service area to flooding as marshlands act as a natural buffer to storm surge. Development along Novato Creek, Arroyo San Jose, and other creeks in Novato in the 100 and 500-year floodplain would expose more people, structures and infrastructure including major roads in the NMWD service area to creek flooding and storm surge from Novato Creek as a result of climate change.

2.2.6 LAND SUBSIDENCE

Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials. The principal causes are aquifer-system compaction, drainage of organic soils through groundwater pumping, underground mining, hydro-compaction, natural compaction, sinkholes, and thawing permafrost. More than 80 percent of the identified subsidence in the United States is a consequence of underground water exploitation. The increasing development of land and water resources threatens to exacerbate existing land-subsidence problems and initiate new ones.

Sinkholes can form in three primary ways. Dissolution sinkholes form when dissolution of the limestone or dolomite is most intensive where the water first contacts the rock surface. Aggressive dissolution also occurs where flow is focused in preexisting openings in the rock, such as along joints, fractures, and bedding planes, and in the zone of water-table fluctuation where groundwater is in contact with the atmosphere. See Figure 40 for a picture and description of how dissolution sinkholes form.

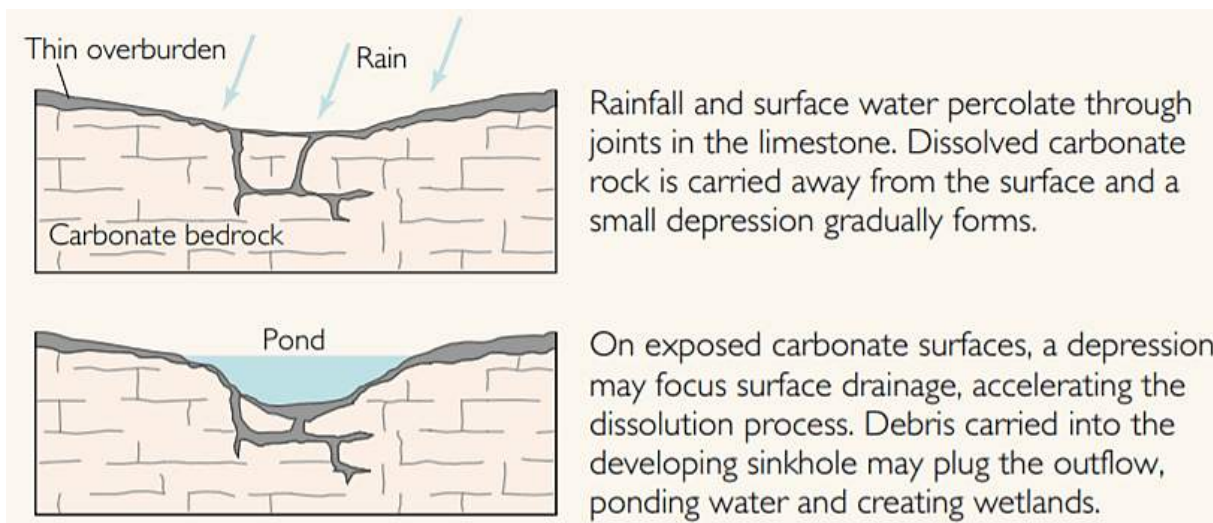


Figure 385: Dissolution Sinkhole Formation

Source: USGS

Cover-subsidence sinkholes tend to develop gradually where the covering sediments are permeable and contain sand. In areas where cover material is thicker, or sediments contain more clay, cover-subsidence sinkholes are relatively uncommon, are smaller, and may go undetected for long periods. See Figure 41 for a picture and description of how cover-subsidence sinkholes form.

Granular sediments spall into secondary openings in the underlying carbonate rocks.

A column of overlying sediments settles into the vacated spaces (a process termed "piping").

Dissolution and infilling continue, forming a noticeable depression in the land surface.

The slow downward erosion eventually forms small surface depressions 1 inch to several feet in depth and diameter.

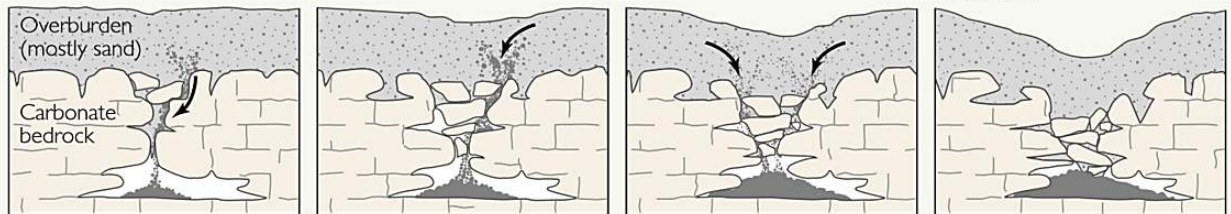


Figure 386: Cover-Subsidence Sinkhole Formation

Source: USGS

Cover-collapse sinkholes may develop abruptly over a period of hours and cause catastrophic damages. They occur where the covering sediments contain a significant amount of clay. Over time, surface drainage, erosion, and deposition of sediment transform the steep-walled sinkhole into a shallower bowl-shaped depression. See Figure 42 for a picture and description of how cover-collapse sinkholes form.

Sediments spall into a cavity.

As spalling continues, the cohesive covering sediments form a structural arch.

The cavity migrates upward by progressive roof collapse.

The cavity eventually breaches the ground surface, creating sudden and dramatic sinkholes.

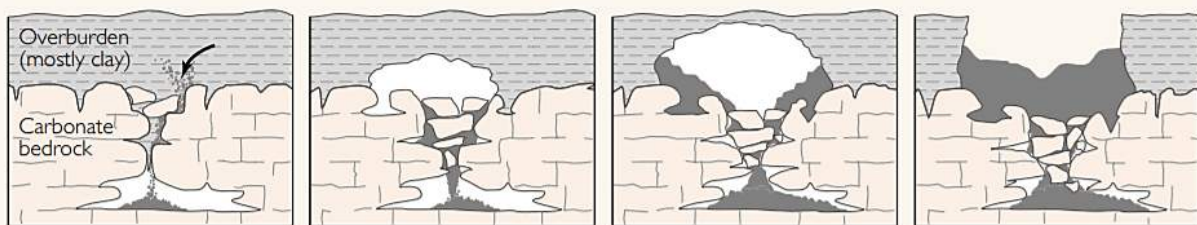


Figure 387: Cover-Collapse Sinkhole Formation

Source: USGS

New sinkholes have been correlated to land-use practices, especially from groundwater pumping and from construction and development practices that cause land subsidence. Sinkholes can also form when natural water-drainage patterns are changed and new water-diversion systems are developed. Some sinkholes form when the land surface is changed, such as when industrial and runoff-storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material, thus causing a sinkhole.

The overburden sediments that cover buried cavities in the aquifer systems are delicately balanced by groundwater fluid pressure. The water below ground helps to keep the surface soil in place. Groundwater pumping for urban water supply and for irrigation can produce new sinkholes in sinkhole-prone areas. If pumping results in a lowering of groundwater levels, then underground structural failure, and thus, sinkholes, can occur.

The areas of the Marin County OA most vulnerable to land subsidence are those underlain with the younger Holocene unconsolidated alluvial and colluvial sediments, and even more so the younger bay muds. In general, Marin County OA shoreline properties are the most exposed and vulnerable to subsidence. Land subsidence and sinkholes would most likely occur in the central and eastern lowland areas of the NMWD including the City of Novato and the unincorporated communities Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point where superficial deposits and fill are more prevalent. This includes the primary commercial area of the City of Novato along the Highway 101 corridor, and numerous residential neighborhoods with schools and other critical facilities. These areas could anticipate increased rates of subsidence as bay waters saturate the soil from below. Bel Marin Keys was built on bay fill and mud, and already experiences subsidence. Land subsidence could have numerous impacts for the district, including the settling of district facilities and infrastructure as well as the shifting of roadways and utility infrastructure that run through the district including in the City of Novato and the unincorporated communities of Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point. Transportation facilities along the OA's coastline are also vulnerable to subsidence. Increased subsidence could warp the buildings and runways at Marin County Airport in North Novato.

There have been no major sinkholes recorded in the district including the City of Novato and the unincorporated communities of Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point, though sinkholes have occurred in neighboring jurisdictions including San Anselmo and San Rafael.

Climate Change and Future Development Considerations

Climate change could indirectly influence land subsidence as more severe and prolonged periods of drought may encourage more groundwater withdrawals. In coastal areas like the Marin County OA including the NMWD, land subsidence leads to higher sea levels and increased flood risk. The rate of land subsidence could increase across the Marin County OA including the lowland areas of the NMWD as a result of climate change. The impacts of land subsidence on infrastructure, including roads and underground utilities, in the NMWD could increase with future development in the lowland populated areas of the City of Novato and the unincorporated communities of Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point where land subsidence is more likely to occur.

2.2.7 LEVEE FAILURE

Levee failure is the overtopping, breach or collapse of the levee. Levees can fail in the event of an earthquake, internal erosion, poor engineering/construction or landslides, but levees most commonly fail as a result of significant rainfall or very high tides. During a period of heavy rainfall, the water on the water-body side of the levee can build up and either flow over the top (“overtopping”) or put pressure on the structure causing quickening seepage and subsequent erosion of the earth. The overflow of water washes away the top portion of the levee, creating

deep grooves. Eventually the levee weakens, resulting in a breach or collapse of the levee wall and the release of uncontrollable amounts of water. Figure 43 shows a levee and the multiple ways it can fail.

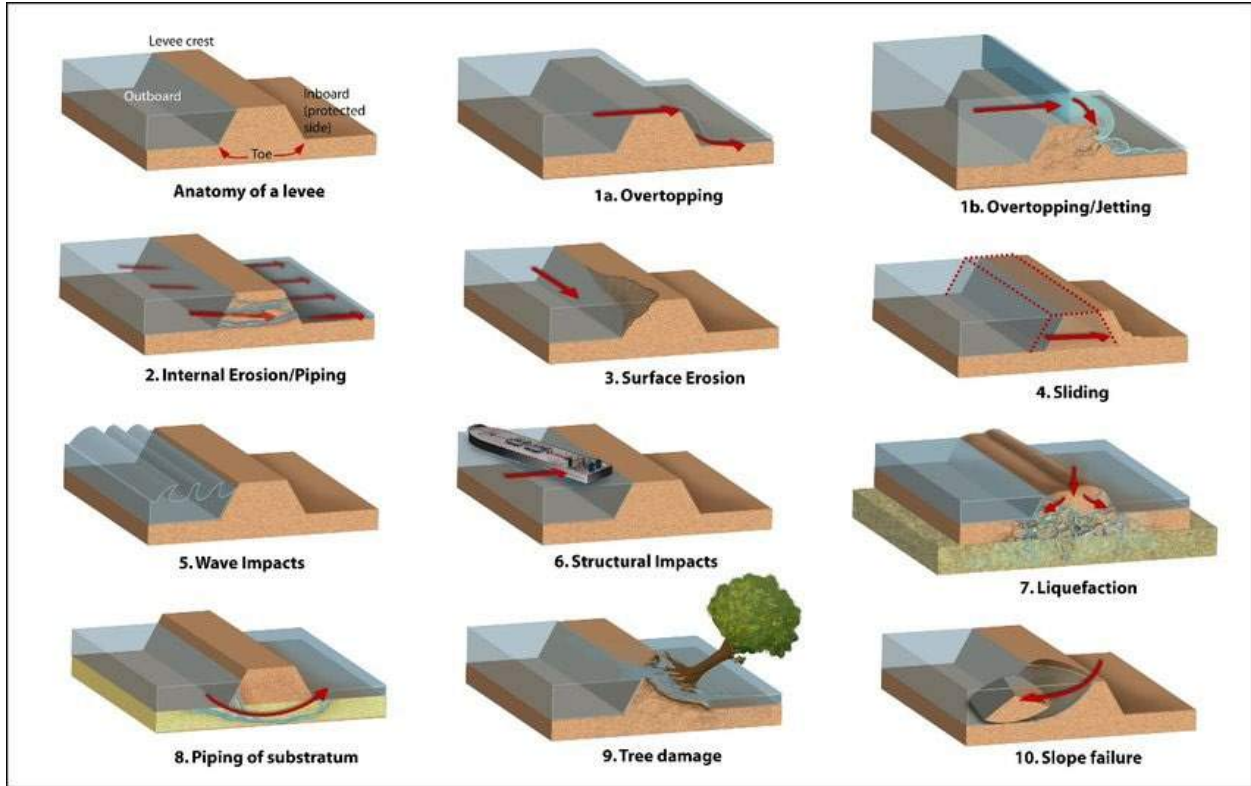


Figure 388: Levee Failure Mechanisms

Source: University of California

Levees are typically earthen embankments designed to contain, control, or divert the flow of water to provide some level of protection from flooding. No levee system provides full protection from all flooding events to the people and structures located behind it. Some level of flood risk exists in the levee-affected areas. Except for one levee system in Novato-Hamilton, none of the County's levees are FEMA-accredited. Many were built many decades ago (non-engineered) by farmers or developers and material may have been added over the years.

The NMWD service area, including the City of Novato and the unincorporated County are protected by several levee systems, as shown in Figure 44.

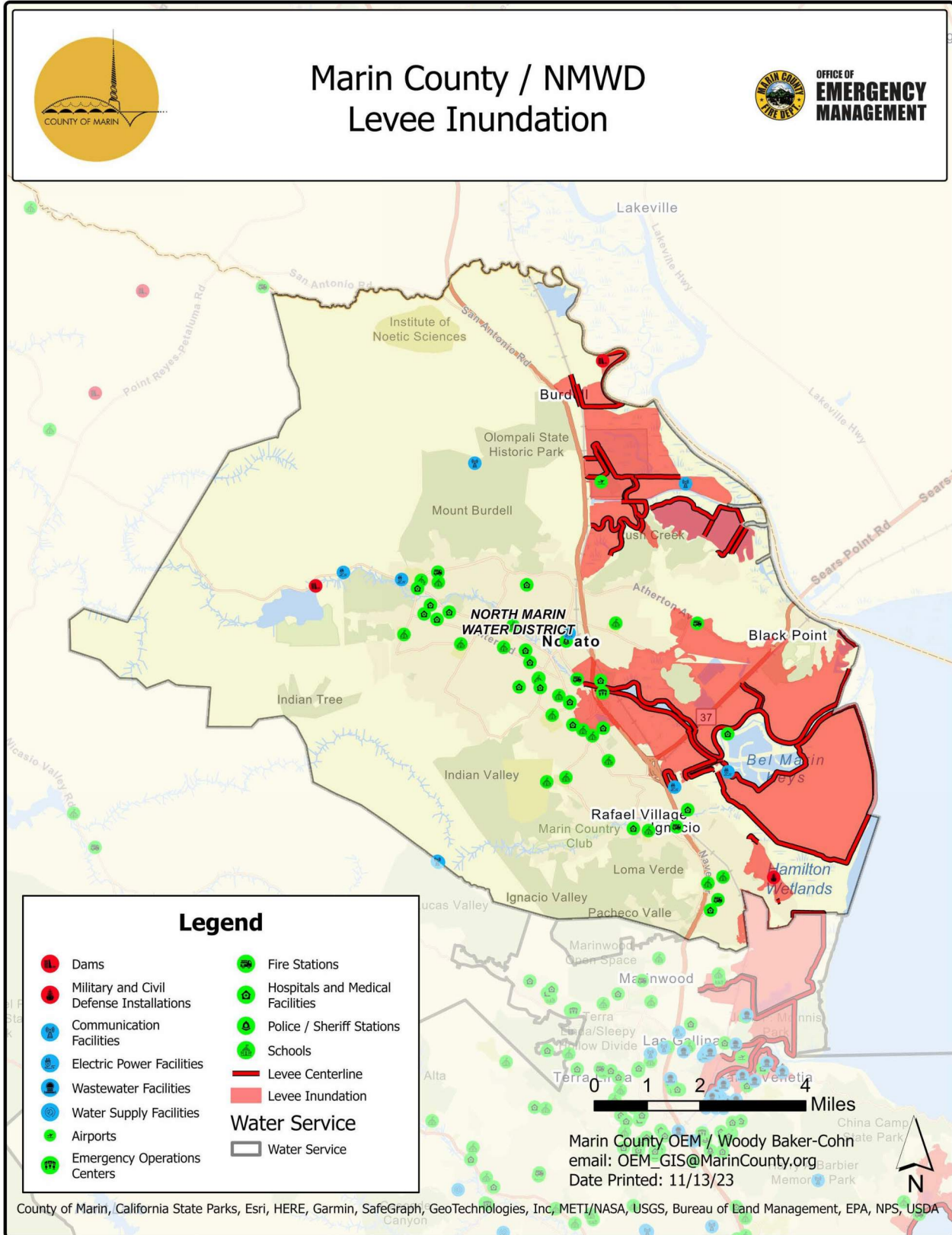


Figure 389: NMWD Levee Inundation Map
 Source: Marin County OEM

Two levee systems are located around the Marin County Airport. The State Fish and Game Levee surrounds the Airport property and neighboring wetlands on three sides to the north, south, and east. The Gross Airport Levee consists of two sections that intersect the airport property. One section is 2.59 miles long with an undocumented height and the other section is 0.43 miles long with an undocumented height. Figures 45 and 46 show the levee systems and levee failure inundation areas around the Marin County Airport and North Marin.

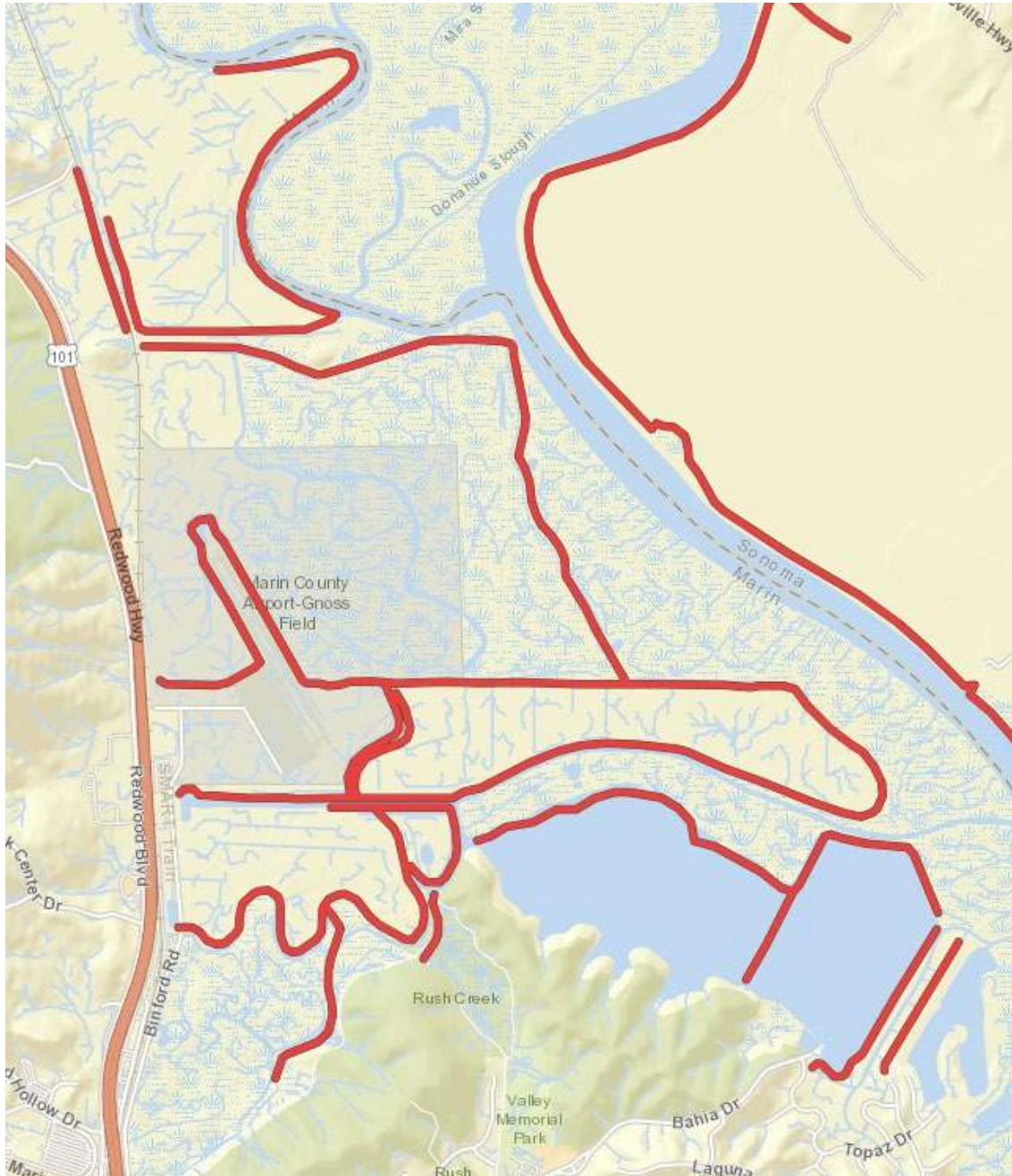


Figure 390: Levees Around the Marin County Airport
Source: U.S. Army Corps of Engineers

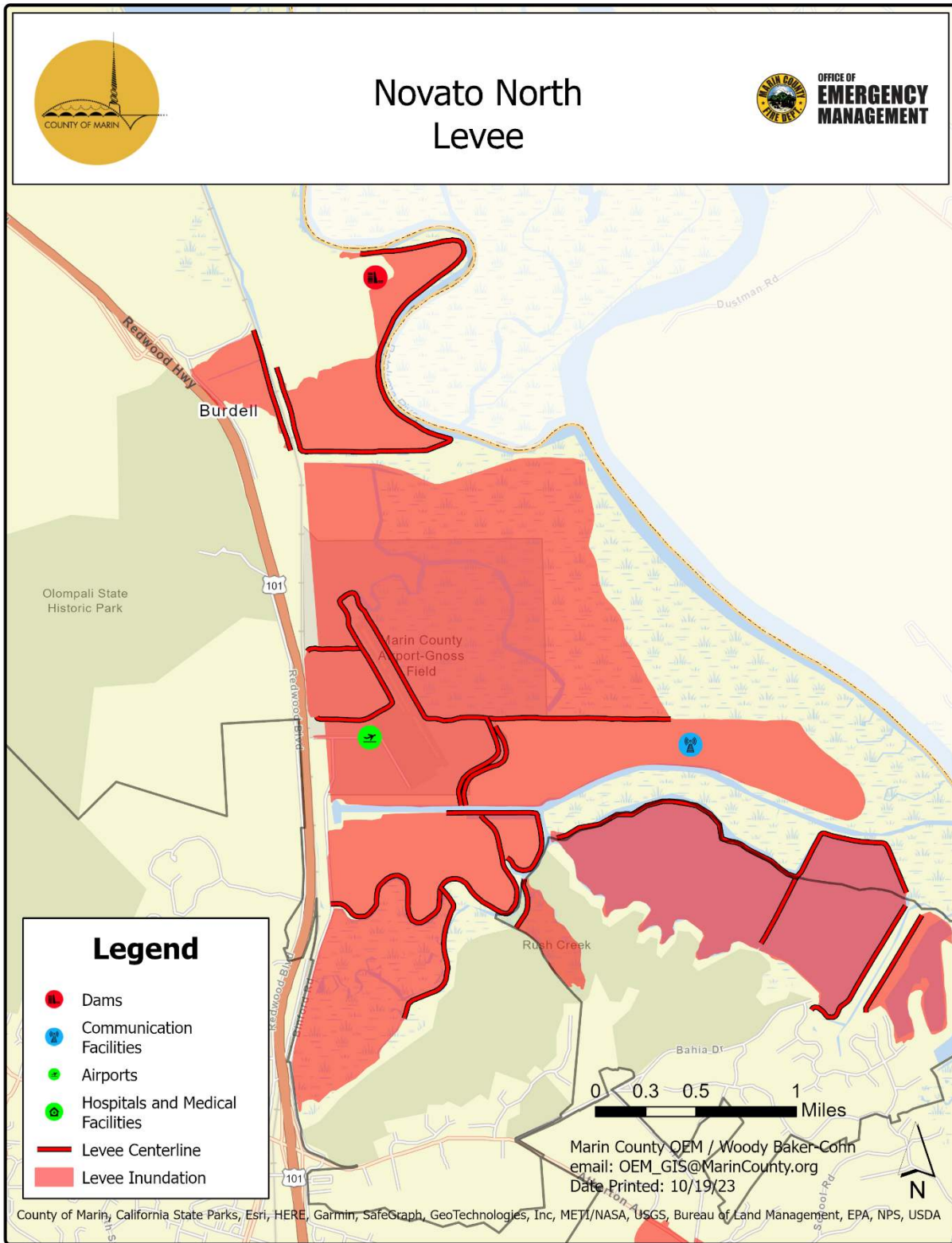


Figure 391: NMWD - Novato North Levee Inundation Map
Source: Marin County OEM

The City of Novato is protected by non-accredited levees along both sides of Novato Creek in the southern part of Novato near Bel Marin Key. The Novato Creek LB Upper Levee on the north side of the Creek is 2.11 miles long with no documented height. Approximately 1,468 people and 265 buildings with a property value of \$361 million are at risk of a failure of the Novato Creek LB Upper Levee, including the Novato Community Hospital and part of Highway 101. The Novato Creek Levee on the south side of the Creek is 1.71 miles long with no documented height. Approximately 3,080 people and 214 buildings with a property value of \$526 million are at risk of failure of the Novato Creek Levee, including several commercial areas and part of Highway 101. The Novato Creek RB Lower levee on the south side of the Creek is 1.1.7 miles long with no documented height. One building at the Ignacio Treatment Plant with a property value of \$1.68 million is at risk from a failure of the Novato Creek RB Lower levee. The Novato Creek LB Lower Levee on the north side of the creek is 4.11 miles long with no documented height. Approximately 12 people and six buildings with a property value of \$6.93 million are at risk of failure of the Novato Creek LB Lower levee. Marin County Levee 10 is a 1.04-mile-long levee with an undocumented height that primarily protects part of the Ignacio Treatment Plant. Marin County Levee 7 and Marin County Levee 3 are two unaccredited levees south of SR-37 on the east and west sides of a small tributary. Marin County Levee 7 is 0.53 miles long with no documented height. There is no risk to populations or property from failure of Marin County Levee 7. Marin County Levee 23 is 0.55 miles long with no documented height. Approximately three people and one building with a property value of \$1.36 million is at risk of failure of the Marin County Levee 23. The Hamilton Levee along the Hamilton Wetlands is an accredited levee that is 1.09 miles long with 0.26 miles of embankment and no documented height. Approximately 1,786 people and 621 buildings with a property value of \$470 million in the Hamilton neighborhood are at risk of failure of the Hamilton Levee. The Las Galinas Valley Sanitary District Levee is a non-accredited levee that is 3.63 miles long with no documented height. Approximately 19 people and nine buildings with a property value of \$9.74 million are at risk of failure of the Las Galinas Valley Sanitary District Levee. The Novato Creek Levee Evaluation Project was created to evaluate the feasibility of increasing the level of flood protection for residences and businesses within Novato Creek's 100-year floodplain, and to work towards having the levees become FEMA accredited. A failure of any of the levees around Novato during a high rain event could cause flooding into residential neighborhoods and commercial areas of Novato, with property and infrastructure within the 100-year floodplain being most susceptible.

Several levee systems exist around Bel Marin Keys and the Black Point area, but their failure does not present a risk to the communities. Figure 47 shows the Novato and Bel Marin Keys levee failure inundation area.

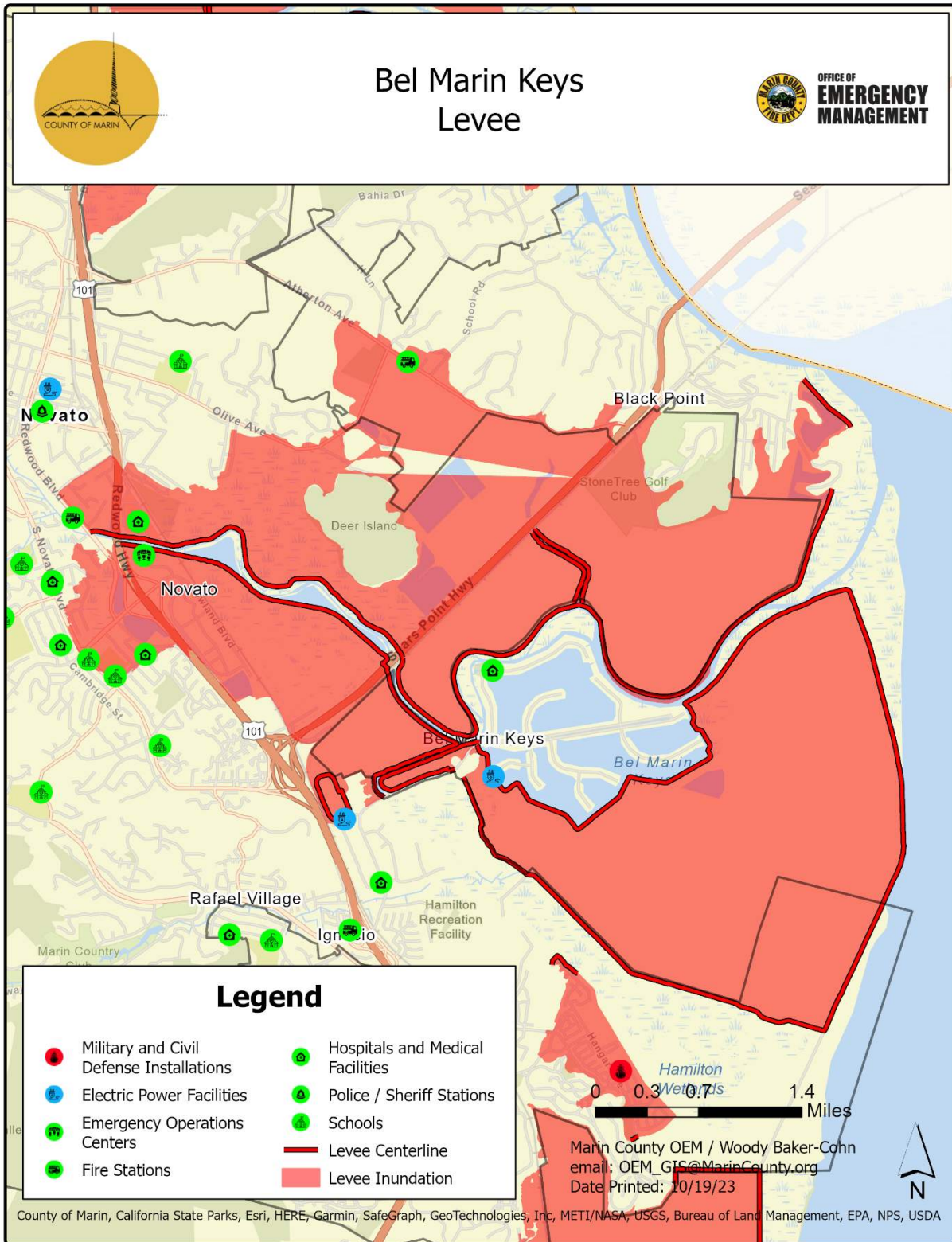


Figure 392: NMWD – Bel Marin Keys Levee Inundation Map
Source: Marin County OEM

On 2/14/2019, a levee was breached in two places near SR 37, washing out railroad tracks and threatening to inundate the roadway with water. A second levee near Pacheco Pond in the City of Novato was flowing over the top of the barrier, though the levee did not appear to have been breached. The largest breach, along Highway 37 and Harbor Drive, caused a swollen Novato Creek to spill over onto a field south of the highway.

On 12/31/2005-1/1/2006 a strong storm caused a levee breach behind Novato Community Hospital. Workers had to build a road out to the levee before they could begin repairs. The area being flooded was mostly wetlands and a park, and repairs were made before any homes were threatened.

Climate Change and Future Development Considerations

Climate change is expected to lead to an increase in the frequency and severity of major storm events, which can place added strain on levee systems. An increase in rainfall and runoff as a result of climate change will increase the potential for higher water levels in leveed areas across the Marin County OA including in the NMWD, increasing the potential for a levee failure. Rising seas will lead to increased stress on the levees around the Marin County OA shoreline including in the NMWD, particularly during a major tidal event and potential tsunami. As development increases in the populated areas of the NMWD protected by its levees, particularly along Novato Creek and around its marshlands, the potential for significant impacts to residents and infrastructure will only increase.

2.2.8 SEA LEVEL RISE

Climate change is the distinct change in measures of weather patterns over a long period of time, ranging from decades to millions of years. More specifically, it may be a change in average weather conditions such as temperature, rainfall, snow, ocean and atmospheric circulation, or in the distribution of weather around the average. While the Earth's climate has cycled over its 4.5-billion-year age, these natural cycles have taken place gradually over millennia, and the Holocene, the most recent epoch in which human civilization developed, has been characterized by a highly stable climate until recently.

The Marin County OA MJHMP is concerned with human-induced climate change that has been rapidly warming the Earth at rates unprecedented in the last 1,000 years. Since industrialization began, the burning of fossil fuels (coal, oil, and natural gas) at escalating quantities has released vast amounts of carbon dioxide and other greenhouse gases responsible for trapping heat in the atmosphere, increasing the average temperature of the Earth. Secondary impacts include changes in precipitation patterns, the global water cycle, melting glaciers and ice caps, and rising sea levels. According to the Intergovernmental Panel on Climate Change (IPCC), climate change will "increase the likelihood of severe, pervasive and irreversible impacts for people and ecosystems" if unchecked.

Through changes to oceanic and atmospheric circulation cycles and increasing heat, climate change affects weather systems around the world. Climate change increases the likelihood and exacerbates the severity of extreme weather – more frequent or intense storms, floods, droughts, and heat waves. Consequences for human society include loss of life and injury,

damaged infrastructure, long-term health effects, loss of agricultural crops, disrupted transport and freight, and more. Climate change is not a discrete event but a long-term hazard, the effects of which communities are already experiencing.

Climate change adaptation is a key priority of the State of California. The 2013 State of California Multi- Hazard Mitigation Plan stated that climate change is already affecting California. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and earlier runoff of both snowmelt and rainwater in the year. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing.

Rising sea levels are considered a secondary effect of climate change due to warming ocean temperatures and melting glacial ice sheets into the ocean. The California coast has already seen a rise in sea level of four to eight inches over the 20th century due to climate change. Sea level rise impacts can be exacerbated during coastal storms, which often bring increased tidal elevations called “storm surge.” The large waves associated with such storm surges can cause flooding in low-lying areas, erosion of coastal wetlands, saltwater contamination of drinking water, disruption of septic system operations, impacts on roads and bridges, and increased stress on levees. In addition, rising sea levels results in coastal erosion as shoreline sediment is re-deposited back into the ocean. Evidence shows that winter storms have increased in frequency and intensity since 1948 in the North Pacific, increasing regional wave heights and water levels during storm events.

According to the 2017 “Rising Seas in California, An Update on Sea-Level Rise Science” report Marin County may experience impacts from Sea Level Rise over defined periods of time, to include long-term changes (second half of this century and beyond), and short- to mid-term projections (within the next two or three decades).

There are areas within the NMWD service area including the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point that are at a lower elevation than many of the coastal areas in Marin County as shown in Figure 48. As such, these areas are particularly vulnerable to sea level rise and could experience between one and six feet of inundation as shown in Figure 49.

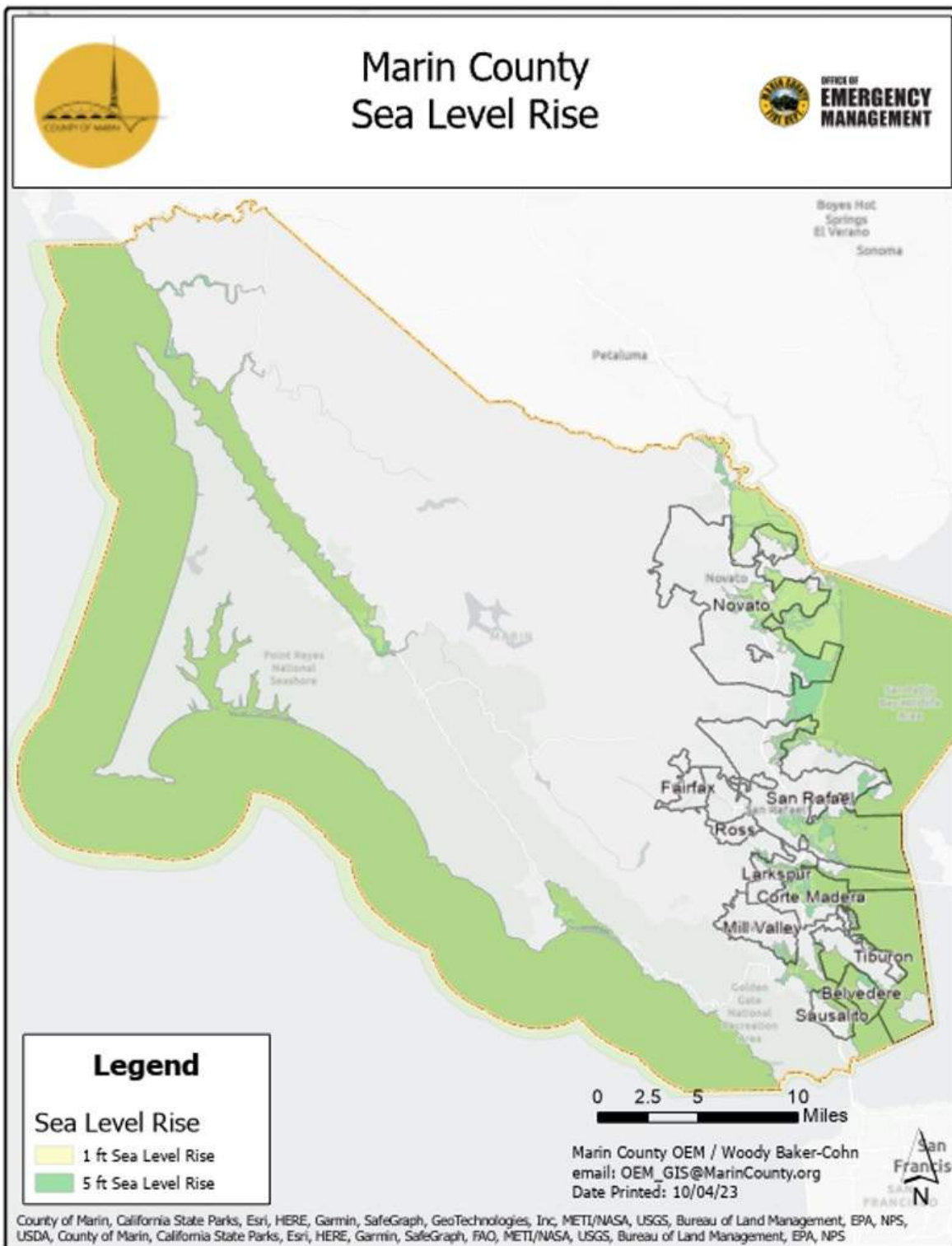


Figure 393: Marin County Sea Level Rise Impact
Source: Marin County OEM

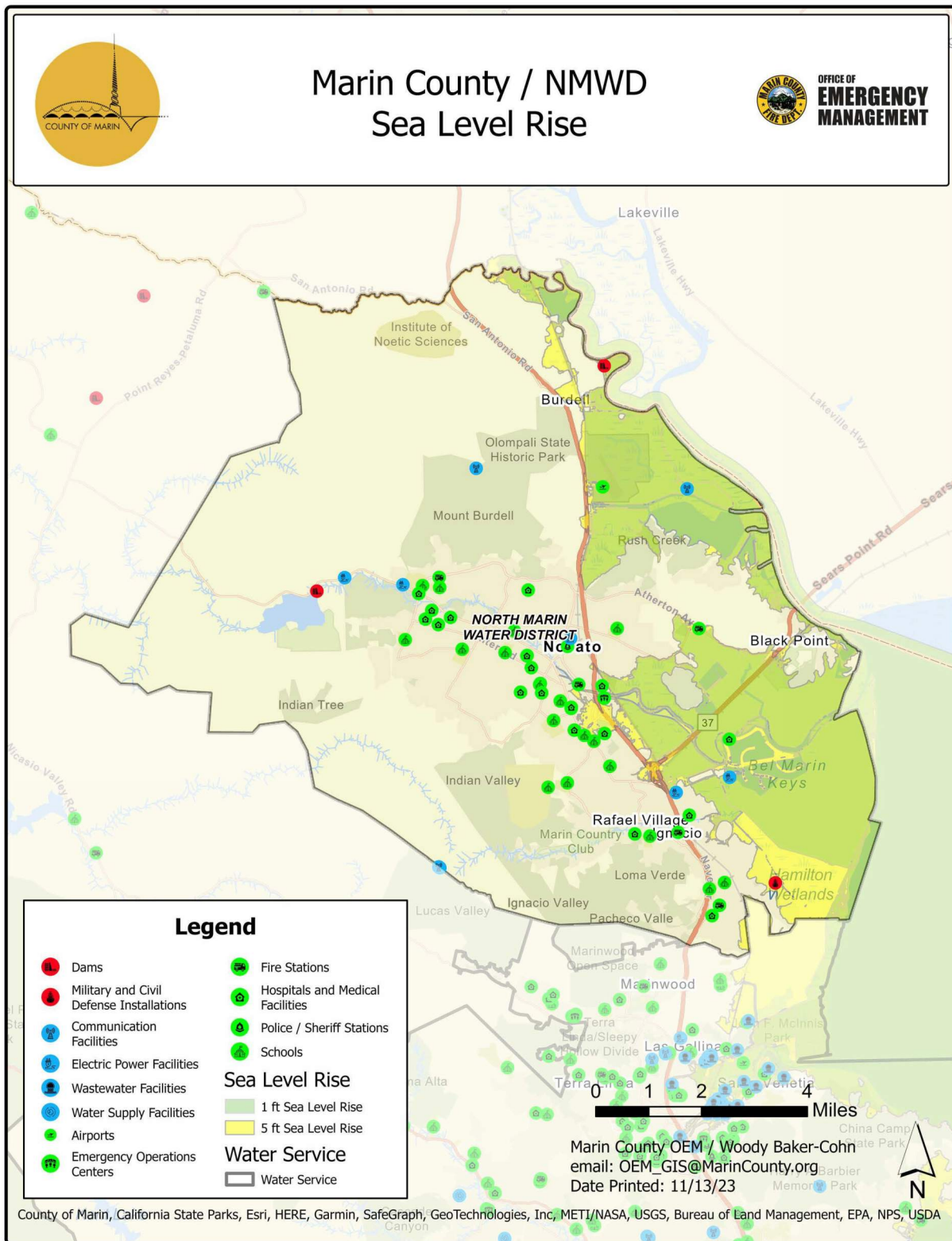


Figure 394: NMWD Sea Level Rise Impact on Critical Facilities
Source: Marin County OEM

The lowland areas in the City of Novato are particularly vulnerable to sea level rise and could experience between one and five feet of inundation. Development in the city is largely inland with a few buildings fronted by tidal marshes and the bay. Much of the community is fronted by unincorporated areas, managed stormwater, agricultural, utility, and marsh lands. These lands could buffer the city from San Pablo Bay for several decades; thus, the majority of assets may not experience saltwater flooding until the end of the century. A considerable number of parcels could flood, compromising their existing land uses and human activities. In addition, because of the city's size and the existence of several smaller neighborhoods, complex levee systems, and extensive marsh land, much of the impacted developed land is dispersed into pockets of flooding.

According to the 2017 "Rising Seas in California, An Update on Sea-Level Rise Science" report Marin County may experience impacts from Sea Level Rise over defined periods of time, to include long-term changes (second half of this century and beyond), and short- to mid-term projections (within the next two or three decades). The following are key issues related to the City of Novato sea level rise and a 100-year storm surge:

- The Hamilton neighborhood could anticipate the FEMA certified levee overtopped in the long term. This would flood hundreds of homes and numerous professional workspaces.
- The Vintage Oaks Shopping Center could anticipate storm surge impacts in the medium term and tidal impacts in the long-term.
- Development east of US Highway 101 at the Bel Marin Keys and Rowland Boulevards.
- Buildings and marshes in Bahia, along Davidson Drive, and on Olive Avenue are vulnerable to sea level rise.
- SR 37 to Sonoma and Napa is vulnerable in the near-term in several locations along its route. This road provides access to several publicly accessible natural resource assets.
- Tidal and storm surge flooding could impair travel on US Highway 101 in the long-term.
- Sonoma Marin Area Regional Transit rail tracks could be vulnerable in the near-term. Train cars could also be damaged by saltwater exposure.
- The Novato Sanitary District wastewater treatment could expect long-term impacts to several critical buildings.
- The Novato Fire Station 62 is vulnerable in the medium-term, and flooded, in part, in the long term. In addition, the Fire Protection District and the Novato Professional Fire Fighter's Association office off Rowland Boulevard could be vulnerable.
- Most vulnerable parks are in Hamilton and are exposed in the long-term.
- Marsh lands are vulnerable in Hamilton, Deer Island and the surrounding diked baylands, and Bahia.

The most vulnerable assets are the wastewater treatment plant, SR 37, and Northern Marin Water District. In the long-term, the Hamilton neighborhood could also be vulnerable to levee overtopping. Due to Novato's inland development, very little of the community is directly impacted. Nevertheless, those dependent on the US Highway 101 corridor will be impacted. In addition, those who use the Novato Sanitary District treatment plant could experience wastewater disruptions.

The 2017 Marin Shoreline Sea Level Rise Vulnerability Assessment estimates that the City of Novato could anticipate impacts to over 51,000 people over 1,100 living units with \$1 billion in assessed property value as a result of a 100-year sea level rise scenario and including storm surge. Structures throughout the city can become damaged extensively with their foundations compromised over time. Of particular concern are those structures and infrastructure that have not been elevated to projected sea level rise heights over the next century, including Highway 101 and SR 37 which could become more isolated due to sea level rise flooding. Sea level rise in the city has the potential to exacerbate inland flooding when a significant rain or tidal event occurs, pushing water from local creeks over their banks and into adjacent neighborhoods. Sea level rise can also cause increased subsidence along the city's shoreline, which may damage underground water and wastewater pipelines and disrupt services. The city's marshland would eventually turn into open water as a result of sea level rise, eliminating a natural barrier that protects the city from increased storm surge. The city would begin to experience seasonal, king tide, and storm surge flooding more frequently in the future.

The most vulnerable assets in the unincorporated County area of the NMWD from sea level rise in the medium-term are portions of Bel Marin Keys, which could face impacts. In the long-term, Black Point and North Novato could anticipate damaging impacts. In the medium-term timeframe, regular high tide tidal flooding could adversely impact the same locations tidally flooded in the near-term, though more severely. Storm surge flooding could be 10 inches with a 100-year storm surge and extend further inland beyond the marshy areas of North Novato. In the long-term (second half of this century and beyond), regular tidal flooding could adversely impact the same locations impacted in the near- and medium-terms (within the next two or three decades) and significant portions of what would have previously only flooded from the 100-year storm surge. The additional areas that would tidally flood at 60 inches of sea level rise are:

- Bel Marin Keys northern and southern lagoon areas
- Hamilton, Vintage Oaks, and pockets of development east of US Highway 101 at Rowland Boulevard and State Route 37 in Novato, and
- North Novato at US Highway 101 and Binford Road.

In the near-term, tidal flooding at 10 inches of sea level rise with an additional 100-year storm surge would flood out and smaller public and private marinas and boat launches along the bay in Bel Marin Keys and Black Point, rendering them unusable. Storm surges can be powerful enough to damage and sink boats. Most concerning, however, is the potential inability of emergency professionals and vehicles to access people in or through flooded areas. Most levees south of the City of Novato could be overtopped as they are not designed to withstand this level of flooding.

In the medium-term, tidal flooding at 20 inches of sea level rise with an additional 100-year storm surge would cause pipelines under vulnerable roads and lateral pipes to vulnerable properties to become squeezed between rising groundwater and the confining roadway. This could cause pipes to bend and break and could even damage roadways. Impacts to the NMWD service area would impact water service in Bel Marin Keys and unincorporated County area around the City of Novato. Vulnerable substations, electrical transmission towers and lines, and underground natural gas pipelines along the shoreline would be compromised by flooding and subsidence. Disruptions or failures in this network could also have far reaching impacts in

transportation, sanitary service, stormwater management facilities, food storage, communications, and general public safety.

In the long-term, tidal flooding at 60 inches of sea level rise with an additional 100-year storm surge would cause roads to degrade more quickly, or if flood waters are deep enough, become impassable. Lane miles could be more than double this figure. Breakdowns in the transportation network would have major impacts on the economy and daily life functions. In addition, significant safety hazards could cause injury or loss of life. Flooding at the Novato Sanitary Wastewater Treatment Plants is a significant vulnerability that could arise, potentially disrupting hundreds of thousands of people. Much of the low-lying shoreline sanitary sewer and stormwater infrastructure could be flooded out. By the end of the century, sea level rise could have direct impacts to the Novato Atherton Avenue Fire Station.

Beaches, estuaries, marshes, wetlands, and intertidal areas on the Marin County OA coast, including in the unincorporated area, are vulnerable to sea level rise and storms. Sea level rise may push coastal habitats inland where possible, flooding tidal areas more frequently and inundating new inland areas with saltwater. On the bayside, the marshlands that buffer the shoreline communities from high tides and storm surges could begin to experience transitions in habitat. Northern Marin marshes would become increasingly tidally influenced, with tide water reaching US Highway 101 in Bel Marin Keys and North Novato up the Petaluma River. Typically, freshwater marshes west of US Highway 101 could also expect damaging salinity impacts. Tidal marsh lands may increase in Northern Marin if they are not prevented from migrating inland. Approximately 1,358 acres on 30 agricultural parcels could be vulnerable to sea level rise and storm conditions. Another 3,000 acres are public agency lands near Bel Marin Keys, Hamilton Field, and the Novato Sanitary District that are leased for agricultural use. Higher high tides could push brackish conditions inland, reducing grazing, manure spreading, and cultivation area. Marin County OA populations in the NMWD that are most vulnerable to the effects of sea level rise include:

- Low-income households
- Households in poverty

Climate Change and Future Development Considerations

The two major causes of global sea level rise are thermal expansion of warming oceans and the melting of land-based glaciers and polar ice caps. Climate change is affecting natural and built systems around the world, including the California coast. In the past century, average global temperature has increased about 1.4°F, and average global sea level has increased 7 to 8 inches. Sea level rise in the San Francisco Bay Area is projected to increase by eight inches MHW in 2050 and could reach 4.5 to eight feet by 2021 if greenhouse gas emissions aren't reduced.

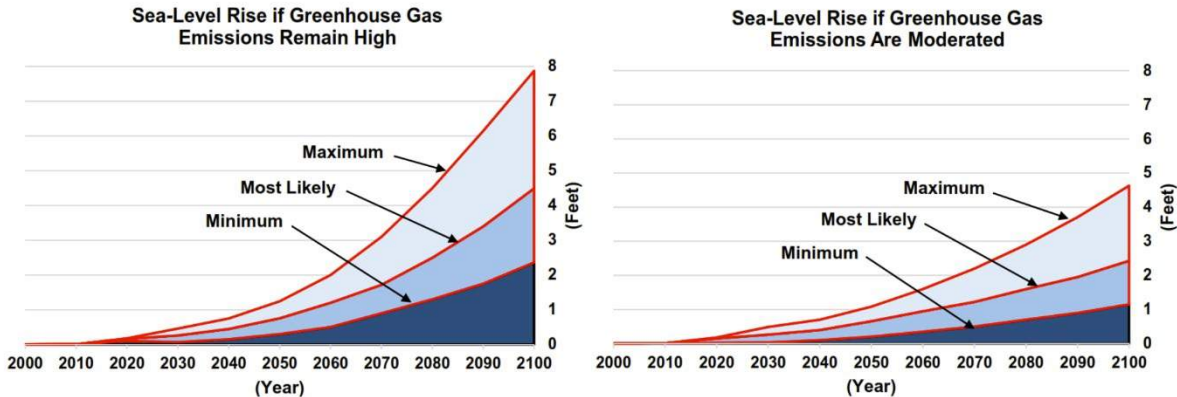


Figure 395: Projections of Sea Level Rise in the San Francisco Bay Area, 2000-2100

Source: 2019–2020 Marin County Civil Grand Jury, Climate Change: How Will Marin Adapt?

While the Marin County OA shoreline including around the NMWD already experiences regular erosion, flooding, and significant storm events, sea level rise will exacerbate these natural processes, leading to significant social, environmental, and economic impacts. The third National Climate Assessment cites strong evidence that the cost of doing nothing exceeds the costs associated with adapting to sea level rise by 4 to 10 times. Sea level rise will continue to affect the Marin County OA including the NMWD with increased tidal flooding and storm surge during severe weather events, and future development along the Marin County OA shoreline including around the NMWD will only amplify these impacts. Sea level can also lead to increased land subsidence and the potential of levee failure. The impacts of a tsunami would also be magnified with rising seas. Future development in the coastal and lowland areas of the NMWD including the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point will put more people and property at risk from flooding as a result of sea level rise. Roads and utility infrastructure across the NMWD will continue to become inundated.

2.2.9 SEVERE WEATHER – EXTREME HEAT

Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. A heat wave is an extended period of extreme heat, often with high humidity. When relative humidity is factored in, the temperature can feel much hotter as reflected in the Heat Index (see Figure 51):

NOAA's National Weather Service

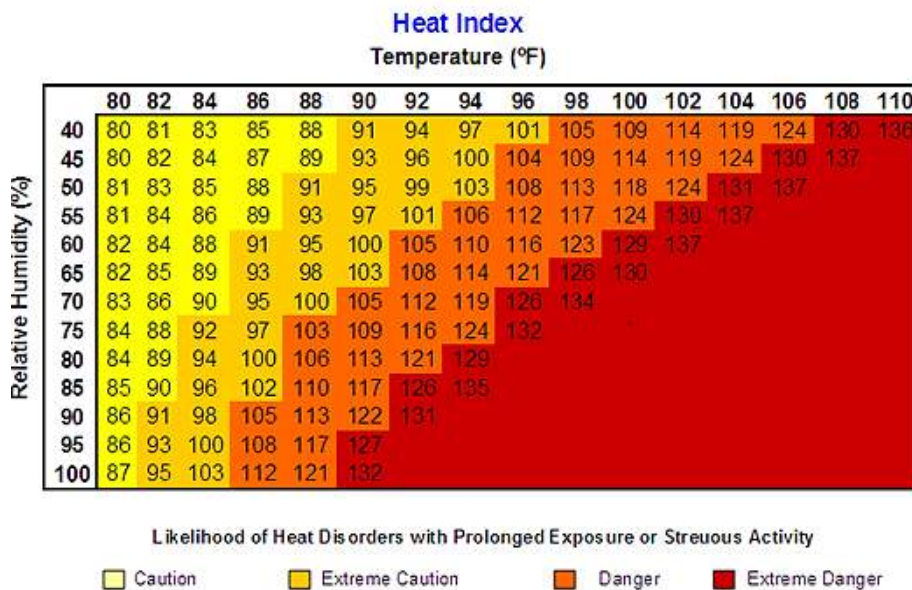


Figure 396: Heat Index
Source: NOAA

Heat kills by taxing the human body beyond its abilities. In a normal year, about 1,300 Americans succumb to the demands of summer heat. Heat is the leading weather-related cause of mortalities in the US. In 2006, California reported a high of 204 heat related deaths, with 98 reported in 2017 and 93 deaths reported in 2018.

Extreme heat has the potential to impact all areas of the NMWD, including the City of Novato and the unincorporated County, and would be felt more at lower elevations in the central areas of the district. Temperatures can feel warmer in this area due to the widespread presence of concrete and asphalt, which stores heat longer. Heat waves can cause power outages and can impact district employees who are exposed to high temperatures while working outside in the heat.

Climate Change and Future Development Considerations

The primary effect of climate change is warmer average temperatures. The annual average daily high temperatures in California are expected to rise by 2.7°F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. At the current rate, annual average temperatures in the Marin County OA region and Bay Area will likely increase by approximately 4.4 degrees by 2050 and 7.2 degree by the end of the century unless significant efforts are made to reduce greenhouse emissions according to California’s latest climate change assessment.

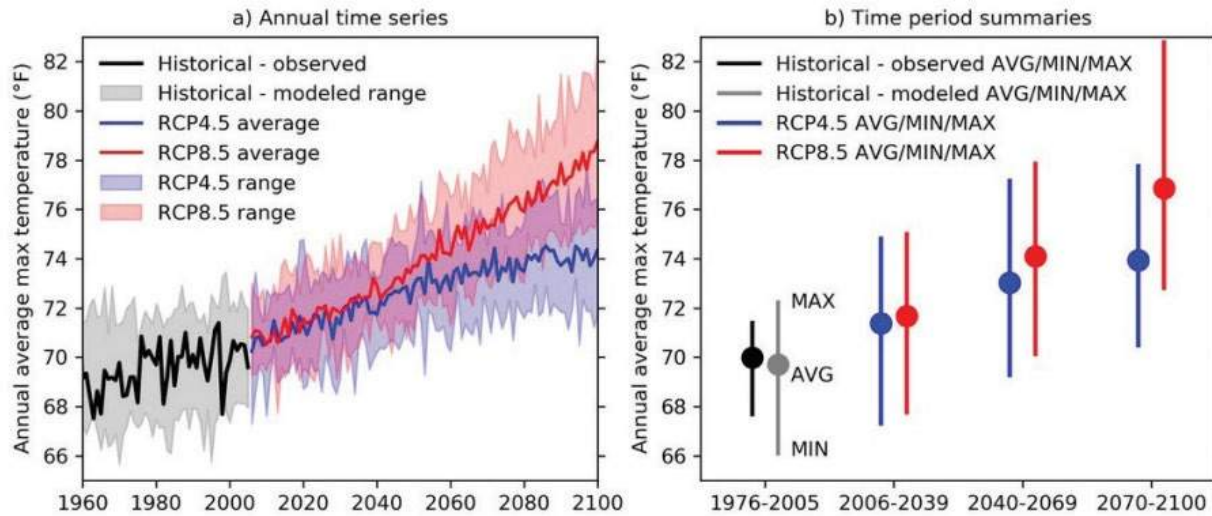


Figure 397: Annual Average Temperatures in the San Francisco Bay Area, 2000-2100
Source: California Climate Change Assessment (Fourth Edition)

As climate change accelerates in the 21st century, it is anticipated that extreme heat events will become more frequent and intense across the Marin County OA including in the NMWD. There will be increased residential and business needs for cooling and addressing heat-related issues. These effects would primarily be felt in the lowland areas of the NMWD including the lowland areas of the City of Novato and the unincorporated communities of Bel Marin Keys, Indian Valley, Loma Verde and Black Point-Green Point where heat builds in developed areas. Heat waves also tax the energy grid. Future development in the Marin County OA including the NMWD could exacerbate the impacts from heat related events, particularly in electricity provision and water delivery. Increased temperatures will also lead to an increase in the occurrence and severity of wildfires across the Marin County OA including the NMWD as conditions become hotter and drier. These effects will primarily be felt in the mountainous and marshlands areas of the NMWD where hotter and drier conditions are more apt to lead to wildfires. Future development near the many open spaces around the NMWD could expose more people and infrastructure to the threat of a major wildfire as a result of increasing temperatures.

2.2.10 SEVERE WEATHER – HIGH WIND & TORNADO

High Wind

High wind is defined as a one-minute average of surface winds 40 miles per hour or greater lasting for one hour or longer, or winds gusting to 58 miles per hour or greater regardless of duration that are either expected or observed over land. These winds may occur as part of a seasonal climate pattern or in relation to other severe weather events such as thunderstorms. The Beaufort scale is an empirical measure that relates wind speed to observed conditions on land and is a common measure of wind intensity (see Figure 53).

Beaufort number	Description	Wind speed		Land conditions
		kts	km/h	
0	Calm	< 1	< 1	Calm. Smoke rises vertically.
1	Light air	1 – 2	1 – 5	Wind motion visible in smoke.
2	Light breeze	3 – 6	6 – 11	Wind felt on exposed skin. Leaves rustle.
3	Gentle breeze	7 – 10	12 – 19	Leaves and smaller twigs in constant motion.
4	Moderate breeze	11 – 15	20 – 28	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	16 – 20	29 – 38	Branches of a moderate size move. Small trees begin to sway.
6	Strong breeze	21 – 26	39 – 49	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.
7	High wind, Moderate gale, Near gale	27 – 33	50 – 61	Whole trees in motion. Effort needed to walk against the wind. Swaying of skyscrapers may be felt, especially by people on upper floors.
8	Gale, Fresh gale	34 – 40	62 – 74	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	Strong gale	41 – 47	75 – 88	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over. Damage to circus tents and canopies.
10	Storm, Whole gale	48 – 55	89 – 102	Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.
11	Violent storm	56 – 63	103 – 117	Widespread vegetation damage. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.
12	Hurricane	≥ 64	≥ 118	Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris may be hurled about.

Figure 398: Beaufort Wind Scale

Source: NOAA

Windstorms in the Marin County OA are typically straight-line winds. Straight-line winds are generally any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 mph, which represent the most common type of severe weather and are responsible for most wind damage related to thunderstorms.

Tornado

Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes are the most powerful storms that exist, and damage paths can be in excess of one mile wide and 50 miles long. The Enhanced Fujita Scale (see Figure 54) is commonly used to rate the intensity of tornadoes in the United States based on the damages that they cause.

Enhanced Fujita Scale	
EF-0	65-85 mph winds
EF-1	86-110 mph winds
EF-2	111-135 mph winds
EF-3	136-165 mph winds
EF-4	166-200 mph winds
EF-5	>200 mph winds

Figure 399: Enhanced Fujita Scale
Source: NOAA

Tornadic waterspouts are tornadoes that form over water or move from land to water. They have the same characteristics as a land tornado. They are associated with severe thunderstorms, and are often accompanied by high winds and seas, large hail, and frequent dangerous lightning.



Figure 400: Waterspout Formation
Source: MarineInsights

All of the NMWD including the City of Novato and the unincorporated County is susceptible to storms and damage from wind and tornadoes, though the mountainous areas on the western side of the district have increased susceptibility due to a higher presence of trees. Drought can increase the susceptibility of trees toppling over in a high wind event. Fallen trees could damage homes and other facilities. Power lines could be impacted by fallen trees and wind,

causing power outages. Roadways could also become blocked by fallen trees, affecting the ability of residents to reach their homes.

On 3/14/2023 a strong storm with heavy winds caused a tree to fall onto a home in the City of Novato. There were no injuries.

On 12/16/2017 heavy winds knocked down a tree in the City of Novato, causing a power outage for 2,440 customers. A wind gust of 44 mph was recorded.

On 4/14/2009 high winds caused a tree to fall onto a power line on Pine Street in the City of Novato causing a small fire and knocking out power along the street.

Climate Change and Future Development Considerations

It is anticipated that the atmospheric rivers that deliver storms to Northern California may intensify because of climate change. This increase in storm intensity may bring more intense winds and potential tornados to Northern California, including the Marin County OA and the NMWD. Significant wind events and tornadoes can topple trees, particularly those that may be saturated, or drought stressed as a result of climate change. An increase in fallen trees in the NMWD as a result of increased storms due to climate change can lead to an increase in power outages. Future development in any of the forested areas of the NMWD including in the mountainous residential areas throughout the City of Novato and the unincorporated communities of Indian Valley, Loma Verde and Black Point-Green Point will increase the effects of severe wind events.

2.2.11 TSUNAMI

Tsunamis consist of waves generated by large disturbances of the sea floor, which are caused by volcanic eruptions, landslides or earthquakes. Shallow earthquakes along dip slip faults are more likely to be sources of tsunami than those along strike slip faults. The West Coast/Alaska Tsunami Warning Center (WC/ATWC) is responsible for tsunami warnings. Tsunamis are often incorrectly referred to as tidal waves. They are actually a series of waves that can travel at speeds averaging 450 (and up to 600) miles per hour with unusual wave heights. Tsunamis can reach the beach before warnings are issued.

A tsunami experienced by the NMWD would most likely occur from an earthquake, the location of which would determine the amount of time that the tsunami waves would reach the district. Much of the eastern area of the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point are at a lower elevation and lie in a tsunami hazard area. The tsunami inundation zone in the City of Novato does not include any structures or populations. The two areas in the city in a tsunami inundation zone include the Hamilton Wetlands in southern Novato and the wetlands north of the Rush Creek Open Space Preserve. The Hamilton Levee protects the Hamilton neighborhood of the city from a tsunami and could be tested in a tsunami event. While most of Bel Marin Keys lies outside of a tsunami inundation zone, the far eastern side has several homes that lie inside a tsunami inundation zone and could be susceptible to a tsunami. The Hamilton Wetlands PG&E substation could also be susceptible to a tsunami, as it lies on the fringe of a tsunami inundation zone. Parts of the Black Point area close to the Petaluma River Marsh lie on the edge of a tsunami inundation zone and could be susceptible to a tsunami. There are several homes in this area that mostly lie at the end of cul de sacs.

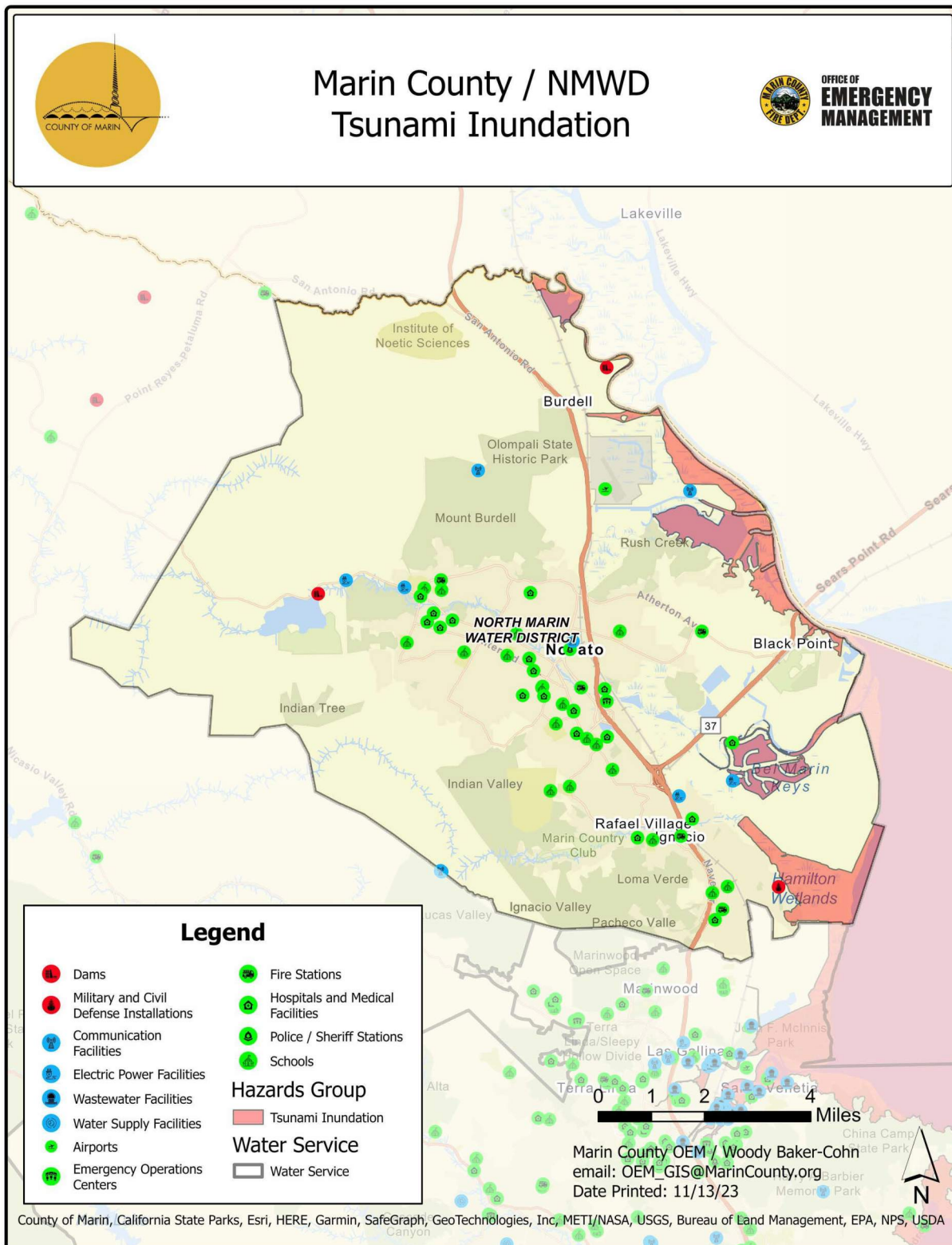


Figure 401: NMWD Tsunami Critical Facilities and Infrastructure
Source: Marin County OEM

The NMWD service area including the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point has never experienced a tsunami. Given its proximity to the San Francisco Bay, however, parts of the District are within a tsunami inundation zone and could potentially experience the impacts of one.

Climate Change and Future Development Considerations

The biggest threat to tsunamis is sea level rise which is a direct result of climate change. Sea level rise can make tsunamis worse than they already are because higher sea levels allow for tsunamis to travel further inland and cause even more damage. Sea level rise results in more vulnerable coastlines which make coastal communities even more vulnerable to an incoming tsunami as the natural buffer to absorb the energy of an incoming tsunami will cease to exist. This is particularly true in the Marin County OA including the NMWD, where a large segment of the developed population lies in an area vulnerable to sea level rise. Furthermore, it has been theorized that ocean warming, caused by climate change, can impact the tectonic plates that rest below large bodies of water. Ultimately, this can result in more geological activities and worse tsunamis. Climate change has also affected ocean patterns, which could eventually lead to tsunamis distributing themselves across the ocean and impacting areas that are currently not susceptible to a tsunami. Tsunamis as a result of climate change and associated sea level rise will exacerbate the impacts of flooding in the lowland areas of the district including the City of Novato and the unincorporated communities of Bel Marin Keys and Black Point-Green Point. This is particularly true along Novato Creek and around the marshland areas where additional storm surge as a result of a larger tsunami could cause greater impacts. Future development in these areas will expose more people and infrastructure to the effects of flooding in the district as tsunami inundation areas expand with climate change. Development in marshland in the district would expose additional people and infrastructure to flooding as marshlands act as a natural buffer to a tsunami. Flooding could be exacerbated in areas where levees could fail along Novato Creek and along the marshlands and shoreline of the district as a result of high wave heights associated with a more significant tsunami.

2.2.12 WILDFIRE

A wildfire is a fire that occurs in an area of combustible vegetation. The three conditions necessary for a wildfire to burn are fuel, heat, and oxygen. Fuel is any flammable material that can burn, including vegetation, structures, and cars. The more fuel that exists and the drier that fuel is, the more intense the fire can be. Wildfires can be started naturally through lightning or combustion or can be set by humans. There are many sources of human-caused wildfires including arson, power lines, a burning campfire, an idling vehicle, trains, and escaped controlled burns. On average, four out of five wildfires are started by humans. Uncontrolled wildfires fueled by wind and weather can burn acres of land and everything in their path in mere minutes and can reach speeds up to 15 miles per hour or faster depending upon wind speed and ember distribution. On average, more than 100,000 wildfires burn 4 to 5 million acres of land in the United States every year. Although wildfires can occur in any state, they are most common in the Western states including California where heat, drought, and thunderstorms create perfect wildfire conditions.

Wildfires are of primary concern when they occur in the Wildland Urban Interface (WUI), which is defined as areas where homes are built near or among lands prone to wildfire. Even relatively small acreage fires may result in disastrous damages. Most structures in the WUI are not destroyed from direct flame impingement, but from embers carried by wind. The damages

can be widely varying, but are primarily reported as damage to infrastructure, built environment, and injuries to people.

The pattern of increased damages is directly related to increased urban spread into historical forested areas that have wildfire as part of the natural ecosystem and climate change. Many WUI fire areas have long histories of wildland fires that burned only vegetation in the past. However, with new development, a wildland fire following a historical pattern may now burn these newly developed areas. WUI fires can occur where there is a distinct boundary between the built and natural areas or where development or infrastructure has encroached or is intermixed in the natural area. WUI fires may include fires that occur in remote areas that have critical infrastructure easements through them, including electrical transmission towers, railroads, water reservoirs, communications relay sites or other infrastructure assets.

Consequently, wildland fires that burn in natural settings with little or no development are part of a natural ecological cycle and may actually be beneficial to the landscape. Century old policies of fire exclusion and aggressive suppression have given way to better understanding of the importance fire plays in the natural cycle of certain forest types.

Warning times are usually adequate to ensure public safety, provided that evacuation recommendations and orders are heeded in a timely manner. While in most cases wildfires are contained within a week or two of outbreak, in certain cases, they have been known to burn for months, or until they are completely extinguished by fall rains.

Wildfire poses the greatest risk to human life and property in the Marin County OA's densely populated WUI, which holds an estimated 69,000 living units. The Marin County OA is home to 23 communities listed on CAL FIRE's Communities at Risk list, with approximately 80% of the total land area in the county designated as having moderate to very high fire hazard severity ratings. The county has a long fire history with many large fires over the past decades, several of which have occurred in the WUI. To compound the issue, national fire suppression policies and practices have contributed to the continuous growth (and overgrowth) of vegetation resulting in dangerously high fuel loads. The Community Wildfire Protection Plan (CWPP) provides a scientifically based assessment of wildfire threat in the WUI of the Marin County OA.

Fire protection in California is the responsibility of either the federal, state, or local government depending upon the location of the incident. On federally owned land, or federal responsibility areas (FRA), fire protection is provided by the federal government, and or in partnership with local agreements. In state responsibility areas (SRA), CAL FIRE typically provides fire protection. However, in some counties CAL FIRE contracts with county fire departments to provide protection of the SRA – this is the case in the Marin County OA, where CAL FIRE contracts with Marin County Fire Department (MCFD). Local responsibility areas (LRA) include incorporated cities and cultivated agriculture lands, and fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government.

CAL FIRE contracts with MCFD to provide wildland fire protection and associated fire prevention activities for lands designated by the State Board of Forestry as SRA. The MCFD is responsible for the protection of approximately 200,000 acres of SRA within the county and is the primary agency that handles wildland fires. MCFD also provides similar protection services

to approximately 100,000 acres of FRA in the Golden Gate National Recreation Area (GGNRA), the Muir Woods National Monument, and the Point Reyes National Seashore.

Figure 57 indicates the federal responsibility areas, state responsibility areas and local responsibility areas in the Marin County OA.

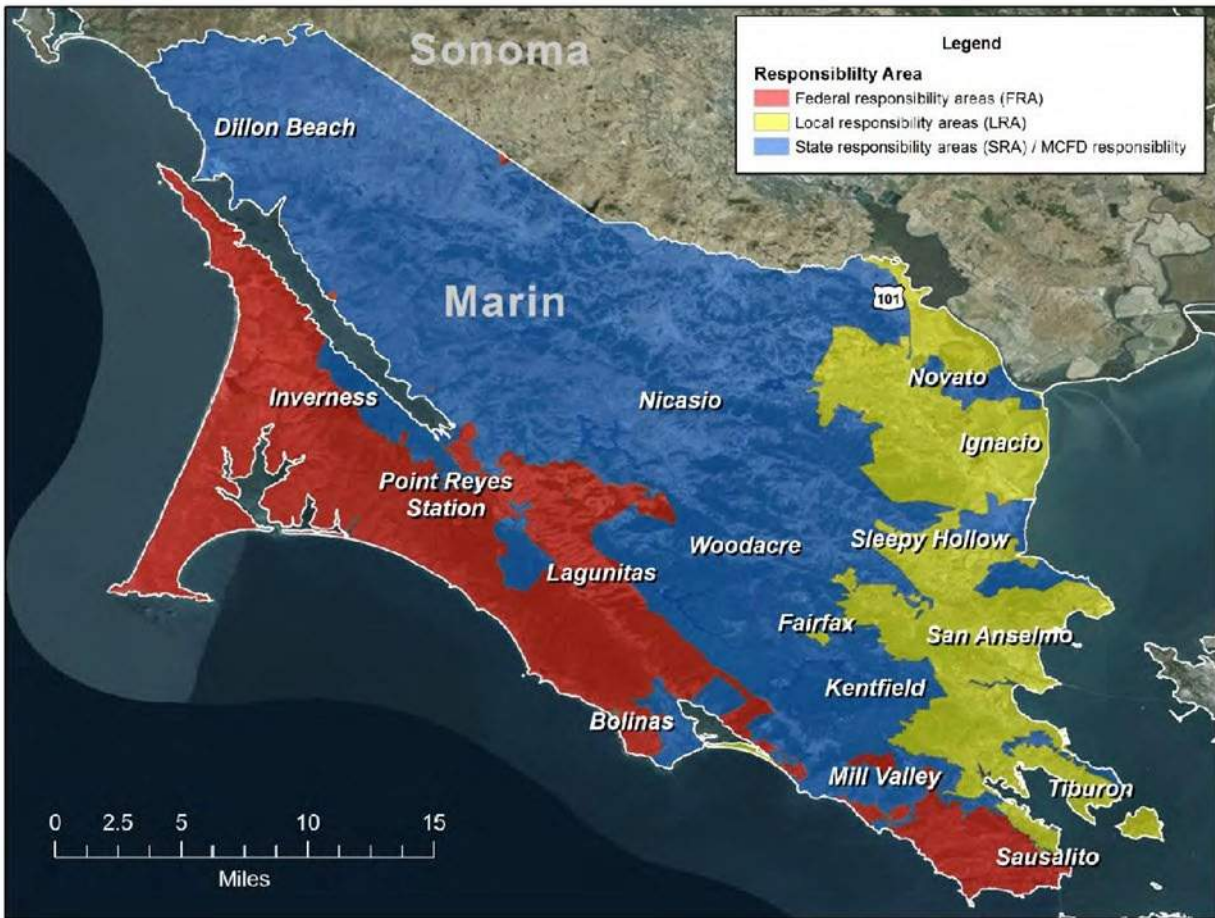


Figure 402: Federal, State and Local Responsibility Areas in the Marin County OA

Source: Marin Community Wildfire Protection Plan

The mix of weather, diverse vegetation and fuel characteristics, complex topography, and land use and development patterns in the Marin County OA are important contributors to the fire environment. The MCFD Woodacre Emergency Command Center (ECC) currently manages the data from four Remote Automated Weather Stations (RAWS) for predicting fire danger utilizing the National Fire Danger Rating System (NFDRS) during the fire season. The RAWS are located in Woodacre, Middle Peak, Barnabe, Big Rock and a new station will be coming online in Novato.

The Marin County OA is bounded by the cool waters of the Pacific Ocean to the west, the San Francisco and Richardson Bays to the southeast, the San Pablo Bay to the east, and Sonoma County agricultural lands to the north. The combination of these large bodies of water, location in the mid-latitudes, and the persistent high pressure over the eastern Pacific Ocean results in several micro-climates. Weather in the OA consists of warm, dry summers and cool, wet

winters. The climate in early fall and late spring is generally similar to the summer, and late fall is similar to winter. Spring is generally cool, but not as wet as the winter. While these general weather conditions are fairly representative of the typical Marin County OA weather, complex topography, annual variability of weather patterns, and less frequent and transient weather patterns are important to fire conditions.

In the late spring through early fall, the combination of frequent and strong high-pressure systems (known as the Pacific High) over California combined with the cool waters of the ocean/bays results in persistent fog and low clouds along the coast (including over the southern Marin County OA near the San Francisco Bay) with winds. The fog often penetrates into the inland valleys of the northern and central Marin County OA, especially during overnight hours. At the coastline, mist from fog can keep the land surfaces modestly moist while inland land surfaces above the fog or inversion are often very dry.

The Pacific High that persists from late spring through early fall over the eastern Pacific, combined with a thermal low pressure over the Central Valley of California, results in an almost continuous sea breeze. These winds usher in cool and moist air and can be strong at times (15 to 25 mph), especially over the ridge tops and through northwest to southeast lying valleys, including San Geronimo/Ross, Hicks, Lucas Valleys, and Mill Valley and the Marin Headlands. These westerly winds are usually highest in the afternoon, decrease in the evening, and are light overnight before increasing again in the late morning/early afternoon.

Occasionally in the summer and more often in the fall, the Pacific High moves inland and centers over Oregon and Idaho, while low pressure moves from the Central Valley of California to southern California and Arizona. The resulting north-to-south pressure gradient can be strong enough to retard the typical sea breeze and can even result in winds blowing from the land to the ocean (offshore winds). As the offshore winds move air from the Central Valley to the coastal areas of California, the air descends and compresses, which greatly warms and dries the air. Under these “Diablo” wind conditions, temperatures in the Marin County OA can reach 100°F in the inland areas and even 80°F at the coast, and relative humidity can be very low. In addition, wind speeds can be high (20 to 40 mph), gusty and are often much faster over the mountains and ridge tops such as Mt. Tamalpais, Loma Alta, Marin Headlands and Mt. Burdell compared to low-lying areas. Wind speeds can be high over the ridges and mountains at all times of day under this “offshore” wind pattern and are often much slower or even calm at night in low-lying areas because nighttime cooling decouples the aloft winds from the surface winds. It is during these Diablo wind events that there is a high potential for large, wind-driven fires should there be an ignition. Historically, the largest and most destructive fires have occurred during these offshore (also known as Foehn) wind events including the Angel Island and the Vision fires which were located in West Marin.

A few times per year in the summer and early fall, monsoonal flow from Mexico may bring in moist and unstable air over central and northern California, which can result in thunderstorms with or without precipitation. With the otherwise dry summer conditions, lightning from this type of weather pattern can ignite fires. These monsoonal flow patterns are usually only one to two-day events.

Beginning in late November and lasting through the end of March, the Pacific High moves south and weakens, allowing storms that originate in the Gulf of Alaska to move over California.

These storms bring precipitation and, at times, strong winds out of the south. Each storm usually results in one fourth inch to several inches of rain over a day or so. Near Mt. Tamalpais, rainfall amounts are enhanced by orographic lifting, resulting in higher rain amounts in the Kentfield and Fairfax areas compared to the rest of the county. Typically, after the first rain in November, the cool weather and occasional storm keeps the ground wet through late Spring. However, in some years, significant rain does not occur until later in the year (e.g., early-to-late December) and there can be several weeks without any storms and rain. During storms, temperatures are usually mild.

When there are no storms over California, a land-breeze typically forms (i.e., winds blowing from the Central Valley to the Pacific Ocean). These winds can reach 30 mph, and travel through the southeast to northwest lying valleys, over low-lying ridges such as the Marin Headlands, and through the Golden Gate. These winds are usually highest in the mid-morning hours and decrease in the afternoon as the Central Valley warms during the day. The winds are associated with cold and modestly moist air.

In late February/early March through late April, the Pacific High strengthens and moves north, and storms impacting the county become less frequent. During this time of year there is often a low-pressure area over the desert in southwest California. The combination of the Pacific High to the north and low-pressure to the southwest results in strong winds blowing from the northwest to the southeast. Like the sea breeze, these winds bring in cool, moist air and are usually highest in the afternoon hours. Because of winter and spring rains, the land is wet and there is little danger of wildland fire despite the strong winds and only occasional precipitation. There is often little coastal fog this time of year.

Vegetation, which is also known as fuel, plays a major role in fire behavior and potential fire hazards. A fuel's composition, including moisture level, chemical make-up, and density, determines its degree of flammability. Of these, fuel moisture level is the most important consideration. Generally, live trees contain a great deal of moisture while dead logs contain very little. The moisture content and distribution of fuels define how quickly a fire can spread and how intense or hot it may become. High moisture content will slow the burning process since heat from the fire must first eliminate moisture.

In addition to moisture, a fuel's chemical makeup determines how readily it will burn. Some plants, shrubs, and trees such as chamise and eucalyptus (both present in the Marin County OA) contain oils or resins that promote combustion, causing them to burn more easily, quickly, and intensely.

Finally, the density of a fuel influences its flammability; when fuels are close together but not too dense, they will ignite each other, causing the fuel to spread readily. However, if fuels are so close that air cannot circulate easily, the fuel will not burn freely.

The Marin County OA has extensive topographic diversity that supports a variety of vegetation types. Marin County's OA has significant changes in topography with steep vegetated slopes which can also add to the ability of the fuel to further expand a wildfire.

Environmental factors, such as temperature, precipitation, soil type, aspect, slope, and land use history, all help determine the existing vegetation at any given location. In the central and eastern parts of the county, north facing slopes are usually densely wooded from lower elevations to ridge peaks with a mixture of mostly hardwood tree species such as coast live oak,

California bay, Pacific madrone, and other oak species. Marshlands are also present throughout the county; once ignited marsh fires can be difficult to contain and extinguish.

Grasslands with a mixture of native and nonnative annual and perennial plant species occur most often in the northern and western parts of the county due to a combination of soil type, lower rainfall, and a long history of ranching. The southern and western facing slopes tend to have a higher percentage of grasslands, which in turn have the potential to experience higher rates of fire spread. Grassland fires are dangerous even without extreme fire weather scenarios due to the rapid rate of fire spread; in some cases, fires spread so quickly that large areas can burn before response resources are able to arrive.

In the west portion of the county closer to the coast, where precipitation is higher and marine influence is greater, most areas are densely forested with conifer species (i.e., Bishop pine, Douglas-fir, and coast redwood) and associated hardwood species. Chaparral vegetation also occurs in parts of the county, especially on steeper south and west facing slopes. This mix of densely forested areas mixed with chaparral results in higher fuel loads and potentially higher fire intensity. Expansion of the residential community into areas of heavier vegetation has resulted in homes existing in close proximity to dense natural foliage; these homes are often completely surrounded by highly combustible or tall vegetation, increasing the potential that wildland fires could impact them.

As part of the development of the Marin Community Wildfire Protection Plan (CWPP), an updated vegetation map layer was created using the most recent vegetation information available from a variety of state and local data sources.

Vegetation distribution in the Marin County OA is characterized by approximately 20 different types of vegetation which have been classified into 15 fire behavior fuel models.

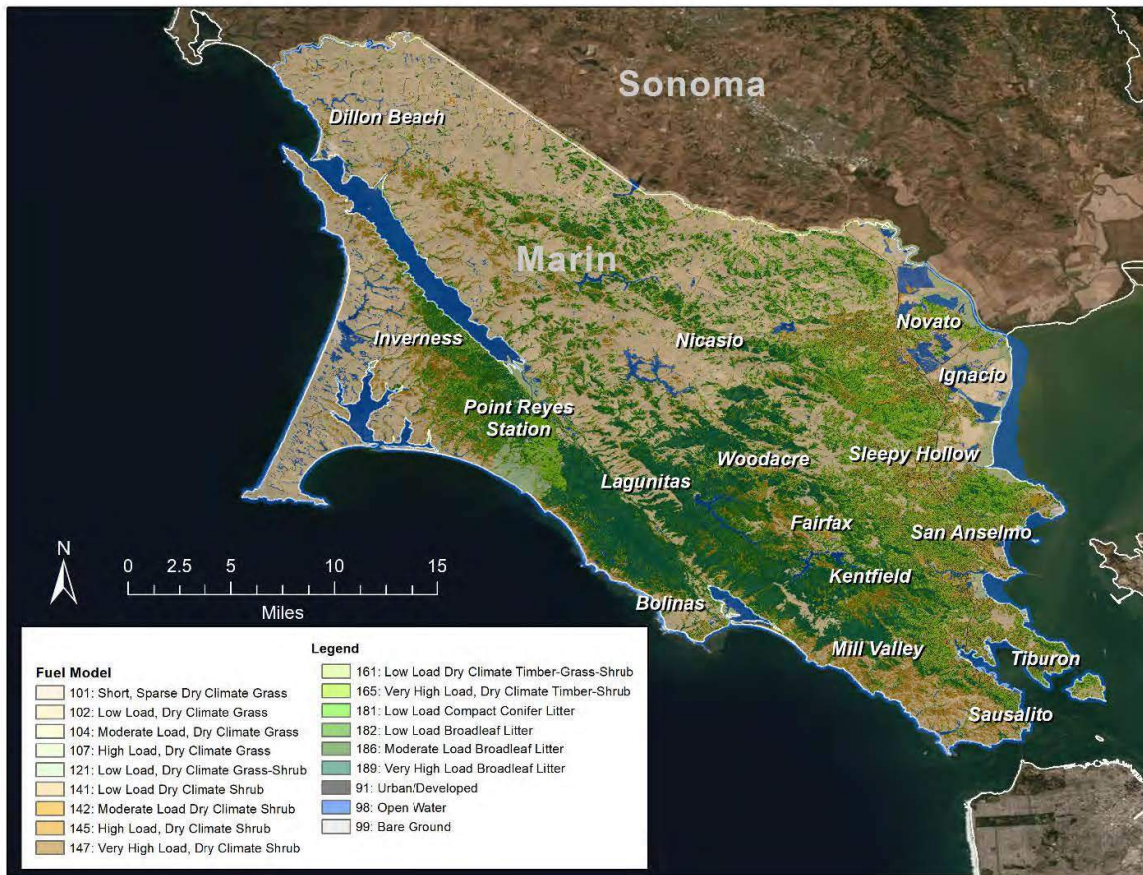


Figure 403: Fuel Model Map for the Marin County OA

Source: Unknown

Insect infestations and plant diseases, such as California oak mortality syndrome (sudden oak death), are increasing and threaten to change the structure and overall health of native plant communities in Marin County. Sudden oak death has no known cure and is the biggest concern; this syndrome is caused by the fungus-like *Phytophthora ramorum*, which has led to widespread mortality of several tree species in California since the mid-1990s; the tanoak (*Lithocarpus densiflorus*) in particular appears to have little or no resistance to the disease. Sudden oak death has resulted in stands of essentially dead trees with very low fuel moistures.

Studies examining the impacts of sudden oak death on fire behavior indicate that while predicted surface fire behavior in sudden oak death stands seems to conform to a common fuel model already in use for hardwood stands, the very low moisture content of dead tanoak leaves may lead to crown ignitions more often during fires of “normal” intensity.

Two other plant diseases prevalent in the Marin County OA are pitch canker (which affects conifers such as Bishop pine and other pine species), and madrone twig dieback (which affects Pacific madrones). Pitch canker is caused by the fungus *Fusarium circinatum* (*F. subglutinans*, *F. sp. pini*), which enters the tree through wounds caused by insects. While some trees do recover, most infected trees are eventually killed by the fungus. Management of this disease largely focuses on containment to reduce the fungus spreading to other trees. Pitch canker is a particular issue in the NPS lands of Pt. Reyes National Seashore, where many acres of young

Bishop Pines that were seeded on the Inverness Ridge by the Mount Vision Fire of 1995 have been infected.

These dead and dying trees have created large swaths of land with dense and dry fuel loads. Madrone twig dieback is caused by the native fungus *Botryosphaeria dothidea* and appears to be getting worse throughout the county due to drought effects on Pacific madrones. Three additional threats to trees common to the Marin County OA include:

- Bark and ambrosia beetles (*Monarthrum dentiger* and *monarthrum scutellare*), which target oak and tanoak trees. Sudden oak death may be exacerbating the effects of beetle infestations which prey on trees already weakened by this disease.
- Root rot, caused by oak root fungus (*Armillaria mellea*), is primarily associated with oaks and other hardwoods but also attacks conifers. These fungal infestations cause canopy thinning and branch dieback and can kill mature trees. As with the beetle infestations, sudden oak death may be exacerbating the effects of root rot fungus in the county forests.
- Velvet-top fungus (*Phaeolus schweinitzii*) is a root rot fungus affecting Douglas-fir and other conifers, with the infection typically occurring through a wound.

Topography characterizes the land surface features of an area in terms of elevation, aspect, and slope. Aspect is the compass direction that a slope faces, which can have a strong influence on surface temperature, and more importantly on fuel moistures. Both elevation and aspect play an important role in the type of vegetation present, the length of the growing season, and the amount of sunlight absorbed by vegetation. Generally, southern aspects receive more solar radiation than northern aspects; the result is that soil and vegetation on southern aspects is warmer and dryer than soil and vegetation on northern aspects. Slope is a measure of land steepness and can significantly influence fire behavior as fire tends to spread more rapidly on steeper slopes. For example, as slope increases from 20 – 40%, flame heights can double and rates of fire spread can increase fourfold; from 40 – 60%, flame heights can become three times higher and rates of spread can increase eightfold.

The Marin County OA is topographically diverse, with rolling hills, valleys and ridges that trend from northwest to southeast. Elevation throughout the county varies considerably, with Mt. Tamalpais' peak resting at 2,574 feet above sea level and many communities at or near sea level. Correspondingly, there is considerable diversity in slope percentages. The San Geronimo Valley slopes run from level (in the valley itself) to near 70%. Mt. Barnabe has slopes that run from 20 to 70%, and Throckmorton ridge has slopes that range in steepness from 40 – 100%. These slope changes can make fighting fires extremely difficult.

In the WUI where natural fuels and structure fuels are intermixed, fire behavior is complex and difficult to predict. Research based on modeling, observations, and case studies in the WUI indicates that structure ignitability during wildland fires depends largely on the characteristics and building materials of the home and its immediate surroundings.

The dispersion of burning embers from wildfires is the most likely cause of home ignitions. When embers land near or on a structure, they can ignite nearby vegetation or accumulated debris on the roof or in the gutter. Embers can also enter the structure through openings such as an open window or vent and could ignite the interior of the structure or debris in the attic.

Wildfire can further ignite structures through direct flame contact and/or radiant heat. For this reason, it is important that structures and property in the WUI are less prone to ignition by ember dispersion, direct flame contact, and radiant heat.

Public Safety Power Shutoff (PSPS) Events

As a result of the 2017 Northern California Wildfires, the 2018 Camp Fire in Butte County and other wildfires caused by power line infrastructure, Pacific Gas & Electric (PG&E) began initiating Public Safety Power Shutoff (PSPS) events in their service areas (including Marin County) to help prevent the start of future wildfires. PG&E will initiate a PSPS if conditions indicate potentially dangerous weather conditions in fire-prone areas due to strong winds, low humidity, and dry vegetation. During these events, PG&E will proactively turn off power in high fire risk areas to reduce the threat of wildfires. The most likely electric lines to be considered for a public safety power outage will be those that pass through areas that have been designated by the California Public Utilities Commission (CPUC) High Fire-Threat District at elevated (Tier 2) or extreme risk (Tier 3) for wildfire. Customers outside of these areas could have their power shut off, though, if their community relies upon a line that passes through a high fire-threat area or an area experiencing severe weather. PG&E will consider numerous factors and analyze historical data to help predict the likelihood of a wildfire occurring, and closely monitoring weather watch alerts from the National Weather Service (NWS). These factors generally include, but are not limited to:

- A Red Flag Warning declared by the National Weather Service
- Low humidity levels, generally 20 percent and below
- Forecasted sustained winds generally above 25 mph and wind gusts in excess of approximately 45 mph, depending on location and site-specific conditions such as temperature, terrain and local climate
- Condition of dry material on the ground and live vegetation (moisture content)
- On-the-ground, real-time observations from PG&E's Wildfire Safety Operations Center and field crews

Pacific Gas & Electric Company (PG&E) operates a total of 1,179 miles of overhead electricity transmission and distribution lines in the Marin County OA. Overhead electricity lines and poles can be damaged or downed under severe weather conditions, particularly severe wind conditions, which increases the potential for wildfire ignition. 52 percent of PG&E's overhead distribution lines and 41 percent of its overhead transmission lines are located in CPUC-identified High-Fire Threat Districts subject to elevated or extreme fire risk. PG&E is currently planning and implementing safety measures to prevent wildfires and reduce the impacts of Public Safety Power Shutoff (PSPS) events on communities in the Marin County OA and throughout California.

These measures include installing weather stations; installing high-definition cameras; installing sectionalizing devices on its overhead lines to separate the grid into smaller sections; hardening the system by installing stronger power poles, covering lines, and undergrounding lines in targeted areas; creating temporary microgrids to provide electricity during PSPS events; and enhancing existing vegetation management activities. From 2018 to July 2021, PG&E hardened three miles of overhead lines, installed 68 transmission and distribution sectionalizing devices, completed enhanced vegetation management on approximately 51 of overhead line miles, installed 28 weather stations, and installed 12 high-definition cameras in the Marin County OA.

PG&E has also begun undergrounding several overhead transmission lines throughout California.

A wildfire in the NMWD would most likely occur in the areas of the district where there is more forested terrain, including around the City of Novato and in the unincorporated communities of Indian Valley, Loma Verde and Black Point-Green Point. These areas are primarily residential and consist of numerous winding streets and hillside homes that could be damaged or destroyed by wildfire. A wildfire could also occur in the marshland areas of the district including in the City of Novato and around the unincorporated communities of Bel Marin Keys and Black Point-Green Point. Of particular concern are those communities in the southern area of the City of Novato near the Indian Valley, Ignacio Valley, and Loma Verde Preserves that are located in a Very High FHSZ. There are hundreds of residences, the Novato High School, the San Jose Middle School, the Loma Verde Elementary School and the Hamilton Elementary School that lie in this area and could be susceptible to a wildfire. This area also has few major thoroughfares, which could impede evacuation in a wildfire. This area and the other areas surrounding the city including the Mount Burdell Open Space Preserve, Ohair Park, the Verissimo Hills Preserve, the Indian Tree Open Space Preserve and the Rush Creek Open Space Preserve are located in Moderate to High FHSZs. This area includes thousands of residences, numerous commercial buildings and medical facilities, San Marin High School, Pleasant Valley Elementary School, Hill Middle School, the College of Marin – Indian Valley Campus, the Good Shepherd Lutheran School, Olive Elementary School, Our Lady of Loretto School, Novato Fire Station #62, Novato Fire Station #63, Novato Fire Station #64 and Novato Fire Station #65 that could be susceptible to a wildfire. The unincorporated County in the District service area lies mostly in a High FHSZ. There are hundreds of homes in this area that could have a high susceptibility to wildfire. The Loma Verde area, which includes dozens of homes and the Loma Verde Elementary School, lies in a Very High and High FHSZ and could have higher susceptibility to wildfire. This area is bordered to the south by a Very High FHSZ in the City of Novato. Most of the Black Point-Green Point area lies in a High FHSZ. There are dozens of homes, several businesses, and the Novato Fire Protection District Station #62 that lie in this area and could have a high susceptibility to wildfire. A smaller section south of the Rush Creek Marsh Wildlife Area lies in a Moderate FHSZ. There are numerous homes and businesses in this area that could be susceptible to wildfire.

The NMWD maintains and operates approximately 340 miles of pipeline, 42 tanks totaling over 37 million gallons of storage, and associated pump stations, hydropneumatic systems, and regulator valves. The NMWD sizes its storage tanks to meet operational, firefighting and emergency requirements. Storage requirements for both the City of Novato and West Marin Service Areas are updated on a 5-year cycle and are based in part on input provided by Novato Fire Protection District and Marin County Fire Department. The NMWD evaluates water supply and consumer consumption on a 5-year cycle via its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) in accordance with state Department of Water Resources (DWR) guidelines and requirements.

All of the NMWD could be impacted by a Public Safety Power Shutoff (PSPS) event and/or suffer poor air quality from smoke as a result of a wildfire in Marin County or the surrounding region. As wildland areas around the district become drier due to climate change, the risk of a wildfire occurring and impacting the district will continue to increase. Brush fires in the district may increase over time as marshlands, parks, and other open spaces experience drier conditions.

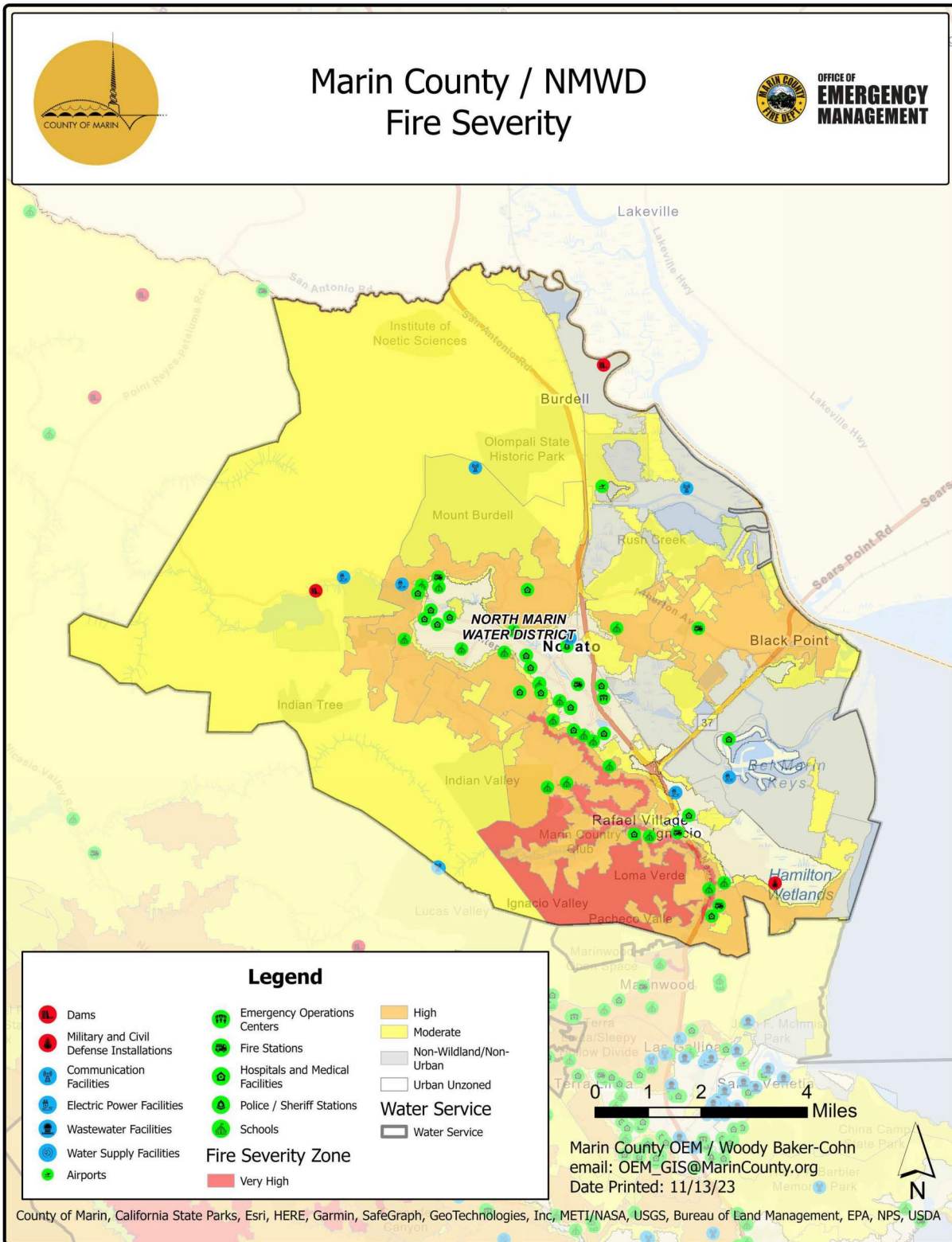


Figure 404: NMWD Wildfire Critical Facilities and Infrastructure
 Source: Marin County OEM

The NMWD including the City of Novato and the unincorporated County has experienced a major wildfire.

Climate Change and Future Development Considerations

Climate change can lead to an increase in wildfire events. Climate change has been a key factor in increasing the risk and extent of wildfires in the western United States. Changes in climate create warmer, drier conditions. Increased drought, and a longer fire season are boosting these increases in wildfire risk.

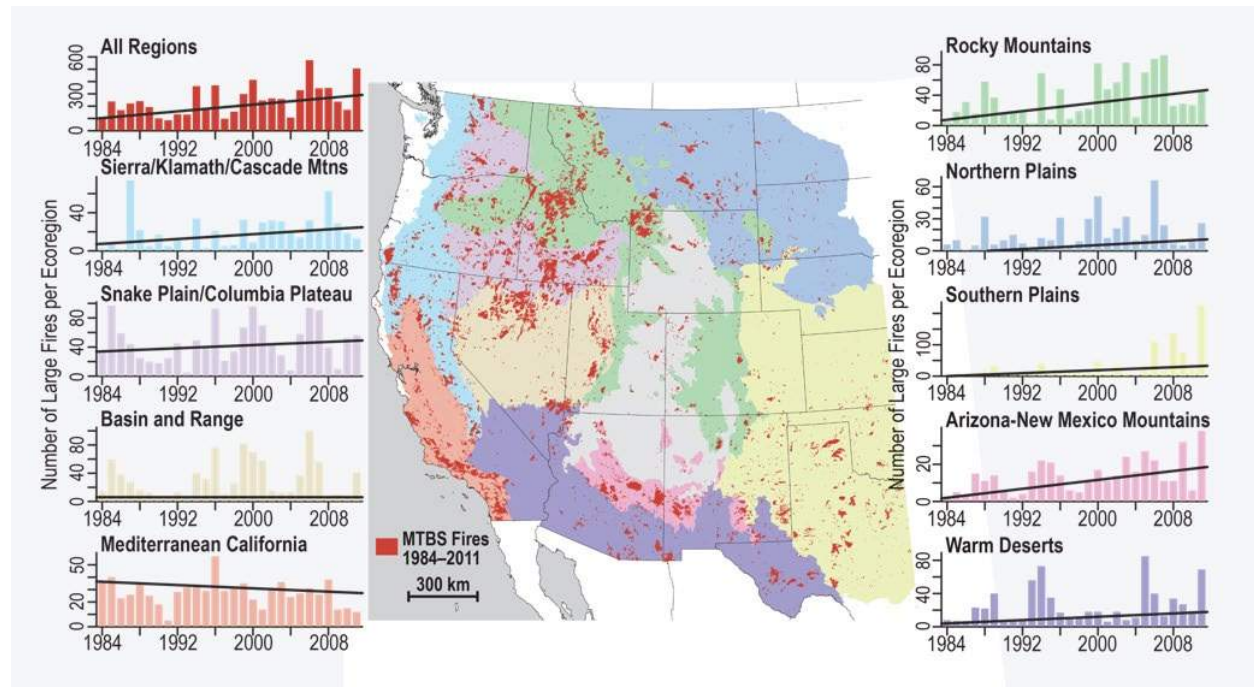


Figure 405: Trends in the Annual Number of Large Wildfires in the United States

Source: Fourth Climate Change Assessment, 01/04/23

As summer conditions in Northern California become hotter and drier due to climate change, the occurrence and severity of wildfires will only increase. The Marin County OA including the NMWD is particularly susceptible to these future impacts of climate change on wildfire, as the OA’s climate has generally been wet enough historically to avoid major wildfires. Extreme heat events and high wind events could cause electrical systems to become overloaded and fail, sparking wildfires. An increase in wildfires as a result of climate change could lead to more significantly burned areas that could contribute to debris flows after a significant storm event, particularly in the open space areas around the NMWD. Future development in the WUI throughout the NMWD will expose more people and property to the impacts of a potentially significant wildfire. The growing number of people in the NMWD WUI can increase risk to life, property and public health as a result of a wildfire. Future development around the NMWD marshlands would expose more people to the effects of brush fires as the marshlands dry out in the summer due to climate change.

SECTION 3.0: MITIGATION STRATEGY

3.1 CHANGES IN DEVELOPMENT

In 2006 the Restructured Agreement for Water Supply with Sonoma County Water Agency (SCWA) was executed, authorizing SCWA to construct facilities to increase North Marin's water delivery entitlement to meet Novato's future needs consistent with community general plans in place. North Marin's aqueduct capacity entitlement in the Restructured Agreement is now 19.9 MGD. Also in 2006, reconstruction of the Stafford Water Treatment Plant concluded. At the time, the \$16 million project was the largest ever undertaken in the District's history, and enables Stafford Lake water to meet anticipated future water quality standards.

North Marin constructed the Deer Island recycled water treatment facility in 2007 where highly-treated recycled water is produced and delivered to irrigate Stone Tree Golf Course. In cooperation with Novato Sanitary District, recycled water is also now produced and distributed to irrigate landscape in North Novato including the Fireman's Fund business park, Valley Memorial Park cemetery, Olive School playing fields and private and public landscape along the recycled water pipeline route.

North Marin also completed infrastructure improvements in coordination with Novato Sanitary District to produce and distribute recycled water for landscape irrigation in Central Novato which serves Novato Community Hospital, Vintage Oaks Shopping Center, Caltrans US101 right of way, Lynwood School playing fields and Marin Country Club Golf Course, plus private and public landscape along the recycled water pipeline route. In South Novato, North Marin worked with Las Gallinas Valley Sanitary District to deliver recycled water for landscape irrigation into the Hamilton Field area including Hamilton School playing fields, HOA common areas, and other public and private landscape along the recycled water pipeline route. Recycled water currently offsets approximately 10% of the annual potable water demand in Novato.

In the mid 2000's, as Caltrans planned its' Marin-Sonoma Narrows US101 highway widening project, North Marin began planning the Aqueduct Energy Efficiency Project. The AEEP, completed in 2015, enlarged 5 miles of the North Marin Aqueduct which was relocated due to the Caltrans project. The enlarged aqueduct enables continued Russian River Water delivery of up to 18 MGD by gravity and eliminates the need for the Kastania Pump station in South Petaluma, reducing energy costs and green-house gas emissions. Two-thirds of the \$22M project cost was paid by Caltrans and one-half of North Marin's remaining share is paid by Marin Municipal Water District.

North Marin's water conservation efforts continue to be focused on reducing summer water demand, which is principally outdoor irrigation. The WaterLine newsletter is published in the spring and fall. The spring edition includes tips on how to reduce summer water demand and describes North Marin's current water conservation programs. North Marin has implemented tiered rates, known as the Conservation Incentive Rate (CIR), where single-family residential customers using over three times the typical summer use, and the Conservation Incentive Tier Rate (CITR), where single-family residential customers using more than one but less than three times the typical summer use, pay a surcharge on the rate to encourage water conservation. Water use restrictions for new development are stringent, requiring interior plumbing fixtures and appliances to meet high-efficiency standards.

North Marin also provides water service to the West Marin communities of Point Reyes Station, Olema, Bear Valley, Inverness Park, and Paradise Ranch Estates. The water supply for these communities comes from groundwater wells located adjacent to Lagunitas Creek. Two wells

are located behind the former Coast Guard Housing facility in Point Reyes Station, while another two wells are located about a mile and a half east of Point Reyes Station. This supply is of excellent quality but it requires treatment to remove iron and manganese which can affect the color of the water and result in staining. Treatment consists of adding an oxidant to precipitate the iron and manganese and then filtering the water through pressure filters which are capable of removing the iron and manganese and any excess oxidant. After filtration a small amount of chlorine is added to keep this water pure in the pipeline.

The West Marin water distribution system is small but complex, consisting of 13 different water storage tanks, 6 pump stations, 4 source water wells, and 1 water treatment plant. Development is scarce in these communities, so existing capacity is adequate to serve the current projected growth. Two of the 13 water storage tanks are redwood which represents a vulnerability to wildfire. The other 11 water storage tanks have been replaced with concrete or welded steel tanks.

3.2 CAPABILITY ASSESSMENT

The North Marin Water District did participate in the 2018 MJHMP. The strategies in which to support the overall District priorities are reflected in the sections below. Several actions were added to coincide with the priorities, progress in local mitigation efforts and changes in development.

Capabilities are the programs and polices currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. The capability assessment identifies the local planning mechanisms where information from the 2018 MJHMP is incorporated and where updated hazard mitigation information from this 2023 MJHMP will be incorporated once approved. The 2018 capability assessments have been successfully incorporated into the North Marin Water District General Plan to include the Public Safety Element, Land Use Element, and Housing Element and the 2023 capability assessments will also be incorporated into the General Plan and these Elements. The capability assessment is divided into four sections: regulatory, administrative and technical, fiscal, and outreach and partnerships.

3.2.1 REGULATORY CAPABILITIES

The legal and regulatory capabilities include existing ordinances and codes that affect the District's physical or built environment. Examples of legal and/or regulatory capabilities can include: a jurisdiction's building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, growth management ordinances, site plan review, general plans, capital improvement plans, economic development plans, emergency response plans, and real estate disclosure plans. The table below lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place.

Opportunities for Enhancement

The 2023 Marin County OA MJHMP update provided the NMWD an opportunity to review and update the capabilities currently in place to mitigate hazards. This also provided an opportunity to identify where capabilities could be improved or enhanced. Specific opportunities could include:

- **Community Wildfire Protection Plan:** The District plans to take an active role in mitigation actions to enhance wildfire protection.
- **StormReady certification and Firewise Communities certification:** The District will consider participation in these programs.

Table 16: North Marin Water District Legal and Regulatory Capabilities

Plans	Yes/No Latest Update	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Strategic Plan	Yes 2018	The Strategic Plan is NMWD’s highest-level planning document. It represents the Board’s direction for the future and the staff’s work plan for implementing that direction. It identifies NMWD’s mission, vision, and values, while providing a set of goals and objectives that becomes a framework for all decision making. The Strategic Plan is reviewed and updated approximately every 5 years. The Strategic Plan does not explicitly address hazards, but it is used to identify goals that often align with mitigating impacts of hazards.
5-Year Master Plan	Yes Varies	NMWD uses Master Plans for guiding decisions related to infrastructure maintenance, capacity improvements, and resiliency to hazards. NMWD has three separate Master Plans, one for each service area, 1) Novato, 2) West Marin, and 3) Oceana Marin. Each Master Plan is reviewed and updated approximately every 5 years. Projects identified in the Master Plans are high-level and are often intended to mitigate impacts from hazards, development, or address resiliency/redundancy in general.
Capital Improvements Plan (CIP)	Yes 2023	The CIP is a document the guides near-term decisions related to NMWD’s capital assets. High-level projects identified in the Master Plans are programed into the CIP based on available funding. NMWD uses a 3-year planning horizon to develop the CIP, and the CIP is updated annually concurrent with the District’s full budget cycle. The Board of Directors reviews and approves CIP funding on an annual basis, which supports implementation of projects that often mitigate impacts from hazards, development, or address resiliency/redundancy in general.
Local Emergency Operations Plan	Yes 2019	NMWD’s Emergency Operations Plan (EOP) is District specific and its purpose is to provide a plan of action to respond to various emergencies and/or hazards that may involve District facilities. The EOP does not identify specific projects to mitigate impacts of hazards.
Local Water Supply Enhancement Study (LWES)	Yes 2022	The LWES was prepared with the intent of assisting NMWD in making informed and prudent decisions towards expanding the local water supply in the Novato service area. Although the LWSES does not explicitly address

		hazards, it identifies viable water alternatives which would inherently provide resiliency and redundancy that could mitigate impacts of certain hazards.
Building Code, Permitting, and Inspections	Y/N	Are codes adequately enforced?
Building Code	N	N/A
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	N/A
Fire department ISO rating:	N	N/A
Site plan review requirements	N	N/A
Land Use Planning and Ordinances	Y/N	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
District Code	Yes	Yes, District participates with Novato or Marin County on plan reviews.
Zoning ordinance	Yes	Yes, District participates with Novato or Marin County on plan reviews.
Subdivision ordinance	N	
Floodplain ordinance	Yes	Yes, District participates with Novato or Marin County on plan reviews.
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes	Yes, District participates with Novato or Marin County on plan reviews.
Flood insurance rate maps	Yes	Yes, District participates with Novato or Marin County on plan reviews.
Elevation Certificates	Yes	Yes, District participates with Novato or Marin County on plans.
Acquisition of land for open space and public recreation uses	N	
Erosion or sediment control program	Yes	Yes, District participates with Novato or Marin County on plan reviews.

Table 186: NMWD Legal and Regulatory Capabilities
Source: North Marin Water District

North Marin Water District Comprehensive Plan or Master Plan

North Marin Water District boundaries overlap unincorporated areas of Marin County and the City of Novato, both of which are required to have a General Plan or Master Plan per California Government Code 65300. Please see their respective General Plan or Master Plan for details.

Table 17: North Marin Water District Comprehensive Plan or Master Plan

Goal/Policy/Program	Explanation
Policy	NMWD is an independent special district governed by a five-member Board of Directors elected By-District for four-year terms.
Policy	NMWD is a public agency of the State of California established under the County Water District Law (Division 12 of the California Water Code). Policies and regulations have been adopted by the Board of Directors of NMWD pursuant to Water Code Section 31024 and establish the procedures under which NMWD operates, including the terms and conditions under which facilities will be installed and water will be supplied to users and the charges and rates for such service.

Table 187: NMWD Comprehensive Plan or Master Plan

Source: North Marin Water District

3.2.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capability identifies the District personnel responsible for activities related to mitigation and loss prevention. Many positions are full time and/or filled by the same person.

Table 18: North Marin Water District Administrative and Technical Capabilities

Administrative	Yes/No	Is coordination effective?
Administration / Finance Department	Yes	The Administrative Department is comprised of the Administrative Services, Consumer Services, Finance and Information System. Consumer Services is responsible for managing water use data, responding to customer calls for service and assistance with their water services, creation and distribution of water bills, and answering customer questions regarding their bill or water use. Finance is responsible for general accounting and budgeting, payroll, purchasing, financial investments, risk management and information systems.
Construction / Maintenance	Yes	The Construction/Maintenance Department has a variety of duties, principally related to the installation, repair and replacement of water main pipelines, their appurtenances and performs all “underground” maintenance for the District. The Construction/Maintenance Department also assists other departments to upkeep structures, grounds, storage tanks and pumping facilities.
Operations / Maintenance	Yes	The Operations/Maintenance Department manages the supply, distribution and water quality for the City of Novato and the West Marin communities, and performs all “above-ground” maintenance for the District.
Mutual aid agreements	Yes	NMWD has mutual aid agreements with the City of Novato and the Novato Sanitary District for staff, equipment, and materials. These agreements are reviewed and updated.

Technical	Yes/No	Has capability been used to assess/mitigate risk in the past?
Warning systems/services	Yes	NMWD plans increase participation in the Alert Marin System through Marin OEM and explore options for increased cybersecurity.
Emergency Manager	Yes	NMWD has a Safety Manager on staff that serves in this role by definition. They lead the management team in emergency scenarios and coordinates with other local agencies throughout the year to include quarterly meetings.
Civil Engineer	Yes	NMWD has a Chief Engineer that oversees the Engineering Department and enforces District design and construction standards. They have training on emergency procedures and they coordinate with County and City officials as needed.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff.	Yes	The Engineering Department consists of a small professional and technical staff that oversees the planning, permitting, design, construction and project management of water supply, treatment, transmission and distribution facilities necessary to serve NMWD’s customers. Engineering functions for wastewater-related facilities are also provided by the Engineering Department to support the NMWD wastewater collection, treatment, and disposal system in Oceana Marin (Dillon Beach area).
Grant writing	No	NMWD does not have in-house staff with expertise in writing grant applications. NMWD has historically used consultant support for grant writing purposes.

Table 188: NMWD Administrative and Technical Capabilities
Source: North Marin Water District

3.2.3 FISCAL CAPABILITIES

The fiscal capability assessment shows specific financial and budgetary tools available to the jurisdictions such as community development block grants; capital improvements project funding; authority to levy taxes for specific purposes; fees for water, sewer, gas, or electric services; impact fees for homebuyers or developers for new development; ability to incur debt through general obligations bonds; and withholding spending in hazard-prone areas.

Table 19: North Marin Water District Fiscal Capabilities

Financial	Yes/No	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes	The Board of Directors reviews and approves CIP funding on an annual basis, which supports implementation of projects that often mitigate impacts from hazards, development, or address resiliency/redundancy in general.
Fees for water, sewer, gas, or	Yes	NMWD’s main source of revenue comes from rate payers

electric services		of the three different service areas. Rate revenue is used to fund District operations, maintenance, capital improvements, debt service, staff salaries and benefits, and various other expenses. When mitigation projects are identified in the various Master Plans and the Capital Improvement Plan, rate revenue can be adopted with the annual CIP budget to fund projects that have a hazard mitigation component.
Impact fees for new development	Yes	NMWD assesses Facility Reserve Charges (FRCs) to developments within the various service areas that need new or increased water use entitlement. FRC revenue can be used to fund future capital improvement projects that have a hazard mitigation component.
Incur debt through general obligation bonds and/or special tax bonds	Yes	NMWD has incurred debt through bonds that were used to fund larger capital improvement projects, some of which had a hazard mitigation component.
Federal funding programs	Yes	Federal grant program funding could be used to fund hazard mitigation projects, such as sea-level rise and drought contingency. Regional coordination through California Office of Emergency Services (Cal OES) was used to secure a federal grant through the Federal Emergency Management Authority's (FEMA) Hazard Mitigation Grant Program for a project to rehabilitate the District's Oceana Marin Wastewater Treatment and Storage Ponds
State funding programs	Yes	State grant program funding could be used to fund hazard mitigation projects, such as sea-level rise and drought contingency. Regional coordination through the Department of Water Resources (DWR) was used to secure a state grant through the State's Small Community Drought Relief Program for a project to drill a new well outside of the 100-year sea-level rise boundary in the District's west Marin service area.

Table 189: NMWD Fiscal Capabilities
Source: **North Marin Water District**

3.2.4 COMMUNITY OUTREACH

The outreach and partnerships capability assessment shows outreach and public education programs available to the North Marin Water District and the North Marin Water District partnerships utilized to promote those programs.

Table 20: North Marin Water District Community Outreach		
Outreach and Partnerships	Yes/No	Could the program/organization help implement future mitigation activities?
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	NMWD is committed to ongoing public education surrounding water conservation and water-waste reduction. The District has an active online presence through social media and provides frequent updates on the website.

Table 190: NMWD Community Outreach
Source: North Marin Water District

3.2.5 PARTICIPATION IN THE NATIONAL FLOOD INSURANCE PROGRAM

As a Special District the North Marin Water District does not participate in the national flood insurance program (NFIP). However, the City of Novato and the County of Marin do participate in the NFIP and have profiled their flood risk in the Flood Profile in this Annex, the Marin County OA MJHMP, and the City of Novato Annex. Repetitive loss and severe repetitive loss structures are also addressed in the NFIP portion of the Marin County OA MJHMP, and the City of Novato Annex. The NMWD does have any facilities within a flood plain and that vulnerability is addressed in the Flooding profile. The NMWD does not have any repetitive loss and severe repetitive loss structures are defined as a structures covered under an NFIP flood insurance policy (44 CFR § 77.2(i)).

3.3 MITIGATION GOALS

44 CFR Requirement § 201.6(c)(3)(i) [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long - term vulnerabilities to the identified hazards.

The information developed from the risk assessment was used as the primary basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what each jurisdiction wants to achieve in terms of hazard and loss prevention.



Goal statements are typically long-range, policy-oriented statements representing jurisdiction-wide visions. Objectives are statements that detail how each jurisdiction's goals will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of jurisdiction-level goals and objectives include performing reviews of existing local plans, policy documents, and regulations for consistency and complementary goals, as well as soliciting input from the public.

The following represents overarching strategic goals associated with the identification and eventual implementation of appropriate and meaningful hazard mitigation efforts in relation to prioritized hazards and threats confronting Marin County. These goals form the basis for specific supporting process objectives and are shown from the highest priority, at the top of the list, to those of lesser importance.

The establishment of hazard mitigation goals represents both individual and collective strategies that have been mutually agreed upon by the Steering Committee and have changed with the 2023 MJHMP update. Objectives were added to Goals 2 and 5. Eventually, these goals have been adopted by Marin County and its participating jurisdictions as the guiding policy behind local hazard mitigation efforts, in conjunction with other associated principles.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives

and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

Goal 1: Minimize risk and vulnerability of the community to the impacts of natural hazards and protect lives and reduce damages and losses to property, economy, and environment in Marin County.

- Minimize economic and resource impacts and promote long-term viability and sustainability of resources throughout Marin County.
- Minimize impact to both existing and future development.
- Provide protection for public health.
- Prevent and reduce wildfire risk and related losses.

Goal 2: Provide protection for critical facilities, infrastructure, utilities, and services from hazard impacts.

- Incorporate defensible space and reduce hazard vulnerability.
- Develop redundancies in utilities and services.
- Enhance resilience through enhanced construction.

Goal 3: Improve public awareness, education, and preparedness for hazards that threaten our communities.

- Enhance public outreach and participation in the Alert Marin Emergency Notification System.
- Enhance public outreach, education, and preparedness program to include all hazards of concern.
- Increase public knowledge about the risk and vulnerability to identified hazards and their recommended responses to disaster events, including evacuation and sheltering options.
- Provide planning and coordination for "At-Risk" populations.
- Provide planning and coordination for companion animals, livestock, and other animal populations.
- Increase community awareness and participation in hazard mitigation projects and activities.

Goal 4: Increase communities' capabilities to be prepared for, respond to, and recover from a disaster event.

- Improve interagency (local, state, federal) emergency coordination, planning, training, and communication to ensure effective community preparedness, response and recovery.
- Enhance collaboration and coordination of disaster-related plans, exercises, and training with local, state, and federal agencies, neighboring communities, private partners, and volunteers.
- Enhance the use of shared resources/Develop a strong mutual aid support system.
- Create and maintain a fully functional, interoperable radio and communication system with all regional public safety partners.

Goal 5: Maintain FEMA Eligibility/Position the communities for grant funding.

- Review hazard events and ongoing hazard mitigation projects annually.
- Assess the need to pursue or adjust hazard mitigation projects after significant hazard events.

Goal 6: Reduce exposure to High Hazard Dams that pose an unacceptable risk to the public.

- Improve alert and warning systems to provide residents downstream of a High Hazard Dam to receive timely warning to evacuation when threatened by potential or imminent dam failure.
- Enhance overall community preparedness to respond and evacuate a potential or imminent dam failure.
- Increase public awareness of the risk posed by High Hazard Dams and the potential for relocation of housing outside a possible inundation zone.
- Prioritize High Hazard Dam Mitigation projects and programs.

3.4 STATUS OF PREVIOUS MITIGATION ACTIONS

Table 21 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 21: NMWD Status of Previous Hazard Mitigation Actions					
Action Number / Name	Completed	Ongoing	Not Started	Still Relevant	Included in Updated Action Plan
Stafford Dam (Novato Creek Dam) Mitigation – Upstream Face Armoring			X		X
Oceana Marin Force Main Replacement and Main Pump Station Upgrade/Relocation		X			X
Olema Domestic Water Pump Station Flood Protection			X		X
Eastern Marin County Creek Crossing Upgrades (Rush, Novato, Leveroni, Vineyard)			X		X
Oceana Marin Treatment and Storage Pond Repair		X			X
Oceana Marin Cliff-side Sewer Lining			X		X

Table 191: NMWD Status of Previous Hazard Mitigation Actions
Source: NMWD

3.5 HAZARD MITIGATION ACTIONS

The 2023 Marin County MJHMP was revised to reflect progress in local mitigation efforts. Mitigation projects were selected for each hazard and for the North Marin Water District based off the hazard risk assessment. The projects are supported by the mitigation goals and objectives, and are ranked using the following criteria; approximate cost, timeframe of completion, whether the project requires District Board of Directors regulatory action, and an assumption as to whether or not the project would be subject to CEQA or NEPA requirements. Funding sources are identified for all projects. All projects consider new, future, and existing development. Project worksheets are used by the Planning Team and Steering Committee to describe criteria for each project.

Based on the hazard profiles, threat assessment, capabilities assessment, community survey results, discussions among the Planning Team members, and existing best practices, a set of potential mitigation actions was developed and then evaluated based on the following criteria:

- FEMA requires local governments to evaluate the monetary and non-monetary costs and benefits of potential mitigation actions. Although local governments are not required to assign specific dollar values to each action, they should identify the general size of costs and benefits.
- The Planning Team may elect to include measures with a high cost or low benefits, but such measures should be clearly beneficial to the community and an appropriate use of local resources.

In addition, FEMA directs local governments to consider the following questions as part of the financial analysis:

- What is the frequency and severity of the hazard type to be addressed by the action, and how vulnerable is the community to this hazard?
- What impacts of the hazard will the action reduce or avoid?
- What benefits will the action provide to the community?

The Planning Team also chose to review and revise the potential hazard mitigation actions with consideration for climate impact and social vulnerability. Projects and programs were assessed with consideration of these variables.

Prioritization

Although, the overall hazard or community priorities have not changed from the 2018 plan the hazard action priorities have changed. As part of the mitigation actions development and review, the Planning Team also prioritized the actions. The prioritization efforts looked at the risks and threats from each hazard; lifesaving, life safety, property protection and lastly environmental protection; financial costs and benefits; technical feasibility; consideration for climate impact, and social vulnerability, and community values. Planning Team members were asked to identify their priority actions using the following criteria.

Implementation priority ratings were assigned as follows:

- **High Priority** - An action that meets multiple objectives, is linked to a high risk hazard, has benefits that exceed costs, and has a potential source of funding. Action can begin within the short term (1 to 5 years).
- **Medium Priority** - An action that meets multiple objectives, is linked to a high or medium risk hazard, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can begin within the short term (1 to 5 years) once funding is secured.
- **Low Priority** - An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). Low-priority actions may be eligible for grant funding from programs that have not yet been identified.

Table 22 lists the Current Hazard Mitigation Actions for the North Marin Water District.

Table 22: North Marin Water District Current Hazard Mitigation Actions

No.	Mitigation Actions	Hazards Mitigated/ Goals Met	Jurisdiction/ Responsible Agency	New, Existing, Completed, Removed	Estimated Cost and Potential Funding Source	Timeline/ Priority	Comments/ Progress
NMWD-1	Encourage participation in Alert Marin and other community alert & warning systems to ensure the public is aware of any potential emergencies or risk.	All Hazards 1, 2, 3, 4, 5	North Marin Water District/ Marin County	New (2023)	Cost: General Funds	1 -2 Years/ High	
NMWD-2	Stafford Dam (Novato Creek Dam) Mitigation – Upstream Face Armoring	Dam, Debris Flow 1, 2, 3, 4, 5	North Marin Water District	Existing (2018)	\$1,000,000 (Rate Revenue, HMGP, BRIC, CDAA Grants)	3-5 years Medium	Not started (identify and correct vulnerabilities along the upstream face of Stafford Dam)
NMWD-3	West Marin Water Supply Resiliency Project	All Hazards 1, 2, 4, 5	North Marin Water District	New (2023)	\$2,000,000 (Federal and State HMGP, BRIC, CDAA, Grants)	1-3 years High	Not Started (identify and establish source(s) of additional water supply to enhance system redundancy)
NMWD-4	Novato Water System Enhanced Master Plan	All Hazards - Earthquake, Fire, Flood 1, 2, 3, 4, 5	North Marin Water District	New (2023)	\$300,000-\$500,000 (Rate Revenue)	1-15 years High	Ongoing (A combination infrastructure and hazard mitigation plan, including seismic evaluations of all critical facilities, wildfire, flood hazards, etc.)
NMWD-5	West Marin Water System Enhanced Master Plan	All Hazards - Earthquake, Fire, Flood 1, 2, 3, 4, 5	North Marin Water District	New (2023)	\$300,000-\$500,000 (Rate Revenue)	1-15 years High	Ongoing (A combination infrastructure and hazard mitigation plan, including seismic evaluations of all critical facilities, wildfire, flood hazards, etc.)
NMWD-6	Emergency Operations Plan (EOP) Update	All Hazards 1, 2, 3, 4, 5	North Marin Water District	New (2023)	Cost TBD (Rate Revenue)	1-3 years High	Not Started (update to NMWD's 2019 EOP)
NMWD-7	Community and Individual Emergency Preparedness	All Hazards 1, 2, 3, 4, 5	North Marin Water District	New (2023)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	1-3 years High	Ongoing (circulate information and educate about risks associated with living within the inundation zone of Stafford Dam)
NMWD-8	Emergency Generator(s)	Fire & Wind/ 1, 2, 4, 5	North Marin Water District	New (2023)	Cost TBD: HMGP, BRIC, CDAA,	1-5 years High	Develop redundant power during wind and fire events.

Table 22: North Marin Water District Current Hazard Mitigation Actions

No.	Mitigation Actions	Hazards Mitigated/ Goals Met	Jurisdiction/ Responsible Agency	New, Existing, Completed, Removed	Estimated Cost and Potential Funding Source	Timeline/ Priority	Comments/ Progress
					Private Local Grants		facilities such as HQ and backbone pump stations
NMWD-9	Stafford Dam Mitigation – Remote Instrumentation including piezometers, inclinometers and accelerometers, weather station	Dam Failure/ 1,2,4, 5, 6	North Marin Water District	New (2023)	\$1,000,000 (Rate Revenue, Federal and State Grants)	1-3 years High	Not Started (install new technology to monitor ground water, seepage, movement within Stafford Dam to allow real-time information gathering)
NMWD-10	Educate Residents on Water Saving during extreme heat & drought.	Drought, Heat/ 1, 2, 3, 4, 5	North Marin Water District	New (2023)	North Marin Water District	1-3 years High	Educate citizens regarding water use during extreme heat.
NMWD-11	Oceana Marin Force Main Replacement and Main Pump Station Upgrade/Relocation	Flooding, Tsunami, Sea Level Rise/ 1, 2, 4, 5	North Marin Water District	Existing (2018)	\$2,500,000 (Federal and State Grants)	1-5 years High	Ongoing (design phase underway for replacement of the first phase of the OM force main, no work started related to pump station upgrade)
NMWD-12	Olema Domestic Water Pump Station Flood Protection	Flooding/ 1, 2, 4, 5	North Marin Water District	Existing (2018)	\$1,500,000 (Federal and State Grants)	3-5 years Medium	Not started (raise or relocate the Olema pump station out of the flood plain)
NMWD-13	Eastern Marin County Creek Crossing Upgrades (Rush, Novato, Leveroni, Vineyard)	Flooding, Land Subsidence, Debris Flow, Earthquake/ 1, 2, 4, 5	North Marin Water District	Existing (2018)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	1-5 years Medium	Not started (identify vulnerabilities at creek crossings and design/implement appropriate changes to enhance resiliency to flooding & earthquake)
NMWD-14	Western Marin County Creek Crossing Upgrades (Olema, Lagunitas, Fish Hatchery, Haggerty Gulch, Silver Hills, Tomasini, and Bear Valley)	Flooding, Land Subsidence, Debris Flow, Earthquake/ 1, 2, 4, 5	North Marin Water District	New (2023)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	1-5 years Medium	Not started (identify vulnerabilities at creek crossings and design/implement appropriate changes to enhance resiliency to flooding & earthquake)
NMWD-15	Stafford Dam Mitigation – Spillway Hardening	Flooding/ 1, 2, 4, 5	North Marin Water District	New (2023)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	3-5 years Medium	Not started (identify and correct vulnerabilities along the Stafford Dam spillway)

Table 22: North Marin Water District Current Hazard Mitigation Actions

No.	Mitigation Actions	Hazards Mitigated/ Goals Met	Jurisdiction/ Responsible Agency	New, Existing, Completed, Removed	Estimated Cost and Potential Funding Source	Timeline/ Priority	Comments/ Progress
NMWD-16	Stafford Dam Enhancements – Spillway Adjustable Weir Gate	Flooding/ 1, 2, 4, 5	North Marin Water District	New (2023)	\$1,250,000 (Rate Revenue)	1-3 years High	In Progress (Preliminary design underway for installation of an adjustable gate at the control notch of the Stafford Dam spillway)
NMWD-17	North Marin Water District Headquarters and Corporation Yard Flood Mitigation Project	Flooding/ 1, 2, 4, 5	North Marin Water District	New (2023)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	3-5 years Medium	Not Started (identify and mitigate flooding of District HQ building from adjacent Rush Creek to allow operations during flood events)
NMWD-18	Wooden Tank Replacement – Paradise Ranch Estates Tanks No. 1 & 2	Wildfire/ 1, 2, 4, 5	North Marin Water District	New (2023)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	3-5 years Medium	Not Started (remove and replace two wooden tanks in the West Marin system with steel or concrete tanks)
NMWD-19	Oceana Marin Treatment and Storage Pond Repair	Severe Weather-Wind, Flooding/ 1,2,4,5	North Marin Water District	Existing (2018)	\$1,800,000 (FEMA HMGP)	In Progress Design complete, construction in 2024. High	High winds or flooding create waves that erode the banks of the two ponds that serve the community's waste water. The project will armor the banks.
NMWD-20	Oceana Marin Cliff-side Sewer Lining	Severe Weather-Wind, Tsunami, Debris Flow/ 1,2,4,5	North Marin Water District	Existing (2018)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	3-5 years Medium	These hazards degrade the slopes that hold a slip line sewer lines along the steep cliffs to prevent raw sewage spills into the ocean.

Table 192: NMWD Current Hazard Mitigation Actions

3.6 PROGRESS IN LOCAL MITIGATION EFFORTS

This plan has been created as a “living” document with input from the population and professionals within the North Marin Water District. Based on the planning meetings and the progress monitored by the steering committee members several mitigation actions were accomplished since the last planning cycle. Table 21 provides a brief description of the progress made in the local mitigation efforts and the plan for those mitigation actions that were not completed or are ongoing.

The planning team for the North Marin Water District identified and prioritized the mitigation actions as detailed in Table 22, based on the risk assessment and in accordance with the process outline in Section 3, Mitigation Strategy, of the base plan. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. General processes and information on plan implementation and maintenance of this LHMP by all participating jurisdictions is included in Section 4.0: Plan Review, Evaluation, and Implementation.

3.7 PLAN INTEGRATION

For hazard mitigation planning, “integration” means that hazard mitigation information is used in other relevant planning mechanisms, such as master planning, strategic planning, capital facilities planning, emergency management, hazard specific planning, and that relevant information from those sources is also used in hazard mitigation. This section identifies where the 2023 MJHMP will be used for further integration.

The planning team for the North Marin Water District will maintain this plan and will serve as a lead staff for grant project applications on District projects selected for application under the Hazard Mitigation Assistance grant programs.

An important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into town plans and mechanisms. Where possible the North Marin Water District will use existing plans and/or programs to implement hazard mitigation actions both directly within the District and through the coordinated efforts with the Cities and Towns they serve.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. As described in this plan’s capability assessment, the North Marin Water District and the Cities and Towns they serve already implement policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include Integration opportunities for the 2023 Marin County MJHMP:

District Master & Strategic Plans - Integrates hazard mitigation through the consideration of hazards most likely to impact the district.

District Emergency Action Plans – Integrates hazard mitigation through the consideration of the District’s planned response to hazards most likely to impact the district.

District Dam Emergency Plans – Integrates hazard mitigation through the consideration of the District’s planned response to an Emergency Dam incident most likely to impact the district or surrounding community.

Community Wildfire Protection Plan - Integrates hazard mitigation through the consideration of strategies to reduce fire hazard and the risk of catastrophic wildfires in the WUI, while promoting the protection and enhancement of the county’s economic assets and ecological resources.

The successful implementation of this mitigation strategy will require review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. A few examples of incorporation of the MJHMP into existing planning mechanisms include:

19. As recommended by Assembly Bill 2140, each community should adopt (by reference or incorporation) this MJHMP into the Safety Element of their General Plans. Evidence of adoption (by formal, certified resolution) shall be provided to CalOES and FEMA
20. Integration of flood actions identified in this mitigation strategy with the actions and implementation priorities established in existing Flood Management Programs
21. Using the risk assessment information to update the hazards section in the County, City and Town Emergency Operations Plans

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this hazard mitigation plan.

3.8 FUTURE DEVELOPMENT TRENDS

Development within North Marin’s service areas are managed through the Marin County and/or the City of Novato planning and development departments. North Marin participates in development efforts by reviewing applications and providing will-service notices during the planning phase. These will-serve notices acknowledge that North Marin is capable of providing water (or sanitary sewer) services to the proposed development.

North Marin’s 2020 Urban Water Management Plan (Plan) incorporated estimated water use demands by applying projected population and employment growth rates. Additionally, the Plan incorporated planned developments within the District service areas, including new housing required per the Associate of Bay Area Government’s (ABAG) Regional Housing Needs Allocation (RHNA) to verify that account growth projections consider all currently anticipated growth. Compliance with the ABAG RHNA is a requirement imposed on local government agencies (Cities and Counties) rather than utility providers and/or special districts.

North Marin’s Plan indicates that the District has adequate supply and distribution capacity under normal water year conditions. However, the Plan also indicates that as soon as 2035, based on City and County development projections, North Marin will not have adequate supply and distribution capacity under “dry year” conditions. A dry year is defined as one with below average precipitation, which leads to lower water levels in local reservoirs and a reduction in available water supply. Most recently, North Marin experienced dry year conditions in three consecutive years, from 2020 to 2022.

SECTION 4.0: PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

The strategies presented are deemed appropriate and effective by recommendation of the North Marin Water District.

4.1 PLAN ADOPTION

Upon submission to the California Office of Emergency Services (CalOES) for review, and subsequent approval by the Federal Emergency Management Agency (FEMA), the Marin County MJHMP will be presented to local government for formal adoption. As appropriate, the adopted plan and accompanying North Marin Water District Community Profile will then be incorporated into local general plans for integration into organizational policy.

4.2 PLAN MONITORING

The process of hazard mitigation does not end with the completion, approval, and adoption of the Marin County OA MJHMP. During the five-year lifespan the Marin County and NMWD plan, the County, cities, towns and special districts, along with community-based organizations will ensure that the mitigation goals and strategies identified are exercised and monitored under a collaborative and cooperative umbrella, and that the document itself is properly maintained.

The Marin County Office of Emergency Management, as lead coordinating agency for hazard mitigation planning within the Marin County OA, leads the Marin Operational Area Hazard Mitigation Working Group that meets quarterly to review and manage the plan, projects, and programs. The NMWD is a participating member of the Marin Operational Area Hazard Mitigation Working Group. The NMWD Public Works Director will monitor and update the NMWD Annex to the Marin County OA MJHMP.

The review will identify changing community priorities, updated or new planning documents and the progress or status of the mitigation actions as detailed in the mitigation strategy. Additional questions to complete the review will be considered as follows:

- Do the goals address current and expected conditions?
- Are the goals and objectives consistent with changes in the local, state, and federal policy?
- Status updates on all mitigation actions?
- Have the hazards or risks changed?
- Are current resources appropriate for implementing the MJHMP?
- Have the outcomes occurred as expected?
- Is the County and jurisdictions or districts participating in the plan implementation process as expected?

The Working Group is a subgroup of the Marin Disaster and Citizens Corps Council. During the five-year update cycle, the Marin Operational Area Hazard Mitigation Working Group will have quarterly update meetings with the Hazard Mitigation Planning Committee and local stakeholders to discuss revisions to the plan and progress updates for the hazard mitigation actions. Further, Marin OEM will host an annual one-day mitigation summit to increase engagement and enhance collaboration on the plan and projects. The summit will also have the goal to educate stakeholders on innovative approaches to mitigation, trends, and new plan

requirements. Marin OEM, as the host, will seek subject matter experts, state and federal officials, and representatives from within the Marin OA to speak to mitigation and planning. The knowledge gathered and the coordination facilitated during the summit will be used to update the base plan and annexes.

Marin OEM has the capacity to lead the Working Group and Multi-Jurisdictional Planning with one coordinator assigned with direct maintenance of the plan, a department analyst assigned to support the coordinator with project and grant tracking, and a community preparedness coordinator assigned with conducting regular public outreach on the plan and education on mitigation. Community feedback and integration will continue through outreach events and OEM website, where residents and visitors are invited to provide feedback through a survey, available in English or Spanish.

Specific plan maintenance activities by the Marin County Office of Emergency Management and its participating jurisdictions/special districts may include:

- Hold quarterly update meetings with the Hazard Mitigation Planning Committee and local stakeholders to discuss revisions to the plan and progress updates for the hazard mitigation actions.
 - Annual Hazard Mitigation Summit
 - Holding public meetings after the first quarter and third quarter update meetings.
 - Maintaining the Marin County OEM Hazard Mitigation Website, which provides the public with the ability to access identified hazard impact maps, location address search capability, and a listing of hazard mitigation actions.
 - Monitoring of the Marin County and all participating jurisdiction mitigation project activities and dissemination of status reports.
 - Generation of reports relative to plan status, project management, and revision updates to executive leadership.
- Preparations for the plan's future revision and updating.

4.3 PLAN EVALUATION

Upon approval and adoption by the NMWD, the prioritized mitigation strategies will be further developed for funding and implementation by the lead agencies. The plan describes the potential sources of hazard mitigation funding, and general procedures to obtain that funding.

The mitigation strategies represented and adopted within this plan are recommendations only and must be approved and funded in order to be implemented as official mitigation solutions. Ultimately, it is the responsibility of jurisdictional and agency officials within the Marin County to undertake project implementation based upon identified mitigation strategies, funding availability, and local need when it arises. The Marin County Office of Emergency Management will meet with the Marin Operational Area Hazard Mitigation Working Group, including the NMWD, to evaluate the plan after each update meeting.

4.4 PLAN UPDATE

The NMWD General Manager will monitor and update the NMWD Annex to the Marin County OA MJHMP. During the five-year update cycle, the NMWD and the Marin County Office of Emergency Management will hold quarterly update meetings with the Marin Operational Area Hazard Mitigation Working Group and local stakeholders to discuss revisions to the plan and progress updates for the hazard mitigation actions. The Marin County Office of Emergency

Management and all participating jurisdictions and special districts will continue to hold public meetings after the first quarter and third quarter update meetings annually and will continue to invite public participation in the update process via updated public surveys.

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ACRONYMS/ABBREVIATIONS

Acronym	Definition
ABAG	Association Bay Area of Governments
ADU	Accessory Dwelling Units
AQI	Air Quality Index
ARP	Address Resolution Protocol
ASL	American Sign Language
ATSDR	Agency for Toxic Substances and Disease Registry
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BCEGS	Building Code Effectiveness Grading Schedule
BCPUD	Bolinas Community Public Utility District
BFE	Base Flood Elevation
BRIC	Building Resilient Infrastructure and Communities
CA	California
CAC	Community Assistance Contact
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CAP	Climate Action Plan
CASPER	Community Assessment for Public Health Emergency Response - California Department of Public Health
CAV	Community Assistance Visit
CDAA	California Disaster Assistance Act
CDC	Centers for Disease Control and Prevention
CDI	Certified Deaf Interpreter
CEQA	California Environmental Quality Act
CERT	Community Emergency Response Team
CGS	California Geological Survey
CIP	Capital Improvement Plan
CIR	Conservation Incentive Rate
CITR	Conservation Incentive Tier Rate
CMFD	Central Marin Fire District
CMSA	Central Marin Sanitation Agency
CNRA	California Natural Resource Agency

CO	Carbon Monoxide
COVID-19	Coronavirus Disease 2019
COYL	Coyote Creek Left Bank Levee
CPUC	California Public Utilities Commission
CRF	Community Risk Factor
CRI	Community Resilience Index
CRS	Community Rating System
CRT	Community Response Team
CSA	County Service Area
C-SMART	Sea-level Marin Adaption Response Team
CWPP	Community Wildfire Protection Plan
DDoS	Distributed Denial of Service
DMA	Disaster Mitigation Act
DNS	Domain Name System
DOF	California Department of Finance
DoS	Denial-of-Service
DPW	Department of Public Works
DR	Disaster Relief
DSOD	Division of Safety of Dams - California Department of Water Resources
DWR	California Department of Water Resources
EAL	Expected Annual Loss
EAS	Emergency Alert System
ECC	Emergency Command Center
EOC	Emergency Operation Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EPC	Emergency Preparedness Commission
ESHA	Environmentally Sensitive Habitat Areas
FD	Fire Department
FEMA	Federal Emergency Management Agency
FHSV	Fire Hazard Severity Zones
FIRM	Flood Insurance Rate Maps
FMA	Flood Mitigation Assistance
FMP	Flood Mitigation Plan

FOG	Fats, Oils, & Grease
FPA	Floodplain Administrator
FRA	Federal Responsibility Areas
FY	Fiscal Year
GGBHTD	Golden Gate Bridge, Highway and Transportation District
GGNRA	Golden Gate National Recreation Area
GGNRA	Golden Gate National Recreation Area
GIS	Geographic Information System
Gov	Government
GPAC	General Plan Advisory Committee
H2S	Hydrogen Sulfide
HFHSZ	High Fire Severity Zone
HIRA	Hazard Identification and Risk Assessment
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HLR	Historic Loss Ratio
HMGP	Hazard Mitigation Grant Program
IoT	Internet of Things
IP	Intellectual Property
IPAWS	Integrated Public Alert and Warning System
IPCC	Intergovernmental Panel on Climate Change
ISEPA	Identified Site Emergency Planning Application
JPA	Joint Powers Agreement
LCP	Local Coastal Program
LGVSD	Las Gallinas Valley Sanitary District
LHMP	Local Hazard Mitigation Plan
LOMA	Letters of Map Amendment
LOMR	Letters of Map Revision
LRA	Local Responsibility Areas
LRAD	Long-Range Acoustic Device
LSAC	Levee Safety Action Classification
Marin IJ	Marin Independent Journal
MCEP	Marin Climate Energy Partnership
MCFD	Marin County Fire Department
MCOSD	Marin County Open Space District

MCPIO	Marin County Public Information Officers
MCSTOPP	Marin County Stormwater Pollution Prevention Program
NERA	Marin Emergency Radio Authority
MERS	Middle Eastern Respiratory Syndrome
MFHSZ	Moderate Fire Severity Zone
MG	Million Gallons
MGD	Million Gallons Per Day
MHOAC	Medical/Health Operational Area Coordinator
MHW	Mean High Water
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MMI	Modified Mercalli Intensity
MMRC	Marin Medical Reserve Corps
MMWD	Marin Municipal Water District
MRZ	Mineral Resource Zones
MV2040	Mill Valley General Plan 2040
Mw Scale	Moment Magnitude Scale
MWPA	Marin Wildfire Prevention Authority
NASA	National Aeronautics and Space Administration
NCDC	National Climatic Data Center
NEPA	National Environmental Policy Act
NFDRS	National Fire Danger Rating System
NFIP	National Flood Insurance Program
NID	National Inventory of Dams
NIH	National Institute for Health
NMWD	North Marin Water District
NPDES	National Pollutant Discharge Elimination System
NPR	Northwestern Pacific Railroad
NR	National Register of Historic Places
NRI	National Risk Index
NWS	National Weather Service
O3	Ozone
OA	Operational Area
OEM	Office of Emergency Management
OHP	Office of Historic Preservation

OWTA	On-Site Wastewater Treatment Systems
PD	Police Department
PG&E	Pacific Gas & Electric
PM10	Particulate Matter Less Than 10 Microns In Aerodynamic Diameter
PSPS	Public Safety Power shutoffs
PtH	Pass the hash
PUD	Public Utility District
PW	Public Works
RACES	Radio Amateur Civil Emergency Service
RAWS	Remote Automated Weather Stations
RCD	Resource Conservation District
RHNA	Regional Housing Needs Assessment
RTP	Regional Transportation Plan
SASM	Sewerage Agency of Southern Marin
SFBRA	San Francisco Bay Restoration Authority
SFHA	Special Flood Hazard Area
SFHA	Special Flood Hazard Areas - FEMA
SFHA	Special Flood Hazard Area
SHMP	State Hazard Mitigation Plan
SHSGP	State Homeland Security Grant Program
SMART	Sonoma Marin Area Rail Transit
SMCSD	Sausalito Marin City Sanitary District
SMFD	Southern Marin Fire District
SOD	Sudden Oak Death
SOX	Sulfur Oxides
SQL	Structured Query Language
SR	State Route
SRA	State Responsibility Areas
SSMP	Sewer System Management Plan
SVI	Social Vulnerability Index
TAM	Transportation Authority of Marin
TBD	To Be Determined
TENS	Telephone Emergency Notification System
UCERF2	Uniform California Earthquake Rupture Forecast, Version 2

UCERF3	Uniform California Earthquake Rupture Forecast, Version 3
USACE	U.S. Army Corps of Engineers
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VHFHSV	Very High Fire Severity Zone
VMP	Vegetation Management Plans
WC/ATWC	West Coast/Alaska Tsunami Warning Center
WHO	World Health Organization
WSCP	Water Shortage Contingency Plan
WUI	Wildland Urban Interface
WWTP	Waste Water Treatment Plant
XSS	Cross-Site Scripting

12



MEMORANDUM

To: Board of Directors Date: July 16, 2024
 From: Eric Miller, Assistant General Manager/Chief Engineer *EM*
 Tim Fuelle, Senior Engineer *TAF*
 Subject: Lynwood Pump Station Replacement Project Update
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RECOMMENDED ACTION: Information Only - Receive an update on the ongoing effort to evaluate up to two additional primary pump station sites

FINANCIAL IMPACT: None at this time

Background

The Lynwood Pump Station Replacement Engineering Assessment Technical Report (Report), dated February 2024, identified several sites as candidates for a new pump station (PS). The Report developed Alternatives A through E using a two-step analysis. First, a desktop siting study was conducted using four criteria: 1) parcel ownership (focused on agency-owned parcels), 2) 100-year floodplain proximity, 3) sea level rise potential, and 4) hydraulic compatibility. Second, the sites were evaluated to determine if they met the project objectives of: 1) improved reliability, 2) enhanced operability, and 3) meet future demands.

The findings of the Report were presented to the Board at the August 15, 2023 Meeting. A draft Initial Study/Mitigated Negative Declaration (IS/MND) was then prepared based on the results of the Report, and evaluated five PS sites identified in Alternatives A through E. Of the five PS sites evaluated, two locations are considered primary sites based on their ability to meet the project objectives. The remaining three locations are considered secondary sites based on their ability to enhance the project's ability to meet those same objectives; however, the secondary sites do not meet the project objectives as stand-alone facilities.

The draft IS/MND was issued for public review in February 2024. During the Public Review Period, the District received comments from the community requesting that additional sites be considered beyond those identified in the Report. Subsequently, on March 19, 2024 the Board authorized staff to seek other primary sites and associated alternatives that meet the project objectives.

The Board also approved an amendment to the Freyer and Laureta, Inc (F&L) Lynwood Pump Station Replacement consultant agreement to assist staff in this effort. Attachment 1 contains a chronological list of Board actions related to the subject project.

Discussion

At the July 16, 2024 Board meeting, staff will present information related to the ongoing effort to evaluate up to two additional primary PS sites. The focus of the presentation is to highlight the screening methodology as well as to receive Board feedback and public comment regarding the process to date, and prior to finalizing staff's recommendation.

Screening Criteria

The screening criteria used to seek additional primary sites was modified from the original desktop siting study by changing the restriction on parcel ownership to include developed and undeveloped commercially-owned properties, as well as undeveloped privately-owned properties. The requirement for potential sites to meet the project objectives remained unchanged.

Eighteen additional sites were identified using the revised criteria. Of those sites, nine did not meet the project objectives or would require advanced technical studies beyond the scope of the Report to determine feasibility of advancement. Four of the remaining sites meet the project objectives but carry a relative cost increase that make them cost prohibitive, and are therefore considered infeasible. The feasibility of one site is still unclear pending ongoing hydraulic analysis. Staff's presentation focuses on the four remaining sites that have been identified as feasible under the revised criteria.

Next Steps

Depending on feedback received, staff will return to the Board in September 2024 with a recommendation to advance the engineering and environmental evaluations of up to two additional primary PS sites. At the same meeting staff will also provide a schedule for the project including: feasibility of property acquisition, public meetings/workshops, environmental compliance, and engineering analysis/studies (if needed).

ATTACHMENTS

1. Chronological list of Board actions related to Lynwood Pump Station Replacement Project
2. Presentation Slides, dated July 16, 2024

Chronological List of Board Actions
related to
Lynwood Pump Station Replacement Project

- On September 6, 2022, the Board approved an agreement with Freyer and Laureta, Inc. (F&L) to evaluate replacement of the Lynwood Pump Station (LPS).
- On August 15, 2023, the Board received a presentation related to the preliminary assessment for replacement of the Lynwood Pump Station and approved amendment to the F&L agreement to provide consulting services related to environmental compliance with the California Environmental Quality Act (CEQA).
- On February 6, 2024, the Board received a presentation related to project's CEQA Initial Study/Findings and authorized staff to initiate the CEQA 30-day Public Review period for the project; and schedule a public hearing at the April 16, 2024 Board Meeting.
- On March 19, 2024 the Board authorized staff to postpone the April 16, 2024 public hearing and authorized staff to seek other primary sites and associated alternatives that meet the project objectives.
- On May 7, 2024, the Board authorized the General Manager to amend the F&L agreement to assist in identifying and evaluating up to two additional primary pump station sites to provide consistent analysis to the primary sites previously identified.



Lynwood Pump Station Replacement

North Marin Water District

July 16, 2024

Board of Directors Meeting



Presentation Outline

- Project Objectives
- Siting Study Screening Criteria
- Overview of Siting Study
- Review of Primary Site 1 and Site 2
- Overview of Additional Primary Sites No. 6 through No.23
- Top 4 Additional Primary Sites
- Summary
- Q/A

Project Objectives

Improve
Reliability

Electrical
Equipment

Equipment
& Pipe Age

Enhance
Operability

Safety

System
Constraints

Meet Future
Needs

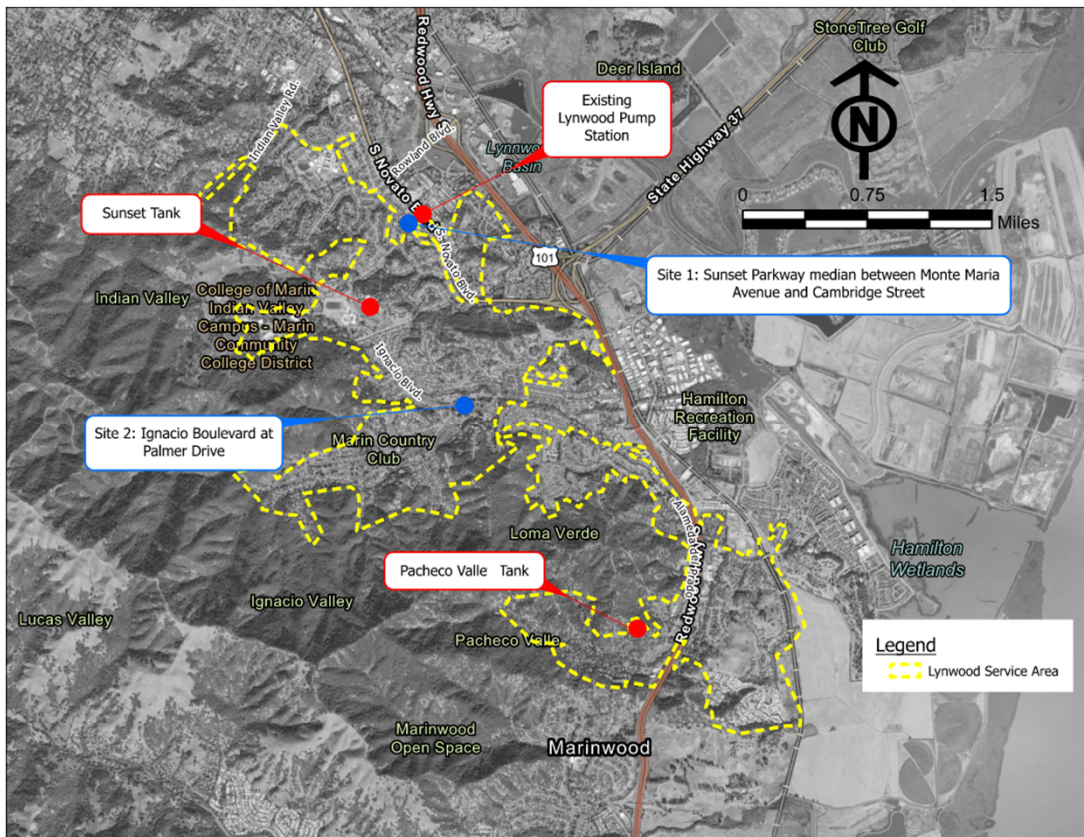
Growth

System
Redundancy

Siting Study Screening Criteria

Siting Criteria	Criteria Description	Source Documents
Parcel Ownership	Priority for preferred sites as follows: <ul style="list-style-type: none"> Public right of way Public agency owned parcel NMWD owned parcel Privately owned parcel 	<ul style="list-style-type: none"> Marin County Assessor Maps Novato Zoning Map Adopted April 24, 2001 Novato General Plan Map GP-1 Adopted October 27, 2020
Flood Plain Proximity	Parcel is outside of FEMA designated Special Flood Hazard Area (SFHA)	<ul style="list-style-type: none"> FEMA Flood Map Service Center
Sea Level Rise	Consider potential future risk from potential sea level rise inundation including increased risk from flooding due to adjacency to SFHA	<ul style="list-style-type: none"> NOAA Sea Level Riser Map Viewer FEMA Flood Map Service Center
Hydraulic Compatibility	Evaluate sites ability to: <ul style="list-style-type: none"> Improve Pacheco Valle Tank fill rates Improve Amaroli Tank water use to improve water quality Total length of pipe required 	<ul style="list-style-type: none"> NMWD Hydraulic Model NMWD system maps

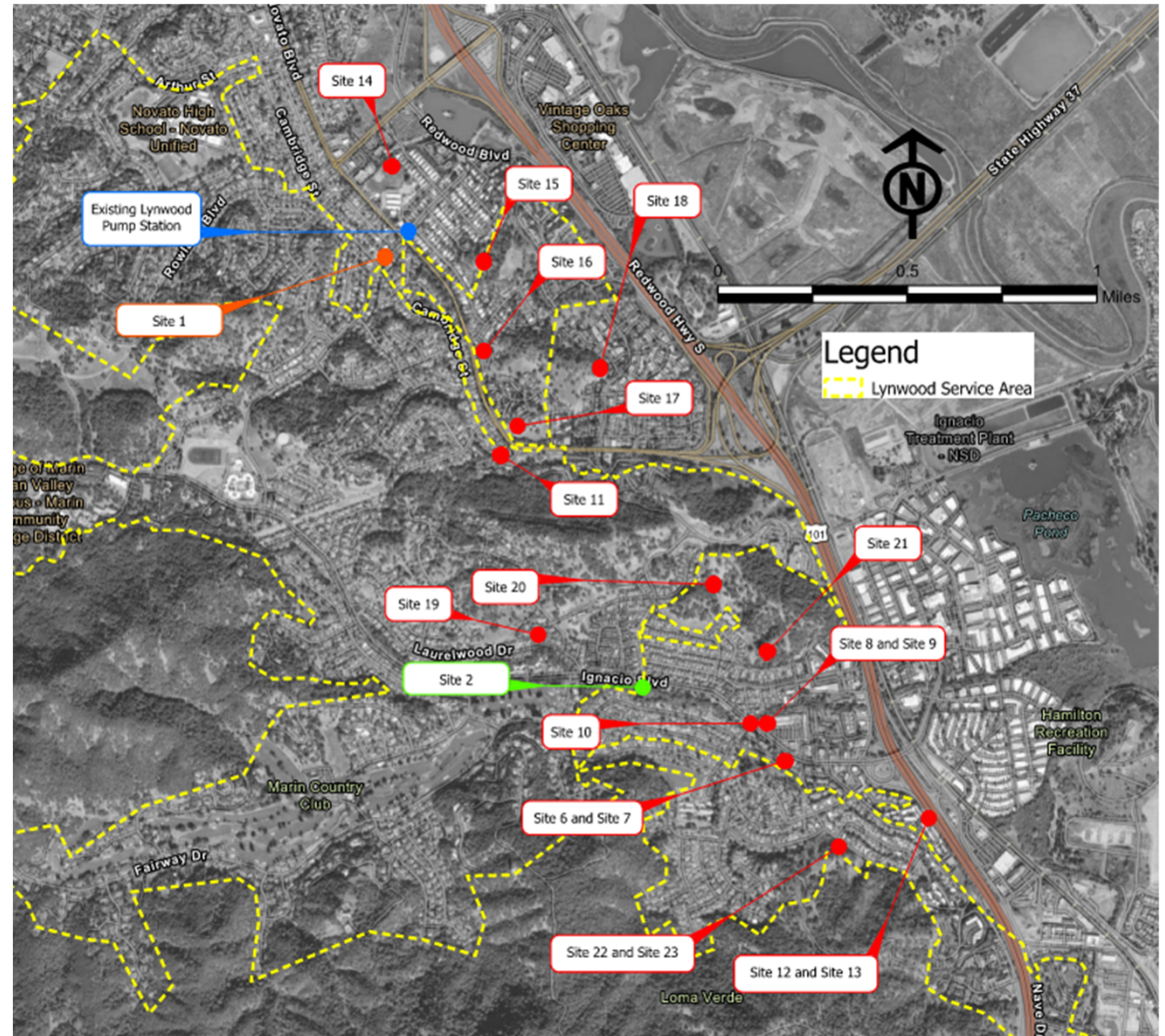
Primary Site 1 and 2



- Site 1: Sunset Parkway
 - Public right of way.
 - Not within 100-year flood plain.
 - Not within anticipated sea level rise.
 - Close to the existing Lynwood Pump Station.
- Site 2: Ignacio Boulevard
 - Public right of way.
 - Not within 100-year flood plain.
 - Not within anticipated sea level rise.
 - Midway between Sunset and Pacheco Valle Tanks

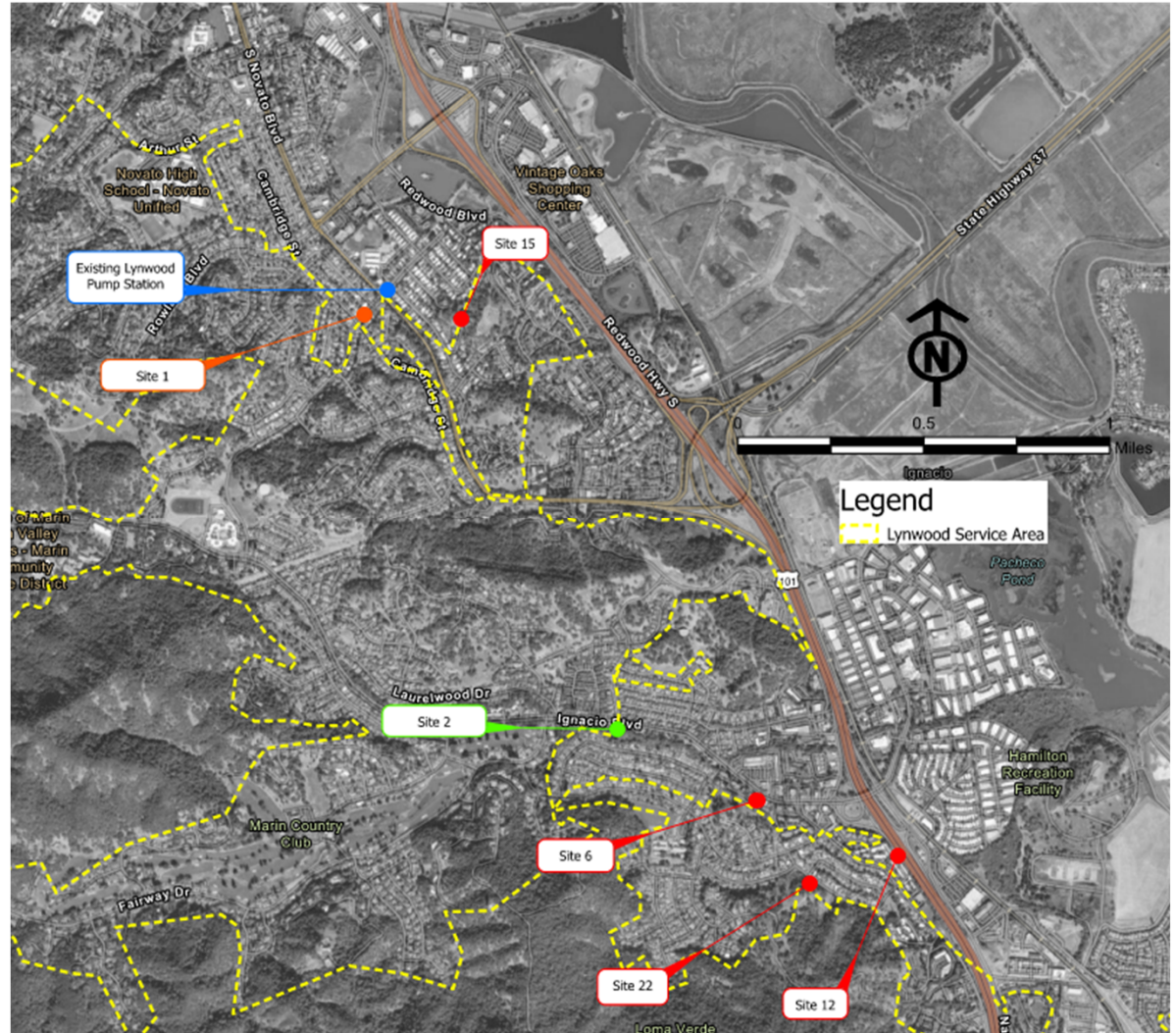
Potential Primary Sites

- Identify potential sites considering:
 - Zone 1 and Zone 2 proximity
 - Surrounding area zoning and use
 - Land ownership
- Consider sites throughout Lynwood Service Area



Top Four Potential Primary Site

- All sites outside of SFHA
- Mix of parcel ownership
- Hydraulic performance similar to or better than either Site 1 or Site 2

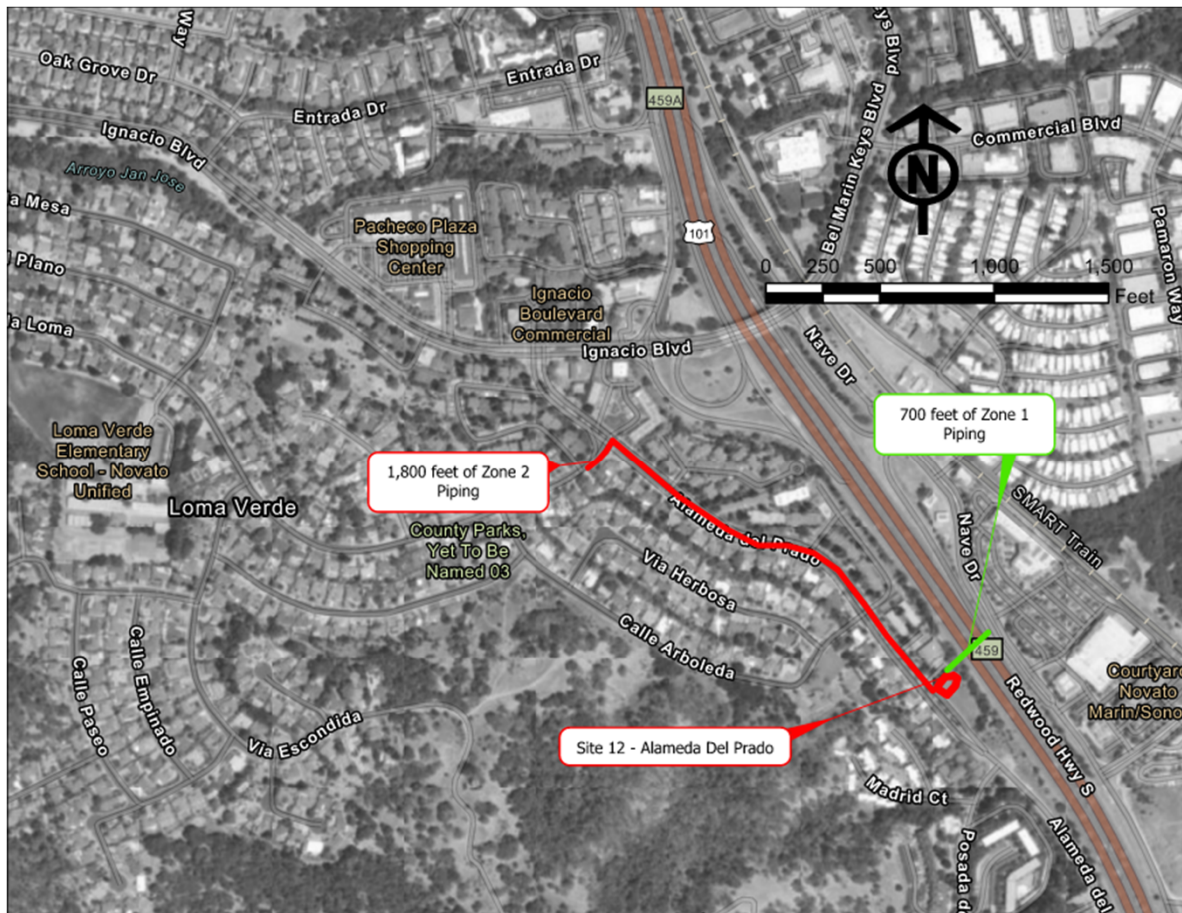


Site 6 – Ignacio Hills



- Private Property
- Not within Flood Plain
- Not within sea level rise
- Will improve Pacheco Valle Tank flows

Site 12 – Alameda Del Prado



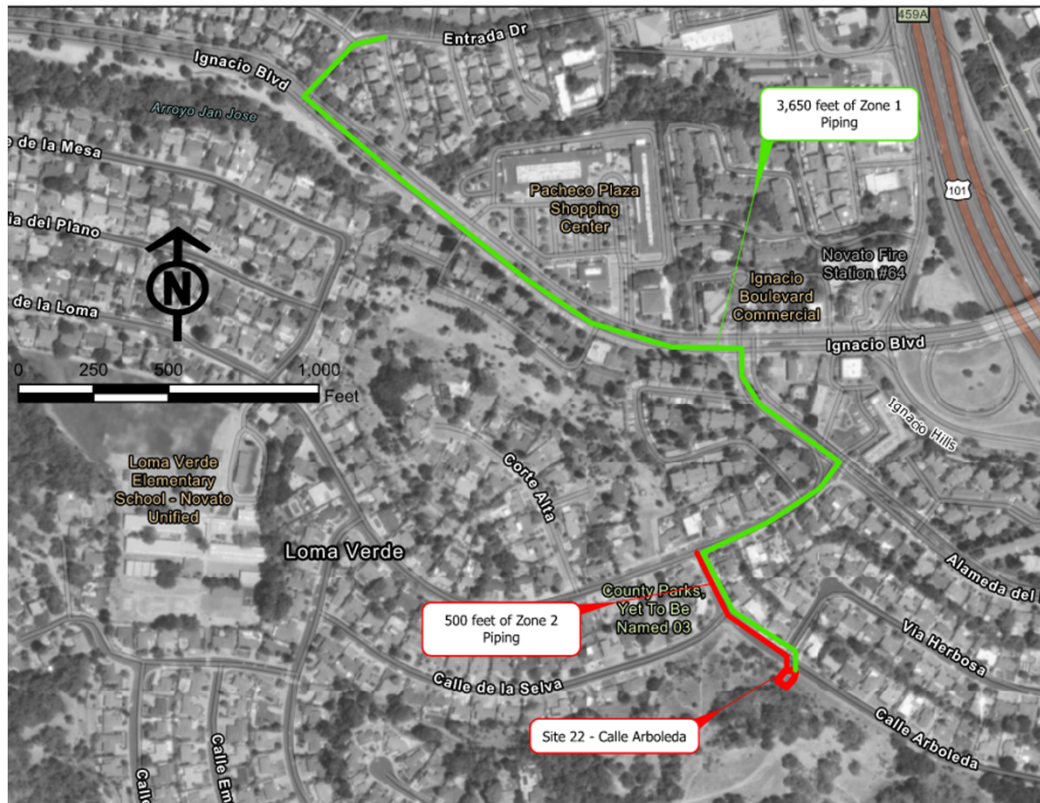
- Private Property
- Not within Flood Plain
- Not within sea level rise
- Will greatly improve Pacheco Valle Tank fill rate

Site 15 – Lynwood Tanks



- NMWD Owned Property
- Not within Flood Plain
- Not within sea level rise
- No change to Pacheco Valle fill rate.

Site 22 – Calle Arboleda



- Publicly Owned (County)
- Not within Flood Plain
- Not within sea level rise
- Will improve Pacheco Valle Tank fill rate

Site Comparison Matrix (One Pump Station)

Evaluation Criteria	Retrofit Existing	Alt A (Site 1)	Alt B (Site 2)	Alt F (Site 6)	Alt G (Site 12)	Alt H (Site 15)	Alt I (Site 22)
Replaces Aging Infrastructure	X	X	X	X	X	X	X
Meet Future Demand	X	X	X	X	X	X	X
Improvements Safety and Maintenance Access		X	X	X	X	X	X
Improves Pacheco Valle Tank Fill Operations			X	X	X		X
Provides Opportunity to Improve Zone 1 Storage Tank Operations					X		
Provides System Redundancy							
Project Capital Cost (millions) ^{(1) (2)}		4.1-5.0	6.0-7.3	8.3-10.2	6.3-7.6	4.9-6.0	6.9-8.4
Lifetime Operational Cost (millions)		9.8-12.0	11.1-13.6	13.4-16.4	11.4-13.9	10.6-13.0	12.0-14.7

1. Per community comment any alternative will need increased landscaping and architectural treatments. Price does not reflect this increase.
2. Land acquisition costs are not included.

Site Comparison Matrix (Two Pump Stations)

Evaluation Criteria	Alt C (Sites 2 & 3)	Alt D (Sites 2 & 4)	Alt E (Sites 2 & 5)	Alt J (Site 6 & 4)	Alt K (Site 12 & 4)	Alt L (Site 15 & 4)	Alt M (Site 22 & 4)
Replaces Aging Infrastructure	X	X	X	X	X	X	X
Meet Future Demand	X	X	X	X	X	X	X
Improvements Safety and Maintenance Access	X	X	X	X	X	X	X
Improves Pacheco Valle Tank Fill Operations	X	X	X	X	X	X	X
Provides Opportunity to Improve Zone 1 Storage Tank Operations	X	X	X	X	X	X	X
Provides System Redundancy	X	X	X	X	X	X	X
Project Capital Cost (millions) ^{(1) (2)}	10.0-12.3	8.7-10.6	8.8-10.8	11.1-13.6	9.0-11.0	7.7-9.4	9.7-11.8
Lifetime Operational Cost (millions)	16.6-20.3	15.3-18.6	15.4-18.8	20.5-25.0	18.4-22.5	17.1-20.9	19.1-23.3

1. Per community comment any alternative will need increased landscaping and architectural treatments. Price does not reflect this increase.
2. Land acquisition costs are not included.

Q&A

13

DRAFT* MINUTES OF THE SPECIAL WATER ADVISORY COMMITTEE
AND
TECHNICAL ADVISORY COMMITTEE
Utilities Field Operations Training Center
35 Stony Point Road, Santa Rosa, CA
April 8, 2024

ITEM #13

Attendees: Mike Healy, City of Petaluma
Oriana Hart, City of Petaluma
Matt Fullner, Valley of The Moon Water District
Jon Foreman, Valley of the Moon Water District
Jennifer Burke, City of Santa Rosa
Natalie Rogers, City of Santa Rosa
Eric Miller, North Marin Water District
Jack Baker, North Marin Water District
Brad Sherwood, Sonoma County Water Agency (SCWA or Sonoma Water)
Laura Sparks, City of Cotati
Craig Scott, City of Cotati
Ron Wellander, City of Sonoma
Mike Berger, City of Sonoma
Cristina Goulart, Town of Windsor
Emily Sanborn, City of Rohnert Park
Vanessa Garrett, City of Rohnert Park
Jed Smith, Marin Municipal Water District
Lucy Croy, Marin Municipal Water District
Michelle Montoya, City of Santa Rosa

Staff/Alternates: Lynne Rosselli, SCWA
Paul Piazza, SCWA
Andrea Rodriguez, SCWA
Kent Gylfe, SCWA
Jake Spaulding, SCWA
Chris Delaney, SCWA
David Manning, SCWA
Larry Russell, Marin Municipal Water District
Shannon Cotulla, Town of Windsor
Peter Martin, City of Santa Rosa
Claire Nordlie, City of Santa Rosa
Stacie Hatfield, City of Santa Rosa

Public: Brenda Adelman, Russian River Watershed Protection
Dick Dowd, Sonoma County Alliance

1. Check In
Chair Healy called the meeting to order at 9:02 a.m.
2. Public Comment
Jed Smith, Marin Municipal Water District, shared that Marin Municipal Water District has recently finished their five-year strategic plan. The objectives included fiscal responsibility, watershed stewardship including working on their first recreation plan since 2004, core operations, water supply storage and conveyance feasibility studies, and organizational structure.
3. Recap from the February 5, 2024 WAC/TAC Meeting and Approval of Minutes

Moved by Jack Baker, North Marin Water District, seconded by Laura Sparks, City of Cotati. Unanimously approved.

No public comment.

4. Recap from the March 4, 2024 TAC Meeting and Approval of Minutes (TAC)
Moved by Matt Fullner, Valley of the Moon Water District, seconded by Vanessa Garrett, City of Rohnert Park. Unanimously approved, with City of Cotati abstaining.
No public comment.

5. Water Supply Coordination Council – March 18, 2024
The Water Supply Coordination Council met on March 18 and finalized today's agenda.
No public comment.

6. Presentation of Draft FY2024-25 SCWA Water Transmission System Budget and Rates
Jake Spaulding, SCWA, presented.
The water transmission system has three main aqueducts. Each contractor receives water from one of the aqueducts and pays the rate that is associated with that aqueduct. The water transmission system budget is made up of operations and maintenance, four subfunds, five capital funds, and debt service funds. Some of the challenges being faced include that the rate must be a fully volumetric rate, low water deliveries, aging infrastructure, maintenance needs, increased repairs, and natural hazard vulnerabilities. The proposed Capital budget for FY 24-25 includes \$8.46 million for hazard mitigation projects to reduce risk, \$7.20 million for other capital projects to increase resiliency; for operations and maintenance the proposed FY 24-25 budget is \$45.41 million to protect, improve, and maintain system reliability; and \$7.53 million for Biological Opinion, water supply planning, and water conservation. The total budget amount for 2024-25 is \$74.43 million, and is offset with \$18.13 million from grants, use of fund balance, and bond proceeds. In comparison to fiscal 2023-24, the 2024-25 budget is \$6.14 million more due to the operations and maintenance and capital needs. Rates are calculated by taking the proposed budget and dividing it by the estimated amount of water sold, which is determined by the Restructured Agreement to be either the lesser of the last three year's annual average water deliveries or the last twelve months of actual deliveries. Three years of historic droughts and state mandated water conservation lead to the lowest water deliveries in 30 years, which put significant pressure on the budget. Efforts made to reduce the budget and rate included deferring non-routine maintenance (\$8.9 million), using the 3-year annual average rather than the 12-month actuals, and increasing the use of grants, bond proceeds, and fund balance (\$18.13 million). This resulted in the projected rate increase dropping from 14.57% to 9.88%, with the total cost per gallon coming to \$0.004. The proposed rate for fiscal year 2024-25 for Santa Rosa will increase by 9.88%, Petaluma will increase by 9.98%, and Sonoma will increase by 8.14%. Sonoma County Water Agency still has the lowest water rates per acre-foot in the Bay Area. Next steps for the budget and rate adoption include the Water Advisory Committee consideration today and the adoption by Sonoma Water's Board of Directors on April 16.
No public comment

7. Recommendation to Sonoma Water Board of Directors - FY2024-25 SCWA Water Transmission System Budget and Rates
Moved by Natalie Rogers, City of Santa Rosa, seconded by Jon Foreman, Valley of the Moon Water District. Unanimously approved, with Town of Windsor absent.
No public comment.

8. Water Supply Conditions and Temporary Urgency Change Order
Chris Delaney, SCWA, presented.
It has been a wet year for water supply, with a number of large storms that have filled the reservoirs. Lake Mendocino is currently at 98,600 acre-ft, putting it at the top of the

Forecast Informed Reservoir Operations (FIRO) pool and at 10,000 acre-ft above the top of the conservation pool. Lake Sonoma is currently at 265,000 acre-ft, which is just above the minor deviation pool, and is 20,000 acre-ft above the top of the conservation pool. Regarding the Potter Valley Project, PG&E has filed a variance with the Federal Energy Regulatory Commission (FERC) to modify this summer's operations. This variance will reduce transfers from the Eel River into the Russian River by between 65 – 85 cubic feet per second (csf) compared to the typical summertime transfers. There will be significant reduction of water into Lake Mendocino as a result of this variance. Sonoma Water is currently operating under a Temporary Urgency Change Order from the State Board, which defines the storage threshold in Lake Mendocino for setting our hydrologic conditions. Normally Sonoma Water operates under decision 1610, which determines the water supply condition primarily based on inflows into Lake Pillsbury. With this Order, Sonoma Water is transferring that determination to be based on storage in Lake Mendocino. As of April 1, based on those storage thresholds, currently in a normal supply condition. This means the upper Russian River has a minimum flow requirement of 185 csf and 125 csf in the lower Russian River. Water conditions will next be assessed on April 16th and will likely stay in normal supply conditions.

Jennifer Burke, City of Santa Rosa, asked about the status of the next temporary urgency change petition, when is it scheduled to be filed, and will it be strictly Biological Opinion compliance.

Chris Delaney, SCWA, answered they will be filing very shortly. Since storage levels are high at both reservoirs, the plan is to file based on the Biological Opinion requirements.

No public comment.

9. Eel Russian Project Authority and Potter Valley Project Update

David Manning, SCWA, presented.

The Potter Valley project is comprised of Scott Dam, Lake Pillsbury, Cape Horn Dam, and Van Arsdale reservoir. There are several alternatives being considered to continue the diversion of water from the Eel River to the Russian River, including Ranney collector system, upstream diversion canal, fish passage improvements at Cape Horn Dam, control section and pump station (Alternative E-2), and roughened channel with gravity supply (Alternative E-3). The alternatives evaluation process included 10 meetings held from July 2023 to March 2024 that included biologists, engineers, and water managers from the California Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Trout, Round Valley Indian Tribes, Mendocino Inland Water and Power Commission, Sonoma Water, McMillen Inc., and Stillwater Sciences. There were 38 evaluation criteria which included Biological Feasibility for Upstream Passage, Biological Feasibility for Downstream Passage, Resiliency and Reliability, Constructability, and Cost. The scoring results were summarized, and the pump station had the advantage for fish passage, sedimentation, construction costs, and constructability and implementation. The roughened channel had the advantage for the operations and maintenance costs. The pump station and roughened channel were equal in the non-differentiating factors which included geomorphic stability for water supply, low and high flow diversion, and challenges integrating with PG&E dam removal alternatives. Overall, the recommended project is Alternative E-2 – Pump Station as it has a lower risk for water supply, has superior fish passage, lower design and construction risk, better upstream and downstream passage, and has a better ability to design around potential reliability issues. Next steps include finalizing the Diversion Facility Assessment Report under the California Department of Water Resources (DWR) grant, taking the preferred diversion facility alternative to a 60% design with a \$2 million grant from U.S. Bureau of Reclamation, grant agreement is anticipated by May 2024, with an RFP for consultant services in Summer 2024. The Technical Advisory Group (TAG) will continue to meet to inform on design and operations.

Larry Russell, Director of Marin Municipal Water District, asked about mercury and if the pump station will have an Archimedes screw.

David Manning, SCWA, answered that the Archimedes screw will be removed, and with the removal of the dam, the methyl mercury will not be a concern. As for elemental mercury, it is found in all sediment within the region.

10. Items for Next Agenda (next combined WAC/TAC meeting is May 6, 2024)

None.

No public comment.

11. Check Out

Chair Healy adjourned the meeting at 9:53 a.m.

14

North Bay Watershed Association

Board Meeting - Agenda

July 12, 2024 | 9:30 – 11:30 a.m.

MEETING AND TOUR WILL BE HELD AT THE
Napa Sanitation District
1515 Soscol Ferry Road, Napa, CA 94558

For those wishing to attend virtually

Join Zoom Meeting:

<https://us02web.zoom.us/j/81630673971?pwd=dm94TXJCRWMyWFBLc3U5V2pTSmNRZz09>

Webinar ID: 816 3067 3971 Password: 216460

Agenda and materials will be available the day of the meeting at: www.nbwatershed.org

AGENDA

Time	Agenda Item	Proposed Action
9:30	<p>Welcome and Call to Order – Roll Call and Introductions</p> <p><i>Jean Mariani, Chair</i></p>	<i>N/A</i>
9:35	<p>General Public Comments</p> <p>This time is reserved for the public to address the Committee about matters NOT on the agenda and within the jurisdiction of the Committee.</p>	<i>N/A</i>
9:40	<p>Agenda and Past Meeting Minutes Review</p> <p><i>Jean Mariani, Chair</i></p> <p>Treasure's Reports</p> <p><i>Jean Mariani, Chair</i></p>	<i>Approve/ Review</i>
9:45	<p>Executive Director Report</p> <p><i>Andy Rodgers, Executive Director</i></p> <p>Andy will provide updates on activities since the June 7 Board meeting, including active projects, recent meetings, regional programs and initiatives, communications, and committees.</p> <p>Andy will outline ideas for next and future Board meeting topics and solicit feedback.</p>	<i>Presentation</i>

10:15	<p>Guest Presentation — Direct Potable Reuse (DPR) Study Overview</p> <p><i>Chris Francis, Operations Director, Napa Sanitation District</i></p> <p>Chris will present Napa’s recently completed advanced water treatment feasibility study which analyzed options and costs for implementing a direct potable reuse (DPR) project in Napa .</p>	<i>ED updates, Board questions, and input</i>
10:45	<p>Napa Sanitation District – Tour of the Linear Generator (Tour will not be virtual)</p> <p>General Manager Andrew Damron and staff will provide participants an opportunity to view and learn about NapaSan’s anaerobic digester, biogas production, onsite electricity production, and new Mainspring Linear Generator.</p> <p>For the tour, please RSVP, wear walking shoes and bring a water bottle.</p>	<i>N/A</i>
11:30	<p>Announcements/Adjourn</p> <p>Next Board Meeting: September 6</p>	<i>N/A</i>

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DISBURSEMENTS - DATED JUNE 20, 2024

Date Prepared 6/17/24

The following demands made against the District are listed for approval and authorization for payment in accordance with Section 31302 of the California Water Code, being a part of the California Water District Law:

Seq	Payable To	For	Amount
1	Able Tire & Brake	Tires (12) ('18 Ford Transit Connect-\$733, '19 F150-\$1,715, '12 F250-\$1,208)	\$3,656.71
2	Alpha Analytical Labs	Lab Testing	1,353.00
3	Aqua Equip Technologies, Inc	Tube Setters (1.5) (STP Primary Filter Basin Improvements)	12,620.00
4		Retiree Exp Reimb (June Health Ins)	1,417.18
5	Athens Administrators	May Indemnity Review Fee	105.00
6	Bank of Marin	Bank of Marin Loan Principal & Interest (Pymt# 152 of 240) Aqueduct Energy Efficiency Project	46,066.67
7	Bay Alarm Company	Quarterly Fire Alarm Monitoring Fee (7/1/24-9/30/24)	338.19
8	Bobcat of Santa Rosa	Replacement Compact Excavator	108,526.59
9	Boucher Law, PC	January Through May Labor & Law Matters	34,252.28
10	Buck's Saw Service	Chain Saw Parts	111.72
11		Retiree Exp Reimb (June Health Ins)	548.98
12		Retiree Exp Reimb (June Health Ins)	548.98
13	Coast Counties Peterbilt	3" Elbow	58.75
14	Comcast	June Internet (Buck Institute)	359.81
15	Cummings Trucking	Sand (\$1,371) (47 yds) & Rock (\$3,171) (174 yds) Deliveries	4,542.40
16	Freyer & Laureta, Inc.	Prog Pymt#2: Consulting for 2024 Master Plan Update (\$1,410) (Balance Remaining on Contract \$28,535), Prog Pymt#18 (\$17,293) & Prog Pymt#19 (\$4,165) Engineering & Design Services for Lynwood Pump Station (Balance Remaining on Contract \$72,409)	22,867.79

Seq	Payable To	For	Amount
17	Friedman's Home Improvement	Miscellaneous Maintenance Tools & Supplies	105.41
18	Frontier Communications	June Leased Lines	1,685.56
19	Frontier Communications	June Internet (STP)	640.00
20	Arthur J. Gallagher Risk Management Services LLC	Extension (09/2024-03/2025) of Environmental-Railroad Liability Insurance-SMART	3,252.67
21	Geokon Inc.	Correction on Sales Tax for Piezometers (STP)	80.89
22	Goodpaster, Stacie	Exp Reimb: Documentation & Traceability of Records Class (5/7/24)	110.00
23	Grainger	Safety Signs (2)	49.82
24	Idexx Laboratories	Colilert Media for Recycled Water Testing (Lab)	3,642.05
25	InfoSend, Inc.	May Processing Fee for Water Bills (\$1,363), Postage (\$4,428) & Monthly Support Fee (\$1,067)	6,857.99
26		Retiree Exp Reimb (June Health Ins)	548.98
27	Kiosk Creative LLC	May Marketing Communication & Outreach Services (Balance Remaining on Contract \$5,582)	7,053.71
28		Retiree Exp Reimb (June Health Ins)	548.98
29		Retiree Exp Reimb (June Health Ins)	1,417.18
30	Lemos, James	Exp Reimb: Safety Boots	267.64
31	Maggiora & Ghilotti	Prog Pymt#1: Crest Pump Station Project (Balance Remaining on Contract \$1,240,747)	53,839.72
32		Retiree Exp Reimb (June Health Ins)	548.98
33	Marin Independent Journal	Display Ad: Rate & Budget Review (5/3 & 5/31/24)	500.00
34	Marin County Ford	Service Parts ('18 Ford Cargo Van, '22 Ford Ranger, '12 F250-\$923 &'24 F250)	1,272.31
35	County of Marin	Encroachment Permits (230 Corte Del Cerro, 31 Cavalla Cay, 169 Montego Key, Novato)	2,208.60
36	Marin, County of	Annual Septic Permit Fee (25 Giacomini Rd)	505.00

Seq	Payable To	For	Amount
37	McLellan Co, WK	Miscellaneous Paving	21,061.52
38	McDonald Pools Inc.	Refund Security Deposit on Hydrant Meter Less Final Bill	549.68
39	Morozumi, Leila	Novato "Cash for Grass" Rebate Program	800.00
40	Noll & Tam Architects	Prog Pymt#36: Architectural & Engineering Services for Admin Headquarters Upgrade (Balance Remaining on Contract \$154,672)	24,040.00
41	Novato, City of	Encroachment Permit Fee (1 Vineyard Ct-Novato)	499.70
42	ODP Business Solutions, LLC	Miscellaneous Office Supplies	123.56
43	Pace Supply	Couplings (5)	2,711.42
44	Pacific Gas & Electric Co	Power: Buildings/Yard (\$3,484), Other (\$238), Pumping (\$52,219), Rect/Controls (\$629) & Treatment (\$153)	56,724.18
45	Point Reyes Light	Legal Notice-Oceana Marin Rate Increase Public Hearing 5/30 & 6/6/24	162.00
46	Quadiant, Inc.	July Postal Meter Rental	143.09
47		Retiree Exp Reimb (June Health Ins)	548.98
48	Soiland Co., Inc.	Rock (79 yds) (\$2,480) & Asphalt Recycling (8 yds)	2,779.62
49	Sonoma County Water Agency	May Contract Water	778,723.73
50	Sonoma-Marin Arborists Inc	Mowing Services (Pt. Reyes Treatment Plant & Coast Guard Wells)	4,845.00
51	Sonoma County Tree Experts Inc.	Tree Removal (Yard)	3,220.00
52	Township Building Services	May Janitorial Services (Yard & STP)	1,579.21
53	Van Bebber Bros	Round Tubes (3)	205.75
54	Carlos Ventura Cux	Refund Excess Advance Over Actual Job Cost	976.82
55	VWR International LLC	pH Test Strip & Safety Gloves (Lab)	172.35
56	Waste Management	Waste Disposal	84.67

DISBURSEMENTS - DATED JUNE 27, 2024

Date Prepared 6/24/24

The following demands made against the District are listed for approval and authorization for payment in accordance with Section 31302 of the California Water Code, being a part of the California Water District Law:

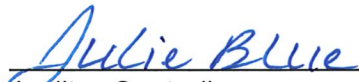
Seq	Payable To	For	Amount
P/R*	Employees	Net Payroll PPE 6/15/24	\$188,241.53
90715*	Internal Revenue Service	Federal & FICA Taxes PPE 6/15/24	84,436.73
90716*	State of California	State Taxes & SDI PPE 6/15/24	19,121.34
90717*	CalPERS	Pension Contribution PPE 6/15/24	53,386.38
EFT*	US Bank	May Bank Analysis Charge (Lockbox \$912 & Other \$411 Less Interest \$128)	1,195.56
1	100 Wood Hollow Drive Owner	July 2024 Rent for Wood Hollow	37,624.85
2	Alameda Electrical Distributors	Generator Cord (100')	535.95
3	Alpha Analytical Labs	Lab Testing	3,728.00
4	Argonaut Constructors Inc.	Prog Pymt#1: Oceana Marin Rehabilitation Project (Balance Remaining on Contract \$1,480,900)	14,250.00
5	AT&T	Leased Lines	63.14
6	Bold & Polisner	May Legal Fees-General	20,812.50
7	Boyden, Melissa	Refund Overpayment on Closed Account	88.44
8	Brady Industries	Safety Gloves (48)	170.64
9	California Water Service	June Water Service	35.28
10	Charles Custom Welding	Welding Services (STP Primary Filter Basin Improvements)	9,375.00
11	Consolidated CM	Prog Pymt#38: Construction Management Services for Admin Building Renovation (Balance Remaining on Contract \$231,199)	54,171.85

Seq	Payable To	For	Amount
12	Core Utilities, Inc	Consulting Services: May IT Support (\$6,000), CMORE Programming for PRTP (\$3,550), SCADA/PLC Support (\$575) & Conversion of Daily Production Report to Portable Document	10,250.00
13	Core & Main	Elbows (11), Nipples (13), Unions (17) (\$793), Flange Tee (\$911), Victaulic Coupling (6) (\$1,296), Bell Restrainers (4) (\$846) & Meter Boxes (42) (\$1,777)	5,860.86
14	Diesel Direct West	Diesel (516 gal) (\$2,610) & Gasoline (421 gal) (\$1,786)	4,396.60
15	Ditch Witch West	Nozzle ('19 Ditch Witch)	326.12
16	Electrical Equipment Co	Meter Main for Bahia Pump Station	575.04
17	Environmental Science Assoc	Prog Pymt#18: San Mateo Tank Permitting Assistance (Balance Remaining on Contract \$23,643)	200.00
18	Fasano, C L	Refund Overpayment on Closed Account	76.47
19	Ferguson Waterworks	2" Meters (8)	6,525.19
20	Forevergreen Landscape and Maintenance	Mowing Services (San Marin Pump Station & Lynwood Tank Site)	6,050.00
21	Forslind, Tim	Refund Security Deposit on Hydrant Meter Less Final Bill	758.84
22	GHD Inc.	Prog Pymt#13: GIS Conversion to ESRI & Mapping Support (Balance Remaining on Contract \$4,552)	2,513.69
23	Grainger	Bed Side Tool Box ('18 Dodge Ram) (\$679), Quick Connect Couplers & Plugs (\$394), Marking Tape (2) (2,000ft) (\$317), Pressure Washer Hoses (2) (\$313), Garden Hose Adapters (30) (\$665) & Miscellaneous Maintenance Tools & Supplies	4,708.41
24	H & R Plumbing and Drain Cleaning, Inc.	Rehabilitation of Manhole Lining at Oceana Marin	32,275.00
25	Harrington Industrial Plastics	Tubing (500') (O.M.)	407.56
26	Ixom Watercare Inc.	Replacement Intake Plate for SolarBee (STP)	507.80


Seq	Payable To	For	Amount
27	Kiosk Creative LLC	Interim Strategic Plan (Balance Remaining on Contract \$3,240)	9,880.00
28	Lincoln Life Employer Serv	Deferred Compensation 6/15/24 PPE	8,898.74
29	Maffei, Craig	Novato "Washer Rebate" Program	75.00
30	County of Marin	Encroachment Permit (225 Caribe Isle-Novato)	736.20
31	McMaster-Carr Supply Co	4" Suction Hoses (30)	914.29
32	Miller Pacific Engineering	Prog Pymt#14-Geotechnical Services - Backfill Tests (Balance Remaining on as needed Contract \$31,428)	894.50
33	Nationwide Retirement Solution	Deferred Compensation 6/15/24 PPE	7,307.37
34	ODP Business Solutions, LLC	Miscellaneous Office Supplies	189.89
35	Pace Supply	Couplings (53) (\$2,084), Flange Adaptors (2) (\$1,946), Hex Nuts (350) (\$428), Elbows (2) (\$574), Gaskets (34) (\$322), Nipples (57) (\$1,022), Pipe (442') (\$3,083), Plugs (6), Reducer (\$510), Spools (2) (\$991), Valves (12) (\$5,204) & Scotchkote Quart Kits (4) (\$1,170)	18,781.60
36	Point Reyes Prop Mgmt Assn	June HOA Fees (25 Giacomini Rd)	75.05
37	RH & Sons Water Services	Backflow Testing (42)	2,730.00
38	RoadSafe Traffic Systems, Inc.	Marking Chalk (3) & Striping Paint (2)	445.35
39	Rubio, Veronica	Refund Overpayment on Closed Account	29.10
40	Scott Technology Group	June Monthly Maintenance on Engineering & Admin Copiers & Overage Charge	432.66
41	Service Station Systems	Service on Fuel Tanks (Yard)	1,685.14
42	SMART	Flagging Services on 4/10/24 RW Extension	1,491.00
43	Soiland Co., Inc.	Rock (48 yds) (\$1,504) & Asphalt Recycling (10 yds)	1,887.72
44	Sonoma County Water Agency	Conservation Support Program (1/1/24-3/31/24)	283.69
45	Sonoma-Marin Arborists Inc	Tree Stump Grinding Services (Railroad Avenue-South)	2,460.00

Seq	Payable To	For	Amount
46	SPG Solar Facility XII, LLC	May Energy Delivered Under Solar Services Agreement	17,408.46
47	TSDK Properties LLC	Refund Overpayment on Closed Account	205.79
48	USA BlueBook	Manhole Hooks (2)	227.04
49	Vulcan Materials Company	Pea & Sand (31 yds)	2,046.12
50	West Coast Energy Systems LLC	Service on Generators (Oceana Marin-\$535 & STP-\$535)	1,070.00
51	ZORO	Magnetic Motor Starter (\$363), Wiring Device, Hard Hat Sweatbands (6), Battery Back-up Systems (2), Cordless Impact Wrenches (2) (\$649) & Garden Hose Shut Offs (24) (\$495)	1,840.04
		TOTAL DISBURSEMENTS	<u><u>\$644,663.52</u></u>

The foregoing payroll and accounts payable vouchers totaling \$644,663.52 are hereby approved and authorized for payment.


06/25/24

 Auditor-Controller Date


6/25/24

 General Manager Date

DISBURSEMENTS - DATED JULY 3, 2024

Date Prepared 7/1/24


The following demands made against the District are listed for approval and authorization for payment in accordance with Section 31302 of the California Water Code, being a part of the California Water District Law:


Seq	Payable To	For	Amount
90718*	Amazon Invoices	Computer Supplies (\$675), Office Supplies, Service Award, Kitchen & Vehicle Supplies	\$1,161.43
90719	US Bank Card	Indeed (Temp Utility Worker) (\$590), Starlink Mobile Internet for PRTP, Zoom for Board Meetings, AT&T-Internet (PRTP & Gallagher Well #2), GoDaddy-SSL Renewals, Microsoft Monthly Subscriptions (4) (\$666), Postal Meter Ink Cartridge, Car Wash for District Vehicle (\$350), Wall Mount Spray Bottle Holder, Dual Voltage Magnet Coils (2), Computer Supplies & Service on Lab Refrigerator (\$328)	3,439.35
1	ACC Environmental Consultants	Prog Pymt#3: Update to Risk Management Program for STP (Balance Remaining on Contract \$18,173)	1,926.96
2	American Family Life Ins	June 2024 Employee Paid Benefit	4,070.55
3	Bramante, Dominic	Refund Overpayment on Closed Account	400.00
4	Caltest Analytical Laboratory	Lab Testing (Oceana Marin)	115.30
5	Chase Receivables	Collection Fees	237.87
6	Clark, Robert E.	Exp Reimb: West Marin Rotary Dues (7/23-6/24)	380.00
7	Comcast	June & July Internet (100 Wood Hollow)	739.62
8	Core & Main	Bushings (3) & Flat Washers (185)	170.59
9	ESRI Environmental Systems Research Institute, Inc	Arc Geographic Information System Software Suite (Engineering)	4,960.68
10	D.L. Falk Construction, Inc.	Prog Pymt#23: Admin & Lab Building Upgrades (Balance Remaining on Contract \$1,586,131)	342,061.29
11	D.L. Falk Construction Escrow Acct	5% Retainage-Pymt#23: Admin Bldg & Laboratory Upgrade	18,003.22

Seq	Payable To	For	Amount
12	Ferguson Waterworks	5/8" Meter Registers (120) - AMI Upgrade for Fire Services	25,545.24
13	Grainger	Pressure Gauge (\$418) (STP) & Miscellaneous Maintenance Tools & Supplies	1,677.91
14	Home Depot	Rodent Repellent Spray & Portable Air Conditioner (\$429)	490.64
15	Intellaprint Systems	Ink for Engineering Plotter	310.88
16	Kaiser Foundation Health Plan	Pre-Employment & Department of Transportation Exams	180.00
17	Kane, Shawn	Exp Reimb: Snacks for Inventory Day (6/28/24)	89.98
18	Marin County Tax Collector	FY25 Possessory Interest Tax Bill (25 Giacomini Rd)	903.33
19	Marin General Services Authority	Marin Map Annual Membership FY24/25	10,000.00
20	McLellan Co, WK	Misc Paving	5,951.78
21	Mutual of Omaha	July 2024 Group Life /ADD Insurance Premium & Vision	2,207.46
22	National Safety Council	Membership Renewal (Clyde) (7/24-6/25)	549.00
23	NEXGEN	Asset Management Annual Subscription (7/1/24-6/30/25)	28,000.00
24	Novato, City of	Encroachment Permit (662 Olive Avenue)	499.70
25	Pace Supply	Couplings (32) (\$3,319), Meter Lid Lifters (3), Hex Nuts (150), Cap, Elbows (10), Cadweld Shots (30) & Nipples (10)	4,008.36
26	Pacific Coast Cutters	Asphalt Cutting Service (Arthur St Main Relocation Project)	847.70
27	POA of Novato Heights	2024 Property Owners' Association Dues (1/24-12/24) (Budget \$400)	400.00
28	Redwood Health Services, Inc.	June 2024 Dental Claims & Fees Expense	5,237.67
29	Sage Software Inc	Accounting Software Fixed Assets (7/24-7/25) (\$1,401) (Budget \$1,300) & Annual Software Subscription Renewal (7/24-7/25) (\$10,696) (Budget \$11,000)	12,096.55

Seq	Payable To	For	Amount
30	Sigma-Aldrich Inc.	Coli Dehydrated Media (Lab)	135.27
31	Six Robblees' Inc.	Brake Hose ('19 Mobile Generator)	98.72
32	SWRCB Accounting Office	Lab Certification (Environmental Accreditation Program) (Budget \$5,525)	5,525.00
33	Thomas Scientific	Sulfuric Acid, Bio Indicator Strips (25), Safety Gloves (2 cases), Lauryl Tryptose Broth (2), Chlorine Reagent Powder (2,000), Brilliant Green Bile Broth (2) & Medium (Lab)	890.97
34	VWR International LLC	Phosphorus Buffer, Steam Integrators (500), Chlorine Water Test Strips (50), Vaporline Integrators (250) & Calcium Standard (Lab)	462.92
35	Waste Management	Waste Disposal	204.27
36	ZORO	Shovels (12) (\$414), Kneeling Pads (6) & Sledge Hammers (2)	730.82
		TOTAL DISBURSEMENTS	<u>\$484,711.03</u>

The foregoing payroll and accounts payable vouchers totaling \$484,711.03 are hereby approved and authorized for payment.


07/01/24
 Auditor-Controller Date


7/2/24
 General Manager Date

DISBURSEMENTS - DATED JULY 11, 2024

Date Prepared 7/8/24


The following demands made against the District are listed for approval and authorization for payment in accordance with Section 31302 of the California Water Code, being a part of the California Water District Law:

Seq	Payable To	For	Amount
P/R*	Employees	Net Payroll PPE 6/30/24	\$194,974.07
90722*	Internal Revenue Service	Federal & FICA Taxes PPE 6/30/24	86,668.06
90723*	State of California	State Taxes & SDI PPE 6/30/24	19,481.54
90724*	CalPERS	Pension Contribution PPE 6/30/24	53,386.38
90720*	CalPERS	July 2024 Health Insurance Premium (Employer \$58,276, Retirees \$12,871 & Employees \$7,884)	79,030.64
90721*	Nationwide Retirement Solution	Deferred Compensation 6/30/24 PPE	7,344.85
1	Aftertec Inc.	Aerial Photography (Office/Yard Refurbish Project & Arthur St Main Relocation)	518.00
2	Alameda Electrical Distributors	Romex Connectors (6), Hex Washer Heads (50) & Miscellaneous Hardware	239.03
3	Alpha Analytical Labs	Lab Testing	106.00
4	Ansari-Jaberi, Tabandeh	Novato "Washer Rebate" Program	75.00
5	AT&T	Telephone, Fax, Leased Lines & Data	532.25
6	Backflow Distributors	Freeze Protective Covers for Backflow Devices (2)	186.14
7	Baywork	Annual Fees FY24-25 (Clyde) (7/24-6/25)	1,500.00
8	Bender & Co Inc, Matthew	Water Codes (Vol 18B & 19)	783.87
9	Blue, Eileen	Exp Reimb: Office Supplies	48.35
10	Borges & Mahoney	Battery Backup Circuit Board for Chlorine Detector @ STP	384.87
11	Bramante, Dominic	Reissue Check-Original Lost in Mail (Refund Overpayment on Closed Account)	538.74


Seq	Payable To	For	Amount
12	Buck Institute for Research on Aging	Monthly Lease for Lab Space @ Buck Institute (7/17/24-9/30/24)	33,960.00
13	Comcast	July Internet (999 Rush Creek Place)	1,567.93
14	Core & Main	Ball Valves (16)	868.00
15	DataTree	June Subscription to Parcel Data Information	100.00
16	DeBarros, Michael	Novato "Water Smart Landscape Efficiency Rebate" Program	65.69
17	Diesel Direct West	Diesel (\$2,634) (540 gal) & Gasoline (\$4,324) (991 gal)	6,957.76
18	Direct Line Inc	June Telephone Answering Services	249.04
19	Susan N. Dove	Exp Reimb: Binders for Facility Maps	66.04
20	Environmental Resource Assoc	Supplies for Annual Performance Testing (Lab)	660.93
21	ESRI Environmental Systems Research Institute, Inc	Arc Geographic Information System Online Editor Subscription (6/28/24-6/27/25)	220.00
22	Fiserv/Bastogne Inc.	Return Payment-Not Our Account	34.75
23	Forevergreen Landscape	Landscaping Services (Trumbull Tank Site)	3,685.00
24	Kathleen Pickens - KP Promo.	Uniform Order (Admin)	177.94
25	Lara, Jessica	Reissue Check-Original Lost in Mail (Novato "Toilet Rebate" Rebate Program)	250.00
26	Lee Cox, Britta	Reissue Check-Original Lost in Mail (Refund Excess Advance Over Actual Job Cost)	923.02
27	Lincoln Life Employer Serv	Deferred Compensation PPE 6/30/24	9,042.53
28	Marin Landscape Materials	Quik Mix (42 bags)	405.57
29	McMaster-Carr Supply Co	Threaded Rod Ceiling Mounts (9) & Suction Hoses (10)	462.68
30	Metrohm USA, Inc.	Carbon Dioxide Absorption Cartridges (2) (Lab)	481.53
31	Moore, Debbie	Novato "Washer Rebate" Program	75.00
32	Neuman, Michael	Novato "Washer Rebate" Program	75.00

Seq	Payable To	For	Amount
33	Novato Builders Supply	Concrete (3 yds) (Railroad/Rose PVC Replacement & Arthur St Main Relocation)	695.46
34	ODP Business Solutions, LLC	Miscellaneous Office Supplies	130.82
35	Pape Machinery Inc.	Service Parts ('19 Mobile Generator)	156.78
36	Brandon Pirinjian	Exp Reimb: Application Fee for D1	31.00
37	Plummer, Charlotte	Novato "Washer Rebate" Program	100.00
38	Sroa, Surinder	Refund Overpayment on Closed Account	11.63
39	Stancato, Patrice	Novato "Washer Rebate" Program	75.00
40	Stenmark, Spencer	Reissue Check-Original Lost in Mail (Refund Excess Advance Over Actual Job Cost)	1,049.00
41	VBS CAL LLC	Inkjet Vellum Paper (36" x 150") (Eng)	108.27
42	Verizon Wireless	June Cellular Charges	1,636.19
43	Vulcan Materials Company	Pea & Sand (16 yds)	1,055.45
44	Wall, Desire	Novato "Washer Rebate" Program	75.00
45	Winzer Corporation	Miscellaneous Hardware	360.40
		TOTAL DISBURSEMENTS	<u>\$511,611.20</u>

The foregoing payroll and accounts payable vouchers totaling \$511,611.20 are hereby approved and authorized for payment.


 Auditor-Controller

07/09/24
 Date


 General Manager

7/9/24
 Date



MEMORANDUM

To: Board of Directors

July 16, 2024

From: Julie Blue, Auditor-Controller *JB*
 Nancy Williamson, Accounting Supervisor *NW*

Subj: Auditor-Controller's Monthly Report of Investments for May 2024
t:\acl\word\invest\24\investment report 0524.doc

RECOMMENDED ACTION: Information

FINANCIAL IMPACT: None

At month end the District's Investment Portfolio had an amortized cost value (i.e., cash balance) of \$29,849,615 and a market value of \$29,704,954. During May the cash balance decreased by \$1,890,772. The market value of securities held decreased \$1,946,946 during the month. The total unrestricted cash balance at month end was \$611,110 and 95% of the Target Reserves are funded.

At May 31, 2024, 75% of the District's Portfolio was invested in California's Local Agency Investment Fund (LAIF), 18% in Time Certificates of Deposit, 4% in the Marin County Treasury, and 3% retained locally for operating purposes. The weighted average maturity of the portfolio was 53 days, compared to 55 days at the end of April. The LAIF interest rate for the month was 4.33%, compared to 4.27% the previous month. The weighted average Portfolio rate was 4.05%, compared to 2.67% for the prior month.

Investment Transactions for the month of May are listed below:

5/1/2023	US Bank	U.S. Treasury	\$10,400,142	Purchase 5.20% Treas due 5/30/24
5/6/2024	American Express Natl B	US Bank	\$246,000	CD Maturity
5/23/2024	LAIF	US Bank	\$300,000	Trsf from LAIF account
5/30/2024	U.S. Treasury	US Bank	\$10,443,000	Treasury bill Matured
5/31/2024	US Bank	LAIF	\$9,000,000	Trsf to LAIF account

ATTACHMENTS:

1. Monthly Report of Investments – May 2024

**NORTH MARIN WATER DISTRICT
AUDITOR-CONTROLLER'S MONTHLY REPORT OF INVESTMENTS
May 31, 2024**

Type	Description	S&P Rating	Purchase Date	Maturity Date	Cost Basis ¹	5/31/2024 Market Value	Yield ²	% of Portfolio
LAIF	State of CA Treasury	AA-	Various	Open	\$22,404,274	\$22,259,613	4.33% ³	75%
Time Certificate of Deposit								
TCD	Enerbank	n/a	9/25/20	9/25/24	249,000	249,000	0.45%	1%
TCD	BMO Harris Bank	n/a	6/10/22	6/10/24	246,000	246,000	2.80%	1%
TCD	GE Credit Union	n/a	6/29/22	6/28/24	249,000	249,000	3.25%	1%
TCD	Beal Bank	n/a	7/13/22	7/10/24	246,000	246,000	3.05%	1%
TCD	Synchrony Bank	n/a	8/5/22	8/5/24	245,000	245,000	3.30%	1%
TCD	Discover Bank	n/a	9/13/22	9/13/24	245,000	245,000	3.40%	1%
TCD	Sharonview Credit Union	n/a	10/17/22	10/17/24	249,000	249,000	4.35%	1%
TCD	Popular Bank	n/a	11/9/22	11/7/24	247,000	247,000	4.75%	1%
TCD	Alabama Credit Union	n/a	11/22/22	11/22/24	248,000	248,000	4.90%	1%
TCD	Community West Credit Union	n/a	12/19/22	12/19/24	249,000	249,000	4.78%	1%
TCD	Austin Telco Fed Credit Union	n/a	1/27/23	1/27/25	248,000	248,000	4.90%	1%
TCD	First Tech Fed Credit Union	n/a	2/17/23	2/18/25	249,000	249,000	4.85%	1%
TCD	Keybank National Assoc	n/a	3/15/23	3/17/25	243,000	243,000	5.00%	1%
TCD	Morgan Stanley Bnk NA	n/a	4/6/23	4/7/25	244,000	244,000	4.90%	1%
TCD	Morgan Stanley Private Bnk	n/a	4/6/23	4/7/25	244,000	244,000	4.90%	1%
TCD	Raiz Federal Credit Union	n/a	5/11/23	5/12/25	248,000	248,000	4.85%	1%
TCD	Hughes Federal Credit Union	n/a	6/29/23	6/30/25	248,000	248,000	5.25%	1%
TCD	Farmers Ins Credit Union	n/a	1/18/24	1/20/26	249,000	249,000	4.50%	1%
TCD	Eagle Bank	n/a	2/21/24	2/23/26	244,000	244,000	4.60%	1%
TCD	Bank of America	n/a	2/22/24	2/23/26	244,000	244,000	4.65%	1%
TCD	Pacific Premier	n/a	3/15/24	3/16/26	244,000	244,000	4.75%	1%
TCD	Valley National Bank	n/a	4/9/24	4/9/26	244,000	244,000	4.70%	1%
					\$5,422,000	\$5,422,000	4.01%	18%

Other

Agency Marin Co Treasury	AAA	Various	Open	\$1,075,120	\$1,075,120	0.84%	4%	
Other Various	n/a	Various	Open	948,221	948,221	0.06%	3%	
TOTAL IN PORTFOLIO					\$29,849,615	\$29,704,954	4.05%	100%

Weighted Average Maturity = **53 Days**

LAIF: State of California Local Agency Investment Fund.

TCD: Time Certificate of Deposit.

Treas: US Treasury Notes with maturity of 5 years or less.

Agency: STP State Revolving Fund Loan Reserve.

Other: Comprised of 5 accounts used for operating purposes. US Bank Operating Account, US Bank STP SRF Loan Account, US Bank FSA Payments Account, Bank of Marin AEEP Checking Account & NMWD Petty Cash Fund.

1 Original cost less repayment of principal and amortization of premium or discount.

2 Yield defined to be annualized interest earnings to maturity as a percentage of invested funds.

3 Earnings are calculated daily - this represents the average yield for the month ending May 31, 2024.

Interest Bearing Loans	Loan Date	Maturity Date	Original Loan Amount	Principal Outstanding	Interest Rate
Marin Country Club Loan	1/1/18	11/1/47	\$1,265,295	\$1,028,811	1.00%
Marin Municipal Water - AEEP	7/1/14	7/1/32	\$3,600,000	\$1,620,203	2.71%
Employee Housing Loan (1)	3/30/15	3/30/30	250,000	250,000	Contingent
TOTAL INTEREST BEARING LOANS			\$5,115,295	\$2,899,014	

The District has the ability to meet the next six months of cash flow requirements.

NORTH MARIN WATER DISTRICT
MONTHLY PROGRESS REPORT FOR JUNE 2024
 July 16, 2024

1.

Novato Potable Water Prod - RR & STP Combined - in Million Gallons - FYTD

Month	FY23/24	FY22/23	FY21/22	FY20/21	FY19/20	24 vs 23 %
July	218.6	224.5	282.9	341.7	317.7	-3%
August	230.9	235.9	212.4	290.1	287.1	-2%
September	212.4	203.5	214.5	225.6	280.5	4%
October	197.0	191.6	198.5	307.8	286.0	3%
November	145.7	137.4	94.1	201.6	226.3	6%
December	121.6	106.6	137.1	183.0	141.2	14%
January	122.4	113.8	118.3	156.6	111.9	8%
February	117.5	105.2	118.6	110.5	120.3	12%
March	121.0	123.1	130.3	124.1	151.8	-2%
April	140.6	146.4	137.7	225.4	195.0	-4%
May	211.5	176.2	204.7	209.9	217.6	20%
June	243.5	197.6	207.7	215.3	269.1	23%
FYTD Total	2,082.8	1,961.6	2,057.0	2,591.4	2,604.4	6%

West Marin Potable Water Production - in Million Gallons - FY to Date

Month	FY23/24	FY22/23	FY21/22	FY20/21	FY19/20	24 vs 23 %
July	7.1	6.3	6.0	8.2	8.9	13%
August	7.5	6.8	5.7	9.2	8.4	9%
September	6.7	6.3	5.9	7.9	7.8	6%
October	6.4	5.7	5.1	6.7	7.5	11%
November	5.0	4.6	3.5	5.8	6.7	10%
December	4.2	4.3	4.0	5.1	4.8	-3%
January	4.6	3.9	3.8	4.2	4.1	17%
February	3.7	3.3	4.0	3.8	4.4	10%
March	5.1	3.7	4.1	5.1	5.2	41%
April	4.9	4.9	5.1	4.8	4.9	-1%
May	6.5	5.1	4.9	7.3	6.0	28%
June	6.7	5.0	5.5	6.2	7.4	34%
FYTD Total	68.3	60.0	57.5	74.4	76.2	14%

Stafford Treatment Plant Production - in Million Gallons - FY to Date

Month	FY23/24	FY22/23	FY21/22	FY20/21	FY19/20	24 vs 23 %
July	67.0	56.3	67.0	105.8	68.2	19%
August	98.3	67.9	31.3	81.1	103.8	45%
September	112.6	57.8	41.7	16.1	115.0	95%
October	109.4	54.0	28.2	7.7	103.4	102%
November	21.8	30.0	0.0	0.6	102.8	-27%
December	0.0	0.0	0.0	0.0	0.0	-
January	0.0	0.0	0.0	0.0	0.0	-
February	0.0	0.0	0.0	0.0	0.0	-
March	0.0	50.5	0.0	0.0	0.0	-
April	0.0	110.0	0.0	0.0	30.9	-
May	0.0	111.4	0.0	0.0	60.2	-
June	0.0	98.6	0.0	0.0	101.8	-
FYTD Total	409.1	636.4	168.1	211.3	685.9	-36%

Recycled Water Production* - in Million Gallons - FY to Date

Month	FY23/24	FY22/23	FY21/22	FY20/21	FY19/20	24 vs 23 %
July	31.0	43.1	42.9	39.0	36.5	-28%
August	34.8	41.6	41.4	43.2	33.3	-16%
September	26.1	29.2	39.6	29.5	29.7	-11%
October	22.4	24.7	18.3	22.8	26.6	-9%
November	3.6	5.1	0.8	10.9	10.8	-29%
December	0.4	0.3	0.3	0.2	0.5	44%
January	0.4	0.4	0.8	0.3	0.6	-18%
February	0.9	0.4	1.3	0.5	0.6	143%
March	0.9	0.4	14.3	11.4	11.7	114%
April	3.1	5.1	16.7	18.1	12.5	-39%
May	24.2	22.3	32.7	39.2	27.6	8%
June	34.9	28.4	43.2	41.6	38.3	23%
FYTD Total*	182.7	201.1	252.3	256.7	228.7	-9%

*Excludes potable water input to the RW system: FY24=13.8MG, FY23=10.8 MG FY22=10 MG; FY21=24.7 MG; FY20=16.7

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2. Regional and Local Water Supply

Lake Sonoma

	Current	2023
Lake Storage*	82,507 MG	83,266 MG
Supply Capacity	96 %	97 %

*Normal capacity = -245,000 AF (79,833.5 MG); deviation storage pool of 264,000 AF (86,025 MG)

Lake Mendocino

	Current	2023
Lake Storage *	30,583 MG	31,918 MG
Supply Capacity	85 %	88 %

*Normal capacity = 70,000-110,000 AF (22,800-35,840 MG); FIRO pool 26,000-36,170 MG

3. Stafford Lake Data

	June Average	June 2024	June 2023
Rainfall this month	0.18 Inches	0.00 Inches	0.01 Inches
Rainfall this FY to date	26.78 Inches	34.52 Inches	40.09 Inches
Lake elevation*	190.2 Feet	194.7 Feet	193.1 Feet
Lake storage**	998 MG	1,299 MG	1,193 MG
Supply Capacity	77 %	99 %	92 %

* Spillway elevation is 196.0 feet (NGVD29)

** Lake storage less 390 MG = quantity available for normal delivery

Temperature (in degrees)

	Minimum	Maximum	Average
June 2024 (Novato)	44	97	76
June 2023 (Novato)	45	90	70

4. Number of Services

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June 30	Novato Water			Recycled Water			West Marin Water			Oceana Marin Swr		
	FY24	FY23	Incr %	FY24	FY23	Incr %	FY24	FY23	Incr %	FY24	FY23	Incr %
Total meters installed	21,025	20,982	0.2%	103	102	1.0%	806	800	0.8%	-	-	-
Total meters active	20,875	20,831	0.2%	101	100	1.0%	797	792	0.6%	-	-	-
Active dwelling units	24,097	24,097	0.0%	-	-	-	837	837	0.0%	237	235	0.9%

5. Oceana Marin Monthly Status Report (December)

Description	June 2024	June 2023
Effluent Flow Volume (MG)	0.422	0.408
Irrigation Field Discharge (MG)	0.828	0.895
Treatment Pond Freeboard (ft)	6.3	5.8
Storage Pond Freeboard (ft)	Empty	10.3

6. Safety/Liability

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	Industrial Injury with Lost Time			Liability Claims Paid		
	Lost Days	OH Cost of Lost Days (\$)	No. of Emp. Involved	No. of Incidents	Incurred (FYTD)	Paid (FYTD) (\$)
FY 24 through June	1	\$368	1	1	2	\$13,624 ⁽¹⁾
FY 23 through June	152	\$90,752	4	4	3	\$43,275 ⁽²⁾
Days since lost time accident through June 30, 2024	348 Days					

(1) Vehicle damage by NMWD valve cap, (2) Planter/Driveway Repair Highland Drive & (3) Homeyard Bound Lightpole damage.

(2) Claim settlement for driveway and concrete repair due to water damage to a property on Bugeia Lane & (2) Landscape repair due to water line break on Taft Ct.,

7. Energy Cost

FYE	June			Fiscal Year-to-Date thru June		
	kWh	¢/kWh	Cost/Day	kWh	¢/kWh	Cost/Day
2024 Stafford TP	70,726	23.6¢	\$555	645,668	23.4¢	\$485
Pumping	158,052	41.6¢	\$2,056	1,351,709	36.3¢	\$1,336
Other ¹	38,763	47.0¢	\$570	406,605	43.8¢	\$411
	267,541	37.6¢	\$3,181	2,403,982	34.1¢	\$2,231
2023 Stafford TP	67,115	22.9¢	\$495	644,064	22.5¢	\$398
Pumping	129,908	32.1¢	\$1,391	1,306,261	29.0¢	\$1,037
Other ¹	30,621	38.9¢	\$397	396,115	34.1¢	\$370
	227,644	30.3¢	\$2,283	2,346,440	28.1¢	\$1,805
2022 Stafford TP	72,592	22.2¢	\$537	603,478	22.1¢	\$365
Pumping	138,035	28.6¢	\$1,315	1,303,657	27.8¢	\$997
Other ¹	45,123	32.2¢	\$484	498,861	31.1¢	\$428
	255,750	27.4¢	\$2,336	2,405,996	27.0¢	\$1,790

¹Other includes West Marin Facilities

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8. Water Conservation Update

	Month of June 2024	Fiscal Year to Date	Program Total to Date
High Efficiency Toilet (HET) Rebates	2	62	4,543
Retrofit Certificates Filed	10	92	6,879
Cash for Grass Rebates	1	24	1,087
Washing Machine Rebates	3	44	6,937
Water Smart Home Survey	1	17	3,938

9. Utility Performance Metric

June 2024 Service Disruptions

SERVICE DISRUPTIONS (No. of Customers Impacted)	June 2024	June 2023	Fiscal Year to Date 2024	Fiscal Year to Date 2023
PLANNED				
Duration Between 0.5 and 4 hours	12	9	141	185
Duration Between 4 and 12 hours	0	0	57	11
Duration Greater than 12 hours	0	0	0	0
UNPLANNED				
Duration Between 0.5 and 4 hours	7	0	70	159
Duration Between 4 and 12 hours	32	0	140	74
Duration Greater than 12 hours	0	0	0	0
SERVICE LINES REPLACED				
Polybutylene	3	4	50	56
Copper Replaced or Repaired)	9	5	49	20

June 2024 Service Disruptions

Planned: For the month of June, we had 12 planned service disruptions.

Plastic: There were 3 plastic service leaks on: School Rd and Crest Rd.

Copper: There were 9 copper service leaks on: Montego Keys, Cavalla Cay, Eldridge Ignacio Valley Circle, Nunes, and Vineyard Ct.

Unplanned:

There were 3 main breaks for the month of June affecting 39 customers: a 6" ac main on Caribe Isle, and 2 2" PVC main breaks on Redwood Hwy and Atherton Oaks.

10. Summary of Complaints and Service Orders – June 2024

Tag Breakdown:

Total: **159** Consumer: 81 Office: 78

<u>Type</u>	<u>Jun-24</u>	<u>Jun-23</u>	<u>Added Notes</u>
Billing			
High Bill	1	2	
Total	1	2	
Meter Replacement			
	9	8	
Total	9	8	
Need Read			
	4	1	
Total	4	1	
No-Water			
	2	6	
Total	2	6	
Leak			
Consumer	74	134	
District	26	15	
Total	100	149	
Check Pressure			
	6	3	
Total	6	3	
Turn Off / On			
	25	23	
Total	25	23	
Other			
	12	20	
Total	12	20	
TOTAL FOR MONTH:	159	212	-25%

Bill Adjustments Under Board Policy:

June 24 vs. June 23

Jun-24	9	\$1,427
Jun-23	9	\$4,817

Fiscal Year vs Prior FY

FY 23/24	169	\$42,521
FY 22/23	155	\$42,792

Customer Service Questionnaire Quarterly Report

Quarter Ending 6/30/2024



NMWD

Water Quality	Response		
	Agree	Neutral	Disagree
Courteous & Helpful	4	0	0
Accurate Information	4	0	0
Prompt Service	3	1	0
Satisfactorily Resolved	4	0	0
Overall Experience	4	0	0
	19	1	0

Leak	Response		
	Agree	Neutral	Disagree
Courteous & Helpful	25	1	0
Accurate Information	25	1	0
Prompt Service	24	2	0
Satisfactorily Resolved	24	0	2
Overall Experience	24	2	0
	122	6	2

Billing	Response		
	Agree	Neutral	Disagree
Courteous & Helpful	1	0	0
Accurate Information	1	0	0
Prompt Service	1	0	0
Satisfactorily Resolved	1	0	0
Overall Experience	0	0	0
	4	0	0

Pressure	Response		
	Agree	Neutral	Disagree
Courteous & Helpful	0	0	0
Accurate Information	0	0	0
Prompt Service	0	0	0
Satisfactorily Resolved	0	0	0
Overall Experience	0	0	0
	0	0	0

Noisy Pipes	Response		
	Agree	Neutral	Disagree
Courteous & Helpful	0	0	0
Accurate Information	0	0	0
Prompt Service	0	0	0
Satisfactorily Resolved	0	0	0
Overall Experience	0	0	0
	0	0	0

Other	Response		
	Agree	Neutral	Disagree
Courteous & Helpful	9	0	0
Accurate Information	8	0	0
Prompt Service	9	0	0
Satisfactorily Resolved	8	0	0
Overall Experience	9	0	0
	43	0	0

Grand Total	188	7	2
	95%	4%	1%

Questionnaires Sent Out	99	100%
Questionnaires Returned	39	39%

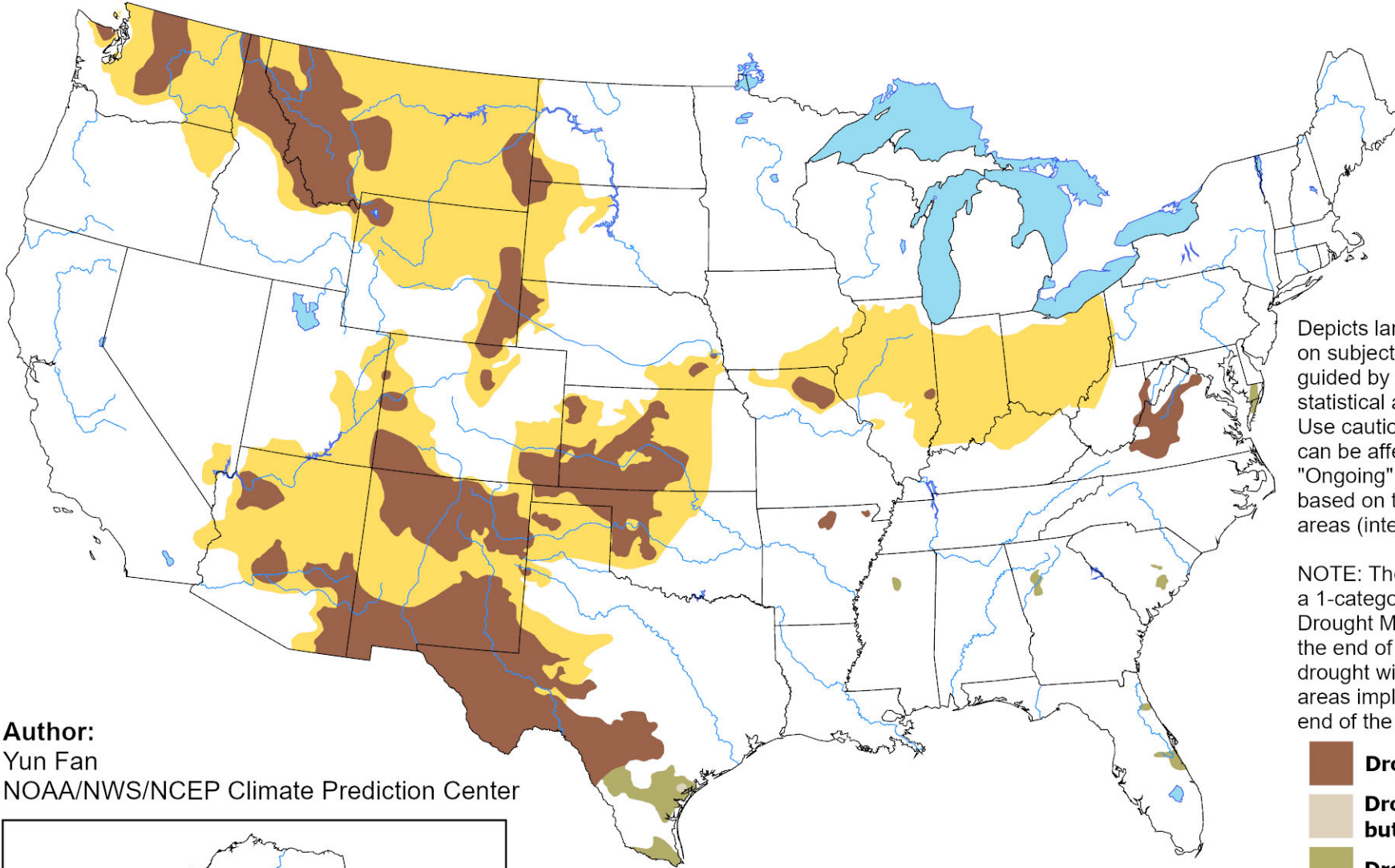
Customer Service Questionnaire Quarterly Report	
Quarter Ending: 06/30/2024	
Customer Comments	Issues NMWD Should Address In The Future
BILLING	
Rich Roberto was very knowledgeable and an excellent professional.	Monitor high usage, if its unusual vs previous billings
LEAK	
Technician was extremely professional and thorough. Great phone service prior to tech coming out. Thank you!	
Utilities in our neighborhood are underground. Water was spouting from PG&E vault next to NMWD vault. Field rep was thorough, interactive and polite. No leak found in our line. Spouting water is likely due to heavy rains.	
Thank you so much for the wonderful help from the NMWD staff. Everyone was just so helpful, informative and courteous. You guys are the best!	
Rich Roberto was very helpful.	
Rich was very nice and prompt.	
Extremely fast service - Very courteous. I wish all of our services were as good!	
You have been simply wonderful! The woman who answered the phone gave good advice, and information. The young man who came and helped identify where the leak was, was simply great!	
Both technicians were great.	
The phone respondent was friendly and knowledgeable. Travis came to my home and was thorough and very helpful.	
Rich Roberto was really great. Very thorough and helpful. We did not find the leak	
We thank you for all of your help. Sure enough we had a leaking toilet. It is now replaced.	
Rich went above & beyond to find my leak and helped resolve the issue.	Change your billing practice, my fixed fee is more than my water use. There is no incentive to conserve water because then you raise the rates.
I was told a tech would arrive the day after I called but he didn't show up. Had to call again at which point he showed up. Overall very happy with service.	
Great staff help at all levels. Phone advice and a super helpful man that came to my home. Thank you to everyone.	
Thank you for coming out so quickly to stop the leak.	
Thanks for the prompt response and the courteous service on the phone.	
Your staff never informed me what they found. They said it could be ground water or a leak on NMWD's side	Inform the customer of your findings. I would still like to know what they found. <i>(Staff conclusion after site visit - No Leak Found)</i>
Our neighbor pointed out a leak in the meter box by the side of the road. I reported it immediately and the on call tech came out within the hour.	
The rep told me of possible reasons for irrigation leak and I appreciate that.	
Communicative and helpful rep.	
OTHER	
Renter did not show up for scheduled appointment. Your staff member left a nice message on my voicemail with information on how to reschedule.	
Very professional and comparable response.	
He was excellent. The service worker worked in the cold to uncover the meter that had failed due to the hole in the brass bottom. Once he took the damaged meter he replaced it within 15 minutes.	
Robert showed up promptly and was extremely courteous and took care of our problem immediately. Thank you!	
Great Staff, work was completed within an hour of calling and looks very professional.	
Thank you for the prompt response.	
Rich came out exactly on time. He was very helpful.	
Appreciate the service.	
The phone report to me was prompt and as promised. The hard copy results arrived by mail.	
Phone staff have always been helpful and courteous.	
Thanks for promptly turning off the water due to a leak.	

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for June 20 - September 30, 2024

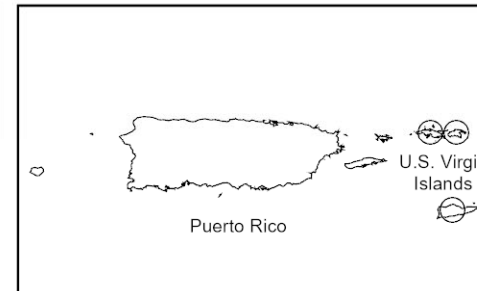
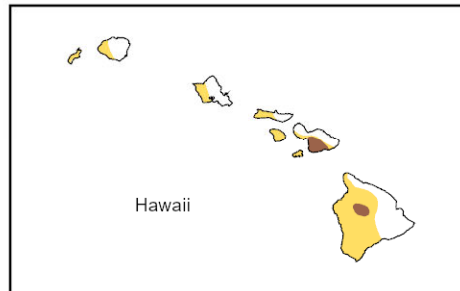
Released June 20, 2024



Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Yun Fan
NOAA/NWS/NCEP Climate Prediction Center



-  **Drought persists**
-  **Drought remains, but improves**
-  **Drought removal likely**
-  **Drought development likely**
-  **No drought**



<https://go.usa.gov/3eZ73>

Statement from AWWA and AMWA on petition for judicial review of PFAS regulation

American Water Works Association (AWWA) CEO David LaFrance and Association of Metropolitan Water Agencies (AMWA) CEO Tom Dobbins released the following statement today regarding legal action related to EPA's final National Primary Drinking Water Regulation (NPDWR) for six per- and polyfluoroalkyl substances (PFAS):

"AWWA and AMWA share the U.S. Environmental Protection Agency's goal of protecting people from potentially harmful levels of PFAS in drinking water. Both AMWA and AWWA supported EPA's decision to swiftly pursue development of a national PFAS regulation, and we provided the agency with robust, constructive comments to maximize public health benefits in a cost-effective manner.

"We are concerned, however, that EPA did not use the best available data and appropriate processes in developing the PFAS regulation. For example, we question the use of a novel 'Hazard Index' in place of a Maximum Contaminant Level for mixtures of certain PFAS, and the issuing of a preliminary determination to regulate certain PFAS simultaneously with the proposed rule.

"The rule significantly underestimates nationwide costs, does not take into account the latest PFAS data, and will add to affordability challenges for many households without achieving the public health outcomes we all seek.

"Scientific process matters, especially when it will set precedent for how EPA develops future drinking water regulations. AMWA and AWWA therefore believe it is prudent to ask a court to verify that EPA constructed the PFAS regulation according to the letter and spirit of the Safe Drinking Water Act, and to give EPA an opportunity to revisit any components of the rule that fell short."

#

About AMWA

The Association of Metropolitan Water Agencies (AMWA) has been the unified and definitive voice for the nation's largest publicly owned water systems for over 40 years. AMWA's membership serves more than 160 million people with safe drinking water.

About AWWA

Established in 1881, the American Water Works Association is the largest nonprofit, scientific and educational association dedicated to managing and treating water, the world's most vital resource. With approximately 50,000 members, AWWA provides solutions to improve public health, protect the environment, strengthen the economy and enhance our quality of life.



June 21, 2024

SENT VIA: USPS

Tony Williams, General Manager
North Marin Water District
PO Box 146
Novato, CA 94948

RECEIVED

JUN 25 2024

North Marin Water District

twilliams@nmwd.com

SUBJECT: Thank You for Supporting NBWA's Imagine Our Future North Bay!

Bel Marin Keys Community
Services District

Central Marin Sanitation Agency

County of Marin

County of Napa

County of Sonoma

Las Gallinas Valley Sanitary District

Marin County Stormwater Pollution
Prevention Program

Marin Municipal Water District

Napa Sanitation District

Napa County Flood Control District

North Marin Water District

City of Novato

Novato Sanitary District

City of Petaluma

Ross Valley Sanitary District

City of San Rafael

City of Sonoma

Solano County Water Agency

Sonoma Valley County
Sanitation Agency

Sonoma County Water Agency

Associate Members:

The Bay Institute

Group Members:

City of Mill Valley

Sewerage Agency of
Southern Marin

Dear Tony:

The North Bay Watershed Association (NBWA) extends sincere appreciation for your generous sponsorship of the 2024 Imagine Our Future North Bay conference. Your commitment to our regional cause and your contribution of \$1,500 played a pivotal role in making this conference a resounding success. As the first in-person and live-streamed gathering since 2018, it was a watershed occasion for our north bay communities and beyond.

Here are some highlights from the event:

- **16 Sponsors:** Your generosity and that of 15 others amassed \$36,000, plus significant in-kind contributions, crafting an unforgettable attendee experience, including sponsorship of student tickets and scholarship programs.
- **Sold-Out Success:** Thanks to your support, we achieved a full attendance, bringing together elected officials, staff, and representatives from our public agencies, non-profit organizations, private companies, educational institutions, and tribal organizations. This diverse assembly of federal, state, regional, and local thought leaders engaged in a dynamic and fruitful dialogue.
- **15 Speakers, 4 Sessions:** Our conference proudly hosted 15 experts in four forward-looking sessions, deepening our water resilience understanding and connections.
- **Exhibit Hall:** More than ten entities showcased their initiatives, enhancing existing networks and creating new partnerships.
- **Access Resources:** Missed out? Revisit the insights at www.nbwatershed.org/event/conf2024 for presentations and more.

Once again, thank you for being an essential part of NBWA's 2024 conference, Imagine Our Future North Bay. Your commitment to our shared cause is deeply appreciated, and we look forward to future collaborations.

Warm regards,

A handwritten signature in blue ink, appearing to read "Andy Rodgers", is written over a blue horizontal line.

Andy Rodgers, NBWA Executive Director

Making Conservation a California Way of Life Regulation

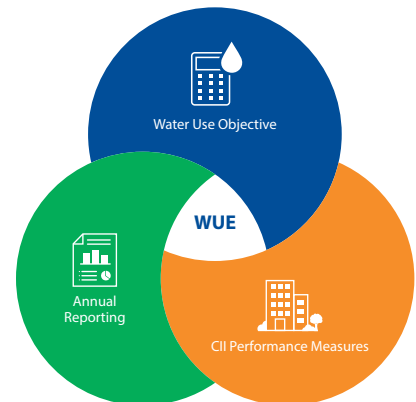


The State Water Resources Control Board on July 3 adopted the Making Conservation a California Way of Life regulation. The regulation implements Assembly Bill 1668 and Senate Bill 606, which were signed into law in 2018, to develop a regulatory framework to achieve long-term water use efficiency with the purpose of adapting to climate change and more intense and frequent droughts in California.

What is included in the Making Conservation a California Way of Life regulation?

Under the regulation, urban retail water suppliers must comply with three major components:

- A unique **urban water use objective**;
- **Commercial, industrial and institutional (CII) performance measures**; and
- **Annual reporting**.



Urban Water Use Objective

The **urban water use objective** is a supplier-specific water budget that is the sum of water use efficiency standards for urban water uses for residential indoor water use, residential outdoor water use, CII landscapes with dedicated irrigation meters and supplier system real water loss. These standards are applied to unique local service area characteristics, such as population, climate and landscape area. The urban water use objective also includes adjustments for specified unique water uses, such as evaporative coolers and seasonal tourism, temporary provisions, and/ or a bonus for potable reuse, if applicable.

Urban retail water suppliers can learn more about their expected urban water use objective by visiting the State Water Board's [Water Use Objective Exploration Tool](#) and reviewing the [Provisional Data](#).



Residential Indoor

+



Residential Outdoor

+



CII-DIM Outdoor

+



Water Loss

+



If applicable:
Variations, Temporary Provisions & Bonuses

CII Performance Measures

Every urban retail water supplier must comply with the following CII performance measures. These CII performance measures are services and programs water suppliers can offer to increase the indoor and outdoor water use efficiency of CII water users. A simplified overview of the CII performance measures is as follows:

- **Classification of CII water accounts** into ENERGY STAR Portfolio Manager's broad categories, plus four additional categories.
- Convert **CII large landscapes** (over 0.5 acres) with mixed use meters (MUMs) to dedicated irrigation meters or employ in-lieu technologies such as advanced metering infrastructure. This requires identifying all CII-MUM landscapes that meet this threshold in a service area.
- Implement **CII best management practices** for the top CII water users (with three possible track options).

Annual Reporting

Starting Jan. 1, 2024, and by Jan. 1 every year thereafter, each urban retail water supplier is required to submit annual reporting requirements to the State Water Board and the Department of Water Resources that includes their urban water use objective, actual urban water use, documentation of the implementation of CII performance measures and a description of progress made towards meeting their urban water use objective (§ Water Code 10609.24).

When does compliance start?

Suppliers must work with their customers to achieve water savings that may be needed to meet the new regulation. Individual customers are not required to comply with the urban water use objective.

Beginning Jan. 1, 2025, and by Jan. 1 every year thereafter, each urban retail water supplier is required to calculate its urban water use objective for the previous year. Each year, the objective will be based on dynamic data such as weather and population. Beginning Jan. 1, 2027, each urban retail water supplier must demonstrate compliance with its urban water use objective.

CONTACT

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‘Extreme’ Novato housing approved

State rules override city’s size, parking concerns



Parcels at 1212 and 1214 Grant Ave. are planned as a site for a residential and commercial project.

BY GIUSEPPE RICAPITO

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The Novato City Council has grudgingly approved a new downtown housing development, saying it is hamstrung by state requirements.

The council voted unanimously on the mixed-use site at Grant Avenue and Third Street at its meeting on Tuesday. The project includes 56 apartments and 1,735 square feet of ground-floor commercial space.

Councilmember Tim O'Connor said the approval came "under duress." The plan includes a density bonus under Assembly Bill 2011, which allows for streamlined approval of housing projects that meet specific criteria.

The council had to make a decision before June 20, the statutory deadline to act on the project under AB 2011. The council and public criticized the size of the building and its lack of onsite parking.

"We are frustrated by our lack of ability to make discretionary review of these projects," said Mayor Mark Milberg. "Together we will navigate these changes as best we can."

Other councilmembers indicated they approved the project with reluctance.

"This project is extreme for our town," said Councilmember Susan Wernick. "This is very large and no parking is an issue for me."

O'Connor called on the developer to collaborate with the city as the project proceeds.

"You can still make a good faith effort to make this less impactful on everybody," he said.

The housing application was filed by AMG & Associates LLC and the California Housing Defense Fund.

"I think we are open to hearing more," said Amanda Locke, AMG project manager.

"Anything I am hearing tonight I am taking back with me."

The project involves merging two parcels at 1212 and 1214 Grant Ave. and constructing a five-story, 64.4-foot high building. The building would feature 735 square feet of ground-floor retail space and 1,000 square feet of ground-floor office space, with the apartments on the four upper floors.

The residences are studio and one-bedroom apartments. Aside from the manager's apartment, the project would include six apartments for very-low-income residents and 49 for low-income residents.

The density bonus allows more apartments than otherwise permitted by the land use designation at the 0.34-acre site. The project has a density of 165 dwellings per acre.

The law allows extra density to fully affordable housing projects on sites within one-half mile of a major transit stop. The downtown Novato SMART station qualifies as such.

The same provision allows for the height increase. The city's maximum height limit is 35 feet, but the bonus allows for 33 additional feet.

The project's lack of parking is a sticking point for many.

Peter Tarantino, who said he is a 51-year resident of Novato and owner of two buildings on Grant Avenue, said the project would exacerbate an already challenging parking situation in the

downtown corridor.

“This isn’t the integrity of downtown Novato,” Tarantino said. “I can’t imagine that it would happen without parking.”

Locke said she could not change the plans to include onsite parking.

“It is a very, very small site to accommodate onsite parking,” she said. “That’s all I can commit to at this time.”

Under the state’s housing mandate, Novato is required to permit 2,090 new dwellings during the eight-year planning cycle. The mandate includes 570 residences for very-low-income households and 328 for low-income households.

Water district revisits desalination

Officials look at building plant for drinking water in a drought

BY ADRIAN RODRIGUEZ

ARODRIGUEZ@MARINIJ.COM

The Marin Municipal Water District is revisiting the possibility of constructing a desalination plant, this time taking a closer look at the cost to produce drinking water during a drought.

The reason for the focused cost analysis is because while a desal plant could provide a great supply, the district has limited storage capacity, Paul Sellier, water resource manager, told the board of directors at its meeting on Tuesday.

“Our reservoirs are going to be spilling,” Sellier said. “So we’ll be operating this plant in years when we don’t really need to.”

With that in mind, staff presented findings where the cost of water produced by such a plant is based on a four-year drought scenario. The analysis also assumes a 25-year service life before plant upgrades would be needed.

The cost for drinking water purchased from Sonoma Water is around \$1,600 an acre-foot, which is equal to about 326,000 gallons. A district study shows that it could cost \$273 million to \$401 million to construct a desalination plant. Annual operations and maintenance would range between \$13.4 million for a 5,601-acre-foot-per-year capacity and \$30 million for a 16,802-acre-foot capacity.

Annually, it would cost \$5,100 per acre-foot for the lower capacity project, versus \$3,100 per acre foot for the higher capacity plant.

However, assuming a four-year drought, the estimated cost per acre-foot range changes to \$10,000 for the highest yield to \$15,300 for the lower yield, according to staff.

The district serves 191,000 residents in central and southern Marin. Its seven reservoirs make up about 75% of the district’s water supply. The reservoirs can hold up to about 80,000 acre-feet of water, about a two-year supply.

The district launched a study into new water sources in 2022 after facing potential reservoir depletion from the drought. Rains in late 2021 nearly refilled the district’s reservoirs, giving the county’s largest water supplier more time to study the costs and benefits of potential new sources of supply.

The resulting study is the water supply roadmap that was approved last year. In addition to desalination, the plan explores expanded recycled water opportunities, conveyance and storage.

For comparison, staff showed that recycled water projects under consideration range from \$4.3 million to \$452 million to construct, with an annual expense of \$18,700 to \$65,200 per acre-foot during a four-year drought. Water conservation efforts could cost about \$12,100 per acre-foot during drought conditions.

“Getting a real cost of water would kind of require us to have that crystal ball,” Sellier said. “We would need to know when’s the drought coming, how severe is it going to be, how much are we going to spill certain years and not others.”

The district is also considering reservoir expansion proposals that would cost upward of \$290 million just to construct. Proposals to connect pipelines between Sonoma and Marin have costs of \$140 million to \$380 million. A drought-focused cost analysis of these projects is coming, Sellier said.

Sellier said considering water supply projects is similar to buying insurance.

“If you’re thinking about buying insurance coverage, you want to make sure you buy the best, cheapest insurance coverage, from a firm that’s going to pay,” Sellier said.

One positive that has emerged from the analysis, Sellier said, is that a \$5 million plan to modify the spillway gates at the Nicasio Reservoir is expected to cost around \$1,600 per acre-foot of water annually.

“So it’s really exciting that we have a real viable option,” Sellier said.

“I’m really excited to see how those larger storage projects as well as the conveyance projects are going to be stacked up,” said Matt Samson, a member of the district board.

Board member Monty Schmitt said that while he appreciates the staff’s effort, the numbers are staggering.

He questioned the accuracy of the cost comparisons that assume a four-year drought. He was specifically concerned about the \$12,100 per acre-foot price tag for conservation, he said.

“I would really like us to have that peer reviewed if we’re going to be making decisions around it, because it is just so wildly different than what we see in other estimations of conservation costs,” Schmitt said.

Ben Horenstein, the district’s general manager, said staff also took pause when looking at the numbers.

“This is strictly and narrowly trying to look at, in context of drought, to help the board think about where do we invest limited dollars to achieve ... supplemental supply and resiliency,” he said. “We’re not in any way suggesting that conservation doesn’t have so much value and benefits beyond this narrow look in this context.”

Board member Larry Russell said while his colleagues react to the numbers as being high, “I react to them being reality.”

“Well, my friends, fasten your seatbelts, this is where we’re going,” Russell said.

MARIN MUNICIPAL

Reservoir connection plan delayed by creek concerns

Impact on habitat halts water supply project OK



Phoenix Lake near Ross. A project to pump water from Phoenix Lake to Bon Tempe Reservoir hit a snag over concerns that more could be done to mitigate the effect on creeks. DOUGLAS ZIMMERMAN — SPECIAL TO THE MARIN INDEPENDENT JOURNAL



The Bon Tempe water treatment plant sits on Mount Tamalpais in Fairfax. ALAN DEP — MARIN INDEPENDENT JOURNAL

BY ADRIAN RODRIGUEZ

ARODRIGUEZ@MARINIJ.COM

The Marin Municipal Water District has paused a \$10 million project to pump water from Phoenix Lake to Bon Tempe Reservoir over concerns that more could be done to mitigate the effect on creeks.

District staff hoped the board would approve the project at its meeting on Tuesday so that they can begin ordering materials, including 6,300 feet of 18-inch pipe needed for construction to begin this fall. The project has been identified as a quick way to increase water supply.

However, local environmentalists told the board they are worried the plan ignores the quality of habitat for steelhead trout, a federally listed threatened species, in Ross Creek and Corte Madera Creek. Phoenix Lake, the district's smallest reservoir, is in the Corte Madera Creek Watershed.

“We believe that there could be a way to not only solve the need for emergency water and more water for human needs, but to also actually improve the habitat to Ross Creek, and make it

better for the aquatic system and threatened steelhead there,” said Terri Thomas, board member of the Marin Conservation League.

Shaun Horne, director of watershed resources, said the state-required environmental analysis already addresses the concerns and the project has been tailored accordingly.

As such, the plan proposes that water can only be pumped between the reservoirs from Oct. 1 to Feb. 28 to minimize fishery disturbances. The plan also proposes that after pumping Phoenix Lake, the district would have to wait for it to rebound to 170 acre-feet before it could draw from it again. An acre-foot equals about 326,000 gallons.

“We wouldn’t expect to mitigate that any further than what’s been presented to you this evening,” Horne said Tuesday.

Phoenix Lake, constructed in 1905, is only drawn on during water shortages because it does not have a pumping and distribution system. Instead, employees have to spend four weeks setting up a pump station and pipes to transport Phoenix Lake water to the Bon Tempe treatment plant.

Building a new pump station and positioning a permanent connection between the two reservoirs is anticipated to yield approximately 260 acre-feet of water a year, improving drought resiliency, district officials say.

Staff said the environmental analysis concluded that the project would have a “less than significant impact” on the fishery.

Board member Jed Smith said he wanted a clearer understanding of what that means.

“Is it negative at all, and if so, what can we do about better protecting this important watershed?” Smith asked staff.

The primary concern was not so much about the volume of water, but the timing of pumping and how that affects creek flows, said Eric Ettlinger, district aquatic ecologist.

Adult steelhead migrate up and the young reside in the creek for a year or two before making their way to the ocean, Ettlinger said.

“There is concern that if you truncate the spring flows, the fish will have a harder time getting out to the ocean,” he said. “Pumping in the spring was more likely to have an impact on those spring flows.”

Having the pumping window end on Feb. 28 each year helps ease that concern, he said.

Horne said the practice of pumping water between the reservoirs is happening already, and that the project is about making the work more efficient.

“It’s kind of surprising that we don’t have this operational efficiency already built into this reservoir as a management solution,” Horne said. “So this project is really improving that and

enhancing something we probably would have done a long time ago if we had the resources to do so.”

Board member Monty Schmitt said the project has highlighted something he was not aware of.

“We are in many ways treating Ross and Corte Madera creeks differently than we are treating Lagunitas Creek with respect to the restoration of coho and steelhead habitat, and the benefits that a living river provides both ecologically as well as to our communities,” he said.

Schmitt said he would like the project to include some aspect of restoration. He believes adding the environmental benefit could give the project an edge in winning additional grant funding, he said.

Ben Horenstein, general manager of the water district, said it would be more appropriate to come up with a project on creek stewardship independently of this project.

The board directed staff to meet with local environmental groups and federal and state fish agencies to review the project again.

Board president Ranjiv Khush said the pause is not so much about trying to rewrite the project proposal as it is about making sure everyone is informed.

“I think if we can establish a process here that promotes more trust between the different stakeholders, we will, I think, benefit in the long-term when we’re facing more difficult issues, much bigger questions,” Khush said.

Horenstein said staff plans to return to the board on the issue next month.

Cautious looks at desal plant can be routine

When voters in the Marin Municipal Water District elected three new board members — ousting two incumbents after another had retired from the panel — they came aboard with a promise to take a fresh look at the options and opportunities to bolster the resilience of the local water supply.

The election and change came in the wake of the district's 2020 alarming warning that even with strict conservation measures the prolonged drought risked, within months, draining MMWD's supply.

Then it rained. But the threat was too close for comfort for most voters.

Some voters decried MMWD's 2010 decision to put its controversial desalination plant plans on the political backburner after spending millions on a trial plant on San Rafael Bay.

The board, at the time, opted to bank on conservation, encouraged by MMWD customers' efforts to reduce water use.

It was the second time since the 1976-77 drought that MMWD had seriously pursued building a desalination plant to expand the district's supply and help it weather a prolonged drought.

The biggest challenge is cost, not only to build, but to operate.

That's why the proposal to join forces with other North Bay water agencies to build a plant on the Petaluma River sounded encouraging. Sharing those costs could save money and address that challenge.

It would be a regional solution to protect against a regional crisis.

The district also faces another challenge — politics.

A 2010 ballot measure would require MMWD to seek voter approval for funding and building a desalination plant.

That wasn't a rejection of the idea, but it is a political hurdle.

Since then, there have been advances in desalination, both technically and politically.

Last year, Gov. Gavin Newsom announced that desalination would be part of the state's drought protection strategy and steered \$5 million to three projects, including one in Mendocino. They were the latest in the state's nearly \$100 million investment in desalination projects up and down the state.

In 2022, Carlsbad touted its desalination plant — and its 50 million gallons per day production — as a shield protecting the San Diego area from drought.

While interest and investment in desalination has grown, MMWD's latest consideration doesn't mean the district is embarking on its third costly foray into embracing the technology.

At a recent meeting, some board members cringed at the cost — \$273 million to \$401 million for construction and as much as \$30 million per year to run.

Both would probably mean increasing rates.

To their credit, they have focused on other water-saving options, as well. They may not offer the seemingly bottomless design of desal, but they are a lot less expensive in both construction and operation.

Increasing the capacity of MMWD's seven reservoirs and instilling supply-efficient operating measures make sense.

Still, desalination should be considered a possible option, especially as MMWD weighs the ramifications of growth in local population and businesses.

It may also make sense in the future if the local water supply returns to perilously low levels.

Or, if state and federal funding significantly brings down the cost.

Routinely taking a hard look at desalination is the right strategy, but directors, at this time, should remain cautious.

State approves key regulations for water policy

California board's plan will guide use and conservation

BY HAYLEY SMITH

LOS ANGELES TIMES

After years of deliberation, California water officials on Wednesday voted to adopt a landmark regulation that will guide water use and conservation in the state for years to come.

The “Making Conservation a California Way of Life” framework will apply to about 400 urban water suppliers and require that they adopt water-use budgets and meet local conservation goals, among other directives. The measures are intended to help preserve supplies as climate change drives hotter, drier conditions.

The 5-member State Water Resources Control board voted unanimously to adopt the rules, which stem from two 2018 bills that directed the state to create new standards.

“As we think of the Colorado River, the Bay Delta, the stressed watersheds from which much of the urban supply comes into our cities and communities, we need to show for other states and for ourselves that we’re taking steps to ease that burden,” chair Joaquin Esquivel said during Wednesday’s board meeting. He added that such efforts are needed “especially in dry times, but through all water year types, in order to ensure that we all continue to have ample supply and thriving communities.”

The framework marks a shift from the one-size-fits-all approach that governed California water for years, such as the mandatory 25% statewide water reductions ordered by Gov. Jerry Brown during the 2012 to 2016 drought. The new rules will instead enable suppliers to weigh local factors such as climate, population and lot size, and to account for previous investments in conservation.

Its approval comes after considerable revisions based on feedback from local water groups who said the rules would have significant cost implications for some suppliers and customers and from environmental organizations who said, conversely, that it doesn’t go far enough.

“This regulation will be very challenging it will require a whole statewide effort to change the way that we use water in California,” said Chelsea Haines, regulatory relations manager with the Association of California Water Agencies, which represents about 90% of the state’s city and

farm suppliers. “It’s an unprecedented approach, and will require a significant amount of funding and technical support.”

ACWA was among a coalition of industry groups that said the rules would create undue cost burdens for low-income and disadvantaged suppliers, which may have a harder time meeting the new requirements.

The majority of the agencies facing the steepest reductions are inland areas and areas that fall below state median household income levels, they said.

The Los Angeles Department of Water and Power, for instance, has already made significant gains in conservation and would not need to achieve its first reduction, 6%, until 2035. Other areas, such as the City of Bakersfield, would need to cut back 25% by 2030 to stay in compliance.

Haines’ concerns echoed a report published by the nonpartisan Legislative Analyst’s Office in January, which slammed an earlier version of the proposal as costly, complicated and unrealistic.

In response to that report and complaints from water agencies, the board decided to relax the conservation requirements. Among other changes, the board reduced the number of suppliers that would have to cut water usage by more than 20% and extended the total timeline for water reductions to 2040 an addition of five years.

“To do this well and to do this right and to achieve all of those long-term goals that we really desire as a community the additional five years that the State Water Board provided is really important, and I think will help us ultimately achieve a better outcome,” Haines said ahead of Wednesday’s vote.

Additional drafts of the regulation released in May and June made other incremental changes, including increasing water budgets for existing residential trees as well as the planting of new-climate ready trees. It also expanded on alternative compliance pathways for certain suppliers facing large reductions, including allowing more time to implement plans to meet long-term objectives.

Haines said she appreciated the Board’s willingness to work with water agencies, but worried the final regulation still won’t be able to meet all the needs of some smaller suppliers.

“The State Water Board made important changes to the regulation to help avoid some of these impacts, or provide more flexibility to water suppliers, but there will still be really significant cost impacts to some water suppliers in some communities,” she said. “And unfortunately with the budget now, there isn’t significant financial or technical assistance available.”

Other groups, however, maintain that the rules are too lax especially as the state faces a potential 10% decrease in water supplies by 2040, according Newsom’s strategy for a hotter, drier future.

“I do think it’s a good framework, but I continue to think that we have far more opportunity across the state to reduce water use and to help prepare our communities for more extremes more extreme droughts, hotter temperatures, all of the things that we’re already seeing and that are going to get worse,” said Heather Cooley, director of research at the Pacific Institute.

The Pacific Institute was among a coalition of environmental groups that expressed disappointment about the final regulation in a letter to the board earlier this week. The approved rules, they say, are a watered-down version of earlier drafts that set loftier goals and tighter deadlines for conservation measures.

“While this regulation could have been an important tool to proactively manage the state’s urban water supplies, improve California’s climate resilience, and reduce unnecessary water waste, it has instead fallen far short of the goals set by the California Legislature and Governor Newsom’s Water Supply Strategy,” the letter said.

Critics said they worried the final draft would leave wiggle room for backsliding, or for agencies that had been meeting regional goals to fall short of individual goals established by the state legislature.

They also expressed concerns about weakened outdoor landscape efficiency standards and uncapped allowances for land that could potentially be irrigated.

The combination of those issues amounts to 390,000 fewer acre-feet of water conserved by 2030 than in earlier drafts, according to their analysis. (An acre-foot is about 326,000 gallons.)

What’s more, the final regulation means half of the state’s urban water suppliers serving about 72% of Californians do not have to begin reducing water use until 2035 more than a decade from now.

Cooley said the cost concerns that pertain to smaller and disadvantaged agencies are valid.

But she noted that conservation is far less expensive than developing new supplies, particularly as restrictions on groundwater usage and cuts on imported supplies from the Colorado River are expected to kick in soon.

“Less supply will be available in the future, and we’ll have to look at alternatives,” she said. “Conservation and efficiency is the cheapest alternative available to us. It’s not free ... but it’s far less expensive than recycled water, than desalination, than really most other water supply options that we have.”

During Wednesday’s meeting, board member Laurel Firestone said she, too, would have liked to have seen an earlier deadline for some agencies. She encouraged the board to continue to engage with stakeholders and work to improve data and reporting practices as the rules roll out.

“I do think these standards are achievable,” Firestone said. “But I do think the key, no matter what, will be the implementation and the learning that we’re doing, particularly over the first couple of years.”

Other provisions in the approved regulation include directives for water agencies to identify and pursue opportunities to update residential landscapes as frequently and as soon as possible, since nearly half of the water applied outdoors in cities is lost to wind, evaporation or runoff.

It also directs staff to consider affordability and equity when implementing the rules, including providing assistance to water suppliers that are struggling to meet regulatory obligations, and to develop strategies to support low-income households.

Suppliers who violate the framework could be subject to actions or even fines, but officials said the emphasis will be on progress and compliance. By December 2028, staff must deliver a recommendation to the board about whether to adopt additional policies or guidelines establishing enforcement procedures.

Despite some lingering concerns about the final regulation, board members and experts said it's ultimately more important to get to work and begin implementation. The rules will go into effect by January 1, 2025.

"This is not a perfect regulation we can never have a perfect regulation but it is a significant one," said Esquivel, the board chair. "And it moves us into a direction here into the future that we can all be proud of, and that is nation-leading. Everyone has a lot to be proud of."

PUBLIC NOTICE

Announcement of a Public Informational Meeting.

WHAT'S BEING PLANNED?

The State Route 1 (SR 1) Lagunitas Creek Bridge Project (Project) proposes to replace the bridge over Lagunitas Creek on SR 1 in Marin County to provide a safe, seismically stable crossing of Lagunitas Creek on SR 1. The Project site is located at post mile (PM) 28.5, south of the unincorporated town of Point Reyes Station in Marin County. The Project limits extend from SR 1 PM 28.4 to PM 28.6, from the "T" intersection with Sir Francis Drake Boulevard north to B Street in Point Reyes Station. The Project proposes to build a three-span, concrete bridge, with accelerated bridge construction (or ABC), and longitudinal move-in. This will be the least environmentally impacting method to construct the new bridge in terms of ground disturbance and property impacts during construction. Additionally, the Project proposes to have a quicker construction turnaround to minimize biological habitat, economic, and community impacts. The Project includes the development of the Construction Management Plan, site preparation, disassembling existing and building the new bridge, extension of the culvert nearby the existing bridge, crosswalk addition on Sir Francis Drake Boulevard, utility relocation, roadway restoration and site cleanup.

WHY THIS AD?

This public notice is to inform you of an upcoming public informational meeting that will provide updates to the Project.

WHERE YOU COME IN?

We will have a public informational meeting to provide updates to the Project. The meeting will be held on July 10, 2024, from 6 PM to 7 PM at the Dance Palace located on 503 B Street, Point Reyes Station, CA 94956. There will be an opportunity for the public to submit comment cards at the meeting.

WHAT, WHEN, AND WHERE

Community Meeting: The purpose of the community meeting is for Caltrans to discuss updates of the Project and for the public to ask questions and provide comment.

Date: July 10, 2024
Time: 6 pm to 7:00 pm
Where: The Dance Palace
503 B Street
Point Reyes Station, CA 94956

CONTACT

For more information about the document, or if you have comments, questions or concerns regarding the Project, please contact Brooklyn Klepl at brooklyn.klepl@dot.ca.gov, or (510) 504-7246. TDD users may contact the California Relay Service TDD line at 1-800-735-2929 or Voice Line at 1-800-735-2922.

POINT REYES LIGHT

NEWS

Ranchers decry reservoir expansion plan

by **Ben Stocking**
July 10, 2024



The creation of Soulajule Reservoir flooded ranchlands. Landowners don't want to lose more. (David Briggs / Point Reyes Light)

Many farmers worry about going under due to drought and other climate-related catastrophes. But some West Marin ranchers are worried about going under water—literally.

In the aftermath of recent droughts, Marin Water is seeking to boost its storage by as much as 25 percent. Among the three remaining options on the table are two that would inundate ranches in West Marin. One option involves building a new reservoir in Nicasio, across the road from the existing one. The other would triple the size of Soulajule Reservoir—inundating 530 acres of Hicks Valley ranchland in the process.

At half the estimated cost of the other two options, a Soulajule expansion seems most likely.

“Our home, our barn, and the road to our property would all be underwater,” said Barbara Reedy, a member of the Dolcini family that has owned an 1,100-acre ranch in Hicks Valley for five generations. “Water would cover all our useful agricultural land, or 90 percent of it. All that would be left are some hills sticking out of the water.”

The three-mile ride from Hicks Valley Road to the Dolcini place winds through a spectacular vista of rolling hills, oak groves and pastures. There is a hidden valley within a valley that can’t be seen from the road. They call it Spring Valley Ranch.

On a recent day, Ms. Reedy drove in past a great blue heron, a flock of geese and some pelicans. A golden eagle nested nearby.

“This is one of the few places on earth where you can stop walking and hear layers of sound,” she said. “You can hear the bugs. On top of that, you hear the birds. You can hear the wind. You don’t hear airplanes. You don’t hear cars. You hear the land as it is. It’s so precious, and so rare.”

Last spring, a consulting firm hired by Marin Water, Terra Engineering, evaluated 11 different paths to expanding water storage for the district, and pared those down to three options. In addition to expanding Nicasio and Soulajule storage, the district is considering expanding Kent Lake, which would not flood privately owned land.

The consultants said expanding Soulajule would cost \$291 million. In contrast, building a new reservoir in Nicasio would cost \$606 million, and expanding the Kent Lake would cost \$613 million, they said.

Another option the consultants considered and rejected was building a new reservoir on land straddling Samuel P. Taylor State Park and the Golden Gate National Recreation Area at Devil's Gulch Creek, a tributary of Lagunitas Creek. Terra Engineering concluded that the land acquisition costs would be prohibitive.

The firm will study the pros and cons of the three remaining sites in more detail this summer and recommend one as the most appropriate at the district's September meeting.

Ranchers are not on board.

Bill Barboni grazes some of his cattle on the Dolcini ranch and owns more than 2,000 acres next door, some of which would also be inundated if the Soulajule is expanded. His brother, his sister, his niece and the families of two longtime farmhands live in houses on the site.

"It would wipe out my entire home ranch," said Mr. Barboni, a fourth-generation rancher who runs one of the largest cow-calf operations in Marin and Sonoma Counties. "My hay barn and all our infrastructure are here. If my home place becomes inoperable, I would probably have to retire and call it quits."

There are also environmental factors to consider, he added. "There are a lot of riparian areas and biological diversity that is going to be destroyed by this dam," he said.

Marin Water serves nearly 200,000 residents in central and southern Marin, including the San Geronimo Valley. Seventy-five percent of its water supply comes from its seven reservoirs, which hold a combined 80,000 acre-feet of water. (An acre-foot is about 326,999 gallons of water.)

Terra Engineering was tasked with evaluating what it would cost to add another 20,000 acre-feet to the system. Its report, released this spring, found that a Soulajule Reservoir expansion would involve fewer construction obstacles than the other sites, especially

Kent Lake. There, the presence of northern spotted owls would restrict the construction window to just three months a year, the report said.

Increasing reservoir storage capacity is only one prong of Marin Water's water supply roadmap, which board directors adopted last year. The roadmap calls for adding 12,000 to 20,000 acre-feet of water supply by 2035.

When Marin Water's reservoirs are full, they hold enough water to supply customers for two years. The roadmap calls for developing a large enough water supply to get through a four-year drought.

Besides expanding reservoir storage, the roadmap calls for increasing conservation measures, desalination and building pipelines to convey more water from Sonoma County, where the banks of the Russian River often overflow during the rainy season. Much of the excess water goes uncaptured.

Ranchers in Hicks Valley believe a Soulajule expansion is all but certain to be part of the district's final plan.

"They keep telling us that this is preliminary, and they're just doing their due diligence," Mr. Barboni said. "But a Soulajule expansion keeps showing up on our radar as being foremost on their mind."

Paul Sellier, Marin Water's water resources manager, said the other two options remain on the table and will be given close consideration.

"We're taking a deeper look at those three to try to understand and refine and develop them a bit more," he said.

That investigation will involve taking a closer look at the storage potentials of each project and their impacts on the environment, Native resources and ranches.

"The final volume for any reservoir raise is still somewhat open," Mr. Sellier said. "We will be looking for ways to minimize the impacts."

The Hicks Valley neighbors point out that Terra Engineering's estimated cost of the Soulajule expansion only includes construction and engineering costs—not the cost of acquiring their land.

The Dolcini ranch alone was recently appraised at over \$10 million, according to Carol Dolcini, Ms. Reedy's sister. Ms. Dolcini said that northern spotted owls have also been documented on her property, which could limit the schedule of construction there, and drive up its costs.

While some winter water from Sonoma County is already piped into Marin Water's system, the roadmap calls for conveying additional Sonoma water to Soulajule through a pipeline that has yet to be built. Its cost was not included in Terra Engineering's estimated price tag.

But some directors at Marin Water have questioned whether any reservoir expansion is feasible. When Terra Engineering staff presented their financial estimates at an April 30 board meeting, board director Larry Russell dismissed all the proposals as “pie in the sky.”

“Even at \$300 million, you are exceeding our bonding capacity by multiples,” he said. “I just don't see the reason to go forward.”

But board president Ranjiv Khush said it would be “very irresponsible” to drop the study.

“I feel very strongly that we should continue this analysis until we have all of the data on the table—including impacts on community members, including price tags, including the possibilities of external funding, so that we can make decisions that are defensible, not emotional,” he said.

Several directors have visited with the Soulajule ranchers, who have been lobbying against the project for nearly two years. Supervisor Dennis Rodoni recently met with Ms. Reedy and her neighbors to hear their concerns. He did not take a firm stance.

In an email to the *Light* this week, Mr. Rodoni said he supported the district investigating all options.

“Marin County and my office are supportive of Marin Water moving forward with their studies,” he said. “We do want to understand what the impacts to agriculture, family farms, and grazing lands are, if a project becomes feasible.”

Mr. Barboni said he did not expect politicians or water district board members to be swayed by emotional appeals.

“They’re looking for the most cost-effective way to store water,” he said. “I don’t think the heritage of agriculture in West Marin or economic impact on ranchers is going to influence their decision on flooding our valley.”

When the Soulajule damn was built 45 years ago, the Dolcinis and the Barbonis each lost roughly 300 acres of ranchland.

“It’s very jarring to have it come up again,” Ms. Reedy said. “If you’ve grown up in a place, it is a part of you. It’s in your DNA. Losing it is like cutting your skin.”

The Marin Agricultural Land Trust has purchased easements from both the Barboni and the Dolcini families to guarantee that their land remains in agricultural production. Ms. Dolcini said her family is committed to fulfilling that pledge.

“We feel a deep sense of connection and responsibility for stewardship of this place—for keeping it open, keeping it free, keeping it clean and passing it on to the next generation, who have had those values imbued in them from the beginning,” she said.

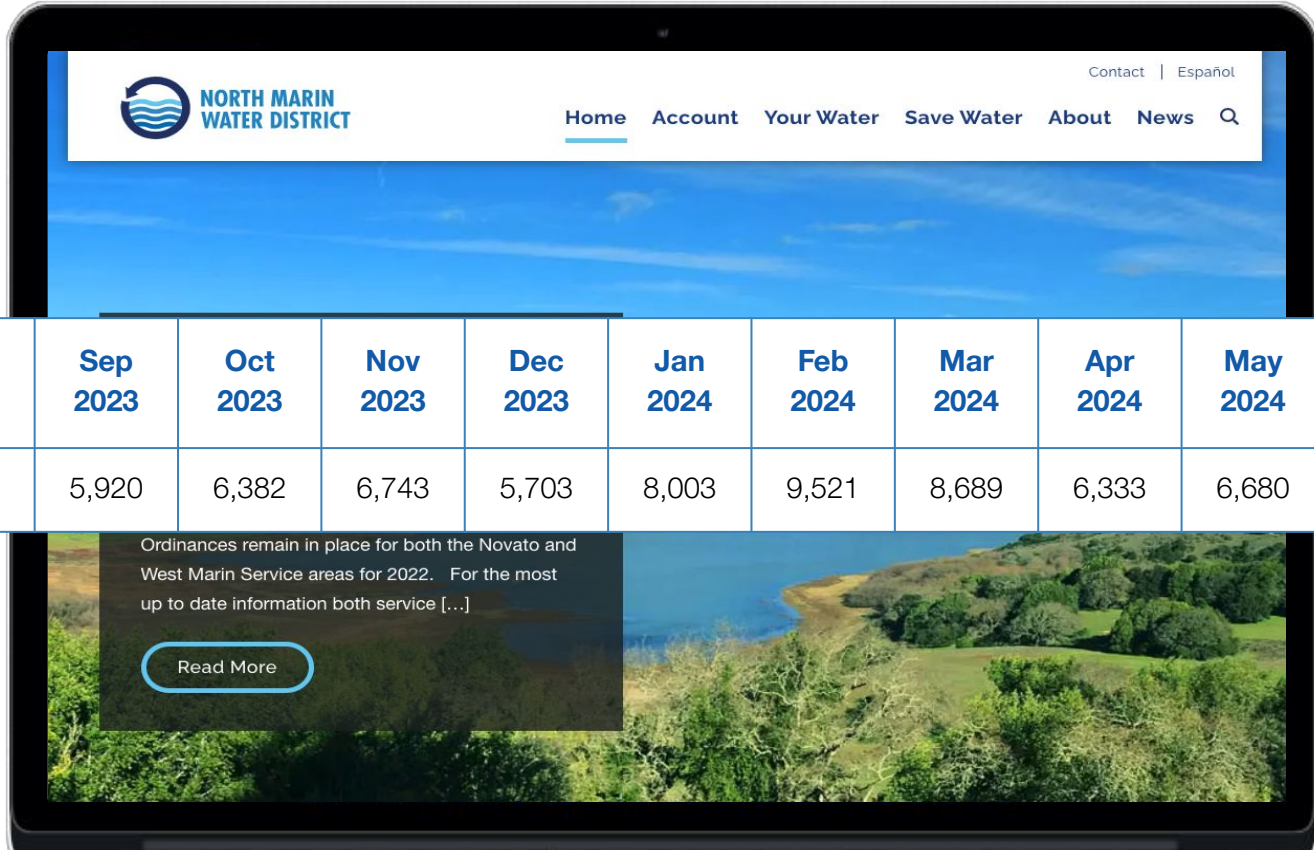


**NORTH MARIN
WATER DISTRICT**

Web & Social Media Report

June 2024

Website Statistics






	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	June 2024
2023/ 24 Visitors	5,956	5,920	6,382	6,743	5,703	8,003	9,521	8,689	6,333	6,680	6,230

Ordinances remain in place for both the Novato and West Marin Service areas for 2022. For the most up to date information both service [...]

[Read More](#)



Social Media Followers

	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Jan-2024	Feb-2024	Mar-2024	Apr-2024	May-2024	Jun-2024
 Facebook Followers	2,416	2,436	2,454	2,471	2,502	2,537	2,548	2,569	2,581	2,606	2,627
 X (Twitter) Followers	122	123	124	125	128	130	131	131	130	132	132
 Instagram Followers	841	844	859	860	869	876	891	903	907	914	922



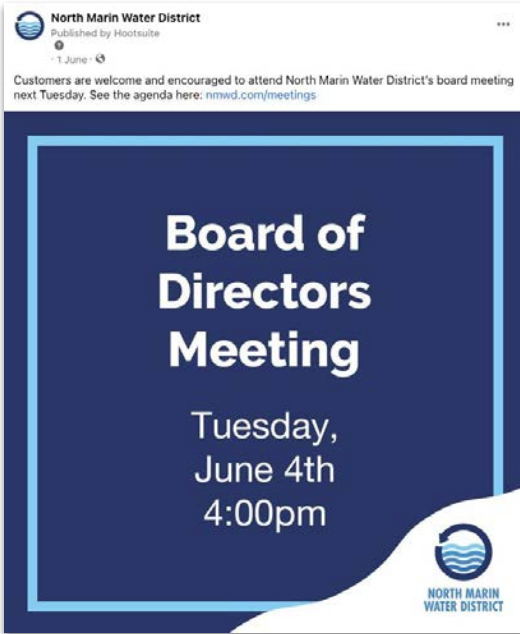
NMWD Most Visited Pages

Pages	Views
Home	9,352
Online Billing	2,288
My Water Usage (WaterSmart Portal)	1,129
What Is An Acre Foot?	509
Contact	243
NMWD Water Conservation Rebates	222
Meetings 2024	182
Start Service	148
Human Resources	140





June Social Media Highlights | Facebook



131 people reached | 3 engagements



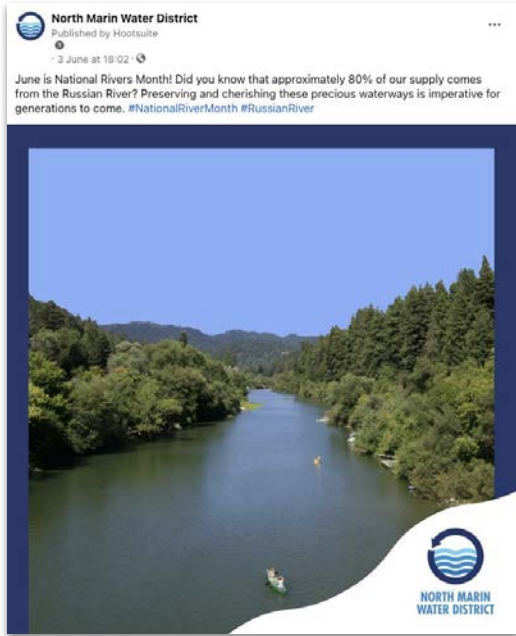
213 people reached | 16 engagements

Engagements include likes, reactions, clicks and comments

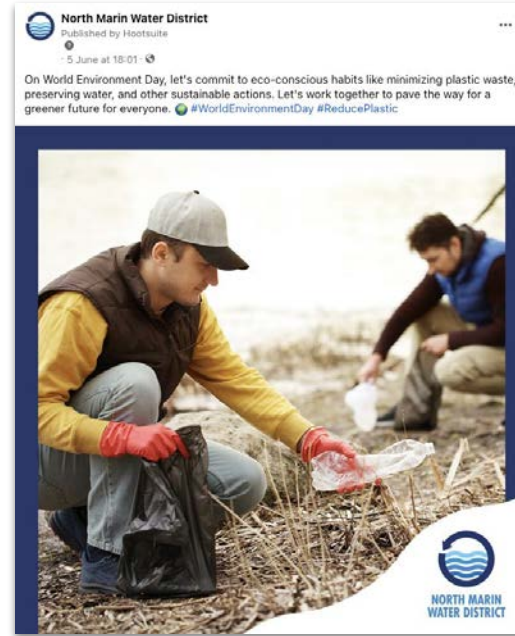




June Social Media Highlights | Facebook



174 people reached | 13 engagements



110 people reached | 5 engagements

Engagements include likes, reactions, clicks and comments





June Social Media Highlights | Facebook



238 people reached | 31 engagements



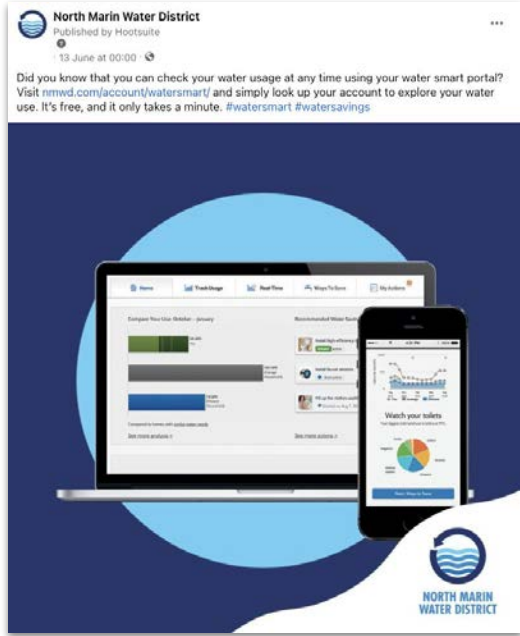
264 people reached | 12 engagements

Engagements include likes, reactions, clicks and comments





June Social Media Highlights | Facebook



140 people reached | 2 engagements



139 people reached | 3 engagements

Engagements include likes, reactions, clicks and comments

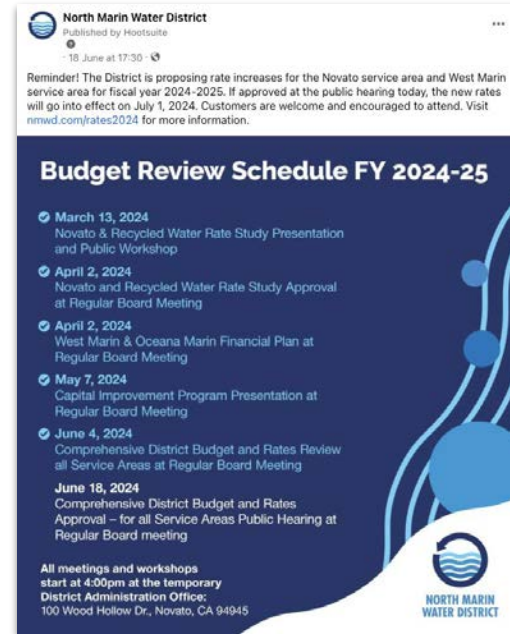




June Social Media Highlights | Facebook



121 people reached | 5 engagements



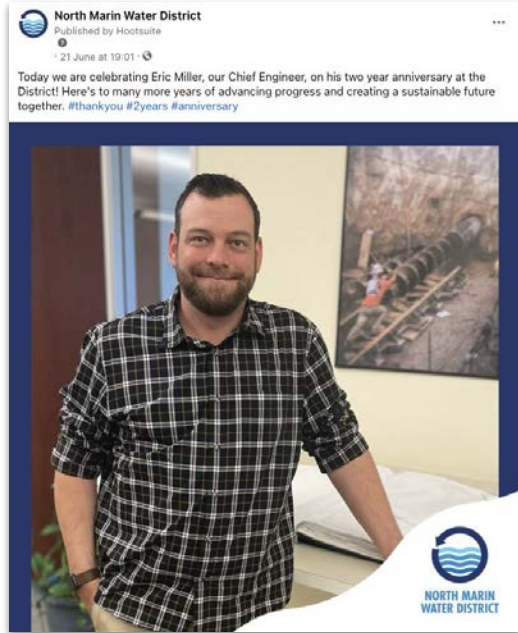
256 people reached | 31 engagements

Engagements include likes, reactions, clicks and comments

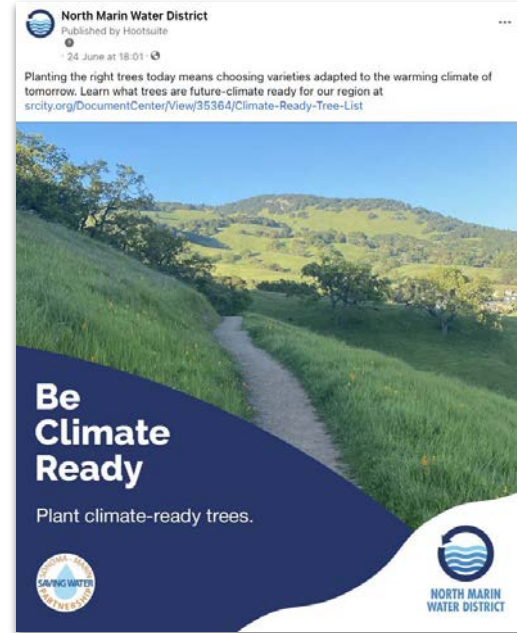




June Social Media Highlights | Facebook



365 people reached | 54 engagements



155 people reached | 4 engagements

Engagements include likes, reactions, clicks and comments





June Social Media Highlights | Facebook



148 people reached | 5 engagements



140 people reached | 2 engagements

Engagements include likes, reactions, clicks and comments





June Social Media Highlights | X (Twitter)



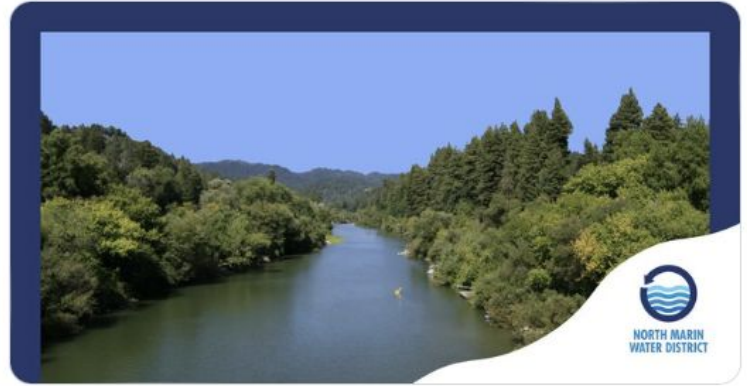
North Marin Water District @NorthMarinWater · Jun 1

Today marks a decade of dedicated service from James Lemos, our electrical and mechanical technician. James' commitment and skills have been instrumental in maintaining a reliable and effective water supply. Congrats, James! [#anniversary](#) [#10years](#)



North Marin Water District @NorthMarinWater · Jun 3

June is National Rivers Month! Did you know that approximately 80% of our supply comes from the Russian River? Preserving and cherishing these precious waterways is imperative for generations to come. [#NationalRiverMonth](#) [#RussianRiver](#)





June Social Media Highlights | X (Twitter)



North Marin Water District @NorthMarinWater · Jun 5

...

On World Environment Day, let's commit to eco-conscious habits like minimizing plastic waste, preserving water, and other sustainable actions. Let's work together to pave the way for a greener future for everyone. 🌍

[#WorldEnvironmentDay](#) [#ReducePlastic](#)



North Marin Water District @NorthMarinWater · Jun 8

...

Our team at NMWD was proud to participate in the Sustainability & Special Districts Day by giving the Novato Chamber's Leadership Program a tour of the dam and water treatment plant. [#novato](#) [#stafforddam](#)





June Social Media Highlights | X (Twitter)



North Marin Water District @NorthMarinWater · Jun 10

Water Smart Plants are adapted to California's dry summers, require little to no water once established, and are drought-tolerant. Find Water Smart Plants that thrive in our region at savingwaterpartnership.org/programs-rebat...



North Marin Water District @NorthMarinWater · Jun 13

Did you know that you can check your water usage at any time using your water smart portal? Visit nmwd.com/account/waters... and simply look up your account to explore your water use. It's free, and it only takes a minute. [#watersmart](#) [#watersavings](#)





June Social Media Highlights | X (Twitter)

 **North Marin Water District** @NorthMarinWater · Jun 13 ...

Applying a 2-3" layer of mulch on top of soil helps retain water for plants and prevent soil erosion from wind or rain. Find other helpful landscaping tips at [savingwaterpartnership.org/programs_list/...](https://savingwaterpartnership.org/programs_list/)



Be Climate Ready
Keep soil covered.


NORTH MARIN
WATER DISTRICT

 **North Marin Water District** @NorthMarinWater · Jun 15 ...

Customers are welcome and encouraged to attend North Marin Water District's board meeting next Tuesday. See the agenda here: nmwd.com/meetings




Board of Directors Meeting
Tuesday, June 18th
4:00pm


NORTH MARIN
WATER DISTRICT





June Social Media Highlights | X (Twitter)


 **North Marin Water District** @NorthMarinWater · Jun 18

Reminder! The District is proposing rate increases for the Novato service area and West Marin service area for fiscal year 2024-2025. If approved at the public hearing today, the new rates will go into effect on July 1, 2024. Visit nmwd.com/rates2024 for more info.

Budget Review Schedule FY 2024-25

- March 13, 2024
Novato & Recycled Water Rate Study Presentation and Public Workshop
- April 2, 2024
Novato and Recycled Water Rate Study Approval at Regular Board Meeting
- April 2, 2024
West Marin & Oceana Marin Financial Plan at Regular Board Meeting
- May 7, 2024
Capital Improvement Program Presentation at Regular Board Meeting
- June 4, 2024
Comprehensive District Budget and Rates Review all Service Areas at Regular Board Meeting
- June 18, 2024**
Comprehensive District Budget and Rates Approval - for all Service Areas Public Hearing at Regular Board meeting

All meetings and workshops start at 4:00pm
at the temporary District Administration Office:
100 Wood Hollow Dr., Novato, CA 94945



 **North Marin Water District** @NorthMarinWater · Jun 21

Today we are celebrating Eric Miller, our Chief Engineer, on his two year anniversary at the District! Here's to many more years of advancing progress and creating a sustainable future together. [#thankyou](#) [#2years](#) [#anniversary](#)







June Social Media Highlights | X (Twitter)

 **North Marin Water District** @NorthMarinWater · Jun 24 ...

Planting the right trees today means choosing varieties adapted to the warming climate of tomorrow. Learn what trees are future-climate ready for our region at srcity.org/DocumentCenter...



Be Climate Ready
Plant climate-ready trees.

 NORTH MARIN WATER DISTRICT

 **North Marin Water District** @NorthMarinWater · Jun 27 ...

Whether you're watering your garden or enjoying a refreshing swim, remember to be conscious of your water usage wherever you can. Visit nmwd.com for tips and resources on how to be water smart this summer. #summer #watersavings #watersmart #tipsandresources



HELLO SUMMER

 NORTH MARIN WATER DISTRICT





June Social Media Highlights | X (Twitter)

 **North Marin Water District** @NorthMarinWater · Jun 30 ...

Look for the Water Smart Plant Label at garden stores near you and take the guess-work out of finding plants adapted to our summer-dry climate. Find participating nurseries at [savingwaterpartnership.org/programs_list/...](https://savingwaterpartnership.org/programs_list/)



Be Climate Ready
Choose Water Smart Plants.

SONOMA - MARIN SAVING WATER PARTNERSHIP

WATER SMART PLANTS
need less water
Ask your knowledgeable staff to recommend plants that are water smart!
watersmartplant.org

NORTH MARIN WATER DISTRICT





June Social Media Highlights | Instagram



7 likes



2 likes





June Social Media Highlights | Instagram



5 likes



4 likes





June Social Media Highlights | Instagram



8 likes



3 likes





June Social Media Highlights | Instagram



4 likes



5 likes

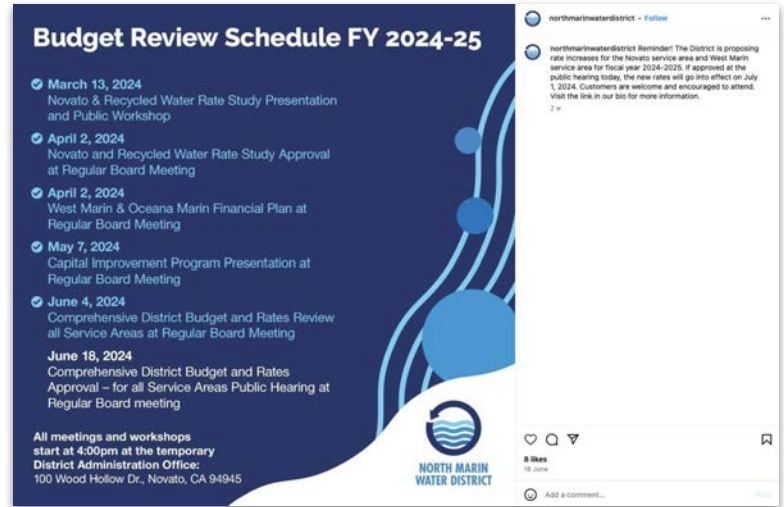




June Social Media Highlights | Instagram



2 likes



8 likes





June Social Media Highlights | Instagram



14 likes



5 likes





June Social Media Highlights | Instagram



3 likes

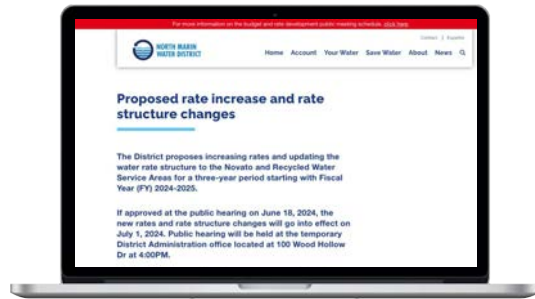


3 likes



Rate Increase Study Outreach Campaign Materials

- Kiosk designed outreach materials for the rate increase study



Budget Review Schedule FY 2024-25

- March 13, 2024**
Novato & Recycled Water Rate Study Presentation and Public Workshop
- April 2, 2024**
Novato and Recycled Water Rate Study Approval at Regular Board Meeting
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Capital Improvement Program Presentation at Regular Board Meeting
- June 4, 2024**
Comprehensive District Budget and Rates Review All Service Areas at Regular Board Meeting
- June 18, 2024**
Comprehensive District Budget and Rates Approval – for all Service Areas Public Hearing at Regular Board meeting

All meetings and workshops start at 4:00pm at the temporary District Administration Office: 100 Wood Hollow Dr., Novato, CA 94945

Notice of public hearing regarding proposed rate increases and rate structure changes for the Novato service area

Hearing Date: Tuesday, June 18, 2024
Time: 4:00pm
Location: 100 Wood Hollow Dr., Novato CA 94945

Reasons for the proposed rate structure changes:

The District regularly reviews its water rate structure to ensure that each residential and commercial, industrial, institutional, and irrigation customer continues to pay their fair and proportional share of costs. The cost for serving each type of customer varies over time because of changes in customer water use, state regulations, service costs, and other factors.

Proposed rate increases
North Marin Water District is proposing a three-year schedule of rate increases to cover the increasing costs of providing quality potable and recycled water service to our Novato service area customers.

Proposed Pass-Through Provision
North Marin Water District is proposing to adopt a provision whereby future increases to wholesale water rates will be automatically incorporated in rates as those increases occur.

Replacement of commercial, industrial, institutional, and irrigation customers seasonal usage rates with a year-round uniform rate.
An additional structural change for commercial, industrial, institutional, and irrigation customers involves reducing the current seasonal quantity charges (with higher rates during some summer months) with a uniform rate that will be applied during all months.

Where to learn more, get answers, and make comments
Call: 415-887-4133
Email: info@nmwd.com
Visit: nmwd.com

Attend the public hearing
The Board will receive and consider adopting the rate increases at a public meeting on June 18, 2024, at 4:00pm at 100 Wood Hollow Drive in Novato.

Proposed Sewer quantity (usage) charges

Category	Current Rate	Proposed Rate
Pass-through provision for FY 25/26 and FY 26/27	\$10.29	\$10.29
Water	\$11.00	\$11.00
Wastewater	\$11.00	\$11.00
Water Conservation Programs	\$1.00	\$1.00
Water Meters	\$13.00	\$13.00
Water Storage Tanks & Systems	\$1.00	\$1.00
Water Treatment	\$9.00	\$9.00
Water Distribution Network	\$25.00	\$25.00
Water Service and Customer Service	\$2.00	\$2.00
Systems Maintenance	\$2.00	\$2.00
Capital Spending	\$2.00	\$2.00
Debt Service	\$2.00	\$2.00
Billing Portal and Staff	\$2.00	\$2.00
Fire Suppression	\$2.00	\$2.00
District Administration	\$2.00	\$2.00
Customer Service Team	\$2.00	\$2.00

Annual Report

- Kiosk updated the Annual Report

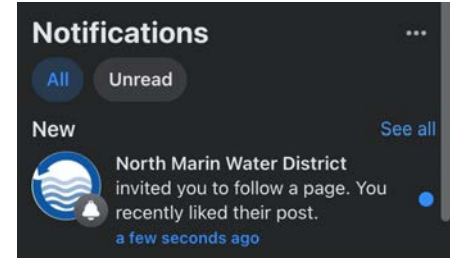
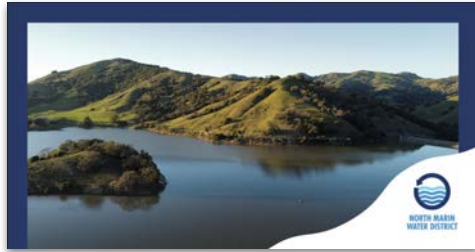


Marin County Fair Materials

- Kiosk designed outreach materials (water stations and posters) for the Marin County Fair in conjunction with Marin Water



Facebook Likes Campaign - June Report




We are running an evergreen ad which encourages customers in the NMWD service areas to 'like' (follow) the NMWD Facebook page. We selected images that have historically performed the best to drive more likes.

Spend in June 2024	Reach (Number of people who saw the ad)	Impressions	Results (New Page Likes)	Cost Per New Page Like
\$45.01	3,772	7,683	26	\$1.73

*This month, we were able to reach over **3,000** people with the Likes Campaign*



What's Next?

- Kiosk will design and layout the Water Quality Report for Novato and West Marin in English and Spanish
 - Kiosk will work on a proposal for video reels for social media
 - Kiosk to begin work on the design and layout of summer outreach posts in partnership with Sonoma Water
 - Social media posts will also feature employees on their work anniversaries, as well as highlight rebates
 - Kiosk continues to work with staff to get photos of construction and maintenance projects throughout Novato and West Marin
- 



Thank You