



**NORTH MARIN WATER DISTRICT**  
**AGENDA - REGULAR MEETING**  
 June 24, 2014 – 7:30 p.m.  
**Dance Palace**  
**503 B Street**  
**Point Reyes Station, California**

Information about and copies of supporting materials on agenda items are available for public review at 999 Rush Creek Place, Novato, at the Reception Desk, or by calling the District Secretary at (415) 897-4133. A fee may be charged for copies. District facilities and meetings comply with the Americans with Disabilities Act. If special accommodations are needed, please contact the District Secretary as soon as possible, but at least two days prior to the meeting.

Est. Time	Item	Subject												
7:30 p.m.	<b>CALL TO ORDER</b>													
	1.	<b>GENERAL MANAGER'S REPORT</b>												
	2.	<b>OPEN TIME: (Please observe a three-minute time limit)</b>  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.												
	3.	<b>STAFF/DIRECTORS REPORTS</b>												
	4.	<b>PUBLIC HEARING/APPROVE: West Marin Water FY 2014/2015 Budget Resolutions</b>												
	5.	<b>PUBLIC HEARING/APPROVE: Oceana Marin Sewer FY 2014/2015 Budget Resolution</b>												
	<b>INFORMATION - WEST MARIN</b>													
	6.	Overview of the West Marin Water Shortage Contingency Measures												
	7.	West Marin Capital Improvements Projects - FY13-14 Preliminary Year-End Progress Report												
	8.	2014 West Marin Water System Master Plan – Administrative Draft												
8:30 p.m.	<b>CONSENT CALENDAR</b>  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.													
		<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Type</u></th> <th style="text-align: center;"><u>DU</u></th> <th style="text-align: center;"><u>EU</u></th> </tr> </thead> <tbody> <tr> <td>9. <b>Consent – Approve:</b> Walnut Meadows Subdivision</td> <td style="text-align: center;">Sub. Div. 12</td> <td style="text-align: center;">11</td> </tr> <tr> <td>10. <b>Consent – Approve:</b> Approve Content and Layout for Summer 2014 Bill Insert/Flyer</td> <td></td> <td></td> </tr> <tr> <td>11. <b>Consent – Approve:</b> Approve Text for West Marin <i>Water Line</i>, Volume 12</td> <td></td> <td></td> </tr> </tbody> </table>	<u>Type</u>	<u>DU</u>	<u>EU</u>	9. <b>Consent – Approve:</b> Walnut Meadows Subdivision	Sub. Div. 12	11	10. <b>Consent – Approve:</b> Approve Content and Layout for Summer 2014 Bill Insert/Flyer			11. <b>Consent – Approve:</b> Approve Text for West Marin <i>Water Line</i> , Volume 12		
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	<b>ACTION CALENDAR</b>													
	12.	<b>Approve:</b> Atherton Avenue Land Division Renewal of Letter Agreement with the Novato Fire Protection District												

All times are approximate and for reference only.

The Board of Directors may consider an item at a different time than set forth herein.

(Continued)

***INFORMATION ITEM***

13. Chemical Bids

14. ***MISCELLANEOUS***

Disbursements

May 2014 Equipment Auction Report

News Articles:

State Regulator regain right over Russian River water drain

9:00 p.m.

15. ***ADJOURNMENT***

1

2

3

**4**

## MEMORANDUM

To: Board of Directors

June 20, 2014

From: David L. Bentley, Auditor-Controller 

Subj: Public Hearing/Approve – West Marin Water FY 2014/2015 Budget

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**RECOMMENDED ACTION:** 1) Approve Rate Increase;  
2) Approve Drought Surcharge;  
3) Approve FY15 Budget

**FINANCIAL IMPACT:** 1) Rate Increase Would Generate \$41,000 Annually;  
2) Drought Surcharge Would Generate \$43,000;  
2) FY15 Budgeted Expenditure Plan Of \$2,187,000

Following for your third review, public hearing and approval is the proposed FY2014/2015 (FY15) Budget for the West Marin Water System.

**WATER RATE INCREASE:** A public hearing to consider adoption of a proposed increase in the cost of water which averages 5% for both the typical residential and non-residential customer, effective July 1, 2014, is scheduled for June 24 at 7:30 PM. Customers were notified individually of the proposed rate increase and drought surcharge by letter dated May 9, 2014 (see page 10 of the budget document) and a notice of the Public Hearing was published in the June 19 edition of both the Point Reyes Light and the West Marin Citizen (Attachments A&B), extending an invitation to attend the public hearing and/or exercise the right to protest the proposed increase. A customer protest of 50% plus one would invalidate the proposed increase.

**DROUGHT SURCHARGE:** The May 9 letter to customers included a proposal to consider, as a separate matter, the adoption of a drought surcharge to be implemented July 1, concurrent with mandatory water use restrictions. The drought surcharge is designed to mitigate both the revenue loss from reduced water sales during a drought, as well as the cost of water purchased from Marin Municipal Water District for release into Lagunitas Creek, pursuant to the Interconnection Agreement between Marin Municipal and NMWD. The proposed drought surcharge would be temporary and would be suspended November 1 when mandatory use restrictions end.

The proposal is to add a surcharge of \$2.50 per thousand gallons for all water use by non-residential customers. For residential customers, the \$2.50 per thousand gallon surcharge would apply only to the amount of water use in excess of 200 gallons per day (gpd).

During the four-month period of mandatory water use restriction, the proposed surcharge

would add \$2 per month to the typical (median) single-family residential water bill, assuming no reduction in water use. If the typical single-family residence reduces water use by 25%, the drought surcharge would be zero. For the median non-residential customer, the proposed surcharge would add \$30 per month, or, if the non-residential customer reduced water use by 25%, the increase in cost would be \$23 per month (see chart on page 6 of the budget document).

The outreach to customers generated one letter and sixteen phone calls:

1. A letter from an Olema customer protests the water rate increase and asks that the District "scale back spending & expanding using rate increases to build unnecessary infrastructure" (Attachment C).
2. Most calls pertained to the 25% mandatory water use reduction and how it would affect them, and trying to understand the difference between the 200 gpd residential threshold and the 25% reduction. Many of the same calls also inquired if the 200 gpd threshold for the drought surcharge would be doubled for customers with multiple dwelling units on their meter. Staff explained that the drought surcharge threshold for multiple dwelling units on a single meter would be 200 gpd per dwelling unit.

Staff will make a presentation on the need for the proposed water rate increase and the proposed drought surcharge. Public comment can then be taken. Attachment D is a draft of Regulation 54 incorporating the proposed changes.

**FY15 BUDGET:** Since the Board's last review on June 17, one adjustment to expenditures has been made adding \$1,000 to annual expense.

#### **RATE INCREASE PROPOSAL DETAIL**

Consistent with the increase adopted for Novato customers, a 5% increase for the typical residential customer is recommended, comprised of a 7% commodity rate increase and no increase in the bimonthly service charge, which stands at \$30 bimonthly for the typical customer with a 5/8" meter (with the exception that Paradise Ranch Estates customers pay \$46 as their service charge includes the cost of amortizing the \$14,000 annual revenue bond debt service applicable exclusively to customers residing within the PRE subdivision). The proposed West Marin Water increase would total \$31 annually (\$2.58 per month) for the typical residential customer (see Rate Increase Analysis on page 5).



If enacted, the proposed increase will generate \$41,000 in additional revenue next fiscal year.

Commodity Rate Increase	\$41,000
Bimonthly Service Charge Increase	<u>0</u>
Total	<u>\$41,000</u>

The proposed budget also includes \$43,000 in drought surcharge revenue generated between July 1 and November 1 due to enactment of a 25% mandatory water use restriction.

Annual 5% increases are included in the 5-year financial plan for FY16 and beyond (see page 3) to help pay for \$1.25 million in water treatment plant improvements. In addition, the District can no longer defer replacement of the 25,000 gallon redwood tank that was destroyed in the Mount Vision fire. An 82,000 gallon concrete replacement tank is estimated to cost \$500,000, and approximately \$500,000 needed to complete the water treatment and PRE storage projects will need to be borrowed and repaid with interest.

### **CONNECTION FEES**

The \$22,800 connection fee for West Marin Water was increased in August 2009 and phased-in over two years. One new connection is budgeted for West Marin Water next fiscal year. Staff anticipates reviewing the West Marin Water connection fee calculation again following approval of the 2014 West Marin Water Master Plan update.

### **BUDGETED SYSTEM IMPROVEMENT PROJECTS**

Significant Improvement Projects budgeted for the coming year, from page 1 of the budget package, include:

- \$1,286,000 to complete installation of 5,200 feet of 12-inch pipeline along the Pt. Reyes-Petaluma Road between NMWD's Gallagher Well and the existing transmission line near Downey Well. This project will help address periodic salinity intrusion at the Coast Guard wells.
- \$100,000 to complete modification of the Olema Pump Station to prevent flooding of facilities by Olema Creek and to upgrade its SCADA remote terminal unit.
- \$120,000 to upsize 900 feet of 4-inch pipeline to 8-inch from the Bear Valley Tanks to Fox Drive/McCarthy Court to improve water delivery and fire flow to the Bear Valley Service Area.

The West Marin Water System Five-Year Financial Plan shows the \$500,000 PRE Tank

4A replacement will commence in FY16. The \$1.25 million upgrade of the treatment plant is scheduled for FY17.

## **WEST MARIN WATER SYSTEM OPERATING BUDGET**

You will note from page 2 of the budget that the proposed West Marin Water System Budget projects a cash surplus next fiscal year of \$1,000. The proposed budget projects one new service to be added to the system each year into the future, in line with the slow growth experienced recently (see page 7).

FY15 water sales volume is budgeted to decrease 11% from the current year estimated actual. The West Marin system is projected to consume 70 million gallons (MG) next year, compared to 78 million gallons estimated for the current fiscal year, due to the enactment of mandatory 25% water use restrictions from July 1 through November 1. The forecast assumes water sales volume will remain flat thereafter at 75MG as conservation programs (including water rate increases) continue to induce more efficient use of water. Historical consumption data is shown on page 8.

Operating expenditures, before depreciation, are budgeted to increase 11% from the FY14 adopted budget, an increase of \$83,000, and fall 3%, (\$16,000) from the current fiscal year estimated actual expenditures. The proposed budget includes \$35,000 for purchase of 200 acre-feet of water from Marin Municipal between July 1 and November 1 to maintain adequate flow in Lagunitas Creek, and an additional \$18,000 in water conservation expense due to anticipated enactment mandatory water use restrictions. A graphical history of operating expenditures is shown on page 9. The 2014 update of the Coastal Area Annual Water Cost Comparison (page 14) shows that, even with the proposed rate increase, the water cost for NMWD's West Marin customers remains below that paid by the customers of the other seven coastal agencies surveyed.

## **STAFF RECOMMENDATION**

After closing the public hearing:

1. Approve Resolution 14-XX (Attachment E) amending Regulation 54 pertaining to Water Rates and Charges to reflect an increase averaging 5% for the typical residential customer in the West Marin Water Service Area effective July 1 of 2014;
2. Approve Resolution 14-XX (Attachment F) amending Regulation 54 pertaining to Water

Rates and Charges to add a provision for the Drought Surcharge, as discussed above, applicable to the West Marin Water Service Area.

3. Adopt the FY15 West Marin Water System Budget as presented;
4. Authorize the General Manager to pay demands arising from execution of the budgeted FY15 West Marin Water expenditure plan.

**No Place Like Home, a free brunch hosted by Bob Grove,** takes place from 11 a.m. to noon at the Bolinas Community Center.

**A farm tour and casual cheese tasting** takes place at 1:30 p.m. on Fridays at Point Reyes Farmstead Cheese Company, north of Point Reyes Station. Learn about the farm's history, diversification and award-winning conservation practices, including its methane digester and composting program. \$20. For reservations visit [pointreyescheese.com](http://pointreyescheese.com) or call (800)

591.6878.

**Mark Taylor and Joelle Goncalves play flamenco** from 6 to 8 p.m. at Tony's Restaurant, in Marshall.

**Buck Nickels and Loose Change** play at Rancho Nicasio at 8 p.m. \$10 in advance, or \$12 at the door. For tickets call (415) 662.2298.

**Jon Hammond** plays jazz at 9 p.m. at Smiley's Schooner Saloon, in Bolinas. Cover charge.

**Strange Nature** plays at 9 p.m. at the Old Western Saloon, in Point Reyes. Cover charge.

## Saturday, June 28

**The opening day of the Point Reyes Farmers Market** features live old-timey, blues and gospel music by the Fog Belters, a demonstration by chef Missy Will at 10 a.m. and local organic produce and foods sold from 9 a.m. to 1 p.m. outside Toby's Feed Barn, in Point Reyes Station. The Kids Zone, sponsored by the Marin Literacy Program, offers bilingual story time at 11 a.m., along with free books. The market continues on Saturday mornings through Nov. 8.

**The Solar Path**, a workshop with solar builders and advocates Gordon Lawrence and Ned Hoke, takes place from 9 a.m. to noon in Bolinas. Presented by the Faultline Institute. \$20; scholarships available. For information and registration email Gordon at [bolinasretreatproject@gmail.com](mailto:bolinasretreatproject@gmail.com). Bring light lunch and stay for more conversation.

**A workshop in miniature burden basket weaving**, led by Charles Kennard, takes place from 9 a.m. to 4 p.m. in the Point Reyes National Seashore. Open to beginning and intermediate weavers. \$70 for members of the Point Reyes National Seashore Association, or \$80 for non-members. For information and registration call (415) 663.1200 or visit [ptreyes.org](http://ptreyes.org).

**Learn to paint the colors of the sand, surf and sea foam** in a workshop with Joan Hoffman from 9 a.m. to 4 p.m. in the Point Reyes National Seashore. All levels welcome. \$90 for members of the Point Reyes National Seashore Association, or \$100 for non-members. For information and registration call (415) 663.1200 or visit [ptreyes.org](http://ptreyes.org).

**An artists' reception for an exhibit of Chinese brush painting** featuring works by Sandy Bellak, Colleen Cavin and Micheline Cote, students of master painter Madeline Fu, takes place from 11 a.m. to 1 p.m. at the Stinson Beach Library. Refreshments served. Exhibit shows through July 29.

**A reception for "The Cliffs of Point Reyes," an exhibit of oil paintings by Thomas Wood**, takes place from 1 to 4 p.m. at Thomas Wood Fine Art, on the Nicasio Square. Exhibit continues from 1 to 4 p.m. on Sunday, and closes with a reception on Saturday, July 5.

**The San Francisco Mime Troupe presents "Ripple Effect,"** featuring The Fiery Activist, The Patriotic Immigrant, The Naïve Techie and Successful CEO, at 3:30 p.m. on the lawn at the San Geronimo Valley Community Center. Bring

the family and a picnic.

**Theater on the Lagoon presents "Charlie and the Chocolate Factory"** at 7 p.m. at the Bolinas Community Center. Directed by Molly Maguire and choreographed by Bridget Bartholome, with art direction by Mollie Lounibus. \$10 to \$20 sliding scale admission, or \$5 for kids.

**It's Delovely: Noah Griffin Sings the Music of Cole Porter**, a smart and entertaining evening of songs from the history of musical theater, begins at 8 p.m. at the Dance Palace Community and Cultural Center. Tickets are \$27 general, \$25 for seniors and \$13 for youth; proceeds benefit the community center.

**Le Jazz Hot** plays at 8:30 p.m. at Rancho Nicasio. \$15.

**Beso Negro** plays at 9 p.m. at Smiley's Schooner Saloon, in Bolinas. Cover charge.

**Go Van Go** plays at 9 p.m. at the Old Western Saloon, in Point Reyes Station. Cover charge.

## Sunday, June 29

**Tai Chi Ch'uan with Ellen Serber** takes place from 8:30 to 10 a.m. at the Dance Palace Community and Cultural Center. All levels. \$40 per month. Please RSVP before first class to (415) 663.1662.

**Sketch the hidden valley of Point Reyes in a thumbnail sketching and painting workshop** with Joan Hoffman from 9 a.m. to 4 p.m. in the Point Reyes National Seashore. All levels welcome. \$90 for members of the Point Reyes National Seashore Association, or \$100 for non-members. For information and registration call (415) 663.1200 or visit [ptreyes.org](http://ptreyes.org).

**Learn about biological strategies for carbon sequestration on managed lands during a day at the Nicasio Native Grass Ranch**, featuring a family-friendly program and tour from 10 a.m. to noon and a more technical program from 2 to 4 p.m. Meet rancher and Carbon Cycle Institute leader John Wick and rangeland consultant Jeff Creque, a co-founder of the Marin Carbon Project. Free, but reservations required by calling (415) 485.6257 or visiting [marincarbonconservationleague.org](http://marincarbonconservationleague.org). Bring water, a sunhat, a windbreaker and a camp chair.

**Ecstatic Dance**, a freestyle dance experience facilitated by Taira Restar, takes place from 10 a.m. to noon on Sundays at the Dance Palace Community and Cultural Center. \$15.

**Pianist Suzanne Ciani performs original compositions** from 2 to 4 p.m. at Commonwealth, in Bolinas. Free, though donations are appreciated and reservations are requested at (415) 868.0970 or [thenevnschool@commonwealth.org](mailto:thenevnschool@commonwealth.org). Carpooling is also encouraged, as parking is limited.

**Ruthie Foster** plays for a Barbecue on the Lawn at Rancho Nicasio, with gates opening at 3 p.m. and music starting at 4 p.m. \$22 in advance, or \$25 at the door.

**Enjoy live music** from 5 to 8 p.m. every Sunday at The Station House Café, in Point Reyes Station. No cover.

**"Hey, hey, LBJ" a 70-minute solo performance by David Kleinberg** ("An army reporter parties in Thailand while his buddies are under rocket attack in Vietnam"), shows at 7 p.m. at the San Geronimo Valley Community Center. Not appropriate for children. \$12 to \$25 sliding scale admission, with \$2 off for people who were either hippies in the 60s, burned their draft cards or arrive at the show in 60s garb.

### PUBLIC HEARING NOTICE PROPOSED NORTH MARIN WATER DISTRICT WATER RATE INCREASE

**Purpose:** Consider FY 2014/15 Budget and Proposed Rate Increase  
**Impact Area:** West Marin Water Service Area  
**Date and Time:** Tuesday, June 24, 2014 at 7:30 p.m.  
**Place:** Dance Palace, 503 B Street, Point Reyes Station, CA

**BACKGROUND:** Water meters are read and customers receive a bill bimonthly. The bill is comprised of 1) a "Water Use Charge" that is determined by multiplying a commodity rate times water use measured in thousand gallon units; and 2) a bimonthly "Service Charge" - currently \$30 for the typical residential water meter. The West Marin water service area is comprised of approximately 770 metered services distributed over five rate zones based upon elevation and tax rate area. Customers residing within a higher elevation zone pay a correspondingly higher commodity rate, or "Hydraulic Zone Charge," designed to recover the incremental cost of energy and maintenance for pumping water into each elevation zone.

PROPOSED		
<b>West Marin Water System Rate Changes</b>		
<b>BIMONTHLY SERVICE CHARGE</b>		
For 5/8 x 3/4-inch meter.....	Existing \$30.00	Proposed \$30.00
For 1-inch residential meter for fire service.....	\$34.00	\$34.00
For 1-inch meter.....	\$60.00	\$60.00
For all meters in Paradise Ranch Estates.....	\$46.00	\$46.00
<b>WATER USE CHARGE</b>		
<b>Residential Rate Per Dwelling Unit</b>		
First 400 gallons per day.....	\$6.68	\$7.15
From 401 to 900 gallons per day.....	\$9.25	\$9.90
From 901+ gallons per day.....	\$14.84	\$15.88
<b>Commercial, Institutional &amp; Irrigation Rate</b>		
November 1 through May 31.....	\$6.75	\$7.22
June 1 through October 31.....	\$9.34	\$9.99
<b>PLUS A HYDRAULIC ZONE CHARGE/1,000 GAL</b>		
<b>Zone</b>	<b>Hydraulic Zone</b>	
1	Point Reyes Station.....	\$0.00 \$0.00
2	Bear Valley, Silver Hills, Inverness Park & Lower Paradise Ranch Estates (Elevation 0' - 365').....	\$0.18 \$0.19
3	Olema.....	\$0.66 \$0.71
4	Upper Paradise Ranch Estates (Elevation 365'+).....	\$4.46 \$4.77
Additional Commodity Rate for Consumers Outside the Improvement District Boundary.....		
	\$2.67	\$2.86

**EFFECTIVE DATE:** The increases are proposed to be effective July 1, 2014.

**IMPACT:** The proposed increases would add \$2.58 per month (\$31 annually) to the cost of water for the typical (median) residential customer who consumes 59,500 gallons of water annually. Those using less than the median will see an increase less than \$31 annually, and those using more will pay more.

#### WHY ARE RATES BEING INCREASED?

Over the next three fiscal years \$1.25 million will be expended to complete construction of water treatment plant improvements. In addition, the District can no longer defer replacement of the 25,000 gallon redwood tank that was destroyed in the Mount Vision fire. An 82,000 gallon concrete replacement tank is estimated to cost \$500,000, and the funds to complete that project will need to be borrowed and repaid with interest.

On a positive note, earlier this year the District received welcome news that construction of the \$1.5 million pipeline from NMWD's well, located adjacent to Lagunitas Creek approximately one mile upstream from the water treatment plant on the Gallagher Ranch, will be fully funded from a California Proposition 50 grant. Water from the Gallagher Well will mitigate the salinity intrusion now experienced at the existing Point Reyes wells during high tide and low creek flow conditions.

#### PROPOSED DROUGHT SURCHARGE

At the Water Rate Hearing the Board will consider, as a separate matter, the adoption of a Drought Surcharge to be implemented concurrent with mandatory water use restrictions. **MANDATORY WATER USE RESTRICTIONS ARE ANTICIPATED FROM JULY 1 THROUGH NOVEMBER 1, 2014.** The NMWD Water Shortage Contingency Plan for the West Marin Service Area includes enactment of a Drought Surcharge to mitigate both the revenue loss from reduced water sales during a drought, as well as the cost of water purchased from Marin Municipal Water District for release into Lagunitas Creek as may be needed, pursuant to the Interconnection Agreement between Marin Municipal and NMWD.

The proposed Drought Surcharge would be temporary and would be implemented concurrent with mandatory water use restrictions (July 1), and suspended when mandatory water use restrictions end (November 1).

The proposal is to add a surcharge of \$2.50 per thousand gallons for all water use by non-residential customers. For residential customers, the \$2.50 per thousand gallon surcharge would apply only to the amount of water use in excess of 200 gallons per day.

During the four-month period of mandatory water use restriction, the proposed surcharge would add \$1.90 per month to the typical (median) single-family residential water bill, assuming no reduction in water use. If the typical single-family residence reduced water use by 25%, the drought surcharge would be zero. For the median non-residential customer, the proposed surcharge would add \$30 per month, or, if the non-residential customer reduced water use by 25%, the increase in cost would be \$23 per month.

**HOW TO PARTICIPATE:** You are cordially invited to attend the hearing and present oral or written testimony on the proposal. You have the right to protest this proposed rate increase. If you do, you must submit your protest in writing, even if you plan to attend the public hearing. If written protests are submitted by a majority of the affected property owners or customers, the proposed increases will not be imposed. Your written protest must be received prior to the close of the June 24, 2014 public hearing. Written protests must be signed by the property owner or customer of record and must include the parcel number or NMWD account number. Send or deliver written protests to: District Secretary, North Marin Water District, PO Box 146, Novato, CA 94948.

**ADDITIONAL INFORMATION:** For more information visit NMWD's website at [www.nmwd.com](http://www.nmwd.com) or call the District Secretary at (800) 464-6693.

## WEATHER

Date	High	Low	Rainfall
Thur. June 12	• 73	• 53	0.00
Fri. June 13	• 80	• 48	0.00
Sat. June 14	• 86	• 50	0.00
Sun. June 15	• 77	• 46	0.00
Mon. June 16	• 68	• 50	0.00
Tues. June 17	• 80	• 41	0.00
Wed. June 18	• 87	• 46	0.00
Temperature measurements from Novato			
Inverness rainfall for week: 00.00 inches			
Inverness rainfall since July 1: 26.14 inches			
Inverness average since 1925: 37.71 inches			

West Marin Citizen  
6/19/14

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**PLUS A HYDRAULIC ZONE CHARGE/1,000 GAL**

Zone	Hydraulic Zone	Existing	Proposed
1	Point Reyes Station.....	\$0.00	\$0.00
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**WHY ARE RATES BEING INCREASED?**  
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**PROPOSED DROUGHT SURCHARGE**  
 At the Water Rate Hearing the Board will consider, as a separate matter, the adoption of a Drought Surcharge to be implemented concurrent with mandatory water use restrictions.

**MANDATORY WATER USE RESTRICTIONS ARE ANTICIPATED FROM JULY 1 THROUGH NOVEMBER 1, 2014.** The NMWD Water Shortage Contingency Plan for the West Marin Service Area includes enactment of a Drought Surcharge to mitigate both the revenue loss from reduced water sales during a drought, as well as the cost of water purchased from Marin Municipal Water District for release into Lagunitas Creek as may be needed, pursuant to the Interconnection Agreement between Marin Municipal and NMWD. The proposed Drought Surcharge would be temporary and would be implemented concurrent with mandatory water use restrictions (July 1), and suspended when mandatory use restrictions end (November 1). The proposal is to add a surcharge of \$2.50 per thousand gallons for all water use by non-residential customers. For residential customers, the \$2.50 per thousand gallon surcharge would apply only to the amount of water use in excess of 200 gallons per day. During the four-month period of mandatory water use restriction, the proposed surcharge would add \$1.90 per month to the typical (median) single-family residential water bill, assuming no reduction in water use. If the typical single-family residence reduced water use by 25%, the drought surcharge would be zero. For the median non-residential customer, the proposed surcharge would add \$30 per month, or, if the non-residential customer reduced water use by 25%, the increase in cost would be \$23 per month.

**HOW TO PARTICIPATE:** You are cordially invited to attend the hearing and present oral or written testimony on the proposal. You have the right to protest this proposed rate increase. If you do, you must submit your protest in writing, even if you plan to attend the public hearing. If written protests are submitted by a majority of the affected property owners or customers, the proposed increases will not be imposed. Your written protest must be received prior to the close of the June 24, 2014 public hearing. Written protests must be signed by the property owner or customer of record and must include the parcel number or NMWD account number. Send or deliver written protests to: District Secretary, North Marin Water District, PO Box 146, Novato, CA 94948.

**ADDITIONAL INFORMATION:** For more information visit NMWD's website at [www.nmwd.com](http://www.nmwd.com) or call the District Secretary at (800) 464-6693. Publish West Marin Citizen June 12, 2014.

MAY 22, 2014

PROTEST OF WATER RATE INCREASE

District Secy -  
NORTH MARIN WATER DIST.  
P.O. BOX 146  
Novato, Ca 94948

RECEIVED  
MAY 23 2014  
North Marin Water District

SCALE BACK SPENDING & EXPANDING - USING RATE INCREASES TO BUILD UNNECESSARY INFRASTRUCTURE.  
WEST MARIN IS NOT A GROWTH AREA.

REGISTER THIS OBJECTION FOR MR/MRS JOSEPH WATT  
A/C # 2034901. A COPY OF THIS LETTER IS  
RETAINED IN MY FILING.

Respectfully yours,  
J. Watt - ESQ.

**DRAFT**

**NORTH MARIN WATER DISTRICT  
REGULATION 54  
WATER RATES**

a Rates for Domestic, Commercial and Industrial Users, Novato Service Area

(1) The following minimum service charge and water quantity rates shall be paid for domestic, commercial and industrial water service for each meter once every two months:

**A BI-MONTHLY SERVICE CHARGE OF:**

	Rate Effective <u>6/1/14</u>
Standard 5/8 inch meter .....	\$30.00
For 1-inch meter* .....	\$60.00
1.5-inch meter* .....	\$73.00
2-inch meter .....	\$114.00
3-inch meter .....	\$227.00
4-inch meter .....	\$364.00
6-inch meter .....	\$761.00
8-inch meter .....	\$1,134.00

\*(see paragraph f)

**PLUS A QUANTITY CHARGE OF:**

	Rate Effective <u>6/1/14</u>
<u>Residential Rate for Each 1,000 Gallons</u>	
First 615 gallons per day (gpd) .....	\$4.29
616 up to 1,845 gpd .....	\$6.84
Use in excess of 1,845 gpd .....	\$11.90

<u>Rate for 1,000 Gal for All Other Potable Water Accounts</u>	
Commercial, Institutional & Irrigation Accounts - 11/1 – 5/31	\$4.73
Commercial, Institutional & Irrigation Accounts - 6/1 – 10/31	\$5.08

<u>Rate For 1,000 Gallons For Non-Potable Water</u>	
Recycled Water .....	\$4.73
Raw (Untreated) Water from Stafford Lake .....	\$1.95

**PLUS AN ELEVATION ZONE CHARGE FOR EACH 1,000 GALLONS**

<u>Zone</u>	<u>Elevation</u>	Rate Effective <u>6/1/14</u>
A	0 through 60 feet .....	\$0.00
B	60 feet – 200 feet .....	\$0.51
C*	200 feet + .....	\$1.64

\*Any consumer receiving water through a District owned and maintained hydro-pneumatic system shall be assigned to Zone C irrespective of said consumer's actual elevation.

NMWD Regulation 54, adopted 1/65  
Revised: 1/67, 6/67, 1/71, 3/72, 2/74, 5/74, 6/74, 8/75, 3/75, 4/76, 5/77, 7/77, 6/78, 7/78, 7/78, 7/79, 3/80, 7/7/81, 7/21/81, 11/81, 12/82, 4/84, 2/87, 5/88, 7/89, 9/89, 7/90, 8/90, 3/91, 4/92, 6/92, 7/92, 9/92, 10/92, 3/93, 7/93, 7/94, 8/94, 11/94, 3/95, 4/95, 7/95, 2/96, 5/96, 6/96, 2/97, 6/97, 2/98, 6/98, 7/99, 6/00, 7/00, 12/00, 06/01, 07/01, 1/02, 06/02, 7/02, 06/03, 01/04, 06/04, 07/04, 6/05, 7/05, 06/06, 07/06 12/06, 07/07, 6/08, 7/08, 7/09, 6/10, 7/10, 6/11, 7/11, 9/11, 7/12, 6/13

(2) Consumers outside the Improvement District boundary shall pay the Elevation Zone C Rate.

(3) In the event a mandatory reduction in water use is triggered under the District's Water Shortage Contingency Plan for the Greater Novato Area, a Drought Surcharge will be implemented simultaneous with enactment of the mandatory stage. The Drought Surcharge will serve to mitigate the revenue loss resulting from a reduction in water use, as well as the liquidated damages assessed by the Sonoma County Water Agency pursuant to the water shortage and apportionment provisions of the Restructured Agreement for Water Supply. The Drought Surcharge shall be a quantity charge for each 1,000 gallons as follows:

Residential Accounts: Use in excess of 300 gallons per day	\$1.00
Commercial, Institutional and Irrigation Accounts: All Use	\$1.00

b Rates for Service to Privately Owned Fire Protection Systems, All Service Areas

The rates for service through detector check assemblies owned by the District to privately owned and maintained systems supplying sprinklers, hydrants or other facilities exclusively for fire fighting shall be paid once every two months as follows:

Size of Detector Assembly

	Rate Effective <u>6/1/14</u>
2 inches or less .....	\$15.00
4 inches.....	\$28.00
6 inches.....	\$54.00
8 inches.....	\$83.00
10 inches.....	\$109.00

c Rates for Domestic, Commercial and Industrial Users, West Marin Service Area:

(1) The following minimum service charge and water quantity rates shall be paid for domestic, commercial and industrial water service for each meter once every two months:

**MINIMUM SERVICE CHARGE**

	Effective <u>07/1/13</u> <u>07/01/14</u>
	<u>4</u>
For 5/8 x 3/4-inch meter.....	\$30.00
For 1-inch meter* .....	\$60.00
For 1 1/2-inch meter* .....	\$73.00
For 2-inch meter.....	\$114.00
For 3-inch meter.....	\$227.00
For 4-inch meter.....	\$364.00
For all meters in Paradise Ranch Estates .....	\$46.00

\*(see paragraph f)

**PLUS A QUANTITY CHARGE**

<u>Residential Rate for Each 1,000 Gallons Per Dwelling Unit</u>	Effective <u>7/1/13</u> <u>07/01/14</u>
First 400 gallons per day (gpd) .....	<u>\$6,687.15</u>
401 up to 900 gpd .....	<u>\$9,259.90</u>



Use in excess of 900 gpd.....	\$14,8415.88
<u>Rate Per 1,000 Gallons for All Other Accounts</u>	
Commercial, Industrial and Irrigation Accounts Nov 1 – May 31	\$6,757.22
Commercial, Industrial and Irrigation Accounts June 1 – Oct 31	\$9,349.99

**PLUS A HYDRAULIC ZONE CHARGE FOR EACH 1,000 GALLONS**

<u>Zone</u>	<u>Hydraulic Zone</u>	<u>Effective 7/1/13 7/1/14</u>
1	Point Reyes Station .....	\$0.00
2	Bear Valley, Silver Hills, Inverness Park & Lower Paradise Ranch Estates (Elevation 0' – 365')	\$0.4819
3	Olema .....	\$0.6671
4	Upper Paradise Ranch Estates (Elevation 365' +) .....	\$4.464.77

- (2) Effective July 1, 2013~~2014~~, charge for raw water delivered from Lagunitas Creek shall be paid once every two months at the rate of \$0.37~~per 40~~ per 1,000 gallons.
- (3) Effective July 1, 2013~~2014~~ consumers outside the Improvement District boundary shall pay an additional \$2,672.86 per 1,000 gallons.
- (4) In the event a mandatory reduction in water use is triggered under the District's Water Shortage Contingency Plan for the West Marin Service Area, a Drought Surcharge will be implemented simultaneous with enactment of the mandatory stage. The Drought Surcharge will serve to mitigate the revenue loss resulting from a reduction in water use, as well as the cost of water purchased from Marin Municipal Water District for release into Lagunitas Creek, pursuant to the Interconnection Agreement between Marin Municipal and NMWD.. The Drought Surcharge shall be a quantity charge for each 1,000 gallons as follows:

<u>Residential Accounts: Use in excess of 200 gallons per day</u>	<u>\$2.50</u>
<u>Commercial, Institutional and Irrigation Accounts: All Use</u>	<u>\$2.50</u>

d. Rates for Water Service from Hydrants or Other Temporary Service

The following rates shall be paid for water delivered via hydrant meter or pursuant to permit issued by the District from hydrants or for any temporary service as authorized in Regulation 5 or for use through a fire service meter.

<u>Novato Service Area</u>	<u>Rate Effective 6/1/14</u>
For each 1,000 gallons .....	\$6.72
<u>West Marin Service Area</u>	<u>Effective 7/1/13 7/1/14</u>
For each 1,000 gallons .....	\$13,8014.76

The quantity of water delivered as aforesaid shall be determined by the District.

e. Service Arrangements Requiring Assessment of Additional Minimum Service Charges, All Service Areas

A minimum service charge established by this regulation, equal to \$15.00 bi-monthly shall be paid for each dwelling unit which includes a kitchen and which is metered pursuant to Regulation 4.b.(5).

f. Minimum Service Charge for Residential Connections with Fire Fighting Equipment

Where a meter larger than is otherwise required is installed solely to provide capacity for private fire sprinklers or other fire-fighting equipment in single-family residential connections, the minimum bi-monthly service charge shall be:

Rate  
Effective  
6/1/14  
\$34.00

g. Charges for Testing & Maintenance of Backflow Preventers Performed by District

(1) Each consumer having a backflow prevention device serviced by the District shall pay a bimonthly fee for servicing the device as shown below.

District Owned DCV Devices:

Services Performed by District	Size	Rate Effective <u>6/1/14</u>
Testing, Repair, Replacement	3/4" + 1" .....	\$12.00
Testing, Repair, Replacement	1 1/2" .....	\$16.00

Privately Owned DCV Devices:

Services Performed by District	Size	Rate Effective <u>6/1/14</u>
Testing	3/4" + 1" .....	\$7.00
Testing	1 1/2" .....	\$12.00
Testing	2" .....	\$19.00
Testing	3" + 4" .....	\$28.00

District Owned RPP Devices:

Services Performed by District	Size	Rate Effective <u>6/1/14</u>
Testing, Repair, Replacement	3/4" + 1" .....	\$34.00
Testing, Repair, Replacement	1 1/2" + 2" .....	\$48.00
Testing, Repair, Replacement	3" + 4" .....	\$114.00
Testing, Repair, Replacement	6" + 8" .....	\$247.00

Privately Owned RPP Devices:

Services Performed by District	Size	Rate Effective <u>6/1/14</u>
Testing	3/4" + 1" .....	13.00
Testing	1 1/2" + 2" .....	\$25.00
Testing	3" + 4" .....	\$52.00

Testing 6" + 8" ..... \$101.00

If any customer requires that testing or maintenance be performed outside of normal work hours of the District an additional charge equivalent to the overtime charges incurred by the District will be assessed.

(2) Exemptions

Exemptions from the testing program are permitted on a case-by-case basis as may be approved by the District and the California Department of Public Health, Office of Drinking Water, District Sanitary Engineer. All such exemptions are conditioned on periodic inspection to ensure that exemption criteria are still being met. Each consumer that applies for and receives such an exemption shall pay a bimonthly fee of:

Rate  
Effective  
6/1/14  
\$2.80

**RESOLUTION 14 - XX**

**RESOLUTION OF THE BOARD OF DIRECTORS OF  
NORTH MARIN WATER DISTRICT  
AMENDING REGULATION 54 – WATER RATES**

WHEREAS, the Board of Directors hereby finds and determines that certain of the water rates and charges adjusted herein or previously adopted by the Board are imposed based on the supply of water to be used or consumed by the customer. The Board of Directors also finds and determines that these rates and charges are not imposed upon real property or upon a person as an incident of property ownership, and such rates or charges may be reduced or avoided by a customer by reducing or discontinuing water use; and

BE IT RESOLVED by the Board of Directors of North Marin Water District that Regulation 54 of the North Marin Water District is adopted as follows, effective July 1, 2014:

c Rates for Domestic, Commercial and Industrial Users, West Marin Service Area:

- (1) The following minimum service charge and water quantity rates shall be paid for domestic, commercial and industrial water service for each meter once every two months:

<u>MINIMUM SERVICE CHARGE</u>	<u>Effective 07/01/14</u>
For 5/8 x 3/4-inch meter.....	\$30.00
For 1-inch meter* .....	\$60.00
For 1 1/2-inch meter* .....	\$73.00
For 2-inch meter .....	\$114.00
For 3-inch meter .....	\$227.00
For 4-inch meter .....	\$364.00
For all meters in Paradise Ranch Estates .....	\$46.00
*(see paragraph f)	

PLUS A QUANTITY CHARGE

<u>Residential Rate for Each 1,000 Gallons Per Dwelling Unit</u>	<u>Effective 07/01/14</u>
First 400 gallons per day (gpd) .....	\$7.15
401 up to 900 gpd .....	\$9.90
Use in excess of 900 gpd.....	\$15.88
<u>Rate Per 1,000 Gallons for All Other Accounts</u>	
Commercial, Industrial and Irrigation Accounts Nov 1 – May 31	\$7.22
Commercial, Industrial and Irrigation Accounts June 1 – Oct 31	\$9.99

PLUS A HYDRAULIC ZONE CHARGE FOR EACH 1,000 GALLONS

<u>Zone</u>	<u>Hydraulic Zone</u>	<u>Effective 07/01/14</u>
1	Point Reyes Station .....	\$0.00

NMWD Regulation 54, adopted 1/65  
Revised: 1/67, 6/67, 1/71, 3/72, 2/74, 5/74, 6/74, 8/75, 3/75, 4/76, 5/77, 7/77, 6/78, 7/78, 7/78, 7/79, 3/80, 7/78/81, 7/21/81, 11/81, 12/82, 4/84, 2/87, 5/88, 7/89, 9/89, 7/90, 8/90, 3/91, 4/92, 6/92, 7/92, 9/92, 10/92, 3/93, 7/93, 7/94, 8/94, 11/94, 3/95, 4/95, 7/95, 2/96, 5/96, 6/96, 2/97, 6/97, 2/98, 6/98, 7/99, 6/00, 7/00, 12/00, 06/01, 07/01, 1/02, 06/02, 7/02, 06/03, 01/04, 06/04, 07/04, 6/05, 7/05, 06/06, 07/06 12/06, 07/07, 6/08, 7/08, 7/09, 6/10, 7/10, 6/11, 7/11, 9/11, 7/12, 5/14

2	Bear Valley, Silver Hills, Inverness Park & Lower Paradise Ranch Estates (Elevation 0' – 365')	\$0.19
3	Olema .....	\$0.71
4	Upper Paradise Ranch Estates (Elevation 365' +) .....	\$4.77

- (2) Effective July 1, 2014, charge for raw water delivered from Lagunitas Creek shall be paid once every two months at the rate of \$0.40 per 1,000 gallons.
- (3) Effective July 1, 2014 consumers outside the Improvement District boundary shall pay an additional \$2.86 per 1,000 gallons.

d. Rates for Water Service from Hydrants or Other Temporary Service

The following rates shall be paid for water delivered via hydrant meter or pursuant to permit issued by the District from hydrants or for any temporary service as authorized in Regulation 5 or for use through a fire service meter.

<u>Novato Service Area</u>	Rate Effective <u>6/1/14</u>
For each 1,000 gallons .....	\$6.72

<u>West Marin Service Area</u>	<u>Effective 7/1/14</u>
For each 1,000 gallons .....	\$14.76

The quantity of water delivered as aforesaid shall be determined by the 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 twenty-fourth of June 2014, by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAINED:

---

Katie Young, District Secretary  
North Marin Water District

(SEAL)

**RESOLUTION 14 - XX**

**RESOLUTION OF THE BOARD OF DIRECTORS OF  
NORTH MARIN WATER DISTRICT  
AMENDING REGULATION 54 – WATER DROUGHT SURCHARGE**

WHEREAS, the Board of Directors hereby finds and determines that certain of the water rates and charges adjusted herein or previously adopted by the Board are imposed based on the supply of water to be used or consumed by the customer. The Board of Directors also finds and determines that these rates and charges are not imposed upon real property or upon a person as an incident of property ownership, and such rates or charges may be reduced or avoided by a customer by reducing or discontinuing water use; and

BE IT RESOLVED by the Board of Directors of North Marin Water District that Regulation 54 of the North Marin Water District is adopted as follows, effective July 1, 2014:

- (4) In the event a mandatory reduction in water use is triggered under the District's Water Shortage Contingency Plan for the West Marin Service Area, a Drought Surcharge will be implemented simultaneous with enactment of the mandatory stage. The Drought Surcharge will serve to mitigate the revenue loss resulting from a reduction in water use, as well as the cost of water purchased from Marin Municipal Water District for release into Lagunitas Creek, pursuant to the Interconnection Agreement between Marin Municipal and NMWD.. The Drought Surcharge shall be a quantity charge for each 1,000 gallons as follows:

Residential Accounts: Use in excess of 200 gallons per day	\$2.50
Commercial, Institutional and Irrigation Accounts: All Use	\$2.50

\* \* \* \* \*

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 twenty-fourth of June 2014, by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAINED:

---

Katie Young, District Secretary  
North Marin Water District

(SEAL

Proposed

# **BUDGET**

*Final Review/Public Hearing*

# **West Marin Water**

FISCAL YEAR

# **2014-15**

***NORTH MARIN WATER DISTRICT***

*999 RUSH CREEK PLACE, NOVATO, CA*

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**West Marin Water**

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**Proposed Capital Improvement Projects**

6/11/14

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	FY14 Budget	FY14 E/A	FY15	FY16	FY17	FY18	FY19
<b>6. WEST MARIN WATER SYSTEM</b>							
a.	TP Solids Handling (Note 3)	\$200,000	\$10,000			\$1,245,000	
b.	Treatment Plant Control Valve Replacement	\$25,000	\$0				
c.	Gallagher Auxiliary Stream Gauge	\$30,000	\$80,000				
d.	Olema PS Flood Protection & RTU Upgrade	\$100,000	\$20,000	\$100,000			
e.	Emergency Generator Connections	\$15,000	\$15,000	\$15,000			
f.	Pt Reyes Tank #2 & #3 Seismic Piping Upgr	\$65,000	\$5,000				
g.	Gallagher Pipeline (Note 4)	\$100,000	\$200,000	\$1,286,000			
h.	THM Spray Systems (3 tanks)			\$10,000			
i.	Upsize 4" Pipe from Bear Valley Tanks (8"@900')			\$120,000			
j.	Replace Pump in Well #2			\$18,000			
k.	Abandon Downey Well			\$50,000	\$50,000		
l.	Replace PRE Tank #4A (25,000 gal w/82,000 gal Tank)				\$50,000	\$450,000	
m.	PB Replace in Sync w/ County Paving		\$35,000		\$50,000	\$50,000	
n.	Rehab Coast Guard Well #2						\$275,000
		<b>\$535,000</b>	<b>\$365,000</b>	<b>\$1,599,000</b>	<b>\$150,000</b>	<b>\$1,695,000</b>	<b>\$50,000</b>
							<b>\$275,000</b>

**LESS FUNDED BY LOANS/GRANTS/OTHER**

a.	WM Treatment Plant Solids Handling (Note 3)	(\$200,000)	(\$10,000)	\$0	\$0	(\$850,000)	\$0	\$0
b.	Gallagher Pipeline (Note 4)	(\$100,000)	(\$200,000)	(\$1,286,000)	\$0	\$0	\$0	\$0
		<b>(\$300,000)</b>	<b>(\$210,000)</b>	<b>(\$1,286,000)</b>	<b>\$0</b>	<b>(\$850,000)</b>	<b>\$0</b>	<b>\$0</b>

**SUMMARY - NET PROJECT OUTLAY**

<b>NET (INTERNALLY FUNDED) PROJECT OUTLAY</b>	<b>\$235,000</b>	<b>\$155,000</b>	<b>\$313,000</b>	<b>\$150,000</b>	<b>\$845,000</b>	<b>\$50,000</b>	<b>\$275,000</b>
Total Number of Projects	7	8	7	3	2	1	1

Note 3 - West Marin Water Treatment Plant Solids Handling Facility partially funded by \$782,000 Bank Loan. Additional \$500K to be borrowed in FY17.

Note 4 - \$1.486M Gallagher Pipeline Funded by Prop 50 Grant

**WEST MARIN WATER**  
**BUDGET SUMMARY**  
**Fiscal Year 2014/15**

	<b>Proposed Budget 2014/15</b>	<b>Estimated Actual 2013/14</b>	<b>Adopted Budget 2013/14</b>
<b>OPERATING INCOME</b>			
1 Water Sales	<b>\$825,000</b>	\$808,000	\$752,000
2 Misc Service Charges	<b>6,000</b>	6,000	6,000
3 <b>Total Operating Income</b>	<b>\$831,000</b>	\$814,000	\$758,000
<b>OPERATING EXPENDITURES</b>			
4 Source of Supply	<b>\$59,000</b>	\$35,000	\$21,000
5 Pumping	<b>39,000</b>	29,000	39,000
6 Operations	<b>39,000</b>	53,000	32,000
7 Water Treatment	<b>131,000</b>	149,000	125,000
8 Transmission & Distribution	<b>111,000</b>	158,000	103,000
9 Consumer Accounting	<b>27,000</b>	23,000	26,000
10 Water Conservation	<b>22,000</b>	10,000	4,000
11 General Administration	<b>55,000</b>	42,000	50,000
12 Depreciation Expense	<b>160,000</b>	154,000	150,000
13 <b>Total Operating Expenditures</b>	<b>\$643,000</b>	\$653,000	\$550,000
14 <b>NET OPERATING INCOME (LOSS)</b>	<b>\$188,000</b>	\$161,000	\$208,000
<b>NON-OPERATING REVENUE/(EXPENSE)</b>			
15 PR-2 County Tax Allocation	<b>\$41,000</b>	\$40,000	\$43,000
16 OL-2 Bond Tax	<b>0</b>	4,000	4,000
17 Interest Revenue	<b>3,000</b>	4,000	3,000
18 Bond & Loan Interest Expense	<b>(40,000)</b>	(41,000)	(41,000)
19 Miscellaneous Revenue/(Expense)	<b>4,000</b>	(28,000)	(5,000)
20 <b>Total Non-Operating Income/(Expense)</b>	<b>\$8,000</b>	(\$21,000)	\$4,000
21 <b>NET INCOME/(LOSS)</b>	<b>\$196,000</b>	\$140,000	\$212,000
<b>OTHER SOURCES/(USES) OF FUNDS</b>			
22 Add Depreciation Expense	<b>\$160,000</b>	\$154,000	\$150,000
23 Connection Fees	<b>23,000</b>	23,000	46,000
24 Prop 50 Grant	<b>1,286,000</b>	200,000	
25 Capital Improvement Projects	<b>(1,599,000)</b>	(365,000)	(435,000)
26 Bond & Loan Principal Payments	<b>(65,000)</b>	(61,000)	(64,000)
27 <b>Total Other Sources/(Uses)</b>	<b>(\$195,000)</b>	(\$49,000)	(\$303,000)
28 <b>NET SURPLUS/(DEFICIT)</b>	<b>\$1,000</b>	\$91,000	(\$91,000)

## WEST MARIN WATER

### 5-Year Financial Forecast

#	BASIC DATA	Actual 2011/12	Actual 2012/13	Estimated 2013/14	Projected 2014/15	Projected 2015/16	Projected 2016/17	Projected 2017/18	Projected 2018/19
1	Active Meters	777	776	776	777	778	779	780	781
2	Avg Commodity Rate/1,000 Gal	\$6.97	\$7.61	\$8.10	\$8.77	\$9.20	\$9.66	\$10.15	\$10.66
3	Potable Consumption (MG)	74	81	79	70	75	75	75	75
<b>INCOME</b>									
4	Commodity Charge	\$518,217	\$614,880	\$640,000	\$657,000	\$644,000	\$728,000	\$765,000	\$803,000
5	Bimonthly Service Charge	115,584	138,684	168,000	168,000	180,000	189,000	199,000	209,000
6	Connection Fee	36,600	4,900	23,000	23,000	23,000	23,000	23,000	23,000
7	PR-2 County Tax Allocation	40,598	40,443	40,000	41,000	42,000	43,000	44,000	45,000
8	PR-3 G.O. Bond Tax	13,938	338	0	0	0	0	0	0
9	OL-2 G.O. Bond Tax	3,757	4,205	4,000	0	0	0	0	0
10	Interest	0	3,251	4,000	3,000	3,000	3,000	1,000	2,000
11	Miscellaneous	8,218	10,983	10,000	10,000	10,000	10,000	10,000	10,000
12	<b>TOTAL INCOME</b>	<b>\$736,912</b>	<b>\$817,684</b>	<b>\$889,000</b>	<b>\$902,000</b>	<b>\$902,000</b>	<b>\$996,000</b>	<b>\$1,042,000</b>	<b>\$1,092,000</b>
<b>EXPENDITURES</b>									
13	Operating Expenditures	\$382,948	\$396,828	\$489,000	\$445,000	\$458,000	\$472,000	\$486,000	\$501,000
14	Water Purchased from MMWD			\$10,000	\$38,000				
15	Miscellaneous	\$3,297	\$11,964	\$32,000	\$0	\$0	\$0	\$0	\$0
16	Bond & Loan Debt Service	55,597	110,799	102,000	105,000	100,000	101,000	137,000	137,000
17	Interdistrict Loan Interest	5,918	0	0	0	0	0	0	0
18	<b>TOTAL EXPENDITURES</b>	<b>\$447,760</b>	<b>\$519,591</b>	<b>\$633,000</b>	<b>\$588,000</b>	<b>\$558,000</b>	<b>\$573,000</b>	<b>\$623,000</b>	<b>\$638,000</b>
<b>NET INCOME</b>		<b>\$289,152</b>	<b>\$298,093</b>	<b>\$256,000</b>	<b>\$314,000</b>	<b>\$344,000</b>	<b>\$423,000</b>	<b>\$419,000</b>	<b>\$454,000</b>
<b>OTHER SOURCES/(USES)</b>									
19	Capital Improvement Projects	(145,027)	(380,323)	(365,000)	(1,599,000)	(150,000)	(1,695,000)	(50,000)	(275,000)
20	Grant/Loan Proceeds	1,000,000	0	200,000	1,286,000	0	500,000	0	0
21	Loan from (Repayment to) Novato	(356,968)	0	0	0	0	0	0	0
22	Net Change in Working Capital	(4,574)	(51,956)	0	0	0	0	0	0
23	<b>INCREASE (DECREASE) IN CASH</b>	<b>\$782,583</b>	<b>(\$134,186)</b>	<b>\$91,000</b>	<b>\$1,000</b>	<b>\$194,000</b>	<b>(\$772,000)</b>	<b>\$369,000</b>	<b>\$179,000</b>
<b>CASH BALANCE</b>									
24	Operating Reserve	\$0	\$0	\$339,000	\$662,000	\$856,000	\$84,000	\$453,000	\$632,000
25	System Expansion Reserve	700,681	566,710	322,000	0	0	0	0	0
26	Liability Contingency Reserve	98,885	99,000	99,000	99,000	99,000	99,000	99,000	99,000
27	Bond Redemption Reserve	33,330	33,000	30,000	30,000	30,000	30,000	30,000	30,000
28	<b>TOTAL CASH BALANCE</b>	<b>\$832,896</b>	<b>\$698,710</b>	<b>\$790,000</b>	<b>\$791,000</b>	<b>\$985,000</b>	<b>\$213,000</b>	<b>\$582,000</b>	<b>\$761,000</b>
29	Amount Due to Novato Water	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	Depreciation Expense	\$150,169	\$148,654	\$154,000	\$160,000	\$187,000	\$190,000	\$218,000	\$219,000

**WEST MARIN WATER NOTES**

## # KEY

West Marin Water includes the communities of Point Reyes Station, Inverness Park, Olema, Bear Valley, Silver Hills and Paradise Ranch Estates (PRE).

- 1 Assumes annual increase of 1 connection per year.
- 2 Commodity rate increase of 7% is proposed effective 7/1/14. Annual 5% Commodity and Bimonthly Service Charge increases shown thereafter.
- 3 Consumption projection assumes 25% reduction in water demand from July 1 through October 31, 2014 due to mandatory 25% water use restrictions. Annual consumption thereafter conservatively projected at 75MG due to continue focus on conservation.
- 4 FY15 includes proposed 7% commodity rate increase, along with projected \$43,000 in drought surcharge revenue generated between July 1 and October 31 due to anticipated 25% mandatory water use restriction.
- 5 No increase in bimonthly service charge is proposed in FY15, 5% increase annually thereafter.
- 6 The connection fee was set at \$22,800 per equivalent dwelling unit effective August 1, 2010.
- 7 County tax allocation enacted subsequent to Prop 13 to compensate for O&M tax revenue previously received. PR-2 County Tax allocation is increase 3% per year.
- 8, 9 GO Bond Taxes are Proposition 13 Exempt property tax levies that fund general obligation bond debt service.
- 10 Projected available funds invested at 0.35%
- 11 Turn-on, set-up, backflow device, Horizon CATV site lease & other miscellaneous charges.
- 13 3% annual increase in Operating Expenditures assumed after FY15.
- 14 Purchase of 250AF from MMWD for release to Lagunitas Creek between June 16 and November 1 at \$190/AF to address salinity intrusion.
- 15 FY14 Includes \$16K for Master Plan update.
- 16 Comprised of three 40-year 5% bonds all purchased by the Farmers Home Administration: 1) 1975 OL-2 \$70,000 GO bond due 2015; 2) 1980 PRE-1 \$240,000 revenue bond due 2020; 3) 1981 PR-6 \$217,800 revenue bond due 2021; plus an Economic Development Administration \$46,000 5% 40-year loan due 2017. On 6/1/91 the OL-2 bond was repurchased by Novato Water upon demand by FmHA. On June 30, 2012, WM Water was allocated \$1 million from a Bank of Marin loan to finance construction of a Treatment Plant Solids Handling Facility, with repayment commencing FY13.
- 17 Interest on interdistrict Loan to fund the WM Water Long-Range Improvement Project Plan. Debt was fully repaid in June 2012 with a Bank of Marin loan.
- 18 Excludes depreciation.
- 19 Capital Improvement Projects. See 5-year Capital Improvement Projects Plan.
- 20 FY12 \$1 million Bank loan; FY14&FY15 Gallagher Pipeline grant of \$1.486 million; FY17 \$500,000 loan to complete the Solids Handling and PRE Storage projects.
- 24 Operating Reserve should be comprised of a minimum of 4 months of operating expenditures as recommended by the District's financial advisors.
- 25 System Expansion Reserve is composed of connection fee revenue and unexpended Bank of Marin loan funds.
- 26 Liability Contingency Reserve - \$90,000 is West Marin Water's pro-rata share (3.6%) of the District's \$2.5 million liability contingency fund, available to pay liability claims arising within the West Marin water system. \$8,885 was added in Dec 2006 from sale of 2 surplus parcels in Inverness Park.
- 27 Bond Redemption Reserve is comprised of one year of Revenue Bond debt service (\$30K) for PR-6 & PRE-1 bonds as required by bond covenant plus tax receipts held in the Marin County treasury. The PR-3 GO Bond was fully repaid in January 2013, eliminating the need for its reserve.
- 29 Amount Due to Novato Water at fiscal year end.

# West Marin Water Rate Increase Analysis

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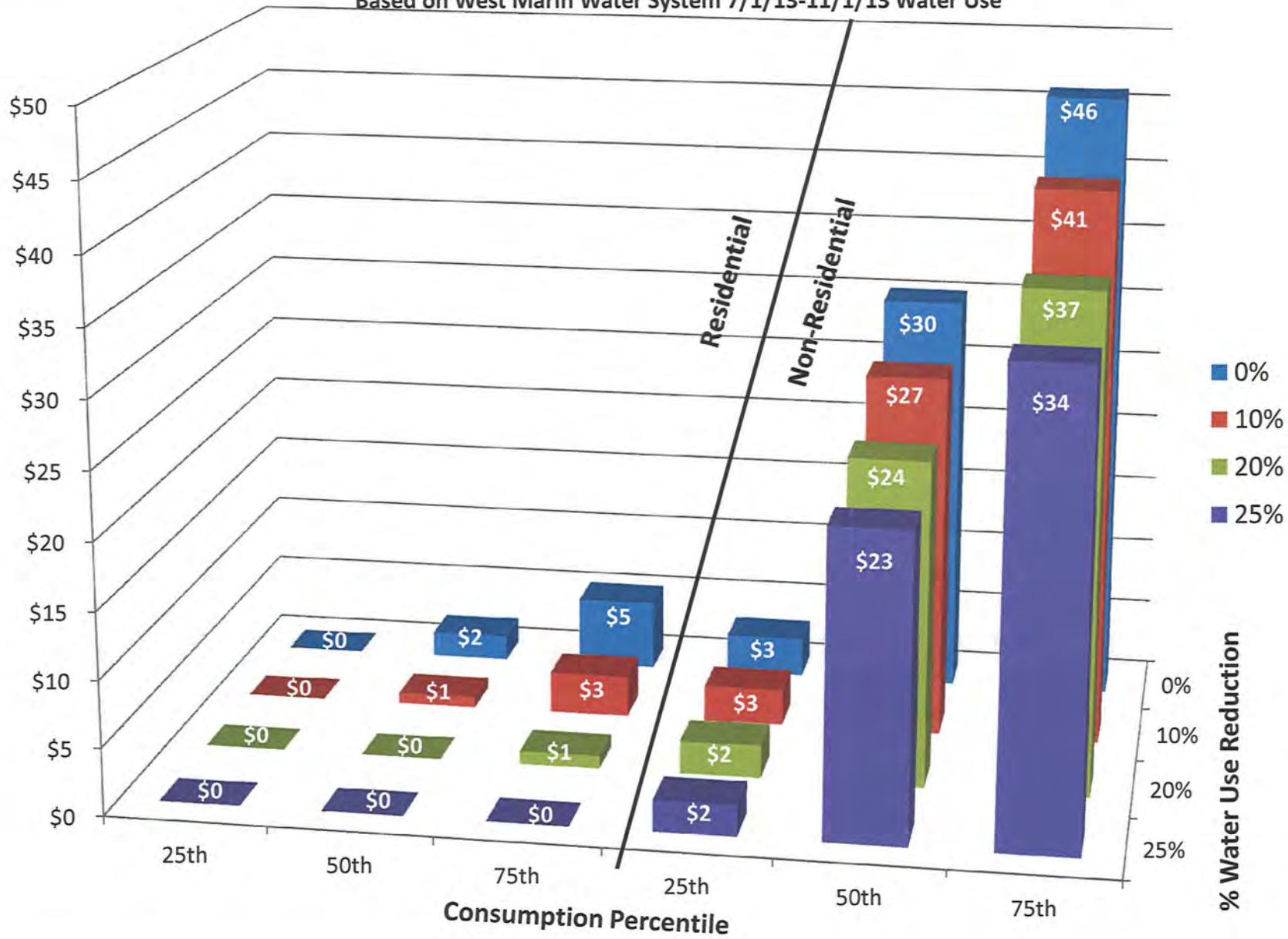
5/29/14

## Annual Residential Impact (based on 59,500 gallons water use

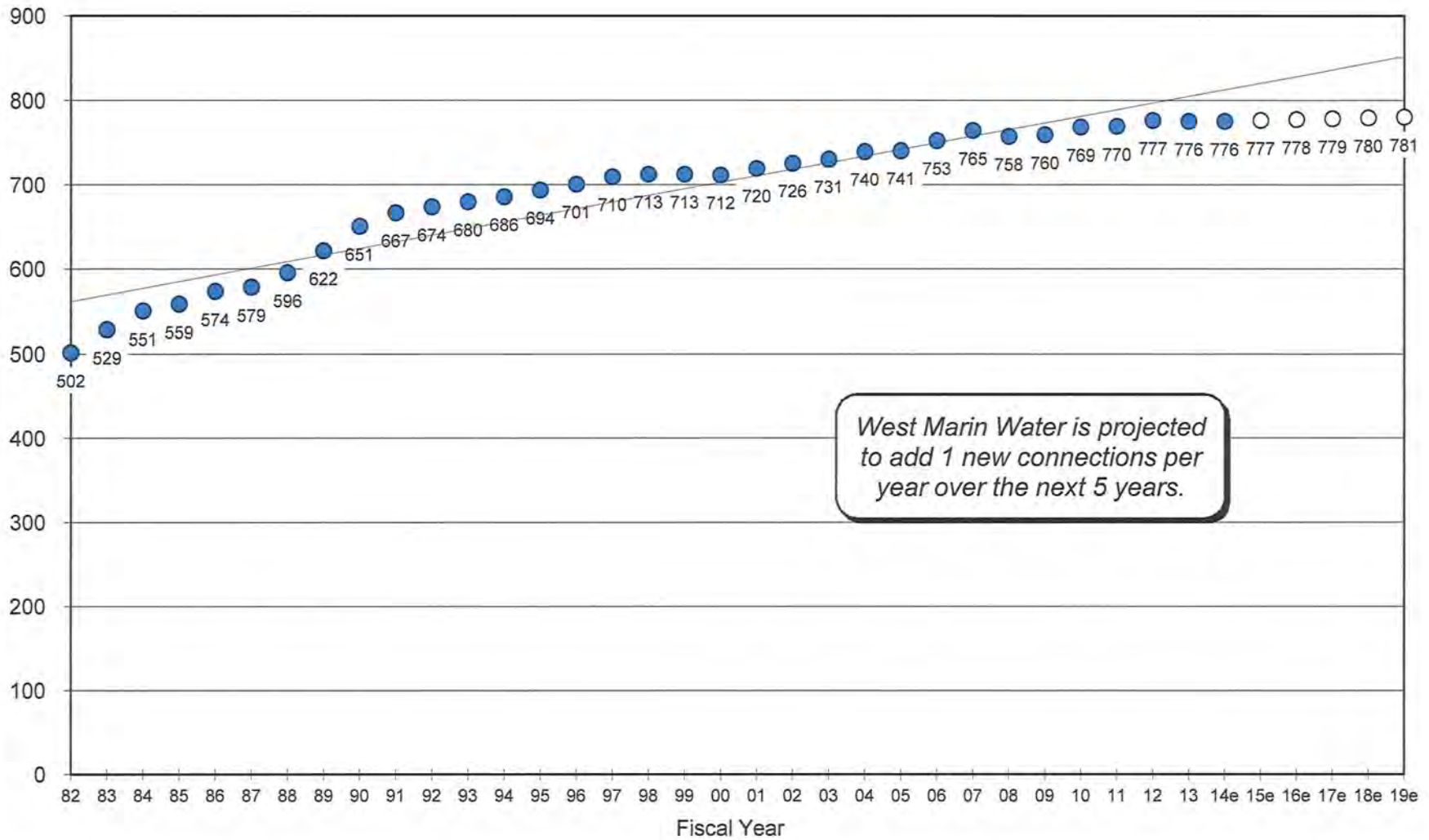
		Commodity	Annual	Annual	Annual	Total	<u>Annual Increase</u>	
		Rate	Use	Service	Tax	Annual	\$	%
Point Reyes Station	Current	\$6.68	\$397	+ \$180	+ \$53	= \$630		
	Proposed	\$7.15	\$425	+ \$180	+ \$53	= \$658	\$28	4.4%
Inverness Park, Bear Valley, Silver Hills	Current	\$6.86	\$408	+ \$180	+ \$53	= \$641		
	Proposed	\$7.34	\$437	+ \$180	+ \$53	= \$670	\$29	4.5%
Olema	Current	\$7.34	\$437	+ \$180	+ \$54	= \$670		
	Proposed	\$7.86	\$468	+ \$180	+ \$54	= \$702	\$31	4.7%
PRE Zone A	Current	\$6.86	\$408	+ \$276	+ \$0	= \$684		
	Proposed	\$7.34	\$437	+ \$276	+ \$0	= \$713	\$29	4.2%
PRE Zone B	Current	\$11.14	\$663	+ \$276	+ \$0	= \$939		
	Proposed	\$11.92	\$709	+ \$276	+ \$0	= \$985	\$46	4.9%
Outside Services	Current	\$9.35	\$556	+ \$180	+ \$0	= \$736		
	Proposed	\$10.01	\$596	+ \$180	+ \$0	= \$776	\$39	5.3%
Weighted Average	Current	\$7.40				\$673		
	Proposed	\$7.92				\$704	<b>\$31</b>	4.6%

### Monthly Impact of Proposed Drought Surcharge Based on West Marin Water System 7/1/13-11/1/13 Water Use

\\ac\excel\wtr use\lwm sf res 2013 use by billing period.xlsx chart data



### West Marin Water Active Service Connections @ June 30

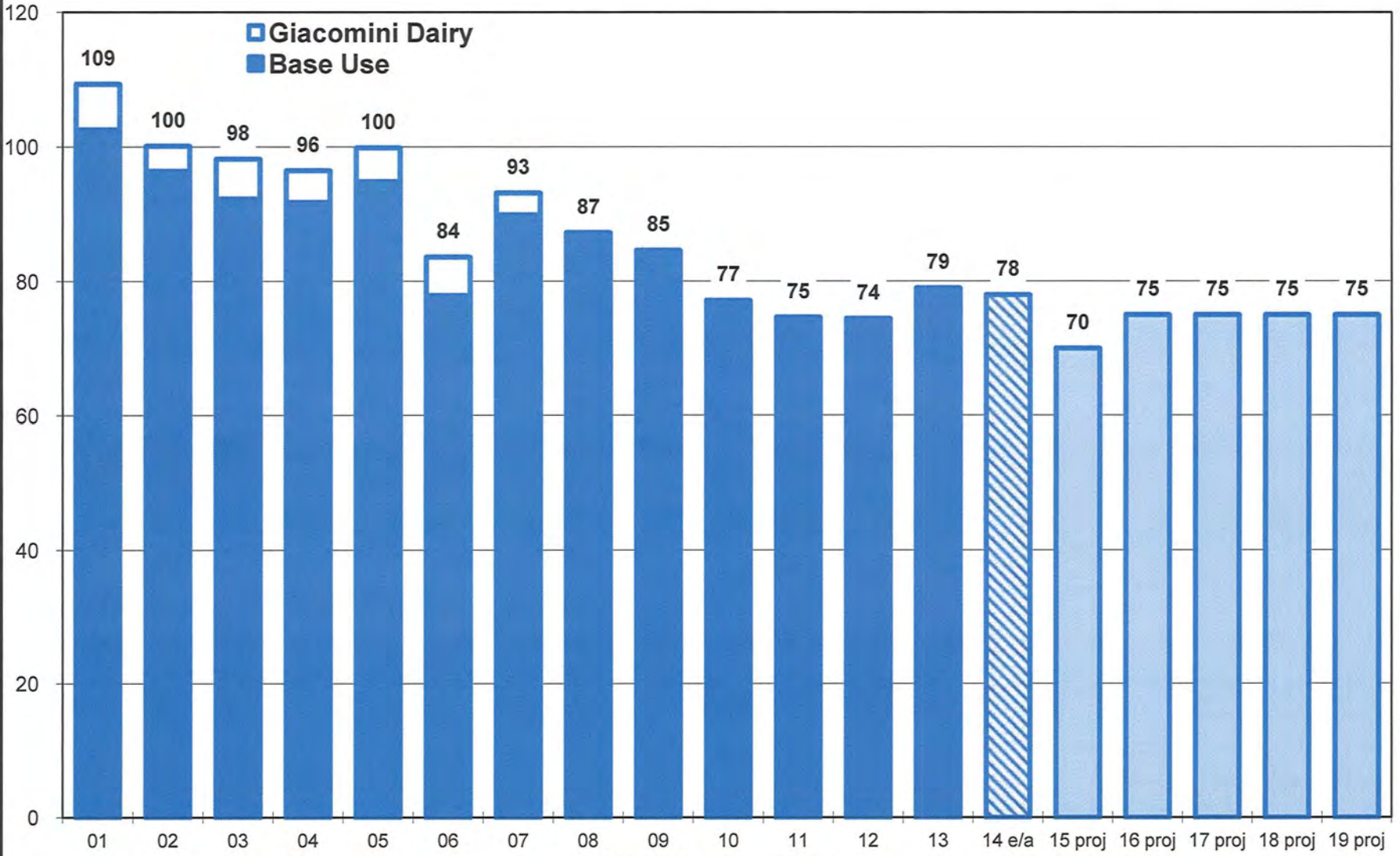


West Marin Water is projected to add 1 new connections per year over the next 5 years.

7

### West Marin Potable Water Billed Consumption

MG

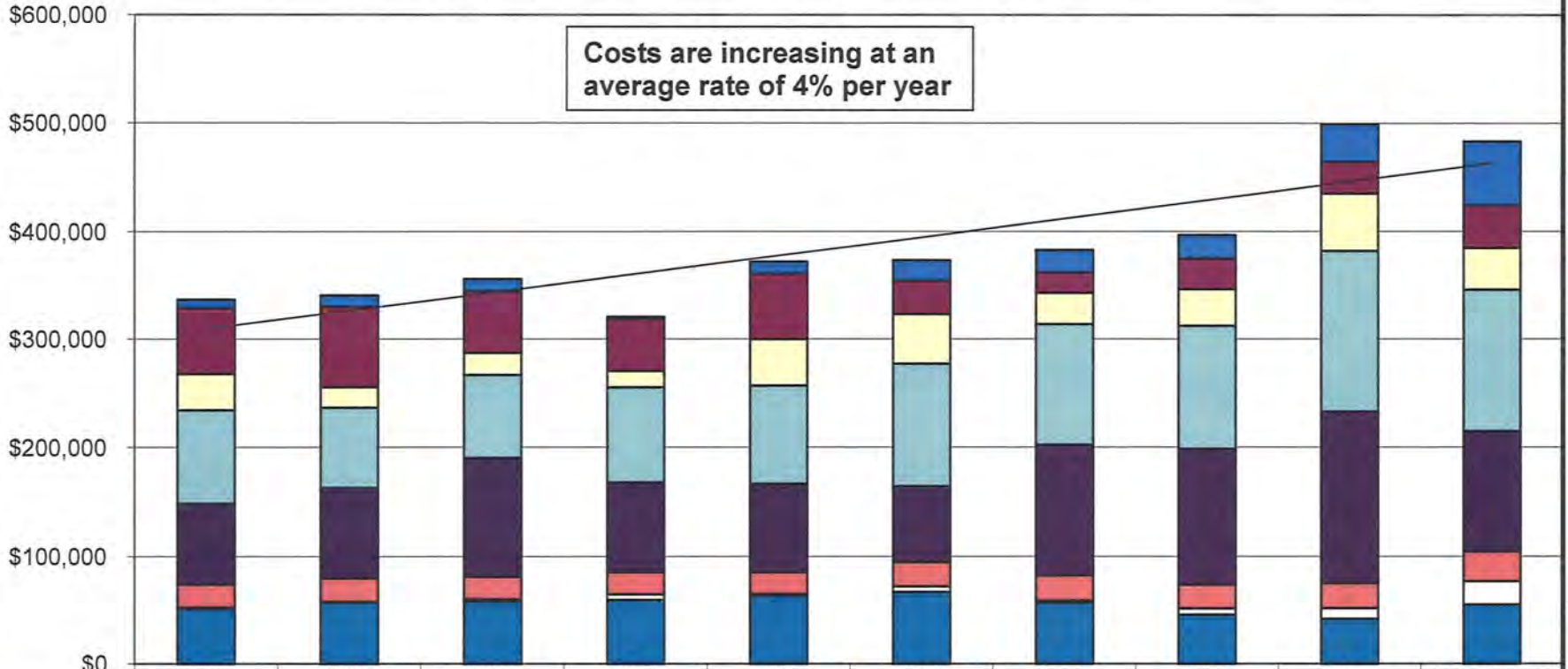


Giacomini Dairy discontinued operation in FY07

FISCAL YEAR ENDING



### West Marin Water Operating Expenditures



Costs are increasing at an average rate of 4% per year

	2006	2007	2008	2009	2010	2011	2012	2013	2014 e/a	2015 Budget
■ Source	\$8,049	\$11,085	\$11,106	\$2,319	\$11,364	\$18,907	\$21,495	\$22,161	\$35,000	\$59,000
■ Pumping	\$61,001	\$74,108	\$57,375	\$47,801	\$60,516	\$31,092	\$18,226	\$28,195	\$29,000	\$39,000
□ Operations	\$33,329	\$18,925	\$20,340	\$14,970	\$42,962	\$45,965	\$29,609	\$34,466	\$53,000	\$39,000
■ Treatment	\$85,643	\$73,627	\$76,588	\$87,871	\$90,739	\$112,531	\$111,205	\$113,619	\$149,000	\$131,000
■ T & D	\$74,790	\$83,545	\$109,186	\$82,386	\$81,052	\$70,274	\$120,093	\$124,721	\$158,000	\$111,000
■ Cons Acctg	\$21,119	\$21,504	\$21,045	\$20,285	\$20,232	\$22,108	\$23,367	\$21,947	\$23,000	\$27,000
□ Wtr Cons	\$1,700	\$900	\$2,177	\$5,338	\$1,783	\$5,266	\$2,008	\$5,857	\$10,000	\$22,000
■ G & A	\$51,065	\$57,133	\$57,828	\$59,500	\$63,234	\$66,880	\$56,945	\$45,861	\$42,000	\$55,000
<b>Total</b>	<b>\$336,696</b>	<b>\$340,827</b>	<b>\$355,645</b>	<b>\$320,470</b>	<b>\$371,882</b>	<b>\$373,023</b>	<b>\$382,948</b>	<b>\$396,827</b>	<b>\$499,000</b>	<b>\$483,000</b>

May 9, 2014

**RE: Notice of Proposed Water Cost Increase – West Marin Service Area**

Dear Customer:

This letter is to advise you of **proposed increases to West Marin water rates and charges** that would take effect on July 1, 2014. It also provides information about a **Public Hearing scheduled on June 24, 2014**, at which time written and oral comments will be considered and a vote on the increase will be taken by the North Marin Water District Board of Directors.

**HOW MUCH ARE THE PROPOSED RATE INCREASES?**

An increase in rates and charges resulting in an average increase of 5% in the annual cost of water service is recommended.

The increase for non-residential customers (commercial, institutional and irrigation accounts) will vary based on water use and meter size. The median non-residential account would also see an average annual 5% cost increase commencing July 1, 2014.

No increase in the bimonthly service charge is proposed.

See Attachment A for a detailed description of the proposed rate increases.

**HOW WILL THE PROPOSED INCREASE AFFECT MY WATER BILL?**

The proposed increase in the commodity rate would add \$2.58 per month (\$31 annually) to the cost of water for the typical (median) single-family residential customer who consumes 59,500 gallons of water annually. Those using less than the median will see an increase less than \$31 annually, and those using more would pay more.

You can determine the increase in your annual water cost based on your water use over the past year from our website. Insert your NMWD account number and the name on your account into the Rate-Increase Model on NMWD's website at <http://www.nmwd.com/accountbalance.php>.

**WHY ARE RATES BEING INCREASED?**

Over the next three fiscal years \$1.25 million will be expended to complete construction of water treatment plant improvements. In addition, the District can no longer defer replacement of the 25,000 gallon redwood tank that was destroyed in the Mount Vision fire. An 82,000 gallon concrete replacement tank is estimated to cost \$500,000, and the funds to complete that project will need to be borrowed and repaid with interest.

On a positive note, earlier this year the District received welcome news that construction of the \$1.5 million pipeline from NMWD's well, located adjacent to Lagunitas Creek approximately one mile upstream from the water treatment plant on the Gallagher Ranch, will be fully funded from a California Proposition 50 grant. Water from the Gallagher Well will mitigate the salinity intrusion now experienced at the existing Point Reyes wells during high tide and low creek flow conditions.

### **PROPOSED DROUGHT SURCHARGE**

At the Water Rate Hearing the Board will consider, as a separate matter, the adoption of a Drought Surcharge to be implemented concurrent with mandatory water use restrictions. MANDATORY WATER USE RESTRICTIONS ARE ANTICIPATED FROM JULY 1 THROUGH NOVEMBER 1, 2014. The NMWD Water Shortage Contingency Plan for the West Marin Service Area includes enactment of a Drought Surcharge to mitigate both the revenue loss from reduced water sales during a drought, as well as the cost of water purchased from Marin Municipal Water District for release into Lagunitas Creek as may be needed, pursuant to the Interconnection Agreement between Marin Municipal and NMWD.

The proposed Drought Surcharge would be temporary and would be implemented concurrent with mandatory water use restrictions (July 1), and suspended when mandatory use restrictions end (November 1).

The proposal is to add a surcharge of \$2.50 per thousand gallons for all water use by non-residential customers. For residential customers, the \$2.50 per thousand gallon surcharge would apply only to the amount of water use in excess of 200 gallons per day.

During the four-month period of mandatory water use restriction, the proposed surcharge would add \$1.90 per month to the typical (median) single-family residential water bill, assuming no reduction in water use. If the typical single-family residence reduced water use by 25%, the drought surcharge would be zero. For the median non-residential customer, the proposed surcharge would add \$30 per month, or, if the non-residential customer reduced water use by 25%, the increase in cost would be \$23 per month.

### **ADDITIONAL INFORMATION**

Attachment A provides greater detail of the various rates and customer categories. We realize that no one likes to see rates increase. However, we need to be able to adequately finance West Marin operations in order to continue to provide a clean and reliable water supply.

**A public hearing before the NMWD Board of Directors to consider the proposed rate increase is scheduled for 7:30 pm, Tuesday, June 24, 2014, at the Dance Palace (503 B Street) in Point Reyes Station.**

You are invited to present oral or written testimony on the proposal at the public hearing. You have the right to protest this proposed rate increase. If you do, you must submit your protest in writing, even if you plan to attend the public hearing. If written protests are submitted by a majority of the affected property owners or customers, the proposed increases will not be adopted.

Your written protest must be received prior to the close of the June 24, 2014 public hearing. Written protests must be signed by the property owner or customer of record and must include a description of the parcel (parcel number) or NMWD account number. Send or deliver written protests to:

District Secretary  
North Marin Water District  
PO Box 146  
Novato, CA 94948

For more information about the North Marin Water District, including the history of the West Marin Water System, or to view the most recent Coastal Area Water Cost Comparison or the District's audited financial statement, visit NMWD's website at [www.nmwd.com](http://www.nmwd.com) or call the District Secretary at (415) 897-4133.

Sincerely,



Chris DeGabriele  
General Manager

Encl: as stated  
t:\acl\word\budget\wm\15\wm wtr increase ltr to customers 2014.docx

<b>West Marin Water Recent Capital Improvement Projects – Status Report</b>		
<b>Project</b>	<b><u>Expenditures</u> thru 3/31/14</b>	<b>Status</b>
1 Replace PRE Tank #3 - 25,000 gal.....	\$91,759	Complete
2 Install 3 Standby Booster Pumps & Controls @ PRE.....	159,990	Complete
3 Bear Valley Pump Station Upgrade.....	88,132	Complete
4 Replace Pt. Reyes 100,000 gal tank w/180,000 gal.....	399,707	Complete
5 Replace Olema 80,000 gal tank w/150,000 gal.....	561,742	Complete
6 Install Parallel 8" Main on Hwy 1.....	180,000	Complete
7 Upgrade Inverness Park PS w/2 150 gpm pumps.....	157,888	Complete
8 Install Pressure Reducing Valve @ Inverness Park PS.....	13,046	Complete
9 Replace 30,000 gal Inverness Park Bolted Steel Tank.....	164,262	Complete
10 Point Reyes Well Replacement.....	262,968	Complete
11 Tank Seismic Upgrades.....	115,531	In Progress
12 Replace PRE Tank #4A - 82,000 gallon.....	22,328	In Progress
13 Water Treatment Plant Enhancements.....	189,727	In Progress
14 Gallagher Pipeline & Stream Gauge.....	<u>201,952</u>	In Progress
	<b><u>\$2,609,032</u></b>	

<b>PROPOSED</b>			
<b>West Marin Water System Rate Changes</b>			
EFFECTIVE JULY 1, 2014			
<b>BIMONTHLY MINIMUM SERVICE CHARGE</b>	<b><u>Existing</u></b>	<b><u>Proposed</u></b>	<b><u>% Increase</u></b>
For 5/8 x 3/4-inch meter.....	\$30.00	\$30.00	0%
For 1-inch residential meter for fire service.....	\$34.00	\$34.00	0%
For 1-inch meter.....	\$60.00	\$60.00	0%
For all meters in Paradise Ranch Estates.....	\$46.00	\$46.00	0%
<b>QUANTITY CHARGE</b>			
<b><u>Residential Rate Per Dwelling Unit</u></b>			
First 400 gallons per day.....	\$6.68	\$7.15	7%
From 401 to 900 gallons per day.....	\$9.25	\$9.90	7%
From 901+ gallons per day.....	\$14.84	\$15.88	7%
<b><u>Commercial, Institutional &amp; Irrigation Rate</u></b>			
November 1 through May 31.....	\$6.75	\$7.22	7%
June 1 through October 31.....	\$9.34	\$9.99	7%
<b>PLUS A HYDRAULIC ZONE CHARGE/1,000 GAL</b>			
<b><u>Zone</u></b>			
1 Point Reyes Station.....	\$0.00	\$0.00	0%
2 Bear Valley, Silver Hills, Inverness Park & Lower Paradise Ranch Estates (Elevation 0' - 365').....	\$0.18	\$0.19	7%
3 Olema.....	\$0.66	\$0.71	7%
4 Upper Paradise Ranch Estates (Elevation 365'+).....	\$4.46	\$4.77	7%
Additional Commodity Rate for Consumers Outside the Improvement District Boundary.....	\$2.67	\$2.86	7%

**ATTACHMENT A**

## 2014 COASTAL AREA WATER COST COMPARISON

5/29/14

Comparison of NMWD's Charges with Other Agencies Based on Rates and Charges in Effect on 6/1/14  
 "Typical" Single Family Residence (5/8" x 3/4" Meter) Using 59,500 Gallons Annually

Agency	No. of Water Services	Bimonthly Service Charge	Commodity Rate per 1,000 Gallons		Annual Water Cost <sup>1</sup>	Water Bond Tax Rate per \$100/AV	Annual Tax Cost <sup>2</sup>	Total Annual Cost
California Water Service Co.	255	\$139.73	\$30.40		\$2,647	-	-	\$2,647
Bolinas Community PUD	587	\$169.67	1.34/\$2.01/\$4.01	(3)	\$1,119	\$0.010	\$457 (4)	\$1,576
Estero Mutual Water District	141	\$187.90	\$7.86/\$11.56	(5)	\$1,525	-	-	\$1,525
Stinson Beach Co Water	725	\$77.10	\$2.61/\$6.26	(6)	\$657	\$0.004	\$572 (7)	\$1,229
Muir Beach Community Services	151	\$49.92	\$9.20	(8)	\$627 (9)	-	\$300 (10)	\$927
Inverness PUD	509	\$100.00	\$3.07/\$4.61	(11)	\$799	-	-	\$799
Bodega Bay PUD	1,054	\$48.67	\$6.84	(12)	\$449	-	\$301 (13)	\$750
→ <b>NMWD West Marin Service Area</b>	<b>776</b>	<b>\$30.00</b>	<b>\$7.88</b>	(14)	<b>\$646</b>	-	<b>\$53 (15)</b>	<b>\$698</b>

Notes:


- (1) Median annual consumption for West Marin Service Area single-family detached home is 59,500 gallons. Use will differ in other areas and microclimates.
- (2) Includes taxes for debt service on outstanding water bonds and loans plus any applicable apportionment of the AB8 1% County levy distributed to compensate for the Prop 13 elimination of the operation and maintenance tax.
- (3) 1st 15 Ccf quarterly @\$1.00/Ccf, 16 to 21 Ccf @\$1.50, 22 - 28 @\$3.00, 29 - 40 @\$6.00, 41 - 60 @\$10, 61 - 75 @\$15 and 76+ Ccf @\$18/Ccf (billed quarterly).
- (4) Based on home with net AV of \$420,164 (average 2013/14 AV on 544 single family homes in Bolinas) and tax rate of 0.10¢/\$100 AV. 100% of this tax is allocated to water. Also shares in 1% County levy. This "allocation" is projected by the County of Marin at \$243,854 for Bolinas in 2013/14 of which 100% is credited to the water fund amounting to \$415 per service.
- (5) First 25 cubic meters bimonthly @ \$2.075/cm; next 25 cm @ \$3.051/cm; 51+ cm @ \$4.089/cm.
- (6) First 6 Ccf monthly @ \$1.95/Ccf; 6 to 10 Ccf @ \$4.68/Ccf; 10 to 16 Ccf @ \$7.88/Ccf; 16 to 20 Ccf @ \$10.80/Ccf; 20 to 30 Ccf @ \$16.97/Ccf; 30 to 40 Ccf @ \$21.20Ccf; 40 and above Ccf @ \$27.54/Ccf.
- (7) Based on weighted average tax rate of 0.039¢/\$100 AV and home with net AV of \$1,064,983 (average 2013/14 AV on 652 single family homes in Stinson Beach less \$7,000 homeowner exemption). Stinson Beach also shares in 1% County levy. This "allocation" is projected at \$549,414 in 2013/14 of which 70% is credited to the water fund amounting to \$530 per service.
- (8) \$49.92/bimonthly flat rate for first 4,500 gallons, plus \$0.92/100 gallons for 4,500 to 10,000, plus \$1.29/100 gallons for 10,000 to 30,000, plus \$1.62/100 gallons for 30,000+ gallons.
- (9) 25% of revenue is allocated to capital improvements.
- (10) The annual \$300 charge is now collected via water billings rather than a parcel tax and is allocated to capital improvements.
- (11) First 12 Ccf bimonthly @ \$2.30/Ccf; 13 to 36 Ccf @ \$3.45/Ccf, 37 to 48 @ \$4.90/Ccf, 49 to 60 @ \$6.75/Ccf, and 61+ @ \$20.15/Ccf.
- (12) \$48.67 bi-monthly water svc charge for 0-800 cubic feet, then \$5.12/100 cubic feet for 801-2,500 cubic feet, then \$5.85/100 cubic feet over 2,500 cubic feet.
- (13) Based on share of 1% County levy. This "allocation" by the County of Sonoma was \$317,632 for 12/13, of which 100% was allocated to water amounting to \$301 per service. FY14 allocation is not available until June.
- (14) Rate shown is weighted average of Point Reyes Station, Olema, Bear Valley/Inverness Park & Paradise Ranch Estates and includes a Proposed 7% commodity rate increase. Tier rate charges do not apply to the typical residential customer as median use does not exceed the 400 gpd tier rate threshold.
- (15) West Marin Service Area receives allocation of the 1% County levy projected at \$41,000 in 2013/14, amounting to \$53 per service.

**5**

MEMORANDUM

To: Board of Directors

June 20, 2014

From: David L. Bentley, Auditor-Controller 

Subj: Public Hearing/Approve: Oceana Marin Sewer FY 2014/2015 Budget  
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**RECOMMENDED ACTION:** 1) Approve Sewer Service Charge Increase;  
2) Approve FY15 Budget as Proposed

**FINANCIAL IMPACT:** 1) Service Charge Increase would generate \$8,000 annually;  
2) FY15 Budgeted Expenditure Plan of \$276,000

Presented for your final review and public hearing is the proposed FY2014/2015 (FY15) budget for the Oceana Marin Sewer System.

**SEWER RATES**

The Oceana Marin Sewer system held a cash balance of \$287,000 at May 31, 2014. The Five-Year Financial Plan includes a \$350,000 project to clean and line the settling and treatment ponds in FY19. A 5% (\$3/month) increase is proposed for FY15, which will generate an additional \$8,000 per year. Annual 5% increases are included in the 5-year financial plan (\$3 per month) for FY16 and beyond to help pay for the pond relining project.

A letter was mailed to all Oceana Marin Sewer customers on May 9, 2014, advising of the proposed sewer service cost increase and extending an invitation to attend the public hearing and/or exercise their right to protest the proposed increase (see page 7 of the budget document). No response to the letter has been received to date.

An increase in the Sewer Service Charge, which is collected on the Property Tax roll, must be adopted by ordinance, which requires readings at two Board meetings and publication twice. A summary of the ordinance was published in the Point Reyes Light on June 5 and again on June 19, inviting customers to attend the June 24 meeting in Point Reyes Station (Attachment A).

**CONNECTION FEES**

The connection fee for Oceana Marin Sewer was increased to \$15,200 in August 2009. Staff anticipates reviewing the connection fee calculation again following the Oceana Marin Sewer System Master Plan update scheduled for the coming fiscal year.



## **BUDGETED SYSTEM IMPROVEMENT PROJECTS**

### FY15 Projects

- \$40,000 to rebuild the disposal field fence that has been damaged by cattle. This project also includes replacement of damaged valve boxes.
- \$15,000 to relocate the pond power connection as requested by Estero Mutual (Oceana Marin Water Company) to remove NMWD's power feed from their service box.

### Future Projects

\$15,000 in continued work on infiltration repair is forecast each year into the future. \$100,000 is included, commencing in FY16, for design and installation of an 8th disposal trench. Finally, \$350,000 is included for lining the settling and treatment ponds in FY19 (see page 1 of the budget document).

## **OCEANA MARIN SEWER OPERATING BUDGET**

The proposed Oceana Marin Sewer budget shown on page 2 includes a \$3/month (5% - to \$68/month) increase in the sewer service charge. One new connection is budgeted for next fiscal year, which is Oceana Marin's average over the past five years, as shown in the chart on page 5. Next year's budget projects operating expenditures, before depreciation, to increase 15% from the current year budget, and 24% from the current year estimated actual. Termination of the agreement with Phillips and Associates to provide for Operation and Maintenance of the Oceana Marin system will add significant expense to operation of the Oceana Marin facility in FY15 as deferred maintenance items are addressed. Also incorporated into next year's budget is \$30,000 to update the Oceana Marin Master Plan, last updated in 2006.

A graphical history of Oceana Marin operating expenditures is shown on page 6. The 2014 update of the Coastal Area Annual Sewer Cost Comparison (page 9) shows that, when the County 1% allocation of AB8 tax revenue is included as a ratepayer cost, and assuming approval of the recommended 5% sewer service charge increase, Oceana Marin sewer service will rank second in cost among the six coastal agencies surveyed.

### **STAFF RECOMMENDATION:**

- 1) Approve Ordinance No. 28 (Attachment B) electing to have the Oceana Marin Sewer Service Charges be collected on the tax roll of the County of Marin;
- 2) Approve Resolution No. 14-XX (Attachment C) amending Regulation 109 (shown in

highlight/strikeout mode on Attachment D), effective July 1, 2014, to increase the Oceana Marin sewer service charge by 5% to \$816 per dwelling unit per year;

- 3) Adopt the FY15 Oceana Marin Sewer System Budget as proposed;
- 4) Authorize the General Manger to pay demands arising from execution of the budgeted FY15 Oceana Marin expenditure plan.

# PROOF OF PUBLICATION (2015.5 CCP)

This space is for the County Clerk's Filing Stamp

## STATE OF CALIFORNIA County of Marin


I am a citizen of the United States and a resident of the county aforesaid. I am over the age of eighteen years, and not a party to or interest in the above-entitled matter. I am the publisher of the Point Reyes Light, a newspaper of general circulation, printed and published in the town of Point Reyes Station, County of Marin and which newspaper has been adjudged a newspaper for general circulation by the Superior Court of the County of Marin, State of California, under the date April 26, 1949, Case Number 183007; that the notice of which annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates to wit:

6/5/14

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Date at Inverness, California, this

6/16/14

Signature 

Proof of Publication

NORTH MARIN WATER DISTRICT NOTICE OF PUBLIC HEARING OCEANA-MARIN SEWER SERVICE CHARGES FISCAL YEAR 2014-2015  
NOTICE IS HEREBY GIVEN that pursuant to Section 5471 et seq. of the California Health and Safety Code and Section 31101 et seq. of the California Water Code, the Board of Directors of North Marin Water District (NMWD), intends to amend NMWD Regulation 109, Oceana Marin Sewer Service - Rates and Charges, through the adoption of Ordinance No. 28 on June 24, 2014, fixing its charges for sewerage services for the fiscal year 2014-2015 in the amount of \$66 per month (\$816 per year) per parcel (a proposed increase of \$5 per month - \$6 annually), and further intends to elect to collect such charges on the tax roll as it did for fiscal year 2013-2014 in the same manner as general taxes. NMWD has caused to be filed with its Secretary a written report containing a description of each parcel of real property receiving sanitary sewerage services from said District and the anticipated amount of charges on each such parcel.  
NOTICE IS HEREBY GIVEN THAT ON Tuesday, June 24, 2014 at 7:30 p.m. at a regular Board Meeting of NMWD held at The Dance Palace, 505 B Street, Point Reyes Station, California, said Board will hear and consider all protests and objections to said report.  
Dated: May 30, 2014. Published in the Point Reyes Light, June 5, 19, 2014.

ATTACHMENT A

**ORDINANCE NO. 28**

**ORDINANCE OF THE BOARD OF DIRECTORS OF  
NORTH MARIN WATER DISTRICT  
ELECTING TO HAVE OCEANA MARIN SEWER CHARGES BE COLLECTED ON THE TAX  
ROLL OF THE COUNTY OF MARIN, STATE OF CALIFORNIA  
COMMENCING FISCAL YEAR 2014-15**

---

Section 1. The Board of Directors hereby finds, determines and declares as follows:

- a. The District has previously developed and instituted a Sewer Service Charge Program to finance the services and facilities furnished by the District in its Improvement Districts No. OM-1 and OM-3 which are herein referred to as Oceana Marin; and
- b. The Board of Directors has reviewed the present sewer service charge and has determined that the sewer service rate should be \$816 per equivalent unit for fiscal year 2014-15;

Section 2. In adopting this Ordinance, the Board of Directors finds that:

- a. Written notices of the proposed increase in the sewer service charge were sent by first class U.S. mail to every customer in Improvement Districts No. OM-1 and OM-3 at least 45 days prior to the Public Hearing conducted on June 24, 2014 to consider said report and rate increase effective July 1, 2014.
- b. The District prepared and filed a sewer service charge report with the District Secretary.
- c. On June 5, 2014 and June 19, 2014, the District Secretary published a notice of Public Hearing and of the filing of said report in the Point Reyes Light, a newspaper of general circulation printed and published in the County.
- d. At the Public Hearing conducted on June 24, 2014, all written protests against the proposed increase in the sewer service charge, including those provided in person, by facsimile, email and U.S. mail, were considered and tallied, and the District was not presented with protests by a majority of the owners of the identified parcels affected by this change.
- e. The amount of the charge imposed does not exceed the proportional cost of the service attributable to the properties receiving service and the charge is only

imposed on those properties actually receiving service or for those which service is immediately available.

- f. This action is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15273 (a) (1-4) of the District CEQA Guidelines.

Section 3. Section c. of that certain Regulation entitled "Regulation 109 – Oceana Marin Sewer Service – Rates and Charges," passed by the Board of Directors of the North Marin Water District on June 21, 1977, as amended, and attached as Exhibit 1 hereto, is hereby amended to read as follows and is hereby adopted:

"c. Sewer Service Rate

For Fiscal Year 2014-15, a sewer service rate of \$816 per equivalent unit per year shall be paid by the owner of the land served. In the case of new construction, said rate shall commence when connection is made to the District sewage facility. Upon written notice by the owner in the event a structure is demolished by fire or otherwise removed from the land, an appropriate adjustment shall be made taking into account the reduced use but excluding any adjustment for infiltration inflow. An appropriate portion of the charges collected during the period that no structure existed shall be refunded. The refund period, however, shall not be greater than one year and shall be measured from the date that the District receives written notice from the owner."

Section 4. The District does hereby elect, pursuant to Section 5473 of the Health and Safety Code of the State of California, to have the sewer service charge, pursuant to its Regulation 109 passed and adopted by the Board of Directors of the North Marin Water District on June 21, 1977, as amended, collected on the tax roll of the County of Marin, State of California, in the manner pursuant to Sections 5471 through 5473.11 of the Health and Safety Code of the State of California.

Section 5. The Secretary shall cause this ordinance to be published in the manner described in Section 31105 of the Water Code.

Section 6. The Secretary of North Marin Water District is hereby directed to file a copy of said report with the Treasurer-Tax Collector of Marin County on or before July 15, 2014, upon which shall be endorsed, over the Secretary's signature, a statement that the report has been adopted by the Board of Directors of the North Marin Water District.

Section 7. The Treasurer-Tax Collector of Marin County shall, upon receipt of said report,

enter the amounts of the charges against the respective lots or parcels as they appear on the assessment roll for the fiscal year 2014-2015.

\* \* \* \* \*

I hereby certify that the foregoing is a true and complete copy of an ordinance duly and regularly adopted by the Board of Directors of NORTH MARIN WATER DISTRICT at a regular meeting of said Board held on the 24th day of June 2014 by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAIN:

---

Katie Young, Secretary  
North Marin Water District

(SEAL)

t:\ordinances\ordinance 28 om tax roll 2014 draft.docx

**RESOLUTION 14-XX**  
**REVISION OF NORTH MARIN WATER DISTRICT**  
**REGULATION 109**  
**OCEANA MARIN SEWER SERVICE - RATES AND CHARGES**

---

BE IT RESOLVED by the Board of Directors of North Marin Water District that Regulation 109 of the North Marin Water District is adopted as follows, effective forthwith:

a. Applicability

This regulation applies to sewer service within Improvement Districts No. OM-1 and OM-3 of North Marin Water District which are herein referred to as Oceana Marin.

b. Sewage Facilities Connection Charge

A sewage facilities connection charge of \$15,200 for each dwelling unit shall be paid prior to the commencement of sewer service. For connection of service to structures projected to generate flows in excess of that generated by a typical single family home in Oceana Marin, the District shall calculate the number of equivalent dwelling units and resulting connection charge. In no event shall connection charge be less than \$15,200. All revenues derived by the District from said sewage facilities connection charge shall be used only for the construction and reconstruction (including, without limitation, enlargement, modification and replacement) and operation and maintenance of the sewage facilities serving said lots or for other purposes authorized by Section 5474.9 of the Health & Safety Code, but shall not be used for acquisition or construction of new local street sewer or laterals. With the exception of property annexed after April 17, 1973, said charge shall not be payable for any lot in Units 3 or 4 of Oceana Marin Subdivision heretofore or hereafter connected to said facilities by reason of the substantial payment for said facilities heretofore made by the owners of said lots.

c. Sewer Service Rate

For Fiscal Year 2014-15, a sewer service rate of \$816 per equivalent unit per year shall be paid by the owner of the land served. In the case of new construction, said rate shall commence when connection is made to the District sewage facility. Upon written notice by the owner in the event a structure is demolished by fire or otherwise removed from the land, an appropriate adjustment shall be made taking into account the reduced use but excluding any adjustment for infiltration inflow. An appropriate portion of the charges collected during the period that no structure existed shall be refunded. The refund period, however, shall not be greater than one year and shall be measured from the date that the District receives written notice from the owner.

\* \* \* \* \*

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 twenty-fourth day of June, 2014, by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAINED:

---

Katie Young, District Secretary  
North Marin Water District

(SEAL)



**NORTH MARIN WATER DISTRICT  
REGULATION 109  
OCEANA MARIN SEWER SERVICE - RATES AND CHARGES**

a. Applicability

This regulation applies to sewer service within Improvement Districts No. OM-1 and OM-3 of North Marin Water District which are herein referred to as Oceana Marin.

b. Sewage Facilities Connection Charge

A sewage facilities connection charge of \$15,200 for each equivalent dwelling unit shall be paid prior to the commencement of sewer service. ~~An equivalent unit is defined as the sewage flow generated by a typical single family home in Oceana Marin.~~ For connection of service to structures projected to generate flows in excess of that generated by a typical single family home in Oceana Marin, the District shall calculate the number of equivalent dwelling units and resulting connection charge. In no event shall connection charge be less than \$15,200. All revenues derived by the District from said sewage facilities connection charge shall be used only for the construction and reconstruction (including, without limitation, enlargement, modification and replacement) and operation and maintenance of the sewage facilities serving said lots or for other purposes authorized by Section 5474.9 of the Health & Safety Code, but shall not be used for acquisition or construction of new local street sewer or laterals. With the exception of property annexed after April 17, 1973, said charge shall not be payable for any lot in Units 3 or 4 of Oceana Marin Subdivision heretofore or hereafter connected to said facilities by reason of the substantial payment for said facilities heretofore made by the owners of said lots.

c. Sewer Service Rate

For Fiscal Year ~~2013-14~~2014-15, a sewer service rate of ~~\$780~~816 per equivalent unit per year shall be paid by the owner of the land served. In the case of new construction, said rate shall commence when connection is made to the District sewage facility. Upon written notice by the owner in the event a structure is demolished by fire or otherwise removed from the land, an appropriate adjustment shall be made taking into account the reduced use but excluding any adjustment for infiltration inflow. An appropriate portion of the charges collected during the period that no structure existed shall be refunded. The refund period, however, shall not be greater than one year and shall be measured from the date that the District receives written notice from the owner.

Proposed

# BUDGET

*Final Review/Public Hearing*

# Oceana Marin Sewer

FISCAL YEAR

# 2014-15

**NORTH MARIN WATER DISTRICT**

999 RUSH CREEK PLACE, NOVATO, CA

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**Proposed Capital Improvement Projects**

6/11/14

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	<b>FY14 Budget</b>	<b>FY14 E/A</b>	<b>FY15</b>	<b>FY16</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	
<b>7. OCEANA MARIN SEWER SYSTEM</b>								
a.	Infiltration Repair	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	
b.	SCADA RTU Upgrade and Install	\$35,000	\$35,000					
c.	Design/Install 8th Disposal Trench (300')				\$50,000	\$50,000		
d.	Pond Power Relocation			\$15,000				
e.	Disposal Field Fencing Upgrade			\$40,000				
f.	Tahiti Way Lift Pumps Rebuild (2) (every 5 yrs)					\$20,000	\$20,000	
g.	Pond Cleaning & Lining						\$350,000	
		<u>\$50,000</u>	<u>\$50,000</u>	<u>\$70,000</u>	<u>\$65,000</u>	<u>\$85,000</u>	<u>\$35,000</u>	<u>\$365,000</u>
<b>SUMMARY - GROSS PROJECT OUTLAY</b>								
	<b>GROSS PROJECT OUTLAY</b>	<u>\$50,000</u>	<u>\$50,000</u>	<u>\$70,000</u>	<u>\$65,000</u>	<u>\$85,000</u>	<u>\$35,000</u>	<u>\$365,000</u>
	Total Number of Projects	2	2	3	2	3	2	2

**OCEANA MARIN SEWER  
BUDGET SUMMARY  
Fiscal Year 2014/15**

	<b>Proposed Budget 2014/15</b>	<b>Estimated Actual 2013/14</b>	<b>Adopted Budget 2013/14</b>
<b>OPERATING INCOME</b>			
1 Monthly Sewer Service Charge	\$187,000	\$178,000	\$178,000
2 Misc Service Charges	0	0	0
3 <b>Total Operating Income</b>	<b>\$187,000</b>	<b>\$178,000</b>	<b>\$178,000</b>
<b>OPERATING EXPENDITURES</b>			
4 Sewage Collection	\$55,000	\$32,000	\$29,000
5 Sewage Treatment	61,000	33,000	26,000
6 Sewage Disposal	31,000	8,000	7,000
7 Contract Operations	0	48,000	67,000
8 Consumer Accounting	2,000	2,000	2,000
9 General Administration	23,000	16,000	19,000
10 Depreciation Expense	58,000	57,000	49,000
11 <b>Total Operating Expenditures</b>	<b>\$230,000</b>	<b>\$196,000</b>	<b>\$199,000</b>
12 <b>NET OPERATING INCOME (LOSS)</b>	<b>(\$43,000)</b>	<b>(\$18,000)</b>	<b>(\$21,000)</b>
<b>NON-OPERATING REVENUE/(EXPENSE)</b>			
13 OM-1/OM-3 Tax Allocation	\$44,000	\$43,000	\$46,000
14 Interest Revenue	1,000	1,000	1,000
15 Master Plan Update	(30,000)	0	1,000
16 <b>Total Non-Op Income/(Expense)</b>	<b>\$15,000</b>	<b>\$44,000</b>	<b>\$48,000</b>
<b>NET INCOME/(LOSS)</b>	<b>(\$28,000)</b>	<b>\$26,000</b>	<b>\$27,000</b>
<b>OTHER SOURCES/(USES) OF FUNDS</b>			
17 Add Depreciation Expense	\$58,000	\$57,000	\$49,000
18 Connection Fees	15,000	30,000	30,000
19 Capital Improvement Projects	(70,000)	(50,000)	(50,000)
20 <b>Total Other Souces/(Uses)</b>	<b>\$3,000</b>	<b>\$37,000</b>	<b>\$29,000</b>
21 <b>NET SURPLUS/(DEFICIT)</b>	<b>(\$25,000)</b>	<b>\$63,000</b>	<b>\$56,000</b>

## OCEANA MARIN SEWER

### 5-Year Financial Forecast

#	BASIC DATA	Actual 2011/12	Actual 2012/13	Estimated 2013/14	Projected 2014/15	Projected 2015/16	Projected 2016/17	Projected 2017/18	Projected 2018/19
1	Number of Connections	227	227	229	230	231	232	233	234
2	Monthly Service Charge	\$58.00	\$58.00	\$65.00	\$68.00	\$71.00	\$75.00	\$79.00	\$83.00
<b>INCOME</b>									
3	Monthly Service Charge	\$157,311	\$157,992	\$178,000	\$187,000	\$196,000	\$208,000	\$220,000	\$233,000
4	OM-1/OM-3 Tax Allocation	43,266	43,101	43,000	44,000	45,000	46,000	47,000	48,000
5	Connection Fees	0	0	30,000	15,000	15,000	15,000	15,000	15,000
6	Interest Revenue	1,387	724	1,000	1,000	1,000	1,000	1,000	1,000
7	Miscellaneous Revenue/(Expense)	10	19,127	0	(30,000)	1,000	1,000	1,000	1,000
8	<b>TOTAL INCOME</b>	<b>\$201,974</b>	<b>\$220,944</b>	<b>\$252,000</b>	<b>\$217,000</b>	<b>\$258,000</b>	<b>\$271,000</b>	<b>\$284,000</b>	<b>\$298,000</b>
9	<b>OPERATING EXPENDITURES</b>	<b>\$137,490</b>	<b>\$148,164</b>	<b>\$139,000</b>	<b>\$172,000</b>	<b>\$149,000</b>	<b>\$153,000</b>	<b>\$158,000</b>	<b>\$163,000</b>
<b>OTHER EXPENDITURES</b>									
10	Capital Improvement Projects/Other	\$58,694	\$221,835	\$50,000	\$70,000	\$65,000	\$85,000	\$35,000	\$365,000
11	<b>TOTAL EXPENDITURES</b>	<b>\$196,184</b>	<b>\$369,999</b>	<b>\$189,000</b>	<b>\$242,000</b>	<b>\$214,000</b>	<b>\$238,000</b>	<b>\$193,000</b>	<b>\$528,000</b>
12	Net Change in Working Capital	\$21,639	(\$2,275)						
13	<b>INCREASE (DECREASE) IN CASH</b>	<b>\$27,429</b>	<b>(\$151,330)</b>	<b>\$63,000</b>	<b>(\$25,000)</b>	<b>\$44,000</b>	<b>\$33,000</b>	<b>\$91,000</b>	<b>(\$230,000)</b>
<b>CASH BALANCE</b>									
14	Operating Reserve	\$293,416	\$192,042	\$255,000	\$230,000	\$274,000	\$307,000	\$398,000	\$168,000
15	Connection Fee Reserve	49,956	0	0	0	0	0	0	0
16	<b>TOTAL CASH BALANCE</b>	<b>\$343,372</b>	<b>\$192,042</b>	<b>\$255,000</b>	<b>\$230,000</b>	<b>\$274,000</b>	<b>\$307,000</b>	<b>\$398,000</b>	<b>\$168,000</b>
17	Depreciation Expense	\$41,084	\$44,720	\$57,000	\$58,000	\$60,000	\$62,000	\$64,000	\$65,000

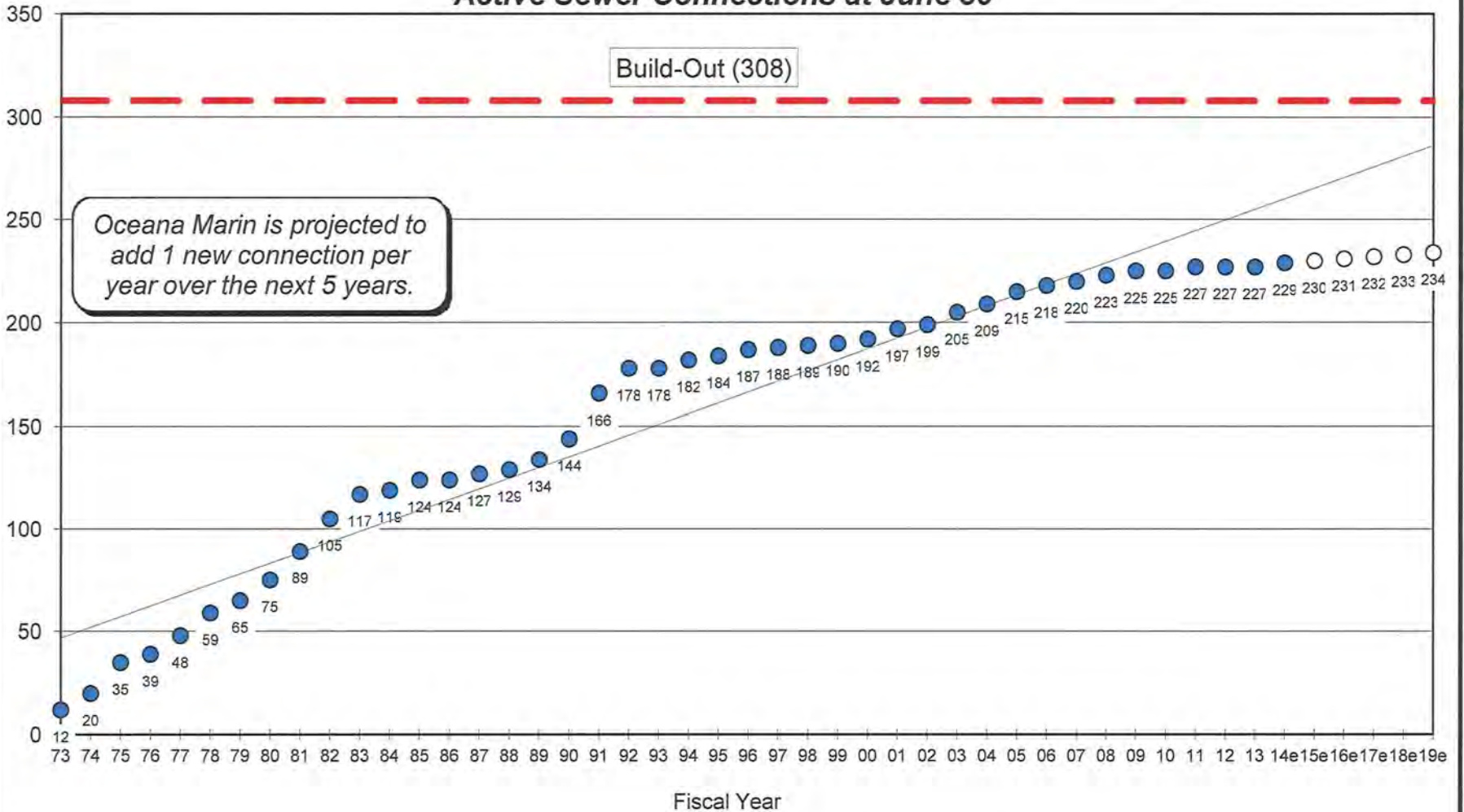
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**OCEANA MARIN SEWER****NOTES**

## # KEY

- 1 Assumes 1 connection per year, which is the average over the last 5 years.  
Capacity is estimated at 308 dwelling units.
- 2 Proposed 5% annual increases to build cash to fund the FY19 \$350,000 Pond Relining Project. A \$700K parallel force main is also projected outside the 5-year window.
- 4 County tax allocation enacted subsequent to Prop 13 to compensate for O&M tax revenue previously received. OM-1/IOM-3 County Tax allocation is projected to increase 3% per year.
- 5 Assumes new connections occur in OM-3 (Units 1 or 5) which are subject to the connection fee.
- 6 Projected available funds invested at 0.35%
- 9 Operating expenditures return to normal after FY15 deferred maintenance projects completed, then increase 3% annually thereafter.
- 10 Capital Improvement Projects. See 5-year Capital Improvement Projects Plan.
- 11 Excludes depreciation.
- 16 Cash available for operation, maintenance and improvements

### Oceana Marin Growth Active Sewer Connections at June 30

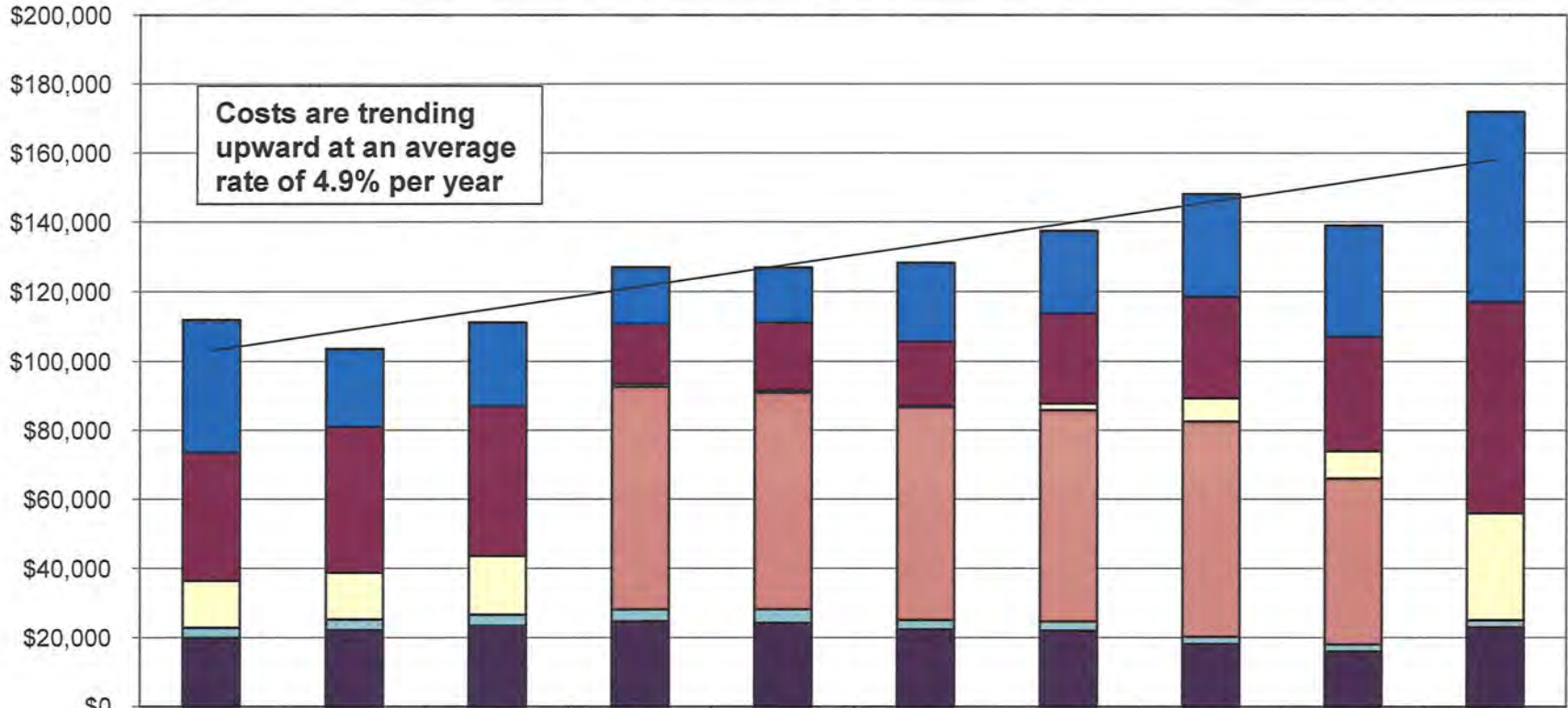


● Connections    - - - - - Build-Out    ○ Projection    — Trend

5



### Oceana Marin Operating Expenditures



Costs are trending upward at an average rate of 4.9% per year

	2006	2007	2008	2009	2010	2011	2012	2013	2014 e/a	2015 Budget
■ Collection	\$38,373	\$22,658	\$24,088	\$16,309	\$15,748	\$22,503	\$23,687	\$29,703	\$32,000	\$55,000
■ Treatment	\$37,086	\$42,187	\$43,307	\$17,142	\$19,474	\$18,470	\$25,928	\$29,021	\$33,000	\$61,000
□ Disposal	\$13,540	\$13,483	\$17,024	\$797	\$719	\$489	\$1,972	\$6,895	\$8,000	\$31,000
■ Contract Ops				\$64,467	\$62,745	\$61,592	\$61,215	\$62,281	\$48,000	\$0
■ Cons Acctg	\$2,874	\$3,087	\$3,179	\$3,429	\$3,952	\$2,778	\$2,636	\$2,162	\$2,000	\$2,000
■ G & A	\$20,023	\$22,197	\$23,491	\$24,801	\$24,228	\$22,359	\$22,052	\$18,099	\$16,000	\$23,000
<b>Total</b>	<b>\$111,896</b>	<b>\$103,612</b>	<b>\$111,089</b>	<b>\$126,945</b>	<b>\$126,866</b>	<b>\$128,191</b>	<b>\$137,490</b>	<b>\$148,161</b>	<b>\$139,000</b>	<b>\$172,000</b>

May 9, 2014

**RE: Notice of Proposed Oceana Marin Sewer Service Cost Increase**

Dear Customer:

This letter is to advise you of a **proposed increase to the Oceana Marin sewer service charge** that would take effect on July 1, 2014. It also provides information about a **Public Hearing scheduled on June 24, 2014**, at which time written and oral comments will be considered and a vote on the increase will be taken by the North Marin Water District Board of Directors.

**How much is the proposed rate increase?**

Current Oceana Marin sewer service charges are \$65/month (\$780/year). A **5% increase** is proposed equaling \$3/month (\$36/year).

**How will the proposed increase affect my sewer bill?**

Oceana Marin sewer service charges are collected on the Marin County property tax bill, which is rendered annually for the fiscal year period July 1 through June 30. The proposed sewer service charge increase would add \$3 per month to the cost of sewer service for all customers in Oceana Marin, resulting in a total annual charge for the 2014/15 fiscal year of \$816 (\$68 per month for July 2014 through June 2015).

**Why are rates being increased?**

If approved, the proposed increase would be the third increase in the Oceana Marin sewer service charge since 2004. On March 31, 2014, Oceana Marin's cash reserve balance stood at \$228,000. Last year the District relined 3,100 feet of aging cross-country pipeline at a cost of \$230,000. The next major improvement project, budgeted for 2017, is cleaning and lining the settling and treatment ponds, projected to cost \$350,000. The proposed rate increase is needed to help pay for the Pond Lining project. If enacted, the rate increase would generate \$8,200 of additional revenue annually. However, this 5% rate increase by itself will not provide enough cash to construct the Pond Lining project in 2017. Additional rate increases will be necessary in future years.

As an informational note, the District's contract with a private company to provide operation and maintenance of the Oceana Marin sewer system was discontinued last month. North Marin Water District staff will again assume responsibility for the day to day operation of the facilities, which we believe will better serve the needs of the community.

## Public Hearing

**A public hearing before the NMWD Board of Directors to consider the proposed sewer service charge increase is scheduled for 7:30 pm, Tuesday, June 24, 2014, at the Dance Palace (503 B Street) in Point Reyes Station.**

You are invited to present oral or written testimony on the proposal at the public hearing. You have the right to protest this proposed rate increase. If you do, you must submit your protest in writing, even if you plan to attend the public hearing. If written protests are submitted by a majority of the affected property owners the proposed increase will not be imposed.

Your written protest must be received prior to the close of the June 24, 2014 public hearing. Written protests must be signed by the property owner and must include a description of the parcel (parcel number or service address). Send or deliver written protests to:

District Secretary  
North Marin Water District  
PO Box 146  
Novato, CA 94948

For more information about the North Marin Water District, including a history of the Oceana Marin Sewer System, or to view the most recent Coastal Area Sewer Cost Comparison or the District's audited financial statement, visit NMWD's website at [www.nmwd.com](http://www.nmwd.com) or call the District Secretary at (415) 897-4133.

Sincerely,



Chris DeGabriele  
General Manager

## 2014 COASTAL AREA SEWER COST COMPARISON

6/19/14

Comparison of NMWD's Charges with Other Agencies based on Charges in effect on 6/1/14

<u>Agency</u>	<u>No. of Sewer Services</u>	<u>Monthly Service Charge</u>	<u>Annual Tax Revenue</u> <sup>(1)</sup>	<u>Annual Total</u>
Marshall Community Wastewater System	32	\$100.57 <sup>(2)</sup>	\$0	\$1,207
<b>&gt; NMWD Oceana Marin</b>	<b>229</b>	<b>\$68.00</b> <sup>(3)</sup>	<b>\$190</b> <sup>(4)</sup>	<b>\$1,006</b> <
Bolinas Community PUD	163	\$81.33	\$0 <sup>(5)</sup>	\$976
Tomales Village CSD	107	\$63.00	\$63 <sup>(6)</sup>	\$819
Stinson Beach Co Water - Inspection Only	703	\$39.65 <sup>(7)</sup>	\$234 <sup>(8)</sup>	\$710
Bodega Bay PUD	1,010	\$55.93	\$0 <sup>(9)</sup>	\$671

**Notes:**

- (1) Includes taxes for debt service on outstanding sewer bonds and loans plus any applicable allocation of the AB8 1% County levy distributed to compensate for the Prop 13 elimination of the operation and maintenance tax.
- (2) Community wastewater step-system commenced October 2008. Each parcel has own septic tank, pumped to a community collection tank, then pumped into a community leach field. Rates shown were effective on July 1, 2012 (proposed July 1, 2013 rates are not available yet).
- (3) Includes proposed increase of \$3/month.
- (4) Based on share of 1% County levy. This "allocation" is projected by the County of Marin at \$43,500 for 2013/14 which equates to \$190 per service.
- (5) Based on home with net AV of \$420,164 (average 2013/14 AV on 544 single family homes in Bolinas) and tax rate of 0.10¢/\$100 AV none of which is allocated to Sewer. Also shares in 1% County levy. This "allocation" is projected by the County of Marin at \$243,854 for Bolinas in 2013/14 of which 100% is credited to the water fund.
- (6) Based on home with net AV of \$315,550 (average 2013/14 AV on 107 single family homes in Tomales) and tax rate of 2¢/\$100 AV.
- (7) On-Site Wastewater System - no sewer system. Services provided include septic inspections, ground and surface water monitoring and other inspections required by the State Water Quality Control Board. In addition to the cost paid to Stinson Beach Water Co., each customer must purchase and install their own on-site wastewater system.
- (8) Based on allocation of 1% County levy. This "allocation" was projected by the County of Marin at \$549,414 for 2013/14 of which 30% was allocated to sewer amounting to \$234.46 per service.
- (9) Based on share of 1% County levy. This "allocation" by the County of Sonoma was \$317,632 for 2012/13 of which 100% was allocated to water (0% to sewer). FY13/14 information is not available until June.

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MEMORANDUM

June 20, 2014

To: Board of Directors  
From: Chris DeGabriele, General Manager   
Subject: Overview of West Marin Water Shortage Contingency Plan Measures  
I:\gm\water shortage 2014\overview of west marin water shortage contingency plan measures.doc

**Recommended Action: Information Only**

**Financial Impact: None**

Water Right Order 95-17 amended Lagunitas Creek Water Rights to protect fishery resources and prevent unauthorized diversion and use of water. That order stipulated that North Marin Water District Water Right Permits 19724 and 19725 could not be used to divert water from Lagunitas Creek during the low flow months (July through October) of dry years. A dry year is defined as one where precipitation that occurs from October 1 to April 1, is less than 28", as measured at the Marin Municipal Water District's Kent precipitation gauge. On April 1, 2014, precipitation at the Kent Lake gauge measured 27.64", just under the 28" threshold. NMWD has acquired a licensed water right from the Giacomini Ranch (license 4324B) that can be used in summer months of dry years.

Also on April 1<sup>st</sup>, North Marin held a public hearing and: 1) Declared a water shortage emergency in West Marin, 2) Enacted the West Marin Water Shortage Contingency Plan (Attachment 1), and 3) adopted the Emergency Water Conservation Ordinance for the West Marin Service Area. The Ordinance enacted voluntary restrictions, Stage 1 requirements, from April 1<sup>st</sup> to June 30<sup>th</sup> to achieve a 15% reduction in water usage compared to the corresponding billing period in 2013. Water production in West Marin was down 17% in April, down 15% in May and down 6% through June 17<sup>th</sup> compared to the similar months in 2013. Thus the voluntary efforts have been successful.

Pursuant to the Water Shortage Contingency Plan and the Emergency Water Conservation Ordinance, Stage 2 measures become effective on July 1, 2014 and require a mandatory 25% reduction in water use, again compared to the same period in 2013.

Customers were notified about the drought and the required Water Shortage Contingency Measures in the West Marin *Water Line* newsletter (Attachment 2), mailed in mid-April. Additionally, there have been several newspaper articles and letters to the editor regarding the water shortage conditions. Staff is proposing a summer West Marin *Water Line*

(approval requested in this agenda) to be mailed in early July and a Drought Drive-Up event, similar to that held in Novato, on August 14<sup>th</sup> now scheduled at the Dance Palace..

Beginning on June 16<sup>th</sup>, flows in Lagunitas Creek have been reduced and are expected to be maintained at 6cfs, 25% below the normal summer flows through the end of October. This is the first year that the North Marin Water District will have experienced a dry year in West Marin without the Giacomini Ranch summer dam in place.

NMWD Operations staff advised that a high tide avoidance pumping schedule began at the wells in early June to avoid salinity intrusion in the water supply. We do expect that the watershed will dry out later this summer and the only creek flow will be that released by Marin Municipal to maintain in stream flows. When that occurs the existing license restricts diversion. NMWD can request and pay Marin Municipal to release more water into Lagunitas Creek for our downstream diversion. The additional water can also likely temper, but not avoid, salinity intrusion and we do expect sodium levels in the water supply to exceed 50 parts per million this summer.

**NORTH MARIN WATER DISTRICT'S  
WATER SHORTAGE CONTINGENCY PLAN  
FOR WEST MARIN SERVICE AREA**

**April 1, 2014**



**NORTH MARIN WATER DISTRICT  
WATER SHORTAGE CONTINGENCY PLAN  
FOR WEST MARIN SERVICE AREA**

**April 2014**

Customer Notification

- I. January 1 water year classification "dry"
  - A. NMWD notifies customer by bill message.

"There are dry year conditions on Lagunitas Creek which may trigger implementation of water shortage contingency measures. Final determination will be made on April 1. Please use water wisely."
  - B. NMWD issues press release in February and March informing that potential dry year conditions exist and promoting customer participation in NMWD water conservation programs.
- II. April 1 water year classification "normal"
  - A. Spring edition of NMWD West Marin "Water Line" promotes conservation measures.
- III. April 1 water year classification "dry"
  - A. Spring edition of NMWD West Marin "Water Line" informs customers of "Water Shortage Emergency," public hearing and contingency measures. Water conservation programs and giveaways to be on display.
  - B. Stages of Action published as required in Point Reyes Light and posted at Point Reyes Station post office.

Specific Triggers

- Stage 1 Trigger:** When the total precipitation that occurs from October 1 through April 1 of the following year is less than 28" as measured at the MMWD Kent precipitation gage, and the period is April 1 through June 30.
- Stage 2 Trigger:** When the total precipitation that occurs from October 1 through April 1 of the following year is less than 28" as measured at the MMWD Kent precipitation gage, and the period is July 1 through November 1.
- Stage 3 Trigger:** When the total precipitation that occurs from October 1 through April 1 of the following year is less than 28" as measured at the MMWD Kent precipitation gage, and the period is August 1 through November 1 and water demands in any preceding thirty-day period exceed an average of 433,000 gpd.

## Consumption Limits

### **Stage 1:** (Request 15% voluntary reduction)

Residential:	15% voluntary reduction in water use from prior normal year for similar billing period.
Commercial and Industrial	15% voluntary reduction in water use from prior normal year for similar billing period.

### **Stage 2:** (25% mandatory reduction)

Residential	25% reduction in water use from prior normal year for similar billing period.
Commercial and Industrial:	25% reduction in water use from prior normal year for similar billing period (exceptions may be granted by the General Manager for emergency and special needs).

### **Stage 3:** (50% mandatory reduction) **(Critical)**

Residential:	Equivalent to X <sup>1</sup> gallons per person per day.
Commercial and Industrial	50% reduction in water use from prior normal year for similar billing period (exceptions may be granted to by the General Manager for emergency and special needs).

## Stages of Action

### **Stage 1** Voluntary - achieve a 15% reduction in water use by implementation of the following

- a. Encourage voluntary rationing
- b. Pursue vigorous enforcement of water wasting regulations and provisions of District's Water Conservation Regulation 17.
- c. Request customers to make conscious efforts to conserve water
- d. Request other governmental agencies to demonstrate leadership and implement restrictive water use programs
- e. Distribute water saving kits upon customer request, to assure availability to existing and new customers. (Note: Similar kits were distributed system wide to all customers during the 1976-77 California drought.)
- f. Encourage private sector to use alternate water sources such as private wells.
- g. Encourage the non-commercial washing of privately owned motor vehicles, trailers and boats only from a bucket and except that a hose equipped with a shut-off nozzle may be used for a quick rinse.
- h. Encourage nighttime irrigation
- i. Implement detailed measures from other stages to meet desired objective.
- j. Request restaurants to serve water only upon request.

### **Stage 2** Mandatory - achieve a 25% reduction in water use by declaring a water shortage emergency and implementing Phase 1 (introductory) and Phase 2 (mandatory) of the District's Emergency Water Conservation Ordinance

- a. Under Phase 1, the following uses are declared to be non-essential:
  - (1) washing sidewalks, driveways, parking areas, tennis courts, patios or other exterior paved areas except by the Marin County Fire Department or other public agency for the purpose of public safety;
  - (2) refilling a swimming pool;
  - (3) Non-commercial washing of privately-owned motor vehicles, trailers and boats except from a bucket and except that a hose equipped with a shut-off nozzle may be used for a quick rinse.
- b. The following additional uses are declared to be non-essential under Phase 2:
  - (1) any use of water from a fire hydrant except for fighting fires, human consumption, essential construction needs or use in connection with animals;
  - (2) watering of any lawn, garden, landscaped area, tree, shrub or other plant except from a hand-held hose or container or drip irrigation system without sprinklers can be used if customer maintains a 25% reduction compared to prior year's use in same billing period (the General Manager shall be authorized to request a greater reduction as required to meet the stage 2, 25% mandatory reduction);
  - (3) use of water for dust control at construction sites;
  - (4) initial filling of any swimming pool;
  - (5) use by a vehicle washing facility in excess of 25% less than the amount used by it during the corresponding billing period in prior year;
  - (6) any non-residential use in excess of 25% less than the amount used by the customer during the corresponding billing period in prior year
- c. Discontinue all intertie deliveries through the intertie to Inverness Public Utility District (IPUD), except for critical needs as determined by the General Manager.

**Stage 3 Critical** Mandatory - achieve a 50% reduction in water use by enacting Phase 3 of the District's Emergency Water Conservation Ordinance.

- a. The following additional uses are declared to be non-essential:
  - (1) Watering any residential lawn, or any commercial or industrial area lawn maintained for aesthetic purposes, at any time day or night during the period when a Stage 3 rationing plan is in progress. (These designated lawns will be allowed to dry up for the summer. Affected customers will be advised on tested methods for re-greening the lawns at minimum expense beginning on November 1, subsequent to a Stage 3 rationing period if operating conditions permit. By following the prescribed instructions, the affected customers will likely avoid the cost of replacing the lawns.)
  - (2) Planting any new landscaping, except for designated drought resistant landscaping prescribed by the District.
  - (3) Public agencies may apply to the General Manager for exemptions for watering specific public lawns used extensively for community wide recreation. Such public area lawn watering shall only be done under methods and time periods prescribed by the General Manager. Such exemptions will only be given by the General Manager, if a 50% or greater conservation level can otherwise be achieved on a service area basis.

- (4) All day and nighttime sprinkling will be discontinued. Any and all outside watering will be done only with a hand held nozzle. An exception will be made to permit drip irrigation for established perennial plants and trees using manual or automatic time controlled water application sufficient only for assured plant survival.
- (5) No new annual plants, vegetables, flowers or vines may be planted until the Stage 3 emergency is over. An exception will be made for customers who are eliminating existing thirsty landscaping and replacing same with drought resisting landscaping prescribed by the District, as in (2) above.
- b. Limit deliveries of water to outside service area customers to that needed for human consumption, sanitation and public safety or as stipulated in outside service agreements.
- c. Discontinue all water deliveries through the intertie to IPUD.
- d. The following additional actions will be recommended for District customers:
  - (1) Navy style showering will be promoted (e.g., turn on water to wet person or persons, turn off water, lather up, scrub, then turn on water for a quick rinse, then turn off shower).  
  
Customers will be provided push button showerhead control valves upon request, and at no direct charge to them, to better allow them to take "Navy style showers."
  - (2) Customers will be urged not to regularly flush their toilets for disposal of urine only.
- e. Implement detailed measures from other stages to meet desired objective.

Adoption of Plan

The emergency rationing plan will be enacted after public hearing required by the District's Emergency Water Conservation Ordinance and a determination by the District's Board of Directors that a West Marin Water Shortage Emergency exists.

Monitoring of Actual Water Use

Monitoring of water use will be by meters with data analysis using the District's computers.

Mandatory Prohibitions

Wasting of water is prohibited by Regulation 17 of the North Marin Water District.

Phase 2 and Phase 3 of the Emergency Ordinance contain specific mandatory provisions.

Revenue and Expenditure Analysis

Drought Surcharge

In the event a mandatory reduction in water use is triggered under the District's Water Shortage Contingency Plan for the West Marin Service Area, a Drought Surcharge will be implemented simultaneous with enactment of the mandatory stage. The Drought Surcharge will serve to mitigate the revenue loss resulting from a reduction in water use, as well as to offset the cost for water purchased from Marin Municipal Water District (MMWD) under the Interconnection Agreement between North Marin Water District and MMWD triggered by dry year conditions. The Drought Surcharge shall be a quantity charge for each 1,000 gallons as

specified in District Regulation 54.



NORTH MARIN  
WATER DISTRICT

# THE WATER LINE

WEST MARIN'S WATER CONSERVATION NEWSLETTER • VOLUME 11 • SPRING 2014

## It's A Drought – Save Water!

Dry year conditions exist on Lagunitas Creek

Water supplied by North Marin Water District (NMWD) to our West Marin customers is diverted from shallow wells adjacent to Lagunitas Creek near the U.S. Coast Guard Housing Facility in Point Reyes Station. The State Water Resources Control Board (SWRCB) has determined that Lagunitas Creek is fully appropriated in summer months of dry years and has ordered NMWD to find an alternative source of water during July through October of dry years. (A dry year occurs when total precipitation from October 1 to April 1 is less than 28 inches measured at Marin Municipal Water District's Kent Lake). NMWD has complied by purchasing a portion of the more senior Giacomini Ranch water right to use during those periods.

Rainfall at Kent Lake through April 1, 2014 totals just under 28 inches. Dry year conditions are in place on Lagunitas Creek. This is the first dry year since Water Right Order 95-17 was adopted by the SWRCB in October 1995. Pursuant to the order, Lagunitas Creek flows are currently

being maintained by Marin Municipal Water District at the regulated threshold of 14cfs (cubic feet per second, or about 6,300 gallons per minute) and will drop to 10cfs on May 1st and to 6cfs on June 16th. This will be the first summer in which NMWD has operated the West



Marin Water System with such low creek flows and without the Giacomini Ranch summer dam to prevent salinity intrusion into the water supply.

A public hearing was held on April 1st where **the Board of Directors declared a water shortage emergency in NMWD's West Marin Service Area**, the West Marin Water Shortage Contingency Plan was enacted and an Emergency

Water Conservation Ordinance was adopted. **From April 1 through June 30**, customers are asked to **voluntarily reduce water consumption by 15%** compared to the same billing period last year. Beginning **on July 1, a mandatory 25% reduction in water use will be in place**. Customers using less than 200gpd (gallons per day) are already in compliance, but are requested to conserve more if possible. Customers using more than 200gpd may be subject to a **"drought surcharge"** which **will be considered at a public hearing in the Point Reyes Station Dance Palace on June 24th**. You can see your water use history and target to reduce 25% by visiting the NMWD website [www.nmwd.com](http://www.nmwd.com), select the YOUR ACCOUNT tab and click on Account Balance & Consumption.

NMWD customers are encouraged to use water efficiently during this drought period, reduce outdoor irrigation and participate in NMWD Water Use Efficiency Programs described in this *Water Line* and at [www.nmwd.com](http://www.nmwd.com).

**Smart move.**

# Water Smart Savings Program

Call (415) 761-8944 for program details or visit [www.nmwd.com](http://www.nmwd.com)

North Marin Water District wants to help customers use water efficiently. That's why we've put all of our water saving promotions under one umbrella. The *Water Smart Savings Program* encompasses all you need to get started on saving water and saving money. Call (415) 761-8944 for program details or visit [www.nmwd.com](http://www.nmwd.com).



## High-Efficiency Toilet Rebate

Don't flush money away. Now you can get a rebate when you replace your non-water-conserving toilets with a High-Efficiency Toilet (HET). HETs use 20% less water than standard ultra-low flush toilets, so not only will you save water, but you'll save money, too. HETs eligible for rebate must be EPA WaterSense models. Call for rebate values and participation details or visit [www.nmwd.com](http://www.nmwd.com).



## High-Efficiency Clothes Washer Rebate Program

High Efficiency clothes washers can save up to 50% of the water used and 65% of the energy used compared to conventional top-loading clothes washers. NMWD currently offers a rebate to customers when they purchase a qualifying high-efficiency clothes washer. Call for rebate value and participation details, or visit [www.nmwd.com](http://www.nmwd.com).



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**NORTH MARIN  
WATER DISTRICT**

[www.nmwd.com](http://www.nmwd.com)

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Novato, CA 94948  
(415) 897-4133



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## Water Smart Landscape Efficiency Rebate

Water efficient landscapes can be achieved through a number of strategies including efficient irrigation devices and equipment, and soil maintenance.

You may be eligible for rebates (call for rebate amounts and participation details or visit [www.nmwd.com](http://www.nmwd.com)) when you install District-qualified water-efficient landscape equipment including:

- Spray to drip irrigation conversions
- Weather Based Irrigation Controllers
- Multi-stream rotating sprinkler nozzles (for lawn areas only)
- Rain shut-off devices
- Mulch



## Cash for Grass



As part of the Water Smart Savings Program, you can get cash back when you remove your regularly mowed and irrigated lawn and re-landscape with California native low-water use plants or District approved synthetic turf. Pre-inspection and re-landscaping plan approval required. Call for rebate values and complete program participation details or visit [www.nmwd.com](http://www.nmwd.com).

## Rainwater Harvesting and Graywater Rebate



Install a rainwater harvesting system, and District rebates may be available. Rainwater harvesting is the collection and storage of rainwater for reuse in landscape irrigation. Systems can range from simple catchment devices, such as rain barrels, to more complex systems, such as cisterns or storage tanks. Rebates are also available for greywater system installations. Pre-inspection and plan approval required. Call for participation details and rebate values.

### Mandatory 25 percent water reduction to affect NMWD customers

By Dennis J. Rodoni

By now, West Marin residents residing in communities served by North Marin Water District (NMWD) have received the spring 2014 Water Line newsletter alerting them of dry year conditions on Lagunitas Creek. These conditions are no surprise as we all are well aware of the ongoing California drought. Water flow in Lagunitas Creek comes from natural runoff and is supplemented with water released from Kent Lake by Marin Municipal Water District to protect fish, pursuant to a 1995 order by the State Water Resources Control Board. This year, due to the drought, the State order stipulates that Marin Municipal maintain lower flows in the creek to preserve Kent Lake storage for domestic and in stream use later in the year. From June 15 through November 1 the flows will be reduced by 25 percent compared to normal year summer creek flows.

NMWD water supply for the West Marin

#### Perspective

### Drakes Bay Oyster files reply brief in U.S. Supreme Court

By Sarah Rolph

This week, Drakes Bay Oyster Company (DBOC) filed its reply to the government's brief opposing the oyster farm's petition to

communities of Point Reyes Station, Olema, Bear Valley, Inverness Park and Paradise Ranch Estates comes from wells adjacent to Lagunitas Creek near the U.S. Coast Guard Housing Facility in Point Reyes. The West Marin water supply is regulated by the State as surface water diverted from Lagunitas Creek, but is considered ground water per water treatment regulations. There is no physical interconnection between the West Marin water system and NMWD's much larger Novato water system.

That same 1995 State Water Board order requiring Marin Municipal stream releases for fish told NMWD that our West Marin water rights were junior in priority and could not be used in summer months of dry years. In year 2000, NMWD purchased a senior water right, which had been used for irrigation on the old Waldo Giacomini Ranch. As NMWD perfected that senior water right for municipal use in West

#### Opinion

### Ninth Circuit's Drakes Bay decision would hamper historic preservation, argues amicus brief

By Sarah Rolph

As has been reported recently in these pages, four strong amicus briefs have been filed with the U.S. Supreme Court in support

of Marin, several environmental groups protested the change from irrigation use to municipal, arguing that municipal use would grow over time. NMWD settled the protest and one of the settlement obligations was to enact a 25 percent reduction in water use during summer months of dry years, coincident with the 25 percent reduction in Lagunitas Creek stream flow.

This is the first time dry year conditions have been experienced pursuant to the 1995 State Water Board order. The NMWD Board of Directors has declared a water shortage emergency and is requiring mandatory conservation measures to achieve a 25 percent reduction in water use community wide.

You can help by not wasting water, reducing outdoor watering and participating in NMWD water conservation programs. Customers can visit our website [www.nmwd.com](http://www.nmwd.com) and select the Your Account tab, then click on Account Balance &

Consumption to find your individual reduction target. Visit [www.wateroff.org](http://www.wateroff.org) and access the Water Savings Calculator link under the Tips button to explore water saving measures and reach your target.

Customers are invited to a Public Hearing at the Dance Palace in Point Reyes Station on June 24 at 7:30pm where the NMWD Board of Directors will consider a rate increase including a drought surcharge to be in effect during the mandatory water conservation period.

In the past, West Marin residents have worked together for the betterment of the community to meet various challenges. I'm hopeful that community spirit will be exhibited this summer. Working together we can do our part to insure water is available for all, including fish, during this dry year on Lagunitas Creek.

*Dennis J. Rodoni, is president of the North Marin Water District*

### Point Reyes Village Association meeting June 12 at the Dance Palace.

On the agenda for this week are the following items:

Public toilet update by Mark Switzer.

Grandi Building update by Michael Mery.

Coast Guard Station update by Marshall Livingston

maintaining environmental quality to the overall welfare and development of man, and to that end seeks to create and maintain conditions under which man and nature can



7

## MEMORANDUM

To: Board of Directors June 20, 2014  
 From: Drew McIntyre, Chief Engineer   
 Subject: West Marin Capital Improvement Projects – FY13-14 Preliminary Year-End Progress Report

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**RECOMMENDED ACTION:** Information Only  
**FINANCIAL IMPACT:** None

The purpose of this memo is to provide a preliminary year-end status report to the Board on the District's performance in completing budgeted FY13-14 Capital Improvement Projects (CIPs) in the West Marin (including Oceana Marin) service territories. A final fiscal year-end report will be presented to the Board at a later meeting once the FY13-14 financial information is complete. This preliminary progress report is being presented to take advantage of the fact that the June 24<sup>th</sup> meeting is being held in our West Marin service territory.

#### Performance Status for Capital Improvement Projects

A total of eight CIPs were originally budgeted in FY13-14 for the West Marin and Oceana Marin service areas (Attachment 1). During the year, two were added and one was dropped. Out of the resulting nine, six projects have been completed (Attachment 2). Overall progress in completing West Marin CIPs (i.e., 67%) is below the mid-year projected completion percentage of 83%. With the exception of Gallagher Auxiliary Stream Gauge project, the remaining FY13-14 West Marin project expenditures were at or below the original budget. Based on a review of total project expenditures for all West Marin CIPs, the combined West Marin Water projects are estimated to be below the initial budget by approximately \$80,000 and the combined Oceana Marin projects are estimated to be approximately \$95,000 below the initial budget.

#### Point Reyes Treatment Plant Solids Handling Facilities

During FY13, the Pt. Reyes Treatment Plant Solids Handling project has been on hold pending changes to the Marin County Local Coastal Program (LCP). NMWD's Coastal Development Permit application was submitted October 2012 and has since been withdrawn pending the May 15, 2014 California Coastal Commission's approval of Marin County's LCP amendment that allows the County to approve projects that fall within the 50-100 foot wetlands buffer (which is the case for NMWD's Point Reyes Treatment Plant Solids Handling project).

#### Tank Seismic Upgrades

Work on installing flexible piping on Pt. Reyes Tank No. 2 has been postponed until the wet weather season returns.

Olema Pump Station and RTU Upgrade

Work on the RTU Upgrade is almost complete and flood protection work has been pushed out into FY14-15.

Gallagher Well Pipeline

As reported to the Board via separate staff memorandums, this state grant funded project is under construction. Most of the submittals have been approved and the Contractor will start potholing along the alignment on Monday, June 23, 2014.

FY 13-14  
IMPROVEMENTS PROJECTS

PROJECTS BUDGETED	WEST MARIN/ OCEANA MARIN
Original Budget	8
Added	2
FY 12-13 Carryover	0
Deferred/Dropped	1
<b>Adjusted Budget</b>	<b>9</b>

FISCAL YEAR COMPLETION STATUS	WEST MARIN/ OCEANA MARIN
No. of Projects Completed	6
Mid-Year Projected Completion Performance	83%
Year-End Completion Performance	67%

**FY12-13 CARRYOVER**  
None

**Date Brought to Board**

**DEFERRED/DROPPED**  
P RTP Control Valve Replacement

First Quarter Report

**PROJECTS ADDED**  
Gallagher Well Pipeline (with \$100,000 budget augmentation)  
County PB Repl (7 servs, 1 street)

Second Quarter Report  
Third Quarter Report

**WEST MARIN CAPITAL IMPROVEMENT PROJECT SUMMARY FY13-14  
AS OF JUNE 30, 2014 (ESTIMATED)**

STATUS	DEPT	ITEM #	PROJECT NO.	DESCRIPTION	PROJECT COSTS		% COMPLETE		EARNED VALUE	
					Budget	Forecast	Planned	Actual	Planned	Actual
<b>6. West Marin Water System</b>										
<b>System Improvements</b>										
PC		1	6.a	TP Solids Handling	\$200,000	\$10,000	100	10	\$200,000	\$6,000
			6.b	<del>TP Control Valve Replacement - DROP</del>	\$25,000	\$0	0	0	\$0	\$0
C	GM	2	6.c	Gallagher Auxilliary Stream Gauge	\$30,000	\$80,000	100	100	\$30,000	\$70,000
PC	Eng	3	6.d	Olema PS Flood Protection & RTU Upgrade	\$100,000	\$20,000	100	20	\$100,000	\$20,000
C	Maint	4	6.e	Emergency Generator Connections	\$15,000	\$15,000	100	100	\$15,000	\$15,000
PC	Eng	5	6.f	Tank Seismic Upgrades	\$65,000	\$5,000	100	10	\$65,000	\$2,000
PC	Eng	6	6.g	<b>Gallagher Well Pipeline (start of construction)</b>	\$0	\$200,000	100	100	\$0	\$200,000
C	Eng	7	6.h	<b>County PB Repl (7 servs, 1 street)</b>	\$0	\$25,000	100	100	\$0	\$25,000
					\$435,000	\$355,000				
<b>7. Oceana Marin Sewer System</b>										
C	Ops	8	7.a	Infiltration Study & Repair	\$15,000	\$15,000	100	100	\$15,000	\$15,000
C	Maint	9	7.b	SCADA RTU Upgrade & Install	\$35,000	\$20,000	100	100	\$35,000	\$20,000
				SubTotal	\$50,000	\$35,000				
				Total West Marin	\$485,000	\$390,000	100	71	\$460,000	\$373,000
1C - Completed										
PROJECT FORECAST REVISED										
TBC - To Be Completed										
Baseline projects with revised forecast budget increases (indicated by shaded box)										
Baselined projects to be deferred or dropped (indicated in strikeout)										
New projects added (indicated in bold)										
Prior year projects carried over indicated in italics										

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## MEMORANDUM

To: Board of Directors

Date: June 20, 2014

From: Drew McIntyre, Chief Engineer



Subject: 2014 West Marin Water System Master Plan – Administrative Draft

R:\Folders by Job No\8000 jobs\8600s\8687 (WM)\8687.01 WM Master Plan Update 2013\_14\BOD Memos\2014 Draft WM Master Plan BOD Memo.doc

**RECOMMENDED ACTION:** Information only**FINANCIAL IMPACT:** NoneBACKGROUND

Prior to 2001, several studies had been completed for the water supply storage and pipeline needs in North Marin Water District's West Marin service area. In 2000, the District determined that a long range plan was needed to consolidate these studies to serve as a basis for the development, financing and implementation of a long range water system capital facilities replacement and improvement program. To this end, the Board authorized a contract with Brelje and Race on September 5, 2000 to prepare the 2001 West Marin Long Range Plan (WMLRP). The District held a public workshop on May 22, 2001 for the purpose of describing the required facilities replacements and alternatives and obtain public input. After incorporating comments received from the public, NMWD Board of Directors directed staff to move forward with preparation of a long range plan based upon capitol replacement/improvement program identified as Alternative 2 leading to the ultimate adoption by the Board of the WMLRP at the District's regularly scheduled Board meeting on October 16, 2001. The projects approved by the Board in 2001 are summarized as follows:

	<b>Project</b>	<b>Status</b>	<b>Cost</b>
1	Bear Valley Pump Station Upgrade	Complete	\$88,132
2	<b>Replace PRE #3 25,000 gallon redwood tank</b>	Complete	\$91,759
3	Replace 100,000 gallon Pt. Reyes bolted steel tank with 180,000 gallon tank	Complete	\$399,707
4	<b>Install new 75,000 gallon tank by existing Olema tank (also includes additional 75,000 gallons capacity)</b>	Complete	\$561,742
5	Tank Seismic Upgrades	Complete	\$115,531
6	<b>Replace two 55 gpm Inverness Park pumps with two 150 gpm pumps</b>	Complete	\$157,888
7	Replace PRE #4B 25,000 gallon redwood tank with 82,000 gallon tank	Not complete	\$22,328
8	<b>Replace 30,000 gallon Inverness Park bolted steel tank</b>	Complete	\$164,262
9	Install 3 booster pumps and controls at PRE	Complete	\$159,990
10	<b>Install parallel 8-inch water main in Hwy. 1</b>	Complete	\$180,000
11	Install pressure reducing valve at Inverness Park Pump Station	Complete	\$13,046
		<b>Total Cost</b>	<b>\$1,954,385</b>

From the above referenced tabulation it can be seen all of the initial projects identified in the 2001 West Marin Long Range Plan have been completed with the exception of the PRE #4A replacement. The identified total project cost of \$1,954,400 is 32% higher than the 2001 conceptual level estimate (i.e., \$1,484,000) and does not take into account any price escalation between 2001 and the time individual projects were actually completed. Note that deferred progress on replacement of PRE#4A was offset by incorporation additional storage capacity at the Olema tank site (a so-called “future” project in the 2001 WMLRP). In summary, actual overall total costs were within the District’s range of accuracy of -10% to +35% for conceptual level project estimates.

Future projects identified in the 2001 WMLRP are summarized below. All of these projects have been included in the 2014 West Marin Master Plan. As already mentioned, one project is complete (i.e., additional storage at Olema) and one project, the 100% state grant funded Gallagher Well Pipeline is now under construction.

	<b>Future Projects</b>	<b>Status</b>	<b>Cost</b>
1	Continue Tank Seismic Upgrades	In progress	\$115,531
2	<b>Replace 80,000 gallon Olema bolted steel tank with 75,000 gallon tank</b>	Completed in 1 <sup>st</sup> phase	
3	Install 30,000 gallon tank on Silver Hills Road in Bear Valley	Not yet started	
4	<b>Install 68,000 gallon tank for Bear Valley</b>	Not yet started	
5	Replace PRE #1 25,000 gallon redwood tank	Not yet started	
6	<b>Replace PRE #2 25,000 gallon redwood tank</b>	Not yet started	
7	Replace PRE #4A 50,000 gallon redwood tank	Not yet started	\$22,328
8	<b>Connect Gallagher Well (170 gpm)</b>	In progress	\$201,952
9	Developer second Gallagher well (130 gpm)	Not yet started	
<b>Total Cost</b>			<b>\$901,553</b>

2014 West Marin Water System Master Plan

The 2001 WMLRP coordinated various studies and evaluations of the West Marin water system into one comprehensive plan. The intent of this new master plan is to update the 2001 WMLRP so that the plan remains fresh. The District budgeted preparation of the West Marin Water System Master Plan Update in 2013 with the intent that the West Marin Master Plan would be updated every 10 years. The 2014 Master Plan has been prepared utilizing in-house staff. The District’s Associate Engineer, Ms. Carmela Chandrasekera, has served as the overall project manager for preparation of the 2014 Master Plan and has coordinated



preparation of all sections of the project. Various staff members have participated in the project through interviews and input into the development of individual sections. Each discipline and department within the District has been represented as part of the project team and each section has been prepared to reflect current data and information. This is particularly true for Section 6, Water Quality, which has been prepared by the District's Water Quality Supervisor, Pablo Ramudo, as well as Section 8, Asset Management, which has been prepared by the District's Operations and Maintenance Superintendent, Robert Clark.

The 2014 West Marin Water System Master Plan Administrative Draft has been completed and is enclosed in its entirety for your review. An oral presentation to highlight the critical elements and provide key background information will be presented at Tuesday night's meeting in West Marin. Staff will solicit additional comments on the Administrative Draft and adoption of the final 2014 West Marin Water System Master Plan will be scheduled for consideration at a future regularly scheduled Board meeting.

**WEST MARIN WATER SYSTEM  
MASTER PLAN 2014**

**ADMINISTRATIVE DRAFT**

WEST MARIN WATER MASTER PLAN  
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## LIST OF REFERENCES

1. Brejle and Race Consulting Civil Engineers (2001)-"West Marin Long Range Plan" - Prepared in Conjunction with North Marin Water District.
2. Jenipher Hubley, Associate Engineer (2002) - Memorandum - "West Marin Tank Seismic Retrofit Study - Seismic Analysis".
3. Soldati Engineering Services (2000) - "West Marin Storage Capacity Analysis" - Prepared for North Marin Water District.
4. SPH Associates (2005) - "Point Reyes Water Treatment Plant Upgrade Study - North Marin Water District".

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## SECTION 1

### INTRODUCTION

#### 1.1 PURPOSE OF STUDY

The North Marin Water District (NMWD) has prepared this 2014 update of the West Marin Water System Master Plan to guide immediate and planned future system improvements. The West Marin Water System serves primarily the Point Reyes Station (PRS), Olema, Bear Valley, Inverness Park and Paradise Ranch Estates (PRE) communities and parcels later annexed in to the PRS and PRE-improvement district within NMWD's West Marin service territory in Marin County, encompassing approximately 24 square miles. The West Marin Service Area boundary is shown on Figure 1-1.

The previous West Marin Long Range Plan was prepared in 2001 by Brelje & Race Consulting Civil Engineers. This Master Plan Update identifies necessary system improvements for both current operation and as water demands increase in the future. The Master Plan Update includes a proposed Capital Improvement Plan that identifies the improvement projects and required funding throughout the planning period through FY 2035.

Projects contained in the Capital Improvement Plan are separated by budget category utilized in the District budgeting process. Projects are identified for the following categories.

- Pipeline Replacement/Additions (Category #1)
- System Improvements (Category #2)
- Pt Reyes Treatment Plant Improvements and Other Improvements (Category #3)
- Storage Tanks/Pump Stations (Category #4)

Proposed projects related to water conservation are beyond the scope of the master plan and are not included herein.

#### 1.2 MAJOR MODIFICATIONS SINCE 2001 LONG RANGE PLAN

The 2001 West Marin Long Range Plan was undertaken by the District in an attempt to develop a long-range strategic plan for identifying and implementing necessary capital improvement projects in the water transmission and distribution system. The effort, including consolidation of various recent planning efforts, a procedure and approach for developing current water consumption by zone, and for monitoring new development within the District boundaries and projecting water demands through buildout. The result of the work was a Capital Improvement Plan that identified a phased plan for implementing recommended improvement projects.

The 2014 Master Plan Update built on the original Long Range Plan with updated historical water production records, updated development forecast and water demand projections. In addition, limited hydraulic analysis was added to evaluate distribution system performance and an asset management section was added to summarize the District's efforts to collect data on existing infrastructure and create a reasonable plan to replace aging facilities.

#### 1.3 SCOPE OF PROJECT

The scope of work consisted of several discrete tasks that covered a particular portion of the study. The following major tasks were performed for this project:



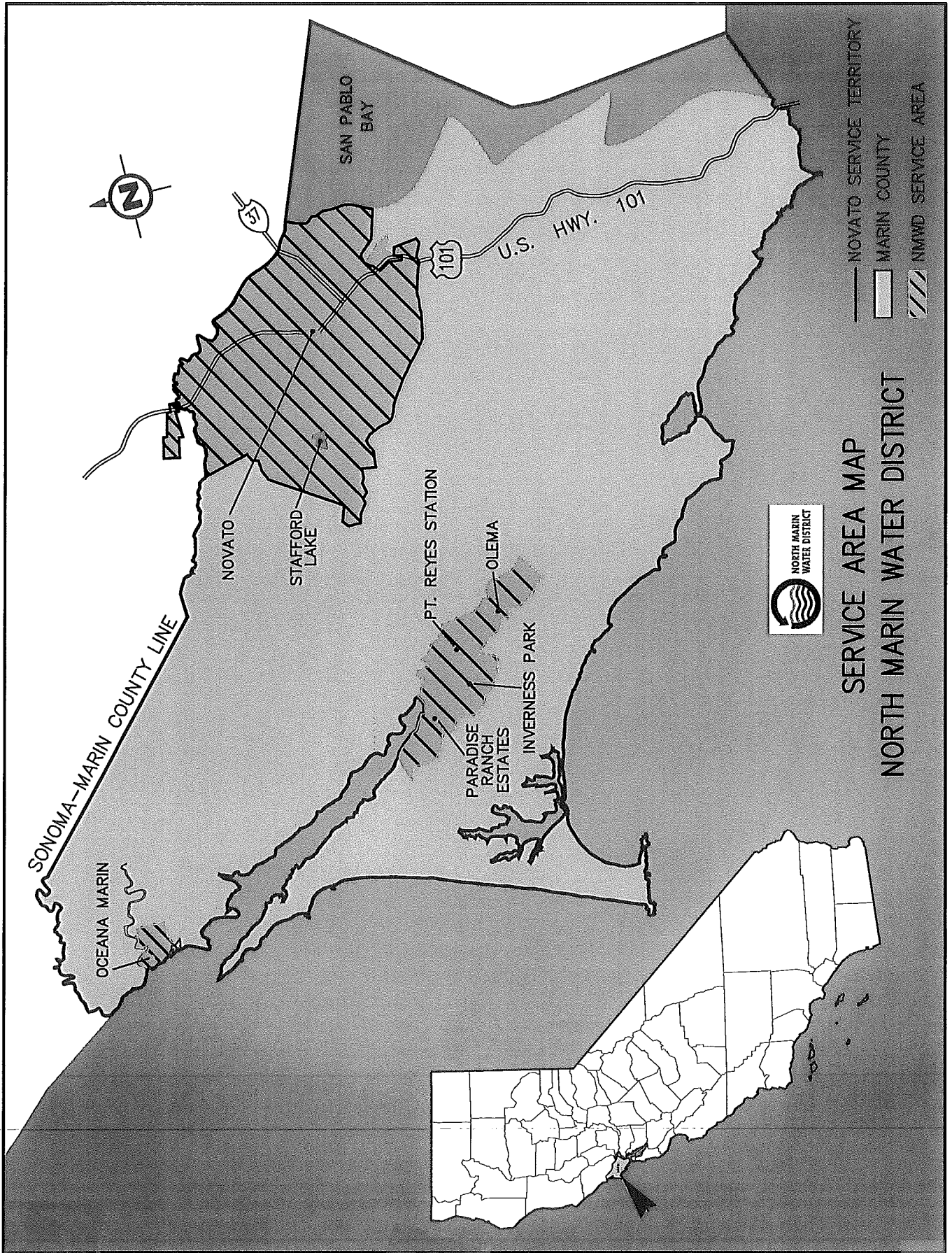


FIGURE 1-1

- Task 1 – Research Existing Materials
- Task 2 – Establish Planning and Evaluation Criteria
- Task 3 – Update Water Supply System Planning Discussion
- Task 4 – Limited Hydraulic Modeling
- Task 5 – Update Water Demand Projections
- Task 6 – Perform Storage and Pumping Capacity Evaluation
- Task 7 – Perform Hydraulic Evaluation
- Task 8 – Evaluate Water Quality
- Task 9 – Evaluate Facility Replacements
- Task 10 – Develop Capital Improvement Program
- Task 11 – Prepare Master Plan Report

#### 1.4 PROJECT TEAM

The project was performed as a collaborative effort between District staff. Associate Engineer Carmela Chandrasekera has served as the overall Project Manager for preparation of the 2014 Master Plan with Pablo Ramudo (Water Quality Supervisor) providing the section on Water Quality Evaluation (Section 6) and Robert Clark (Operations/Maintenance Superintendent) providing the Asset Management (Section 8). Other staff members have participated in the project through interviews and input in revisions of specific chapters. Each discipline and department within the District has been represented as part of the project team and each section has been updated to reflect current data and information.

#### 1.5 LIST OF ABBREVIATIONS

The following abbreviations were utilized in the report and are defined below.

<b>Abbreviation</b>	<b>Definition</b>
AC, ACP	Asbestos Cement Pipe
ADPM	Average Day Peak Month
AF	Acre Feet
AFA	Annual Acre Feet
AM	Asset Management
AOC	Assimilable Organic Carbon
APT	Apartment
AVE, AVG	Average
AWWA	American Water Works Association
CC	City/County Coordination
CI	Cast Iron
CIP	Capital Improvement Plan

<b>Abbreviation</b>	<b>Definition</b>
Cl <sub>2</sub>	Chlorine
COP	Copper
DBP	Disinfection By-Products
DBPR	Disinfection By-Product Rule
DCMS	Distributed Control and Monitoring System
DPH	California Department of Health Services
DIP	Ductile Iron Pipe
DP	District Planning
DU	Dwelling Unit
EDU	Equivalent Dwelling Unit
fps	feet per second
Ft	Foot, feet
FY	Fiscal Year
GAC	Granular Activated Carbon
Gal	Gallons
GHG	Green House Gas
GIS	Geographic Information System
Gpd	Gallons per day
Gpm	Gallons per minute
HA	Hydraulic Analysis
HAA	Haloacetic acids
HDPE	High-Density Polyethylene
HGL	Hydraulic Grade Line
HP	Horsepower
In	Inch
ISO	Insurance Services Organization
kW	Kilowatt
LIMS	Laboratory Information Management System
LTESWTR	Long-term Enhanced Surface Water Treatment Rule
M/DBP	Microbial/Disinfection By-Product
MCL	Maximum Contaminant Level
mg	Million gallons
mg/l	Milligrams per liter
mgd	Million gallons per day
MH	Mobile Home
MMWD	Marin Municipal Water District
MOU	Memorandum of Understanding
ND	Non-detectable
MCFD	Marin County Fire Department
NMWD	North Marin Water District
PB	Polybutylene (Plastic)
PG&E	Pacific Gas and Electric
POU	Point-Of-Use

<b>Abbreviation</b>	<b>Definition</b>
PR	Pressure Regulator
PS	Pump Station
psi	pounds per square inch
PVC	Poly Vinyl Chloride (Plastic)
RAA	Running Annual Average
RCP	Reinforced Concrete Pressure Pipe
SCADA	Supervisory Control and Data Acquisition
SF	Single Family
SP	Storage and Pumping Capacity Analysis
SS	Stainless Steel, Sanitary Sewer
STL	Steel
SWTR	Surface Water Treatment Rule
TDH	Total Dynamic Head
THC	Townhome / Condominium
THM	Trihalomethane
TOC	Total Organic Carbon
TTHM	Total Trihalomethane
ug/l	Micrograms per liter
USEPA	United States Environmental Protection Agency
WQ	Water Quality
WTP	Water Treatment Plant
WUI	Wildland Urban Interface

## SECTION 2

### PERFORMANCE AND EVALUATION CRITERIA

#### 2.1 INTRODUCTION

The performance and evaluation criteria used to evaluate the West Marin Water System are presented in Section 2.

In order to perform the required hydraulic evaluation of the existing and buildout water distribution system, conduct storage and pumping capacity evaluations and develop the Capital Improvement Plan, it is necessary to identify the evaluation criteria that will enable identification of deficiencies and to judge the effectiveness of alternative improvements. Performance and evaluation criteria include:

- Water demand peaking factors for average day peak month (ADPM), maximum day (MDD) and peak hour (PHD) demands for use in developing current and buildout water demands
- Water system operating criteria, including minimum and maximum distribution system pressures and minimum and maximum pipeline velocities and head loss under various demand scenarios
- Storage capacity goals
- Pumping capacity goals
- System reliability goals

The performance and evaluation criteria are summarized in Table 2-1 and further described herein.

**Table 2-1  
Performance and Evaluation Criteria**

Item	Criteria
Peaking Factors	<ul style="list-style-type: none"> <li>• Average day peak month (ADPM) demand = annual average day x 1.45</li> <li>• Maximum day demand (MDD) = ADPM x 1.43 (or annual average day x 2.11)</li> <li>• Peak hour demand (PHD) = MDD x 1.9 (or annual average day x 4.0)</li> </ul>
Minimum pressure	<ul style="list-style-type: none"> <li>• 40 psi under average day demand</li> <li>• 30 psi under maximum day demand</li> <li>• 20 psi at fire hydrant under fire flow event</li> </ul>
Maximum pressure	<ul style="list-style-type: none"> <li>• 80 psi (services with greater static pressure require a pressure regulator)</li> </ul>
Maximum pipeline velocity	<ul style="list-style-type: none"> <li>• 8 fps under average day demand</li> <li>• 10 fps under maximum day or fire flow demand</li> </ul>
Maximum pipeline head loss	<ul style="list-style-type: none"> <li>• 3 feet per 1000 feet under average day demand</li> <li>• 10 feet per 1000 feet under maximum day demand</li> </ul>
Fire flow/storage goals	<ul style="list-style-type: none"> <li>• 2,000 gpm for 2 hours in Point Reyes Station and 1,000<sup>(1)</sup> gpm for two hours in all other service zones.</li> </ul>
Storage capacity goals	<ul style="list-style-type: none"> <li>• Storage capacity goal per zone is the sum of operational storage and the greater of the emergency storage or the fire storage volume</li> <li>• Operational storage = 25% of maximum day demand</li> <li>• Fire storage = see above</li> <li>• Emergency storage = 100% of maximum day demand</li> </ul>
Pumping capacity goals	<ul style="list-style-type: none"> <li>• Station firm capacity is equal to maximum day demand pumped over 16 hour duration</li> <li>• Firm capacity = station capacity with largest pump out of service</li> <li>• Pump stations sized for firm capacity equal to maximum day demand</li> </ul>

(1) - A minimum goal of 500 gpm for 2 hours will be used in remote locations where the 1,000 gpm goal would be cost prohibitive.

## **2.2 WATER DEMAND PEAKING FACTORS**

Peaking factors represent the increase above the average annual demand experienced during a specified time period. The various peaking conditions are statistical concepts or numerical values obtained from a review of historical data and, at times, tempered by engineering judgment. The following peaking conditions are of particular significance to hydraulic analysis of the water system.

The peaking factors shown in Table 2-1 are averages obtained from the historical water production data as shown in Table 4-1 in Section 4. The development of the peaking factors shown in Table 2-1 is presented in Section 4.

## **2.3 HYDRAULIC NETWORK MODELING**

Hydraulic modeling was not performed during the 2001 West Marin Long Range Plan. Limited flow modeling was performed during the 2014 Master Plan for each individual tank pressure zone to analyze pipeline sizing or storage deficiencies. A description of the model preparation and proposed use of the model is included in Section 7.

## **2.4 WATER SYSTEM OPERATING CRITERIA**

The following operating criteria is used to evaluate system operation and hydraulic analysis.

### **2.4.1 Distribution System Pressure**

In accordance with District Regulation 11, the minimum pressure under normal operation for the West Marin Water System is 40 psi measured at the service meter or building pad. Service connections with less than 40 psi pressure are designated "low-pressure services" and will be furnished only in accordance with Regulation 11.

In accordance with District Regulation 12, the maximum pressure under normal operation for the West Marin Water System is 80 psi measured at the service meter or building pad. Service connections with greater than 80 psi are designated "high-pressure services" and will be furnished only in accordance with Regulation 12. Services with normal static pressure greater than 80 psi are required to install a privately owned pressure regulating device. The maximum design pressure in distribution system pipelines is 150 psi, unless special conditions mandate otherwise.

In evaluating the water system hydraulic operation, the minimum allowable pressure under maximum day demand conditions is 30 psi and the minimum residual pressure at the fire hydrant under fire demand conditions is 20 psi.

### **2.4.2 Pipeline Flow and Velocity**

Distribution system pipelines are generally sized to carry the greater of: 1) peak hour demand; or 2) maximum day demand plus fire flow. The minimum pipeline diameter is 6 inches per District Regulation 21. However, the West Marin Distribution system still has 2-inch and 4-inch mains that were installed prior to NMWD purchasing the water system from Pt Reyes Station Water Company and the Inverness Park Water Company in the 1960's. All pipe segments with a single fire hydrant shall be a minimum of 6 inches diameter (although some existing fire hydrants are on 4-inch laterals).

Other criteria related to the distribution system piping include maximum and minimum velocity and the maximum allowable friction head loss. Pipeline velocity should be limited to approximately 8 feet per second under normal operation. Velocities could increase to approximately 10 fps without damage if not sustained for long periods. There is no minimum velocity requirement in water system design, except that stagnant flow in dead ends is discouraged as water quality suffers.

In most situations, as long as the maximum velocity and pressure criteria are not violated, high head loss by itself is not an important factor. However, a pipe segment with high head loss may serve as a warning that the pipe is nearing the limit of its carrying capacity and may not have excess capacity to perform during peak demand conditions. It is normally good practice to limit head loss to no greater than 10 feet per 1000 feet under maximum day demands or fire flow conditions. Head loss should be limited to approximately 3 feet per 1000 feet under average day demand conditions.

## **2.5 WATER SUPPLY FACILITIES**

Typically, water supply sources must be large enough to meet the various water demand conditions and also be able to meet some demand during emergencies such as power outages and natural disasters. Ideally, water supply sources should meet the maximum day demand. The diurnal fluctuations during the maximum day demand are handled by gravity storage capacity.

## **2.6 STORAGE FACILITIES**

The detailed storage capacity evaluation will be presented in Section 5. The following criteria will serve as a guideline for the analysis.

Storage capacity goals for each zone consist of three components:

- Operational storage volume
- Fire storage volume
- Emergency storage volume

The sum of these three components is the typical total storage capacity used in larger water systems. However, in the 2001 West Marin Long Range Plan, the total storage was calculated as the sum of the operational storage (25% of MDD) and the greater of the emergency storage (100% MDD) or the fire storage volume. The criterion used in the 2001 Long Range Plan will be used for this Master Plan as well (as summarized in Table 2-1). The total storage capacity goal is compared to the existing storage capacity to determine if a surplus or deficit exists within the zone.

### **2.6.1 Operational Storage Volume**

Operational storage volume is the amount of storage capacity in a system to absorb fluctuations of demand versus supply. Ideally, water supply sources are sized to provide the maximum day demand, with gravity storage capacity delivering the remainder during peak demand periods. With adequate operational storage capacity, system pressures are stabilized and adequate storage capacity can be provided for fire and emergency use. In accordance with AWWA guidelines, operational storage capacity is assumed to be 25 percent of the maximum day demand for each pressure zone.



## 2.6.2 Fire Storage Volume

Fire storage volume is provided for fire-fighting purposes to allow gravity flow in the event the source flow is interrupted. Fire storage volumes vary and are based on the specified fire flow rate for a specified duration as described above.

Fire flow rates are normally based on the requirements of the local Fire Marshal and Insurance Services Office (ISO) requirements. Fire flows are defined as a specified flow rate for a specified duration of time based on the structure size, type of building construction and land use.

The District and the Marin County Fire Department (MCFD) have cooperatively developed fire flow and fire storage capacity goals throughout the West Marin Water System Service Area. The most recent correspondence between the MCFD and the District is provided in Appendix A-1. The MCFD has indicated a minimum fire flow goal of 2,000 gpm for a duration of 2 hours in the Point Reyes Station Area, and 1,000 gpm for a duration of two hours in other service zones.

Based on the representative land use in each of the pressure zones, previous District experience, and in collaboration with the Marin County Fire Department, the District has adopted the following fire flow rates and fire storage volume goals for each pressure zone shown in Table 2-2.

Fire flow goals represent flows over a specific duration for the purpose of determining fire storage capacity. It is desirable to provide the fire flow goal everywhere in the distribution system; however, there are many locations within the system that cannot meet the fire flow goals due to small diameter pipelines or the particular piping configuration in that vicinity. It is not always possible to make improvements for all locations that cannot meet the updated fire flow goals.

**Table 2-2  
Fire Flow and Fire Storage Volume Goals**

<b>Service Area</b>	<b>Pressure Zone</b>	<b>Area Type</b>	<b>Fire Flow Standard</b>	<b>Fire Storage Goal</b>
Pt. Reyes	1	Comm/Res	2000 gpm for 2 hrs	240,000
Inverness Park	1	WUI	1,000 gpm for 2 hrs	120,000
Paradise Ranch Estates	1,2,3,4	WUI	1,000 gpm for 2 hrs	120,000
Bear Valley	1	WUI	1,000 gpm for 2 hrs	120,000
Olema	1	WUI	1,000 gpm for 2 hrs	120,000

### **2.6.3 Emergency Storage Volume**

Emergency storage volume is the storage volume available to meet demand during emergency situations such as pipeline failures, major trunk main failures, pump failures, electrical power outages or other natural disasters. The volume of water allocated for emergency use is determined by historical record of emergencies experienced and by the amount of time which is expected to lapse before the emergency can be corrected. The amount of emergency storage volume included within a particular water system is District-specified, based on an assessment of risk and the desired degree of system reliability. In California, emergency storage volumes range from 25 percent of average day demand to over 100 percent of maximum day demand. The lower criterion would apply to systems with a single pressure zone, adequate and reliable water supply sources (usually with emergency power), and redundant sources. If some, or all, of these criteria do not apply, it is appropriate to use a higher figure.

The District's normal criterion is one maximum day demand for each pressure zone to be reserved as emergency storage capacity.

In West Marin, historically, the District had utilized a total storage capacity criterion equal to two days of maximum day demand. In the 2001 West Marin Long Range Plan, the total storage was calculated as the sum of the operational storage (25% of MDD) and the greater of the emergency storage (100% MDD) or the fire storage volume. The 2001 criterion will be used as the storage capacity goal for this Master Plan as well.

## **2.7 PUMPING FACILITIES**

Providing adequate storage capacity is only one distribution system element that benefits system operation. Adequate pumping capacity must also be provided to enable the storage tank to recover depleted volume in a reasonable time period. Undersized pumps may reduce the effectiveness of storage capacity. An analysis of the pumping capacity is presented in Section 5.

Booster pump stations feeding the higher pressure zones are normally sized to pump the maximum day demand. In order to account for outages and routine maintenance procedures, the District has adopted a criterion that all booster pump stations must have adequate capacity to pump the maximum day demand over a 16-hour interval. Each station should have enough firm capacity to meet the maximum day demand over the 16-hour interval. This results in a reserve duration of eight (8) hours for unplanned contingencies such as power interruptions, pipeline breaks, etc. Firm capacity is defined as the station capacity with one pump out of service. The District's goal is to have at least two pumps at each booster pump station.

## **2.8 RELIABILITY CRITERIA**

Reliability criteria have been established for the major facilities and operation of the water system to provide a level of reliability for the system.

### **2.8.1 Water Sources**

It is preferable to have more than one source of water supply for a water system to provide flexibility should one source be lost. In 2008, CDPH adopted revised Waterworks Standards that require new groundwater based systems to have a minimum of two approved sources. NMWD historically has relied on the two Pt Reyes Wells (aka Coast Guard Wells) located to the south of its Pt Reyes Treatment Plant (PRTP) to supply water for the West Marin service area.

Due to the wells' location in the lower tidal reach of Lagunitas Creek, they are subject to periodic salinity intrusion and occasional flooding. The District is working on having more than one source of water supply to the West Marin Water System. A pipeline connecting the Gallagher Well to the PRTP will be installed in 2014. Once the Gallagher well is connected to the West Marin service area, it will provide the second source of supply.

### **2.8.2 Booster Pump Stations**

District standard design practice is to have at least two pumps at each booster pump station. Additional reliability is designed into the design criteria which limit pumping capacity to a 16-hour window in order to account for outages, mechanical problems and issues of this nature. Although standby power is not required at each station, the District has made provisions for emergency standby power. A portable power generator is available that can be used in the case of a local power failure.

### **2.8.3 Storage Tanks**

Water storage capacity provides for gravity supply of water demand if a pump station is off-line or out of service. The District prefers to have at least two storage tanks for each pressure zone to allow one tank to remain in service while one is taken out of service for maintenance or repairs. All new tanks are designed to meet seismic codes and requirements. Existing tanks not meeting current seismic requirements have been evaluated and the seismic upgrade recommendations are further discussed in Section 9. A Seismic study of West Marin tanks was performed in 2002 (job 2.8713).

### **2.8.4 Distribution System Pipelines**

The distribution system should be adequately looped to minimize dead ends and promote good water circulation. Ideally, there should be at least two paths for water delivery at all locations in the system. Looping is especially important for those areas that do not have storage facilities in the immediate vicinity. However, the system is not looped adequately other than in the Pt Reyes Station zone due to the topography of the area.

Isolation valves should be located to allow shutdown of pipe segments enabling routine maintenance and emergency repairs which impact the fewest customers.

## SECTION 3

### EXISTING WEST MARIN WATER SYSTEM

#### 3.1 INTRODUCTION

Section 3 describes the existing distribution system facilities of the North Marin Water District (NMWD, District) West Marin Water System and presents a general overview of system operation.

#### 3.2 WEST MARIN WATER SYSTEM OVERVIEW

The West Marin Water System serves primarily the Point Reyes Station (PRS), Olema, Bear Valley, Inverness Park and Paradise Ranch Estates (PRE) communities and parcels later annexed in to the PRS and PRE-improvement district within NMWD's West Marin service territory in Marin County, encompassing approximately 24 square miles. The West Marin Service Area boundary is shown on Figure 3-1.

As of June 30, 2013, the West Marin Service area had approximately 776<sup>1</sup> active service connections serving approximately 811<sup>1</sup> dwelling units. The estimated service area population is 1,700<sup>1</sup>.

#### 3.3 WATER SUPPLY SOURCES

The North Marin Water District water supply for the West Marin Service area is currently derived from a single source, from two wells (Well Nos. 2 and 4) located on the Coast Guard housing facility property in Point Reyes Station and adjacent to Lagunitas Creek. Prior to installation of Well No. 4 in 2013, a total of three supply wells had been in place. Historically, at any one time, only two of these wells had been in service. These wells were identified as Well Nos. 1, 2 and 3. All the wells are installed in close proximity to each other. Well No. 1 was abandoned in 2002 by grouting with concrete. Well No. 4 was installed in 2013 as a replacement well for Well No. 3 due to decrease in the water production capacity from Well No. 3. Well No. 3 is no longer active and is now used as a monitoring well for measuring the depth of groundwater. Due to the Coast Guard Wells' location in the lower tidal reach of Lagunitas Creek, they are subject to periodic salinity intrusion and occasional flooding.

In 1993, Gallagher well was constructed 1.3 miles northeast of Highway 1 within the Gallagher Ranch for use as an emergency source. It is located upstream of any flooding and tidal reach of Lagunitas Creek but not connected to the West Marin Water System. NMWD plans to use Gallagher Well as the source during periods of salinity intrusion and flooding when Coast Guard Wells cannot be operated. A project to connect the Gallagher Well to the Point Reyes Treatment Plant by installing approximately 5,300 ft of pipeline is scheduled to be completed in calendar year 2014 funded by using a California Department of Public Health Prop 50 grant. The Gallagher Well pipeline will connect the well with an existing 6-inch pipeline near the abandoned Downey well site which extends to the PRTP.

NMWD abandoned the use of Downey Well that was located within the Lagunitas Creek stream channel in 2007. The well was originally constructed on the bank of the stream, but the creek has migrated and captured the wellhead. This well produced water with poor water quality.

<sup>1</sup>Source: NMWD Annual Report FY 2013

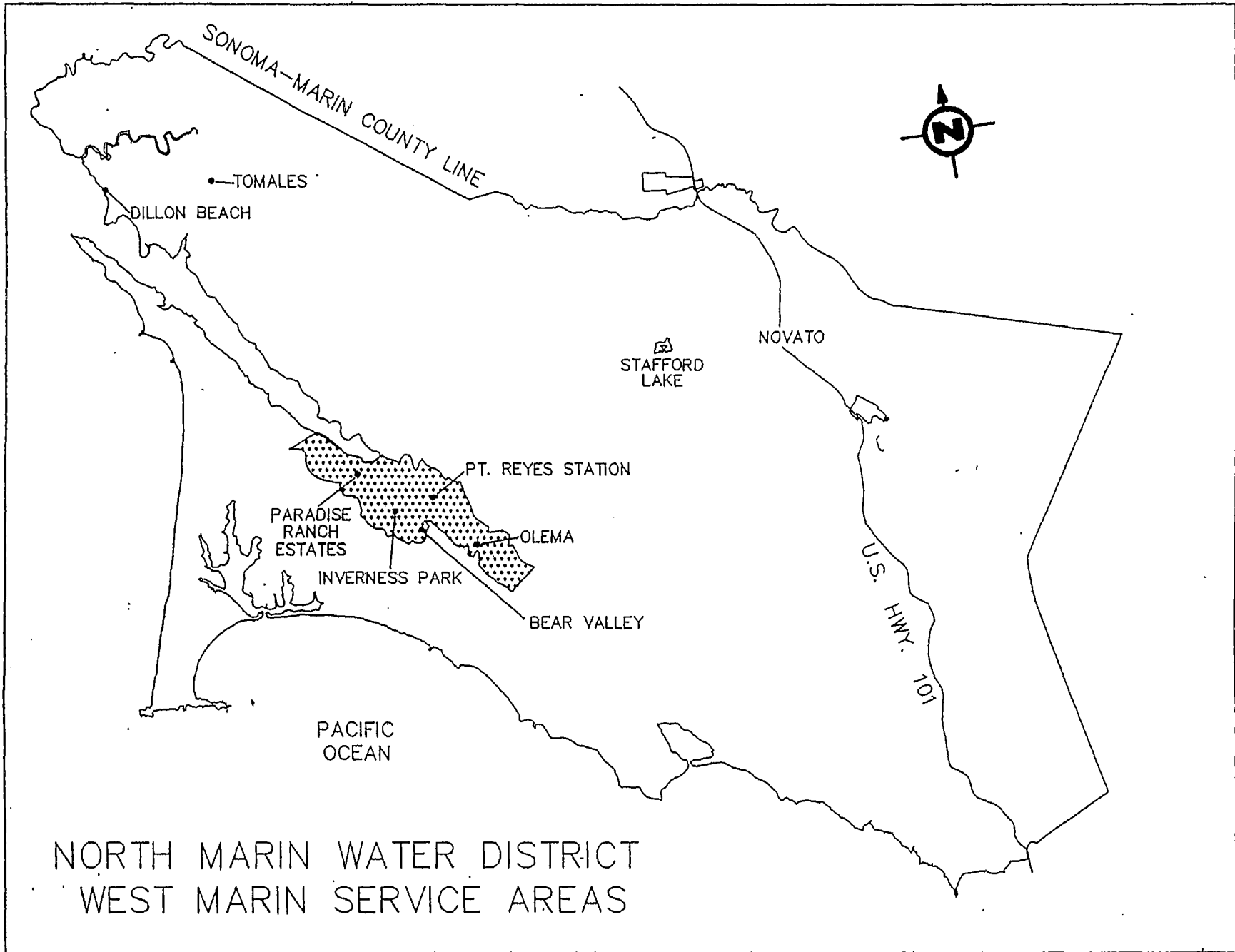


FIGURE 3-1

From 1994 to 2007, this well was used to deliver raw water to the Giacomini Ranch for irrigation. Proposed water supply source locations in West Marin are shown in Figure 3-2.

### **3.3.1 Coast Guard Wells**

The North Marin Water District Point Reyes potable Well Nos. 2 and 4 (Coast Guard Wells) are located on U.S. Coast Guard Property at 101 Commodore Webster Drive, Point Reyes Station, Marin County, California. As shown on the attached Figure 3-2, the Coast Guard well site is located on a grassy flat below residential units on the Coast Guard's Point Reyes Housing Unit. The site is west of Lagunitas Creek. The water from the two existing wells at this well site is pumped by individual 30 HP pumps to the nearby Point Reyes Water Treatment Plant (PRTP) where the water is treated and distributed to the West Marin Service Area. Well Nos. 2 and 4 have respective capacities of 250 gpm and 300 gpm. When both pumps are running at the same time, the combined capacity reduces to a total of 420 gpm.

### **3.3.2 Gallagher Well Supply**

NMWD historically has relied on the two Coast Guard Wells located to the south of its Pt Reyes Treatment Plant (PRTP) to supply water for the West Marin service area. Due to the wells' location in the lower tidal reach of Lagunitas Creek, they are subject to periodic salinity intrusion and occasional flooding. In contrast, the Gallagher well, which was drilled in 1993 as an emergency water source, is upstream of any flooding and tidal reach of Lagunitas Creek. The District is constructing a new 12-inch pipeline so that the existing well is connected to NMWD's PRTP. The capacity of the existing Gallagher well is approximately 120 gpm and construction of additional well(s) is planned in the future.

The Gallagher Well and the new pipeline will provide a second reliable water source that not only addresses salinity intrusion and flooding issues with NMWD's existing Coast Guard Wells but also complies with CDPH Waterworks Standards Section 64554 which states that, community water systems using only ground water shall have a minimum of two approved water sources.

### **Gauging Station**

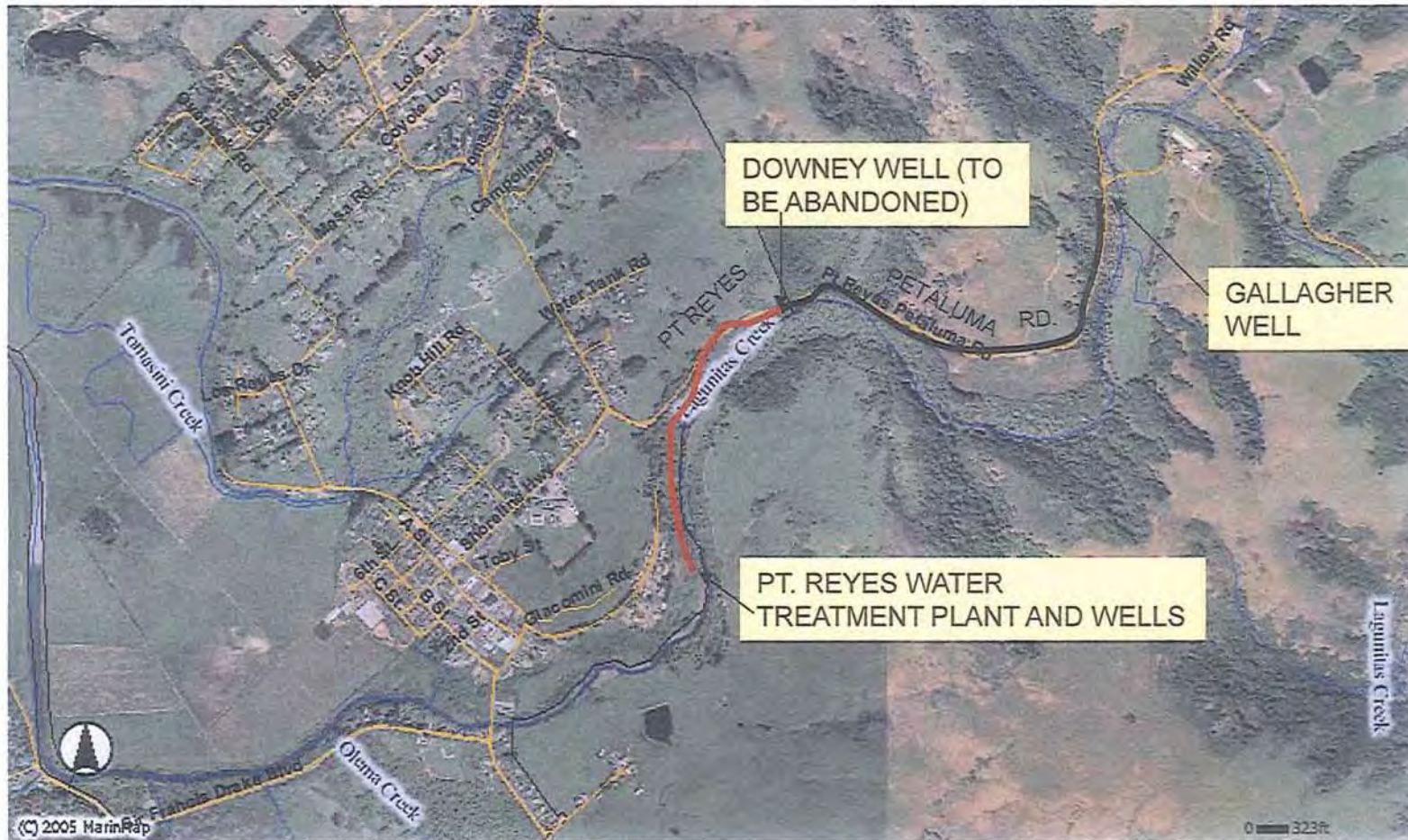
An existing stream gauging station is located between Point Reyes-Petaluma Road and Lagunitas Creek immediately north of the Gallagher Ranch driveway.

In order to gauge the effect of the water drawdown from the well on stream flow downstream of the area where the existing and the new Gallagher Well would be located, an auxiliary (temporary) gauge was installed in 2013 at a location about 1,200 feet south of the existing Gallagher Well. The testing showed that Gallagher Well production was limited to 120 gpm and the drawdown had no significant effect on the downstream flow.

### **3.4 Existing Water Rights**

NMWD diverts water from Lagunitas Creek through a Water License and two Water Right Permits. Water License 4324B allows NMWD to divert water between May 1 and November 1 of each year at a rate not exceeding 0.67 cubic feet per second (cfs) for a maximum diversion of 148.8 acre-feet per year. Approved points of diversion for License 4324B include the Coast Guard Wells, Downey Well, and the Gallagher Well.

Fig 3-2 West Marin Supply Sources



LEGEND:

NEW 12" MAIN - 


EX. 6" MAIN - 

FIGURE 3-2



The Water Right Permit 19724 allows diversion of 0.699 cfs (maximum of 212.7 acre-feet diverted) on a year-round basis. Water Right Permit 19725 allows a maximum diversion of 0.961 cfs (292.5 acre-feet maximum) on a year-round basis. The water rights under these two Permits are junior rights that are not available during the summer months (July through October) of dry years. A dry year is defined as a year in which the total precipitation that occurs from October 1 through April 1 is less than 28 inches as measured at the Marin Municipal Water District's Kent precipitation gauge. The Permits authorize diversion from the Coast Guard Wells, Downey Well and Gallagher Well site.

To meet water demand in dry years when water cannot be diverted from Lagunitas Creek due to the restrictions described above, NMWD has an Intertie Connection Agreement with the Marin Municipal Water District (MMWD) to release up to 250 acre-feet of water from Kent Lake.

### **Dedication of Water for In-Stream Uses**

As allowed under California Water Code Section 1707, the purpose of use for Water Right Permit 19724 includes instream use for fish and wildlife preservation and enhancement. The Permit allows diversion of 212.7 acre feet of water per year (at a maximum rate of 0.699 cubic feet per second). NMWD petitioned the State Water Resources Control Board (SWRCB) to change the place of use and purpose of use for 0.699 cubic feet per second (cfs) of water diverted from Lagunitas Creek under Water Right Permit 19724 for municipal uses in the NMWD West Marin Service Area for the purpose of preserving and enhancing wetland habitat, and fish and wildlife resources in Lagunitas Creek pursuant to Water Code Section 1707. The new place of use is defined as instream flows for the protection, preservation, restoration and recovery of aquatic organisms, including but not limited to coho salmon and steelhead trout pursuant to Recovery Planning measures to be developed under the Memorandum of Understanding Among National Marine Fishery Service, California Department of Fish and Game, Army Corps of Engineers, Fish Net4C, counties of Mendocino, Sonoma, Marin, San Mateo, Santa Cruz and Monterey and the County of Humboldt as executed on May 16, 2002. This was approved in February 2013.

### **3.5 CLIMATE PROTECTION MANAGEMENT PLAN**

Climate change is a global phenomenon with local implications. Local and regional actions can affect the overall amount of greenhouse gas emitted, and the District pledges its support to reduce greenhouse gases and improve air quality.

The District has embarked on a program to increase awareness of the affects its operation has on greenhouse gas emissions. Over the past five years, the GHG Emission Reduction Program has included participation in the Marin Clean Energy program with greater than 50% of its power supplied from carbon free emissions, staff training on truck & equipment idling operation, efficient vehicle operation and employee commute options. Operational efficiencies have been implemented at all NMWD pump stations and in new fleet & materials purchases utilizing the most energy-efficient products.

With these improvements, the District has been able to meet the California Assembly Bill 32 (AB32) 2010 targets for emission reduction for both the fleet and electricity uses. The District continues to seek opportunities to reduce greenhouse emissions through programs and philosophies, including the following:

- Utilizing high efficiency pumps and motors at pumping plants.
- Investigate opportunities to reduce energy usage at District facilities.
- Install solar power panels to generate power for District-owned facilities.
- Investigate upsizing transmission mains to reduce overall pumping requirements and reducing energy usage.
- Participate in regional Climate Protection Mitigation Management programs, particularly those with Marin County, Sonoma County and other bay area governments.
- Investigate the possibility of 100 percent energy self-sufficiency.
- Investigate the potential impacts to District facilities from a possible three foot sea level rise by 2050 and a 15 foot sea level rise by 2100.
- Include climate impacts in all CEQA documents for future projects.
- Purchase "Deep Green" power through the Marin Clean Energy Program.

### **3.6 WATER CONSERVATION**

NMWD maintains a comprehensive and innovative Water Conservation Program aimed at improving water use efficiency for residential, commercial, and large landscape customers. Each water conservation program element is analyzed to assure that it will efficiently produce long-lasting water savings, mutually worthwhile to the customer and the District.

Focused residential activities include residential water use surveys (Water Smart Home Survey), high efficiency washing machine rebates, Ultra Low Flush Toilet (ULFT) rebates, High Efficiency Toilet (HET) rebates, a Cash-for-Grass Program (turf removal rebate), Conservation Incentive Rates, flapper rebates, weather based irrigation controller rebates, and a plumbing retrofit on resale program (toilets, showerheads, and bathroom sink aerators). Commercial water conservation programs include High Efficiency Toilet (HET) rebates, high efficiency washing machine rebates, and free water audits/surveys.

The public outreach program includes direct mail newsletters, bill text, newspaper advertisements and articles, and a variety of other customer outreach campaigns. The outreach program is designed to increase customer participation in the various programs offered by the District and fosters customer awareness of water supply issues.

NMWD requires new development to meet some of the most stringent water use standards in the nation, including installation of a high efficiency washing machine, high efficiency toilets, weather based irrigation controllers, a maximum of 400 square feet of turf for residential development and no turf for commercial development, drip or other subsurface irrigation for all irrigated non-turf areas and other landscape requirements consistent with the State model Water Efficient Landscape Ordinance (WELO).

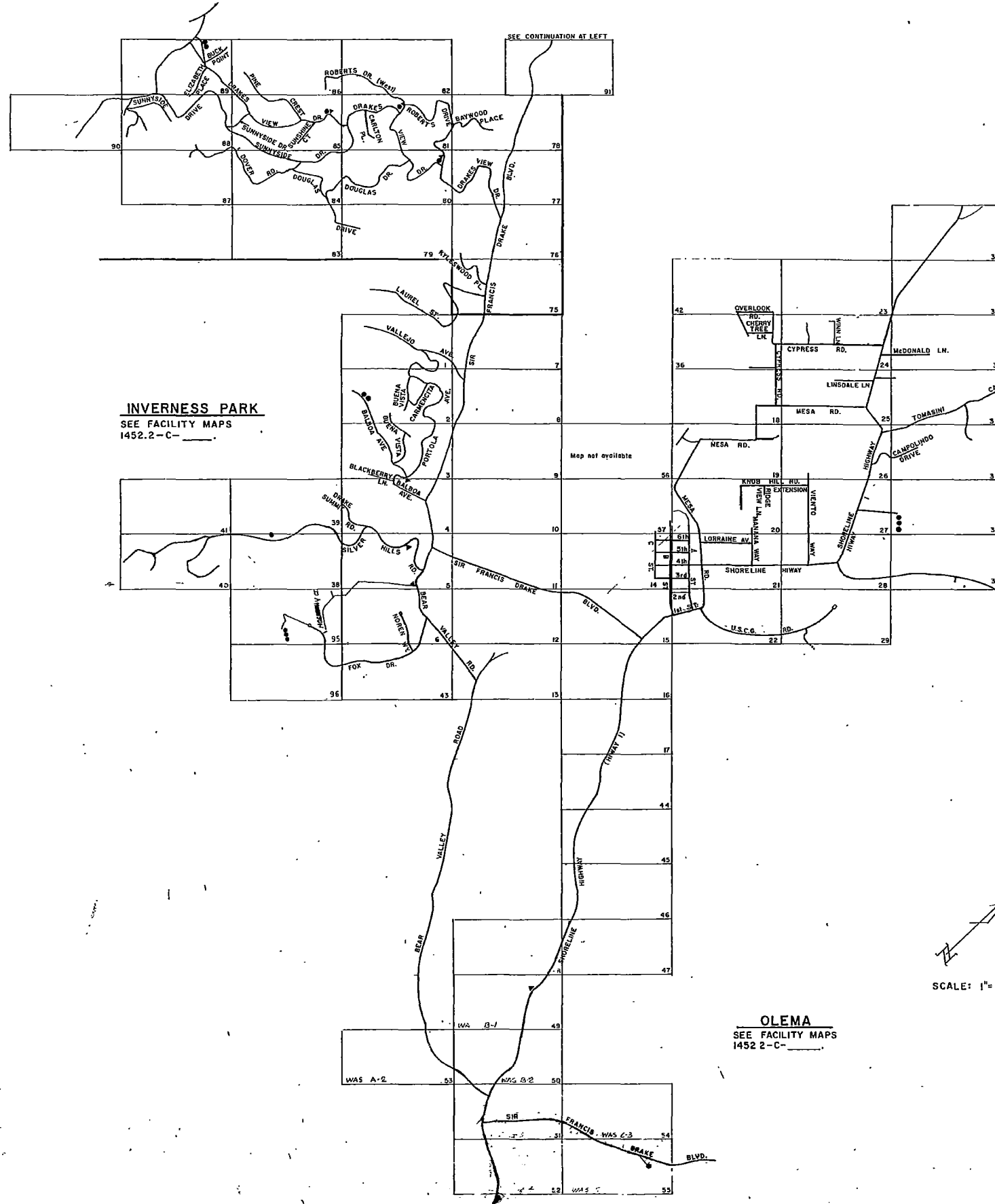
### **3.7 DISTRIBUTION SYSTEM CHARACTERISTICS**

The distribution system facilities for the West Marin Water System are described below. The distribution system piping and major facilities are shown on Figure 3-3. A schematic of the West Marin water system is shown on Figure 3-4.

#### **3.7.1 Service Areas**

The District has seven separate service and pressure zones in West Marin based on ground surface elevations and geographic locations. Each zone has one or more water storage tanks

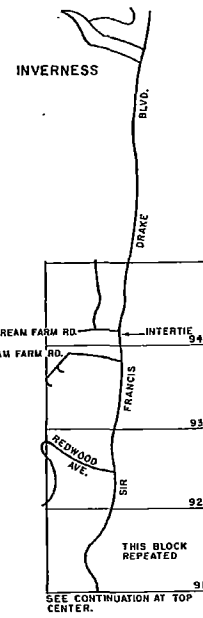
**PARADISE RANCH ESTATES**  
SEE FACILITY MAPS  
1931P-C-



**INVERNESS PARK**  
SEE FACILITY MAPS  
1452.2-C-

**POINT REYES**  
SEE FACILITY MAPS  
1452.2-C-

**OLEMA**  
SEE FACILITY MAPS  
1452.2-C-



- LEGEND**
- ▲ PUMP STATION
  - STORAGE TANK
  - WELL

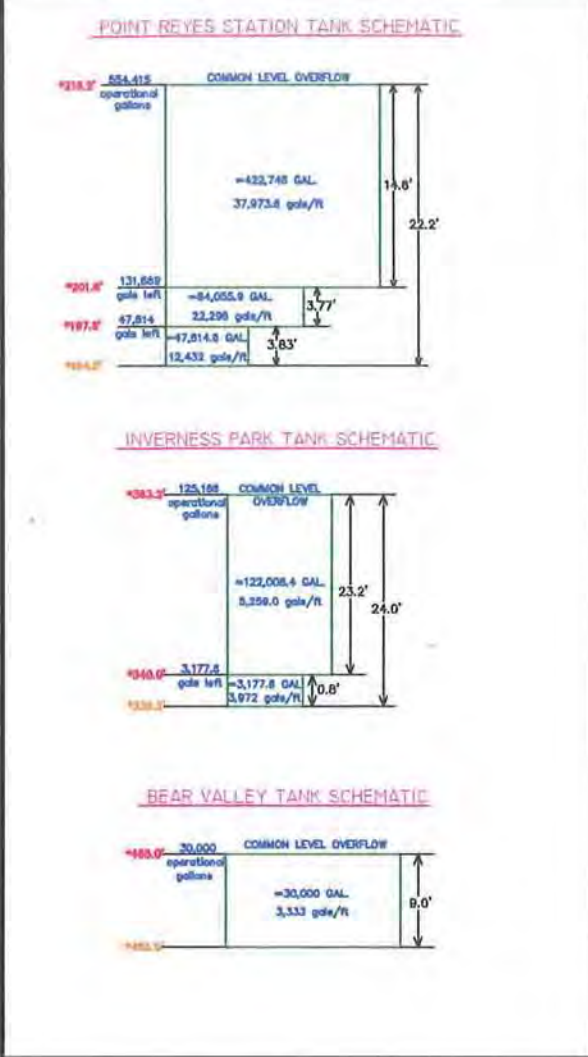
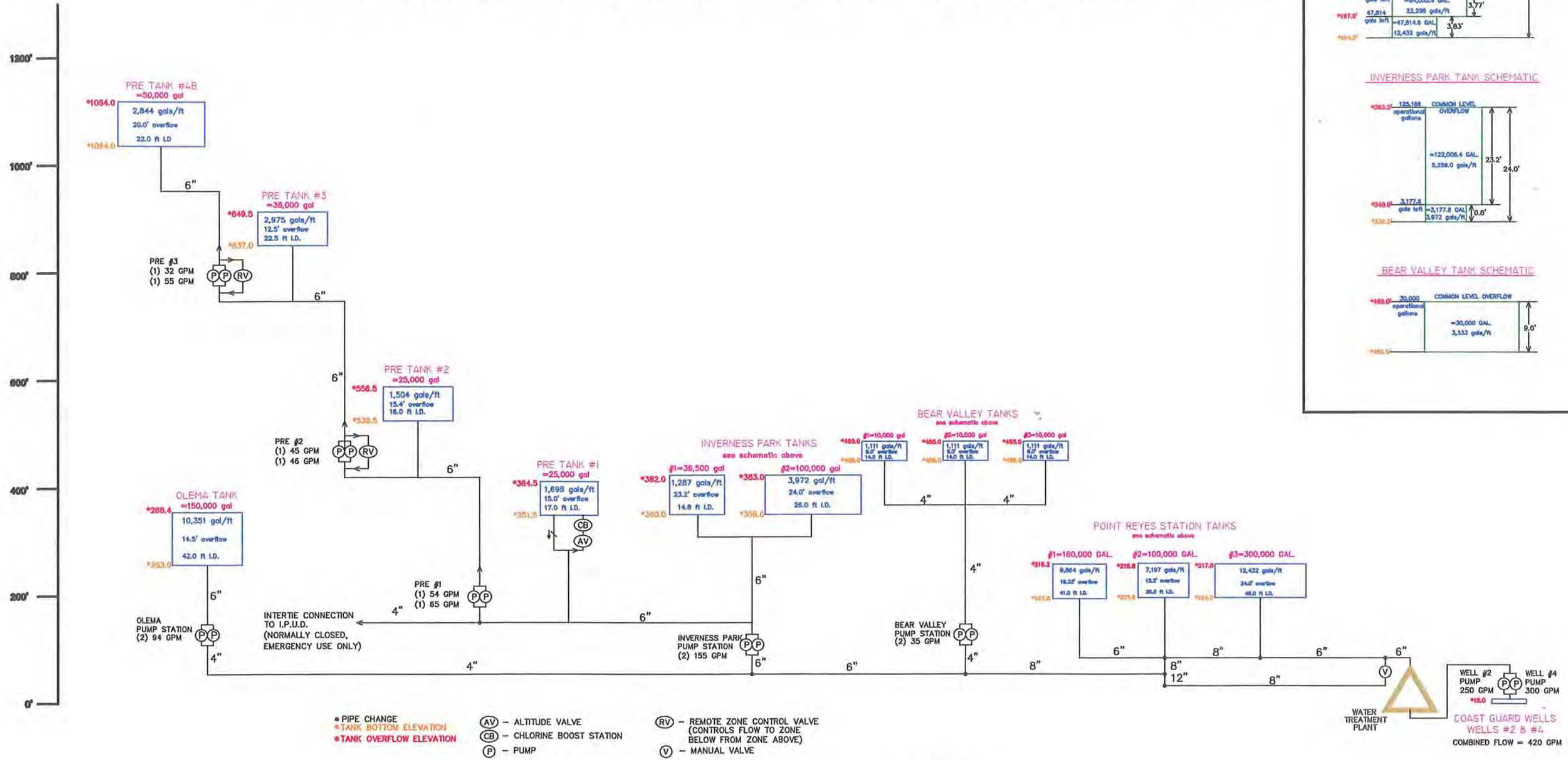
SCALE: 1"=1150'

**FACILITY MAP INDEX**

FOR:  
POINT REYES  
INVERNESS PARK  
OLEMA  
PARADISE RANCH ESTATES

Date: 2/3/61 WLM

# WEST MARIN DISTRIBUTION SYSTEM PROFILE



**NOT SHOWN ON DRAWING:**  
PRESSURE SYSTEMS  
REGULATING STATIONS

FIGURE 3-4

**NORTH MARIN WATER DISTRICT  
NOVATO, CALIFORNIA**

**WEST MARIN  
DISTRIBUTION SYSTEM PROFILE**

DES	DR	CH	SCALE	NONE
3/5/14	3/5/14	3/5/14	DATE	01/30/01
2	3/3/14	3/3/14	SHEET NO.	1 OF 1 SHEETS
1	1/19/07	1/19/07	SERVICE AREA	2
NO.	DATE	REASON	BY	APP
			R.E. C10938	

ACCT. NO. NO. **OP13**

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that establish the maximum water surface elevation for that zone and provide gravity flow during peak demand periods.

The main service zones in West Marin are Point Reyes Station (PRS Zone), Olema, Bear Valley, Inverness Park and the Paradise Ranch Estates (PRE).

Water from the Point Reyes Treatment Plant is first pumped from Coast Guard Wells through the PRTP in to the Point Reyes Station tanks. The Olema, Bear Valley and Inverness Park booster pump stations pump from the Point Reyes zone to Olema, Bear Valley and Inverness Park zones.

Inverness Park pumps and tank supply water to PRE-1 tank. PRE-1 tank uses an Altitude valve because it is lower than the fill elevation of Inverness Park Tank.

Inverness Park Service Zone serves customers along and mostly west of Sir Francis Drake Blvd from approximately Balboa Avenue to Kyleswood Place. PRE-1 serves customers to the north along Sir Francis Drake Blvd and lower areas of the PRE. The Paradise Ranch Estates Service Area consists of four separate pressure zones, each being fed by a booster pump station from the lower PRE-1 pressure zone. PRE-1 Pump Station (PS) pumping to PRE-2 tank, PRE-2 PS pumping to PRE-3 tank and PRE-3 PS pumping to PRE-4 tank. There are two pumps at each of the pump stations.

Storage tanks and pump stations are described in the next sections. The PRE service areas are able to use a cascading system for providing emergency / fire storage using the combined storage of these areas using the available cascading system by pumping from lower zones to the higher zones (or by gravity, bypassing the pumping system in case of an emergency condition in the lower elevation zones).

For FY 2013, Point Reyes Station Service Zone accounted for 64.4 percent of the water demand, the highest demand in the West Marin system. Inverness Park and PRE Service Zones accounted for approximately 19.7 percent of the total system demand. Of this demand, approximately 8.2 percent is for PRE 2, 3, and 4 subzones and 11.5% for Inverness Park Service Zone. Olema Service Zone accounted for approximately 12.5 percent of the total system demand. Bear Valley Service Zone demand accounted for only 3.3 percent of the total system demand.

### **3.7.2 Storage Tanks**

Each pressure zone has gravity storage capacity in one or more storage tanks. There are a total of 13 storage tanks throughout the West Marin Water System, totaling almost 1.035 MG. PRS has a storage capacity of 580,000 gallons. Inverness Park has a total storage capacity of 136,500 gallons. PRE has a combined storage capacity of 138,000 gallons. Bear Valley has 30,000 gallons and Olema has 150,000 gallons of storage capacity. Tank sizes range from 10,000 gallons to 300,000 gallons. Pertinent information for all storage tanks is shown in Table 3-1.

### **3.7.3 Booster Pump Stations**

A total of 6 booster pump stations deliver water from a lower pressure zone to a higher pressure zone. Individual pumps range from 5 hp to 30 hp. Booster pumps are operated based on water surface levels in a storage tank serving the pressure zone. High and low level set points control

**Table 3-1  
Storage Tanks**

Zone	Storage Tanks	Capacity Gallons	Overflow depth (ft)	Elevation		Inside Diameter (Ft)	Gal Per Ft.	Type Of Construction	Year Built
				Bottom	Overflow				
PR	Point Reyes# 1	180,000	18.33	197.83	216.2	41.0	9,864	Concrete	2004
PR	Point Reyes# 2	100,000	15.2	201.6	216.8	35.0	7,197	Welded Steel	1973
PR	Point Reyes# 3	300,000	24.0	194.0	217.8	46.0	12,432	Welded Steel	1982
IP	Inverness Park# 1	36,500	22	360.0	382	16.8	1,658	Concrete	2009
IP	Inverness Park# 2	100,000	24.0	359	383	26.0	3,972	Welded Steel	1982
PRE	PRE# 1	25,000	15.0	351.5	364.5	17.0	1,698	Redwood	1975
PRE	PRE# 2	25,000	15.4	539.5	556.5	16.0	1,504	Redwood	1980
PRE	PRE# 3	38,000	12.5	837.0	849.5	22.5	2,975	Concrete	2002
PRE	PRE# 4A*	25,000						Redwood	1975
PRE	PRE# 4B	50,000	20.0	1064.0	1084.0	22.0	2,844	Redwood	1980
BV	Bear Valley# 1	10,000	8.8	456.0	465.0	14.0	1,111	Concrete	1978
BV	Bear Valley# 2	10,000	8.8	456.0	465.0	14.0	1,111	Concrete	1978
BV	Bear Valley# 3	10,000	8.8	456.0	465.0	14.0	1,111	Concrete	1978
Olema	Olema	150,000	14.5	253.9	268.4	42	10,351	Concrete	2005
<b>Total</b>		<b>1,034,500</b>							

\* PRE Tank #4A was destroyed in 1995 Mount Vision Fire

R:\Folders by Job No\8000 jobs\8600s\8687 (West Marin)\8687.01 WM Master Plan Update 2013\_14\Tables\Tables Section 3 WM MP.xlsx]Table 3-1

the priority operation of the pumps within each station. Tank level set points vary by season. None of the booster pump stations has permanent standby power facilities. Portable generators are available to power the pump stations in emergency situations. All pumps can be run by emergency generators. All stations have been retrofitted with manual transfer switches to disconnect from the power grid and to accommodate the portable generator hookups.

Water is pumped from the Coast Guard wells directly to PRS system through the PRTP. Olema, Bear Valley, Inverness Park/PRE-1 each have a booster pump station pumping water to these service zones. PRE-1, 2, 3 booster pumps each pump to the next higher level tank (i.e., PRE-2, 3 and 4 respectively). Pertinent information for all pump stations is shown in Table 3-2.

#### **3.7.4 Hydropneumatic Systems**

Hydropneumatic systems are installed for small demands that cannot be met from the primary pressure zones. There are no District operated hydropneumatic systems in the West Marin service area.

#### **3.7.5 Pressure Regulator Valves**

Normally, services located at elevations that do not match the primary zone elevations are served by intermediate pressure zones. Water is delivered to these intermediate pressure zones from a higher pressure zone through a pressure regulating station, which consists of two or three pressure reducing valves set at an appropriate downstream pressure to serve the zone. There are no pressure regulating valves installed for this purpose in West Marin. All customer services are supplied directly from tanks.

However, there is a system of pressure regulating valves installed at each of the PRE pump stations to create a cascading system to use water from the higher pressure zones during a main failure or high demand (due to fire fighting) in a lower pressure zone. The cascading system is physically set at each regulator.

There are 76 recorded high pressure services (HP) in West Main per the NMWD billing program. These are mainly located all along Sir Francis Drake Blvd, Vallejo Avenue, Laurel Street, and parts of Portola Avenue in Inverness Park Service area, along Fox Drive and Noren Way in Bear Valley Service Area, and along lower areas of Roberts Drive and Baywood Place in Paradise Ranch Estates. These services are required to have private pressure regulator valves installed and maintained by the home owners.

The billing program also shows 13 low pressure (LP) and 49 normal pressure (NP) services. There are 628 undeclared services some of which could be high pressure or low pressure services. No further study was performed to verify if any of these undeclared services are high or low pressure services.

#### **3.7.6 Relief Valves**

Pressure relief valves are located at the intermediate zones to open to relieve high pressure that may build up in the distribution system. No pressure relief valves are used in the West Marin System.

**Table 3-2  
Pump Stations**

<b>Pump From</b>	<b>Pump Name</b>	<b>Number Pumps</b>	<b>H.P. Size</b>	<b>Capacity GPM each</b>	<b>Suction Pressure</b>	<b>Discharge Pressure</b>	<b>Pumps to</b>
Well	P.R. Wells	2	30, 30	250, 300	0 psi	100 psi	Point Reyes System
P.R.	I.P. P.S.	2	10, 10	155	50 psi	132 psi	I.P. tanks & PRE #1
P.R.	Olema P.S.	2	7.5, 7.5	94	68 psi	124 psi	Olema System.
P.R.	Bear Valley P.S.	2	5.0	35	72 psi	200 psi	Bear V.& Silver H.
PRE1	PRE 1 P.S.	2	5.0, 5.0	54, 65	8 psi	90 psi	PRE Tank 2 System
PRE2	PRE 2 P.S.	2	5.0, 5.0	45, 46	8 psi	135 psi	PRE Tank 3 System
PRE3	PRE 3 P.S.	2	3.0, 5.0	32, 55	8 psi	105 psi	PRE Tank 4 System
Well	Gallagher Well	1	25	120			Not in Service



### **3.7.7 Pipelines**

The transmission system consists of 8-inch and 4-inch diameter pipelines to convey water supply to the distribution system. The primary transmission mains include 8-inch diameter main connecting the Point Reyes Treatment Plant to Point Reyes Station Tanks and an 8-inch pipeline along Sir Francis Drake Blvd delivering water from the Point Reyes Station zone to Inverness Park and Bear Valley systems. There is also a 4-inch transmission main conveying water to the Olema zone. Transmission system piping is generally constructed of Asbestos Cement (AC) or PVC pressure pipe.

The majority of the distribution system (86%) is comprised of 2-, 4-, or 6-inch diameter pipelines to distribute water from the transmission mains. There are both 8-inch and 12-inch distribution pipes installed (14%) in the more recent developer funded projects such as Point Reyes affordable housing and Heidrun Meadery. Distribution system pipelines are constructed primarily of PVC, AC, and steel pipe. There are older 2-inch galvanized pipe in the PRE zone which had been installed before the District acquired the system from Adams in the 1970s. AC pipe had been used before early 1990s and since 1992 distribution system piping is heavy walled PVC pipe (C-900, dimension ratio 14).

As of June 30, 2013, the distribution system totals approximately 26.5<sup>2</sup> miles of pipeline, based on data initially obtained from a review of the District facility maps in 2001, and continuously updated as projects are completed. The distribution system pipeline characteristics, including the lengths of each pipe material, pipe diameter, and age of pipe, are shown in Table 3-3.

### **3.8 SYSTEM CONTROL AND OPERATION**

The District utilizes a Supervisory Control and Data Acquisition (SCADA) system which allows the system operator to remotely control and monitor pumps, tank levels, pressures and alarm settings for all of the major West Marin facilities which are connected to the SCADA system.

Flow control measurement of the source water is accomplished at the Point Reyes Treatment Plant. Also flow metering is available at each of the pump stations and is connected to the SCADA system.

**Table 3-3  
West Marin Distribution System Pipeline Characteristics (March 14, 2014)**

<b>Pipe Age</b>	<b>Total (ft)</b>	<b>Total (miles)</b>	<b>% of Total</b>
<10 years	4,191	0.79	3.0
10-19 years	7,475	1.42	5.3
20-29 years	3,931	0.74	2.8
30-39 years	89,038	16.86	63.6
40-45 years	25,458	4.82	18.1
over 45 years	9,799	1.86	7.0
<b>Total</b>	<b>139,892</b>	<b>26.5</b>	<b>100</b>

<b>Pipe Material</b>	<b>Total (ft)</b>	<b>Total (miles)</b>	<b>% of Total</b>
Asbestos Cement (ACP)	99,023	18.8	70.8
Ductile Iron (DI)	351	0.1	0.3
Galvanized Steel (GS)	2,152	0.4	1.5
Plastic (PVC)	36,801	7.0	26.3
Steel (STL)	1,565	0.3	1.1
<b>Total</b>	<b>139,892</b>	<b>26.5</b>	<b>100.0</b>

<b>Size (in)</b>	<b>Total (ft)</b>	<b>Total (miles)</b>	<b>% of Total</b>
1	20	0.0	0.0
2	10,468	2.0	7.5
4	25,341	4.8	18.2
6	84,496	16.0	60.4
8	15,678	3.0	11.1
12	3,889	0.7	2.8
<b>Total</b>	<b>139,892</b>	<b>26.5</b>	<b>100</b>

<sup>1</sup>Source: Per West Marin Pipe Count Database

Each tank has a high and low level alarm programmed in the SCADA system. Each pump has a low suction and high discharge pressure alarm in the SCADA system. Pumps can be turned on or off manually from the SCADA system. Other system alarms included are power failure, pump failure, low battery (backup), transducer failure, and communication failure alarms.

### **3.9 WATER QUALITY**

Distribution system water quality is presented in greater detail in Section 6.

### **3.10 FUTURE DEVELOPMENT**

Future development projection and buildout forecast presented in Section 4.

## SECTION 4

### HISTORICAL WATER DEMANDS AND DEMAND FORECASTS

The historical, current and forecast buildout water demands for the North Marin Water District's West Marin Water System are presented in Section 4.

#### 4.1 HISTORICAL WATER PRODUCTION

Historical annual water production for the last forty years since FY 1973 for West Marin water supply is shown in Table 4-1.

#### 4.2 CONSUMER ACTIVITY

The District maintains five principal residential customer classifications: single family detached unit (SF); single family attached unit, such as townhouse, condominium or duplex unit (THC); apartment unit (APT); mobile home (MH), and Ranch. The District maintains two other billing classifications that cover non-residential customers: commercial (CM) and government (GVT).

As of June 30, 2013, the approximate water usage, active services and residential dwelling unit mix, per customer classification is as follows:<sup>1</sup>

Structure Type	Consumption (MG)		Number of Accounts		Number of Dwelling Units	
SF	51.2	65%	665	86%	700	86%
THC	0.9	1%	3	0%	34	4%
APT	2.5	3%	16	2%	63	8%
MH	0.2	0%	3	0%	3	0%
Ranch	4.7	6%	8	1%	11	1%
<b>Total</b>	<b>59.5</b>	<b>75%</b>	<b>695</b>	<b>90%</b>	<b>811</b>	<b>100%</b>
CM	13.3	17%	71	9%		
GVT	6.2	8%	10	1%		
<b>Non-Residential Total</b>	<b>19.5</b>	<b>25%</b>	<b>81</b>	<b>10%</b>		
<b>System Total</b>	<b>79.0</b>		<b>776</b>			

<sup>1</sup> Source: NMWD Auditor Controller, November 2013

Table 4-1 - Historical Potable Water Production and Demands

Fiscal Years	FY Acre Feet	Million Gallons	Annual Daily (mgd)	Peak Month (mgd)	ADPM (mgd)	Factor	Factor	Factor	Water Bank	Lost Water	
						ADPM/AD	Max Day Demand (mgd)	Max day/ADPM	Max Day/AD	Total EDUs	%
1973-1974	150.68	49.10	0.13	5.30	0.17	1.27					
1974-1975	184.13	60.00	0.16	6.80	0.22	1.33					
1975-1976	184.75	60.20	0.16	7.00	0.23	1.37					
1976-1977	168.48	54.90	0.15	6.50	0.21	1.39					
1977-1978	160.50	52.30	0.14	5.40	0.17	1.22			21		
1978-1979	208.68	68.00	0.19	8.30	0.27	1.44			18		
1979-1980	190.89	62.20	0.17	8.30	0.27	1.57			16		
1980-1981	225.26	73.40	0.20	8.40	0.27	1.35			104	18%	
1981-1982	247.66	80.70	0.22	9.60	0.31	1.40			9	11%	
1982-1983	260.24	84.80	0.23	9.70	0.31	1.35			40	17%	
1983-1984	253.18	82.50	0.23	11.70	0.38	1.67			25	18%	
1984-1985	273.44	89.10	0.24	11.80	0.38	1.56			26	21%	
1985-1986	301.67	98.30	0.27	12.30	0.40	1.47			16	25%	
1986-1987	342.80	111.70	0.31	13.80	0.45	1.45			10	28%	
1987-1988	349.95	114.03	0.31	13.20	0.43	1.36			12	31%	
1988-1989	336.30	109.58	0.30	12.92	0.42	1.39			24	29%	
1989-1990	297.22	96.85	0.27	11.60	0.37	1.41			13	16%	
1990-1991	342.58	111.63	0.31	11.71	0.38	1.24			9	23%	
1991-1992	311.87	101.62	0.28	12.49	0.40	1.45			8	20%	
1992-1993	294.07	95.82	0.26	12.28	0.40	1.51			6	12%	
1993-1994	298.72	97.34	0.27	12.30	0.40	1.49			9	11%	
1994-1995	288.01	93.85	0.26	11.63	0.38	1.46			5	10%	
1995-1996	320.99	104.59	0.29	12.85	0.41	1.45			7	12%	
1996-1997	332.98	108.50	0.30	14.35	0.46	1.56			10	10%	
1997-1998	319.89	104.24	0.29	14.13	0.46	1.60			3	10%	
1998-1999	381.89	124.44	0.34	16.49	0.53	1.56			4	23%	
1999-2000	392.87	128.02	0.35	15.23	0.49	1.40			0	22%	
2000-2001	375.95	122.50	0.34	13.82	0.45	1.33	0.66	1.47	1.96	8	10%
2001-2002	365.83	119.21	0.33	14.01	0.45	1.38	0.69	1.52	2.10	5	16%
2002-2003	332.17	108.24	0.30	15.09	0.49	1.64	0.61	1.26	2.07	1	9%
2003-2004	334.70	109.06	0.30	14.47	0.47	1.56	0.57	1.23	1.92	37	18%
2004-2005	336.00	109.49	0.30	16.76	0.54	1.80	0.75	1.40	2.52	2	9%
2005-2006	324.22	105.65	0.29	13.03	0.42	1.45	0.63	1.50	2.18	21	21%
2006-2007	380.36	123.93	0.34	13.94	0.45	1.32	0.62	1.37	1.82	13	19%
2007-2008	303.67	98.95	0.27	11.55	0.37	1.37	0.62	1.67	2.30	4	12%
2008-2009	301.17	98.14	0.27	11.86	0.38	1.42	0.53	1.39	1.97	6	14%
2009-2010	236.38	77.03	0.21	10.59	0.34	1.62	0.44	1.27	2.06	4	2%
2010-2011	243.65	79.39	0.22	9.93	0.32	1.47	0.63	1.98	2.92	3	6%
2011-2012	242.23	78.93	0.22	9.44	0.30	1.41	0.40	1.32	1.86	3	6%
2012-2013	249.71	81.37	0.22	9.81	0.32	1.42	0.40	1.26	1.79	1	4%
Max	1066.11	347.39	0.35	16.76	0.54	1.80		1.98	2.92		21%
Minimum	150.68	49.10	0.13	5.30	0.17	1.22		1.23	1.79		2%
Average	303.29	98.83	0.26	11.51	0.37	1.45		1.43	2.11		11%

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### **4.3 HISTORICAL WATER DEMANDS**

As noted in Section 2, water demand peaking factors are utilized to analyze and evaluate the water distribution system. Peaking factors are based on review of historical water demands and production data, operational impacts, and industry standards.

Historical water demand for the West Marin Water System is shown in Table 4-1. The observed annual average day demand, average day peak month (ADPM) demand and maximum day demand (starting from FY2001), along with calculated peaking factors and lost (un-accounted) water percentages for the WM Water System as a whole are also shown in Table 4-1. Daily production data prior to FY2001 were not available.

Historical annual, average day, average day of the peak month and maximum day production records are used to forecast the future demand. Over the past 40 years, the peaking factors have been highly variable and even though the trend is decreasing, the forecast relies on the historical average, which has been relatively constant, continuing to predict average day of the peak month as a function of average daily demand.

#### **4.3.1 Average Day Peak Month Demand**

The average day of the peak month (ADPM) demand represents an average daily demand during the month of highest demand for the year, typically July or August. This factor is used by the District to develop unit water demands and plan system improvements. For FY2013, the average day peak month peaking factor is 1.42 times the average day demand. Since FY1974, the ADPM/Average Day peaking factor has varied between 1.22 and 1.8. The 40-year average is 1.45.

#### **4.3.2 Maximum Day Demand**

The maximum day demand represents the highest daily demand for the entire year. A water system is usually evaluated under maximum day demand conditions or maximum day demand plus fire flow conditions. This condition allows the system to be stressed at a higher demand rate to ascertain if supply sources and pipeline carrying capacities are adequate. Hydraulic evaluation under maximum day plus fire flow demand conditions represents a reasonable "worst case" scenario of system operation.

For FY2013, the maximum day to ADPM demand peaking factor is 1.26. Thus, the maximum day to average day demand peaking factor is 1.79. Since FY2001, the maximum day to average day demand peaking factor has varied between 1.79 and 2.92. The 13-year average maximum day to ADPM peaking factor is 1.43 and the maximum day to average day peaking factor is 2.11. Maximum day to average day demand peaking factors generally range from 1.2 to 2.5 (per American Waterworks Association guidelines) except for one occurrence which was higher than 2.5 in FY2011 (2.92). In West Marin, the maximum day to average day factor is generally higher than that compared to in the AWWA guidelines.

### **4.3.3 Peak Hour Demand**

The peak hour demand represents the highest hourly demand on the entire system, and simulates the highest flow rate expected on the hottest day of the year. Peak hour demand usually occurs during the morning or evening peak usage periods. Depending on the data, peak hour demand is sometimes considered the "worst case" scenario instead of maximum day demand plus fire flow. It is not appropriate to evaluate a system against a demand rate of peak hour plus fire flow, as the likelihood of a fire event at the hottest hour demand of the year is extremely low.

Actual operational data is not readily available to determine the peak hour to maximum day demand peaking factor for the West Marin Water System. Based on calculations using Harmon Formula and PRP-Gumbel (indoor use only) and comparison with other similar water systems, the peak hour to maximum day demand peaking factor is estimated to be 1.9 (which equates to a peak hour to average day demand peaking factor of 4.0). Peak hour to maximum day demand peaking factors generally range from 1.3 to 2.0 per American Waterworks Association guidelines.

### **4.3.4 Lost (Un-accounted) Water**

Lost water is the water that cannot be credited after accounting for flushing flows, hydrant flow tests, water leaks, and other non-billed usage. The amount of un-accounted for water (or lost water) exhibits a decreasing trend over the past 33 years. The production numbers since FY 2001 are tied to the daily production reports and consumption numbers are from the District's "CORE" utility billing data base. The average lost water percentage for both the last 33 years and the last 13 years (since FY2001) happens to be 11%. Although, the lost water percentages since FY2009 has dropped to an average of 5%, the forecast assumes that there will be no change in the percent or share of un-accounted for water in the future and is projected to continue at an average of approximately 11.0 percent.

## **4.4 FY 2013 WATER DEMANDS**

The FY2013 water demand will be utilized in this Master Plan for several tasks including the hydraulic evaluation of the distribution system and the storage and pumping capacity evaluations. FY2013 demand is also separated by pressure zone.

FY2013 water demand data was obtained from District operations records. In FY2013, the total water produced is 81.37 million gallons.

For FY2013, the average annual water demand in the West Marin System was 0.22 mgd. The average day peak month demand was 0.32 mgd (which occurred in July 2012). The maximum day demand was 0.399 mgd (which occurred on July 8, 2012).

The FY2013 demand, separated by Inverness Park (including PRE), Olema, Bear Valley and Point Reyes, is shown in Table 4-2. Separation of demand by service zones was accomplished by reviewing pump station production records. Point Reyes Station Service Zone is fed directly by the water delivered from the Coast Guard Wells. The Olema, Bear Valley and Inverness Park service zones are all fed by booster pump stations from the Point Reyes Station Service Zone. Each service zone has one or more tanks that provide gravity flow during peak demand periods. Inverness Park pumps and tank supply water to PRE-1 tank. PRE-1 tank uses an Altitude valve

Table 4-2  
FY 2013 Water Demands by Service Area

Service Area	Annual Usage Demand (gallons)	Average Day Demand (gpd)	Average Day Demand (gpm)	Max. Day/Ave. Day Peaking Factor	Maximum Day Demand (gpd)	Maximum Day Demand (gpm)	Percentage of Use
Point Reyes Station	55,191,519	151,210	105	2.11	319,052	221.6	64.4
Olema	10,746,267	29,442	20	2.11	62,122	43.1	12.5
Bear Valley	2,857,381	7,828	5	2.11	16,518	11.5	3.3
Inverness Park/PRE-1	10,035,824	27,495	19.1	2.11	58,015	40.3	11.7
PRE-2	1,147,432	3,144	2.2	2.11	6,633	4.6	1.3
PRE-3	2,362,184	6,472	4.5	2.11	13,655	9.5	2.8
PRE-4	3,358,520	9,201	6.4	2.11	19,415	13.5	3.9
<b>Total</b>	<b>85,699,127</b>	<b>234,792</b>	<b>163</b>	<b>2.11</b>	<b>495,411</b>	<b>344.0</b>	<b>100.0</b>

Notes:

Sub area production was obtained by pump records (PRS, Olema, Bear Valley and IP).

PRE breakdown using billing data for individual PRE zones

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because it is lower than the fill elevation of Inverness Park Tank. Paradise Ranch Estates PRE-2, PRE-3 and PRE-4 pressure zones are each being fed by a booster pump station from the lower pressure zone.

#### **4.4.1 Inverness Park and PRE**

For FY2013, Inverness Park and PRE service zone accounts for approximately 19.7 percent of the total system demand. Of this demand, approximately 8.2 percent is for PRE-2, 3, and 4 subzones and 11.5% for Inverness Park service zone.

#### **4.4.2 Olema**

Olema Service Zone accounts for approximately 12.5 percent of the total system demand.

#### **4.4.3 Bear Valley**

Bear Valley Service Zone demand accounts for only 3.3 percent of the total system demand.

#### **4.4.4 Point Reyes Station**

Point Reyes Station Service Zone accounted for 64.4 percent, the largest demand in the West Marin system.

### **4.5 BUILDOUT DEMAND PROJECTIONS**

Previous water demand forecasts for North Marin Water District were prepared in 1992 based on the 1991 Countywide Plan. Demands and development projections were updated in the 2001 West Marin Long Range Plan based on a West Marin Storage Capacity Analysis by Soldati Engineering Services (July 2000). July 2000 study demand projections were based on 1991 Countywide Plan and draft County Community Plan. Demands and development projections in this Master Plan are based on 2001 PRS Community Plan and 2007 Countywide Plan update.

#### **4.5.1 Water Demand Projection**

The District continually monitors planned development within the distribution system and periodically updates projected buildout water demands. The last update was in November 2013 (Table 4-3).

This demand projection is still applicable since the growth projections in the 2001 Countywide Plan or the PRS Community Plan have not changed since then. The buildout demand projection is shown in Table 4-4. At buildout, there is a projected annual demand of 380 AF per year, or an average daily demand of 338,920 gpd. Utilizing the peaking factor of 2.11, the projected maximum day demand at buildout is 715,122 gpd.

#### **4.5.2 Development Projection**

Analysis of projected water demands is based on new development slated to be constructed within the District boundaries. The buildout water demand forecast provided herein is updated



Table 4-4  
Point Reyes Water System - Projected Buildout Water Demands by Service Area

Service Area	Current Annual Demand gal	Current Demand afa	At Buildout afa	Buildout Demand	Buildout Ave. day	Buildout Max Day
				mg	gpd	gpd
Point Reyes Station	55,191,519	169	263	85.6	234,391	494,565
Olema	10,746,267	33	40	13.0	35,627	75,173
Bear Valley	2,857,381	9	11	3.5	9,473	19,988
Inverness/ PRE-1	10,035,824	31	37	12.1	33,272	70,203
PRE-2	1,147,432	4	5	1.6	4,370	9,221
PRE-3	2,362,184	7	10	3.3	8,996	18,982
PRE-4	3,358,520	10	14	4.7	12,791	26,989
<b>Total</b>	<b>85,699,127</b>	<b>263</b>	<b>380</b>	<b>123.7</b>	<b>338,920</b>	<b>715,122</b>

Notes:

- (1). Current demands are from the pump records for FY 2013 for Pt. Reyes Station, Olema, Bear Valley, Inverness Park/all PRE
- (2). The split between PRE zones are based on billing records.
- (3). Build out demand was calculated by utilizing percent increase of DUs listed in Table 4-3 (Forecast of Water Demands-Pt Reyes Water System) last updated 11/27/2013 by Chris DeGabriele. The percent increases are- PRS 55%, Olema, Bear Valley, IP/PRE-1, 21%, other PRE zones 39%
- (4). Average to max. day factor is 2.11 (See Table 4-1).

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with the county's estimate of growth contained in 2001 PRS Community Plan and Countywide Plan Update. These have not changed since 2001.

The water demand for potential buildout is projected by Point Reyes Station, Olema, PRE and Inverness Park and Bear Valley zones. The projected buildout development demand is shown in Table 4-3. The potential increase in Dwelling Units (DUs) is 243 in Point Reyes Station, 9 in Olema, 60 in PRE and 33 in Inverness Park and Bear Valley. The total increase in residential DUs is 42%. The commercial and governmental sector growth is assumed to be approximately equivalent to residential growth (45%).

The annual demand for the projected residential units is converted to annual acre-feet (AF) with the conversion factor of 0.19 AF per DU equaling 65 AF. The commercial and government component is 29 AF. Agricultural sector is assumed to decrease as a result of National Park Service (NPS) purchase of Giacomini Ranch. Existing base demand is 272 AF. This results in a total buildout demand of 376 AF (Table 4-4 uses 380 AF). The buildout projection used in the 2001 West Marin Long Range Plan was 483 AF. Although the present existing demand has increased slightly due to the persons per household has increased slightly, the decrease in buildout is largely due to the decrease in the buildout projection. The additional buildout demand projection has decreased from 75% of current demand in the 2000 buildout to 42% of current demand in 2013.

#### **4.5.3 Projected Water Demands**

Overall, approximately 55% of the new demand will occur in Point Reyes Station, 21% in Olema, 39% in PRE and 21% in Inverness Park/ Bear Valley zones.

Maximum day demands will be utilized for other tasks in this Master Plan, including the storage and pumping capacity evaluation presented in Section 5.

## SECTION 5

### STORAGE AND PUMPING CAPACITY EVALUATION

#### 5.1 INTRODUCTION

The storage and pumping capacity evaluation of the service areas and pump stations in the West Marin System is presented in Section 5. The analysis is based on FY 2013 and projected buildout (FY 2035) water demands presented in Section 4. The existing storage capacity is compared to storage capacity requirements based on District West Marin storage criteria for each service area to determine storage capacity adequacy. Similarly, the existing firm pumping capacity is compared to pumping capacity requirements based on District pumping criteria for the major booster pump stations to determine pumping capacity adequacy.

#### 5.2 BACKGROUND/PREVIOUS STUDIES

In July 2000, Soldati Engineering Services conducted a Storage and Pumping Capacity analysis which was used as the basis of storage and pumping improvements recommended in the 2001 West Marin Long Range Plan. The 2000 storage study included analysis for two conditions; then current (FY1997/98) and the estimated buildout (2035). Service areas found to be deficient in storage and pumping capacity under both then current (FY 1997/98) and buildout demand conditions were identified. These included Olema, Bear Valley and PRE-tanks.

The 2000 study states that historically, the District had used two days of maximum demand (one maximum day for operational needs and one maximum day for fire storage) as the storage capacity goal. Emergency storage was included in the fire protection storage capacity of one maximum day. Typically the storage capacity goal is the summation of operational storage (25% maximum day demand), emergency storage (100% of maximum day demand), and fire storage. Since the West Marin service areas are relatively small and the fire component is such a large component of the total storage capacity required, the 2000 study concluded that it is appropriate that the greater of the fire and emergency component be used instead of both. This will be referred to as the combined storage capacity goal.

Since the 2001 Long Range Plan, all storage deficiencies identified in that plan for the buildout condition (for the modified storage capacity goal) have been addressed with the exception of the Bear Valley / Silver Hills area storage capacity. The PRE service areas are able to use a cascading system for providing emergency / fire storage using the combined storage of these areas using the available cascading system by pumping from lower zones to the higher zones (or by gravity, bypassing the pumping system in case of an emergency condition in the lower elevation zones).

The 2001 Long Range Plan recommended increasing Balboa (Inverness Park) pump capacity from 55 gpm to 150 gpm and installing stand by pumps and controls for all three PRE pump stations. These improvements have been performed since 2001.

With the updated water demand projections now presented in Section 4 of this 2014 Master Plan, it is necessary to update the storage and pumping capacity evaluations for all service areas within the West Marin Water System.

### **5.3 EVALUATION METHODOLOGY**

The pertinent storage capacity evaluation criteria and pumping capacity evaluation criteria are presented in Section 2. The major elements of the approach are summarized herein.

#### **5.3.1 Storage Capacity Evaluation**

The storage capacity evaluation is based on determining three storage volume components as presented in Section 2:

- Operational storage
- Fire storage
- Emergency storage

The sum of these three components is the typical total storage capacity for the specific pressure zone. However, in the 2001 West Marin Long Range Plan, the total storage was calculated as the sum of the operational storage (25% of MDD) and the greater of the emergency storage (100% MDD) or the fire storage volume. The calculations for both the typical storage (sum of operational, fire and emergency storage) and the modified criterion are performed. Similar to the 2001 Long Range Plan, the modified criterion (combining fire and emergency storage) is used as the storage capacity goal for the current Master Plan. The storage capacity goal is compared to the existing storage capacity to determine if a surplus or deficit exists within the zone.

#### **5.3.2 Pumping Capacity Evaluation**

Providing adequate storage capacity is only one distribution system element that beneficially affects system operation. Adequate pumping capacity must be provided to enable the storage capacity to recover depleted volume in a reasonable time period. Undersized pumps may reduce the effectiveness of storage capacity. Therefore, it is necessary to evaluate the pumping capacity requirements at each booster pump station.

The pumping evaluation in this study consists of comparing the pumping requirement (calculated as maximum day demand pumped over 16 hours) to the firm capacity of the station and determining the surplus or deficit. Firm capacity is defined as the station capacity with the largest pump out of service.

All of the District stations evaluated in this report have at least two pumps, except the Gallagher Well. Note that this analysis uses the rated pump capacity, as individual pump tests have not been performed recently, and actual pump flow information is not available in some instances. The pump capacity of Coast Guard Well No. 2 is 250 gpm when Well No. 4 is off line and Well No. 4 capacity is 300 gpm when Well No. 2 is off line. However, when both pumps are simultaneously in operation, the capacity reduces to 420 gpm. A recent well pump analysis was prepared and concluded that well pump No. 2 needs repair/replacement. Once this deficiency is corrected the combined pumping capacity should increase from 420 gpm to 580 gpm. The total Coast Guard Wells pumping capacity was listed as 550 gpm in the 2001 Long Range Plan.

In general any individual pump or pumps are not operating efficiently, they should be checked and appropriate actions taken. A full evaluation of each pumping station is beyond the scope of this study. It is recommended that the District conduct pump tests and undertake an evaluation of the pumping capacity at each pumping station.

Many pump stations are required to pass water through to a higher zone than the one which the pump station is serving. The total flow that is required to be pumped through the station for both its zone and upper zones is included as appropriate when determining the total pumping capacity requirement.

#### **5.4 PRESSURE ZONE WATER DEMANDS**

The storage and pumping evaluation utilizes FY 2013 water demand and projected buildout (FY 2035) water demand. Specifically, operational and emergency storage criteria, as well as the pumping capacity criteria, are based on maximum day demand for each pressure zone, as shown in Table 4-4. Demands were obtained from the pumping records and when pumping records are not available, from billing consumption records (e.g., PRE) which are coded by service area. Billing records and pump records for PRE- 2 and PRE-3 service areas could not be reconciled. It seemed that the billing records were consistent with the use shown in the 2001 Long Range Plan. Therefore, the billing records are used in this Master Plan for the PRE sub zone demands.

In theory, water pumped into the pressure zone should equal the consumption for each zone plus a percentage for lost (un-accounted) water. Comparison of production to consumption could indicate another: (1) lost water; (2) a problem in the method of determining consumption data; (3) the obtaining and recording of production data; or (4) in the actual performance of the pumps.

#### **5.5 STORAGE CAPACITY EVALUATION**

The storage capacity requirements for each pressure zone for FY 2013 and buildout (FY 2035) water demands are lower than listed in the 2000 storage capacity study and 2001 Long Range Plan buildout forecast. This is due to the FY 2013 (current) demand being lower than the FY 1999 (then current) demand and the growth and potential buildout forecast is lower than that estimated in the 2001.

All District tanks are designed in cooperation with the MCFD. A breakdown of the Fire Flow and Fire Storage Volume Goals is presented in Section 2, Table 2-2.

##### **5.5.1 FY 2013 Water Demands**

Storage capacity requirements by pressure zone for FY 2013 water demand are shown in Table 5-1 for the selected criterion (combined fire/emergency). Pt Reyes Station, Olema and Inverness Park/PRE-1 have surplus storage capacity under current water demand. Note that, although individual PRE service zones show deficits in storage, because all PRE tanks are connected (a cascading system) has a combined storage of 113,000 gallons (excluding PRE-1), therefore the deficit is about 12,000 gallons. Bear Valley service zone has a deficit of 94,000 gallons in storage capacity.

The Point Reyes Station, Olema and Inverness Park/PRE-1 service zones have a surplus of approximately 182,000 gallons, 15,000 gallons and 27,000 gallons respectively.

##### **5.5.2 Buildout Water Demands**

Storage capacity requirements by service area at buildout in Year 2035 are shown in Table 5-2 for the combined fire and emergency storage criterion.

Table 5-1  
West Marin Storage Capacity Requirements - combined fire/emergency storage  
FY 2013 Water Demands

Tank/Zone	Tank Capacity (gal)	Estimated Max Day Demand (gal/day) (1)	Operational Storage (gal) (2)	Fire Storage (gal)	Emergency Storage (gal)	> of Fire / Emergency Storage (gal)	Total Storage Required (gal) (3)	Additional Storage Required (gal)
Point Reyes Station	580,000	319,052	79,763	240,000	319,052	319,052	398,815	-181,185
Olema	150,000	62,122	15,531	120,000	62,122	120,000	135,531	-14,469
Bear Valley	30,000	16,518	4,130	120,000	16,518	120,000	124,130	94,130
Inverness Park / PRE-1	161,500	58,015	14,504	120,000	58,015	120,000	134,504	-26,996
PRE-2	25,000	6,633	1,658	120,000	6,633	120,000	121,658	96,658
PRE-3	38,000	13,655	3,414	120,000	13,655	120,000	123,414	85,414
PRE-4	50,000	19,415	4,854	120,000	19,415	120,000	124,854	74,854
<b>Total</b>	<b>1,034,500</b>	<b>495,411</b>	<b>123,853</b>			<b>1,039,052</b>	<b>1,162,905</b>	<b>128,405</b>

Notes:

- (1) From Table 4-2
- (2) 25% of maximum day demand
- (3) Total of operational and greater of fire and emergency storage

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Table 5-2  
West Marin Storage Capacity Requirements - combined fire/emergency storage  
Projected Buildout Demands

Tank/Zone	Tank Capacity (gal)	Estimated Max Day Demand (gal/day) (1)	Operational Storage (gal) (2)	Fire Storage (gal)	Emergency Storage (gal)	> of Fire / Emergency Storage (gal)	Total Storage Required (gal) (3)	Additional Storage Required (gal)
Point Reyes Station	580,000	494,565	123,641	240,000	494,565	494,565	618,207	38,207
Olema	150,000	75,173	18,793	120,000	75,173	120,000	138,793	-11,207
Bear Valley	30,000	19,988	4,997	120,000	19,988	120,000	124,997	94,997
Inverness Park/PRE-1	161,500	70,203	17,551	120,000	70,203	120,000	137,551	-23,949
PRE-2	25,000	9,221	2,305	120,000	9,221	120,000	122,305	97,305
PRE-3	38,000	18,982	4,746	120,000	18,982	120,000	124,746	86,746
PRE-4	50,000	26,989	6,747	120,000	26,989	120,000	126,747	76,747
<b>Total</b>	<b>1,034,500</b>	<b>715,122</b>	<b>178,780</b>			<b>1,214,565</b>	<b>1,393,346</b>	<b>358,846</b>

Notes:

- (1) From Table 4-4
- (2) 25% of maximum day demand
- (3) Total of operational and greater of fire and emergency storage

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Pt Reyes Station changes from a surplus storage to a minor 38,000 gallon deficit storage at buildout. Pt Reyes Station storage deficit calculated at buildout is primarily due to a higher multiplication factor utilized in this report for converting average day demand to maximum day demand (2.11 in this report vs. 1.76 utilized in 2001 Long Range Plan). Olema and Inverness Park/PRE-1 continue to exhibit surplus storage capacity even at buildout (11,000 gallons and 24,000 gallons, respectively). Although individual PRE service zones show deficits in storage, when connected via the cascading system it has 113,000 gallons of storage, and therefore has a minor 12,000 gallons deficit at buildout. Bear Valley service zone has a slight increase in deficit with 95,000 gallon deficit at buildout.

Existing storage volumes and current (2013) and buildout storage volumes are compared in Table 5-3.

### **5.5.3 Historical Comparison**

At Pt. Reyes Station and Olema service zones, the 2001 Long Range Plan identified storage deficits at buildout have been rectified since that time. The current (2014 Master Plan) update shows 38,000 gallon deficit at Pt. Reyes Station and 11,000 gallon surplus at Olema. Bear Valley service area continues to have a storage deficit of 95,000 gallons and combined PRE (excluding PRE-1) has a deficit of approximately 12,000 gallons. Pt Reyes Station

## **5.6 PUMPING CAPACITY EVALUATION**

The pumping capacity requirements for each pressure zone for FY2013 and buildout (FY2035) water demands are shown below. Specific recommendations to address pumping capacity needs are presented later in this section.

### **5.6.1 FY 2013 Water Demands**

Pumping capacity requirements for each pump station under current water demands are shown in Table 5-4. The annual pump demand is the actual volume of water pumped by each pump station in FY2013. Utilizing the average day/maximum day peaking factor specific to each pressure zone (presented in Table 4-2), a maximum day demand in gallons per day for each pump station was determined. The maximum day pumping requirement represents the gallons per minute pumping capacity needed by each pump station to pump the maximum day demand over 16 hours, per District criterion.

### **5.6.2 Buildout Water Demands**

Pumping capacity requirement by pump station at buildout in FY2035 is shown in Table 5-5. Coast Guard well pumps have a firm capacity deficit of 495 gpm. Other pump stations have small surplus capacities except PRE-1 and PRE-2 pump stations. The deficit at these two pump stations are not very significant at 3 gpm each and can be neglected due to the uncertainty in build out demand.

### **5.6.3 Historical Comparison**

A comparison of the pumping capacity deficit from the last study (in 2000) and present (2013) at buildout (FY2035) is show in Table 5-6. It should be noted that water use demands in FY2013

Table 5-3  
West Marin Storage Capacity  
Existing Volumes and Capacity Goals

Tank/Zone	Existing Tank Capacity (gal)	Current Requirement (gal) (1)	Buildout Requirement (gal) (2)
<b>Point Reyes Station</b>			
Point Reyes -1	180,000		
Point Reyes -2	100,000		
Point Reyes -3	300,000		
<b>Totals</b>	<b>580,000</b>	<b>398,815</b>	<b>618,207</b>
<b>Olema</b>			
Olema -1	150,000		
<b>Totals</b>	<b>150,000</b>	<b>135,531</b>	<b>138,793</b>
<b>Bear Valley</b>			
Bear Valley -1	10,000		
Bear Valley -2	10,000		
Bear Valley -3	10,000		
<b>Totals</b>	<b>30,000</b>	<b>124,130</b>	<b>124,997</b>
<b>Inverness Park/Paradise Ranch Estates 1</b>			
Inverness Park -1	36,500		
Inverness Park -2	100,000		
PRE -1	25,000		
<b>Totals</b>	<b>161,500</b>	<b>134,504</b>	<b>137,551</b>
<b>Paradise Ranch Estates -2</b>			
PRE-2	25,000		
<b>Totals</b>	<b>25,000</b>	<b>121,658</b>	<b>122,305</b>
<b>Paradise Ranch Estates -3</b>			
PRE-3	38,000		
<b>Totals</b>	<b>38,000</b>	<b>123,414</b>	<b>124,746</b>
<b>Paradise Ranch Estates -4</b>			
PRE-4	50,000		
<b>Totals</b>	<b>50,000</b>	<b>124,854</b>	<b>126,747</b>

Notes:

- (1) From Table 5-1
- (2) From Table 5-2

Table 5-4  
West Marin Pumping Capacity Requirements  
FY 2013 Water Demands

Pump Station	Tank(s)	Zone Max Day Demand (gal/day) (1)	Transfer to other Zones (gal) (2)	Total Pumping Flow (gal/day)	Pumping Requirement (3) gpm	Pump Firm Capacity (gpm) (4)	Additional Capacity Required (gpm) (5)
Coast Guard Wells	Point Reyes Station	319,052	176,359	495,411	516	420	96
Olema	Olema	62,122	0	62,122	65	94	-29
Bear Valley	Bear Valley	16,518	0	16,518	17	35	-18
Inverness Park	Inverness Park / PRE-1	58,015	39,703	97,719	102	155	-53
PRE-1	PRE-2	6,633	33,070	39,703	41	54	-13
PRE-2	PRE-3	13,655	19,415	33,070	34	45	-11
PRE-3	PRE-4	19,415	0	19,415	20	32	-12

Notes:

- (1) From Table 4-2
- (2) Includes demands for upper zones that are pumped through station
- (3) Total Pumping Flow pumped over 16 hours per day per District criterion
- (4) Pump Station capacity with largest pump out of service (Added 120 gpm expected from alternate source at Gallagher well to Coast Guard capacity)
- (5) Additional capacity needed to meet maximum day demand criteria.

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Table 5-5  
West Marin Pumping Capacity Requirements  
Projected Buildout Demands

Pump Station	Tank(s)	Zone Max Day Demand (gal/day) (1)	Transfer to other Zones (gal) (2)	Total Pumping Flow (gal/day)	Pumping Requirement (3) gpm	Pump Firm Capacity (gpm) (4)	Additional Capacity Required (gpm) (5)
Coast Guard Wells	Point Reyes Station	494,565	220,556	715,121	745	420	325
Olema	Olema	75,173	0	75,173	78	94	-16
Bear Valley	Bear Valley	19,988	0	19,988	21	35	-14
Inverness Park	Inverness Park / PRE-1	70,203	55,192	125,395	131	155	-24
PRE-1	PRE-2	9,221	45,971	55,192	57	54	3
PRE-2	PRE-3	18,982	26,989	45,971	48	45	3
PRE-3	PRE-4	26,989	0	26,989	28	32	-4

Notes:

- (1) From Table 4-3
- (2) Includes demands for upper zones that are pumped through station
- (3) Total Pumping Flow pumped over 16 hours per day per District criterion
- (4) Pump Station capacity with largest pump out of service (Added 120 gpm expected from alternate source at Gallagher well to Coast Guard capacity)
- (5) Additional capacity needed to meet maximum day demand criteria.

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Table 5-6  
West Marin Pumping Capacity Goals 2000 and 2014  
Projected Buildout Demands

Pump Station	Tank(s)	2000 Goal gpm (1)	Additional Capacity Required in 2000 report (gpm) (2)	2013 Goal gpm (3)	Additional Capacity Required (present study) (gpm) (4)
Coast Guard Wells	Pt Reyes Station	850	550	745	325**
Olema	Olema	130	36	78	0
Bear Valley	Bear Valley	33	33	21	0
Inverness Park	Inverness Park / PRE-1	204	149	131	0
PRE-1	PRE-2	75	75	57	3
PRE-2	PRE-3	68	68	48	3
PRE-3	PRE-4	48	48	28	0

Notes:

(1) From Table 7 - West Marin Storage Capacity Analysis - Soldati Engineering Services (July 7, 2000)

(2) From Table 7 - West Marin Storage Capacity Analysis - Soldati Engineering Services (July 7, 2000)

(3) From Table 5-5 (this report)

(4) From Table 5-5 using 0 for additional capacity required when there is surplus capacity

At Coast Guard Wells, 120 gpm from Gallagher well (alternate source) was added to reduce the deficit.

\*\* More wells are proposed at Gallagher Ranch

were approximately 12% lower system-wide than in FY 1997-98. A reduction in annual demand results in lower max day pumping demands at any given pump station.

## **5.7 CONCLUSIONS AND RECOMMENDATIONS**

The recommended improvements to address current and future storage and pumping capacity deficiencies are summarized below. Specific projects are listed in Sections 9 and 10.

### **5.7.1 Storage Capacity Improvements**

Specific improvements to address pressure zones with inadequate storage capacity are presented below. Other pressure zones not specifically listed require no improvements.

#### **5.7.1.1 Point Reyes Tanks**

There is a deficit of 38,200 gallons at buildout. This can be addressed in the future when time comes for replacing one of the tanks.

#### **5.7.1.2 Bear Valley Tanks**

There is a storage deficit of 95,000 gallons at buildout. Adding a new 65,000 gallon tank at the present tank location and a 30,000 gallon tank at Silver Hills Road is appropriate.

#### **5.7.1.3 PRE Tanks**

There is a storage deficit of 12,000 gallons at buildout. Adding a new 80,000 gallon PRE-4 tank will rectify the storage deficit and will provide fire storage capacity for lower PRE zones via the cascading system.

### **5.7.2 Pumping Capacity Improvements**

Specific improvements to address pump station capacity deficits are presented below. Other pump stations not specifically listed require no improvements.

#### **5.7.2.1 Coast Guard Wells**

Point Reyes Station has a pumping deficit of 445 gpm at buildout. Since Gallagher well will be adding 120 gpm flow, the deficit is reduced to 325 gpm. Since there is a future project to add well(s) at Gallagher Ranch site in the future, no changes other than repair/replacement of the pump at Coast Guard well #2 is proposed.

In 2001, the District initiated time-of-use pumping at both Coast Guard wells. The program has resulted in over 5% energy savings annually. The district will continue to work with PG&E and Marin Clean Energy to further optimize the program to reduce energy consumption and pumping cost.

## **SECTION 6**

### **WATER QUALITY EVALUATION**

#### **6.1 INTRODUCTION**

Ensuring water quality is one of the primary goals of the District. Policy supports this goal with Board and management commitment to meeting or exceeding all US Environmental Protection Agency (EPA) and California Department of Public Health (CDPH) regulatory requirements. Water quality is monitored by the Water Quality Division whose responsibility is to provide oversight to all District activities as they relate to water quality.

Section 6 presents information on the current water quality, and provides recommendations for operational modifications and capital improvements related to water quality in the West Marin Water System.

#### **6.2 CURRENT WATER QUALITY**

##### **6.2.1 Source Water Quality**

Source water for the West Marin system is supplied by two wells adjacent to Lagunitas Creek (Coast Guard wells). The wells have a maximum depth of around 60 feet. This water is low in naturally occurring organic compounds and requires minimal disinfection to maintain a disinfectant residual. The total DBP (disinfection byproducts) formation potential is normally moderate with concentrations of around 40 ug/L at the location with the highest water age or maximum residence time. During times of salinity intrusion the brominated constituents of DBPs can rise significantly resulting in a total THM concentration of up to 89 ug/L at maximum residence.

The primary contaminants in water from the Coast Guard Wells are iron and manganese. These are removed through oxidation and green sand filtration. The green sand must be chemically activated in order to remove iron and manganese filters, this chemically active state is maintained with potassium permanganate that is injected along with sodium hypochlorite (for disinfection) at the front of the chemical contact tank.

##### **6.2.2 Existing Distribution System Water Quality**

Water quality in the distribution system is generally excellent. Although iron and manganese are not generally detectable in finished water, sediment composed of these metals has accumulated from time to time in certain parts of the distribution system. These sediments can be stirred up by atypical water demand and cause dirty water complaints. Salinity intrusion can cause changes in taste, increased corrosion from copper pipes and metal fixtures, as well as an increase in the concentration of certain disinfection byproducts.

#### **6.3 DRINKING WATER REGULATIONS AND NMWD MONITORING PROGRAMS**

The District operates the West Marin Water System under an operating permit issued by the California Department of Public Health (CDPH). CDPH is responsible for enforcing both State and Federal (United States Environmental Protection Agency, USEPA) drinking water regulations as a "primacy" State. NMWD's operating permit requires compliance with all State



and Federal drinking water regulations and imposes several additional operating and monitoring conditions.

Discussion follows on the drinking water regulations and permit conditions that are most significant in regards to distribution system water quality. The purpose of the regulation, NMWD's response and review of issues for the West Marin customers is addressed for each.

- Coliform Rule
- Stage II Disinfection By-Product Rule (DBP II)
- Groundwater Rule
- Lead and Copper Rule
- Fluoridation Mandate
- Other regulations and permit conditions
- Other NMWD programs and emerging issues

### **6.3.1 Coliform Rule**

- *Purpose of rule:*  
Assure pathogenic microbial growth is not present in water supply.
- *Monitoring requirement:*  
CDPH requires every separate hydraulic zone of water, as represented by a tank or pressure system, must be monitored monthly. A minimum number of samples are required per month based on population served.
- *NMWD response:*  
Currently, 7 sample sites are identified in the NMWD Coliform Sampling Plan. CDPH regulations require 3 samples be collected each month. NMWD has structured a sampling program that provides for sampling 1 to 2 sites on four separate routes, each sampled every four weeks.
- *Issues:*  
Historically the District relied on customer taps for sample sites. Finding representative sample sites among residential and business taps has been difficult at times. A standard sampling station design has been developed and 4 have been installed. Sample stations should be installed to replace tap sampling for the 3 remaining locations.

### **6.3.3 Disinfection By-Product Rules Stage II**

- *Purpose of rule:*  
Minimize health effects related to chemicals formed during the disinfection process.
- *Monitoring requirement:*  
Distribution sampling is required in the two warmest quarters at two locations for total trihalomethanes (THMs) and haloacetic acids. Compliance is based on location running annual average. Locations are determined by conducting an Initial Distribution System Evaluation (IDSE) using a number of factors including results from increased system wide monitoring for one year, residence time, and population distribution.

- *NMWD response:*  
DBP formation potential in water from the Coast Guard wells is relatively low. Samples taken at the distribution system location with the highest residence time (furthest from the source) rarely exceed 55 ug/L. Re-chlorination at PRE tank 1 raises the concentrations of DBPs along with boosting chlorine concentration. During periods when salinity intrusion at the Coast Guard well site raises the concentration of bromide in source water, the THMs concentration has risen to just below 90 ug/L.

Sprayer systems have been installed in Inverness Park Tanks and PRE tank 2 to volatilize and ventilate DBPs from the water in the tank to the atmosphere. They have been effective in reducing DBPs by up to half.

- *Issues:*  
There is a conflict in simultaneous compliance with maintaining an adequate chlorine residual and keeping DBPs as low as possible. Other water utilities have converted to chloramines as the disinfectant to lower DBPs while maintaining an adequate residual in the distribution system. Conversion to chloramines by NMWD would require the addition of ammonia into the water supply and is not necessary under current standards.

The sprayer systems in Inverness Park Tanks and PRE tank 2 can also have the effect of lowering chlorine residuals. Monitoring the chlorine concentration and dose at the PRE Tank 1 booster station is necessary to ensure adequate residual.

#### 6.3.4 Groundwater Rule

- *Purpose of rule:*  
The purpose of the rule is to provide for increased protection against microbial pathogens in public water systems that use ground water sources. EPA is particularly concerned about ground water systems that are susceptible to fecal contamination since disease-causing pathogens may be found in fecal contamination
- *Monitoring requirement:*  
The groundwater rule requires triggered source water monitoring for fecal coliforms and/or E coli if a routine sample for compliance with the Total Coliform Rule is positive for coliforms. An E coli positive in source water would require a system-wide Boil Water Order (BWO) and follow up monitoring. There is a waiver of the triggered source water monitoring and BWO requirement if the system maintains 4-log inactivation of viruses through treatment.
- *NMWD response:*  
NMWD has applied for and received the 4-log waiver from requirements of the Groundwater Rule. 4-log inactivation is achieved by qualifying disinfection in the contact tank at the Point Reyes Treatment Plant (P RTP). The 4-log waiver is maintained by monthly reporting of the lowest daily contact time (CT) value.
- *Issues:*  
4-log inactivation of viruses has not been difficult to maintain. Data collected in the Supervisory Control and Data Acquisition (SCADA) system is used to generate the monthly report. Failure to document 4-log at the time of a coliform positive in the distributions system would trigger the source water monitoring and reporting.

### 6.3.5 Lead & Copper Rule

- *Purpose of rule:*  
Reduce corrosion of lead and copper in consumer plumbing.
- *Monitoring requirement:*  
20 residences have been identified to test for lead and copper. Currently, NMWD is under a reduced monitoring program of 10 residences every three years.
- *NMWD Response:*  
Samples tested as part of the lead and copper monitoring do not commonly contain lead at concentrations nearing the action level. Copper has been detected at levels above the action level in some samples
- *Issues:*  
Salinity intrusion can make water more aggressive and could increase lead and copper values above the action level.  
Some of the older valves in the distribution system, such as those associated with older fire service assemblies, may have lead weights. These valves are being removed from the system as repairs are identified. The Point Reyes distribution system has no lead service lines.

### 6.3.7 Other Regulations and Permit Conditions

In addition to the regulations discussed above, the California CDPH has regulations that focus on assuring that water systems are designed, constructed and operated in a manner compatible with public health goals. Cross connection control, State Waterworks Standards and Operator Certification stand out as regulations focused on maintaining water quality.

- Cross Connection Control
- State Waterworks Standards
- Operator Certification
- West Marin Permit Provisions

### 6.3.8 Cross-Connection Control

- *Relationship to Water Quality:*  
Contamination of a treated water supply within the distribution system due to cross-connection/backflow conditions is a primary concern. California regulations require that all water suppliers maintain a cross-connection control program with specific required elements including annual testing of devices and certification of personnel.

North Marin has experienced cross-connection events in the distribution system. There have been instances where soda-dispensing systems (soft drinks) have allowed carbonation to backflow, causing copper leaching.

Other cross-connection events may not have been recognized and reported. Close compliance with the District program remains the strongest protection.

- *The North Marin Water District Program:*  
The current NMWD cross-connection program is the responsibility of the Maintenance Division. The responsibility includes identification of hazards within the system, and assuring compliance with NMWD regulation 6 and Title 17, California Code of Regulations.

The NMWD program differs from other local water agencies in that District staff test backflow prevention devices. This has the advantage of assuring that tests have been properly performed and costs are reduced for the rate payers because employees trained and supervised by the District's certified cross-connection control technician are used. Management provides the staff resources and oversight to assure that the program is carried out and minimal delays occur between a test failure and repairs.

- *Issues:*  
There have been several revisions to the California Code of Regulations, Title 17 governing selection and location of backflow preventers. A survey of the West Marin cross-connection control program has revealed under-utilization of backflow devices in some areas of the system. The District has planned for the capital and maintenance costs for upgrading services and updated District regulations and fee schedules to cover these required costs.

### **6.3.9 State Waterworks Standards**

- *Relationship to Water Quality:*  
California Department of Public Health sets regulations including design and construction standards to be used by water suppliers. These standards were recently revised. Specific design and construction criteria are identified to provide protection of public health.
- *Highlights of the Waterworks Standards as related to West Marin:*
  - Requires an amendment to the water permit if volume of water delivered increases by more than 10 percent.
  - A source capacity report is required of all systems.
  - All coatings, linings, gaskets or sealing materials, joint compounds or tank materials must be certified to meet ANSI/NSF Standard 61.
  - Details on standards for flushing valves and blow-offs, air release valves and isolation valves are identified.
  - Reservoirs are required to have separate inlet and outlet and sampling taps.
  - A Distribution System Operation Plan is required with updates every five years.
  - Mapping Standards are identified.
- *Issues:*  
The most significant issue is the requirement for NSF Standard 61 certification for materials. Standard 61 addresses water quality contamination issues but does not address longevity or strength. Care must be taken in selecting appropriate materials.

Both District and contract work will be required to be in compliance with the new standards.

### 6.3.10 Operator Certification

- *Relationship to Water Quality:*  
All states are required to develop operator certification programs to comply with regulations. California water treatment operators have been certified for many years. As more focus has recently arisen related to distribution system operation, a California program has been underway since 2004 to certify distribution operators. Certification is also required for cross-connection control device testers.
- *The North Marin Water District Program:*  
The District is required to have distribution operator certification for all employees with duties that involve decisions in operation, maintenance or repair of distribution system facilities. All District treatment operators are certified. The District's cross connection control technician is certified by AWWA as a tester and assumes the role of certifying other District personnel hired to test NMWD devices.
- *Issues:*  
The most significant impact of the new California certification rules is the requirement for continuing education units and the successful testing of all employees to receive certification.

## 6.4 OTHER NMWD PROGRAMS AND EMERGING ISSUES

Distribution water quality is maintained if policies and procedures are in place to assure that good planning, construction and maintenance practices are followed. Some of the programs developed by NMWD staff can be considered quasi-regulated because they are cited in the Point Reyes Operations Plan that is reviewed and approved by the Department of Health Services. Following is a review of:

- Tank inspections, operations and maintenance
- Valve Turning
- Flushing
- New construction approval process
- Water Quality Laboratory
- Source Controls and Treatment
- Emerging Issues

### 6.4.1 Tank Inspections, Operations and Maintenance

- *Relationship to Water Quality:*  
Storage tanks are a location of high vulnerability. Storage of water, while providing fire protection and emergency supply, can cause the water to age and lose chlorine residual. Screens on vents and overflows must be properly maintained to prevent intrusion by birds, and animals.
- *The North Marin Water District program:*  
The current NMWD tank inspection program is carried out by the Operations division with occasional assistance from the Maintenance division. The Maintenance division conducts annual inspections, typically performed by the Electrical/Mechanical staff. The Operations division inspects four tanks weekly for chlorine residuals and tank security issues. These are Olema Tank, Bear Valley Tanks, PRE Tank 1, and PRE Tank 4. A water quality-focused inspection of all tanks typically occurs once a year during the winter. Samples are collected by the distribution system operator for lab analysis,

including coliform growth and heterotrophic bacteria. Tank inspection observations are recorded in the database "Tank Cleaning Sch.xls" which is maintained by the Operations staff. Tank Inspection forms, typically filled out during tank cleanings, are included in the individual tank binders located in the Engineering department.

Reduced chlorine residuals have caused a tank chlorine augmentation program to be developed. Chlorine dispersion tubes have been installed in Olema Tank and PRE Tank 4. A regular program is conducted by the distribution operator to monitor all of the tanks and add chlorine tablets as necessary. Records are maintained on this activity and correlation with lab sampling within the zone is reviewed by the Water Quality division. Significant improvement in maintaining a chlorine residual and a marked decrease in the number of coliform positive samples in the distribution system has been observed as a result of these actions

The pump operational set points at the storage tanks and system dynamics have a great influence on water age.

- *Issues:*  
Tank inspections must be scheduled and maintenance prioritized so water quality problems are quickly remedied.

Overflow drains may not be located on facility drawings.

Augmentation of tanks with chlorine tablets is time-consuming. If it is determined that ongoing chlorine augmentation is advantageous, alternatives to the program will be investigated.

A system to chlorinate the larger tanks under emergency conditions is needed.

Separate tank inlet and outlet pipelines have been designed for some NMWD tanks. Their performance has been positive in de-stratifying tank water and maintaining adequate chlorine residuals throughout the water column. Proposed Water Works Standards will require separate inlet and outlet pipelines.

#### **6.4.2 Valve Turning Program**

- *Relation to Water Quality:*  
Turning all valves provides assurance that valves are functioning and can be used to valve off main breaks or contamination events in a timely manner. It also provides an opportunity for staff to gain knowledge of valve locations and assure they haven't been buried by new paving and are fully operational.
- *The North Marin Water District program:*  
NMWD has a good program that provides for turning all distribution and transmission system valves each year by the Maintenance Division.
- *Issues:*  
A valve replacement program with identified goals should be considered. Fewer available staff has allowed for this program to fall behind.

### 6.4.3 Flushing

- *Relation to Water Quality:*  
Flushing has long been identified as one of the most effective maintenance practices for improving water quality by removing sediments, corrosion by-product biofilms and introducing higher chlorine residual to stagnant dead ends.
- *The North Marin Water District program:*  
North Marin initiated an annual, system-wide flushing program over 30 years ago. Budget constraints caused the program to be abbreviated in the '90s. Currently, flushing is carried out by Maintenance, Construction, and Operations personnel, coordinated by the Treatment and Distribution Supervisor with flushing routes assigned to several flushing teams. Flushing is generally conducted annually.
- *Issues:*  
Flushing of dead ends and between pressure zones is complicated by the lack of flushing blow-offs at zone valves. A program to install zone valve blow-offs has been initiated. Flushing zone-valve dead-ends without blow-offs requires that stagnant water from the higher zone be flushed to the lower zone which can jeopardize customer water quality, as well as the risks associated with introducing a higher pressure to an area.

Although the flushing program has been normally performed annually, cutting the program back due to water supply concerns has not resulted in an increase of colored water complaints.

Stormwater protection rules require dechlorination of all water discharged during flushing. The District has adopted a policy of dechlorinating at all flushing points; previously dechlorination took place only adjacent to locations that were perceived as being environmentally sensitive.

### 6.4.4 New Construction Approval Process

- *Relationship to Water Quality:*  
New facilities are approved for service by procedures that allow for their disinfection and subsequent testing to show no contamination. The final approval depends on more than the disinfection process but starts with good design and construction practices.
- *The North Marin Water District Program:*  
Design review procedures include review for water quality concerns. District procedures document the post-construction disinfection and approval process. The Operations division has procedures for liquid chlorine disinfection of mains. Protection of the sanitary condition of pipe in storage has been identified as a goal and is now practiced.
- *Issues:*  
The electrical/mechanical crew has developed a procedure for the disinfection of pressure reducing stations and their bypass valves. This procedure should be documented.

Engineering should include a representative from the Water Quality division at pre-construction meetings on larger projects to review the approval process and discuss BMPs as relating to assuring water quality. Distribution of the appropriate standards

related to disinfection and main approval to the project construction superintendent could be included on the job check list.

Flushing velocities have been less than sufficient in many cases to clear lines. Tie-in to existing mains has been required in several cases prior to main approval in order to achieve flushing velocities. NMWD should consider providing temporary connection with backflow protection to mains.

Covered storage has been suggested to provide contamination protection for pipe and appurtenances in yard. In lieu of covered storage, end caps are used on stored pipe. End cap effectiveness requires prompt capping and contractor attention at job sites.

District experience with pipeline disinfection using liquid hypochlorite is positive. Training District personnel on main disinfection procedures has been done to enhance the ability to respond to emergencies. However, the District utilizes outside contractors for pipeline disinfection on large, planned projects.

#### **6.4.5 Water Quality Laboratory**

- *Relationship to Water Quality:*  
The ability to consistently control and improve water quality is determined by the ability to quickly obtain data and detect trends. The ability to provide quantitative data that can be used to guide process control decisions allows for a higher quality product. It is the role of the laboratory to provide this data. An on-site laboratory equipped to perform tests on demand provides the timely detection that is crucial to good water quality control.
- *The North Marin Water District Program:*  
The NMWD Water Quality laboratory is staffed and equipped to perform common regulatory tests and those tests that are routinely requested by staff or customers. The laboratory is certified under the California Environmental Laboratory Accreditation Program and staff are certified as Water Quality Analysts by the California-Nevada Section of the American Water Works Association. It has been the policy to equip the lab with the ability to perform those tests essential to monitoring constituents of concern, i.e., those that can be controlled by adjustment to either plant operations or distribution practices. Use of commercial laboratory services is limited to those tests of constituents that are required for regulatory purposes, primarily to show their absence, or to those tests which are not cost effective for the District to perform.
- *Issues:*  
There is no commercial laboratory in Marin County that is certified to perform bacteriological tests on water. The NMWD laboratory has been asked by County Environmental Health if NMWD would be capable of accepting private well bacteriological tests of Non-District County residents. The NMWD laboratory has started to accept samples from Novato Sanitary District and Marin Municipal Water District. The lab should continue to market lab services to neighboring water and wastewater utilities to add revenue and reduce operational costs.



A Laboratory Information Management System (LIMS) was implemented in June 2007 and has been put into daily operation. This system allows for automated reporting from instruments and a streamlined, multistep process for validating results. All bench sheets and reports (including electronic reports to the state database) are generated from the LIMS.

Results of all testing are compiled and summarized in an Annual Water Quality Report. This report (identified as a Consumer Confidence Report as required by the US Safe Drinking Water Act) lists any detected contaminant or constituent with a primary standard as well as several constituents with secondary standards that may be of interest to consumers. The Annual Water Quality Report is sent to each customer in a special mailer and is posted on the District's website.

#### **6.4.6 Source Controls and Treatment**

- *Relationship to Water Quality:*  
Good source water quality is typically directly related to treated water quality. Improving source water quality can improve treated water quality.
- *The North Marin Water District Program:*  
A Sanitary Survey showed no major threats to source water.

#### **6.5 WATER QUALITY GOALS**

Based on the issues discussed and experienced the following goals are identified as appropriate to assure water quality in the West Marin Water System:

1. A minimum 0.20 chlorine residual maintained at all points in the distribution system.
2. Heterotrophic plate counts not exceeding 500/ml bacteria at all points in the distribution system.
3. No taste and odor complaints or detection.
4. Total Trihalomethanes reduced below 60 ug/L at all DBP sample sites; total haloacetic acids reduced below 40 ug/L at all sample sites.
5. Maintain Sodium concentration below 50 mg/L at all times.
6. Annual inspection and testing of all reservoirs for bacterial quality and sediments that would warrant disinfection and/or cleaning.
7. All reservoirs cleaned (or bypassed for cleaning based on data) every five years.
8. Annually, flush all mains and turn all valves.
9. Test backflow prevention devices annually and repair within 45 days of failure identification date.
10. Maintain lead and copper below action level at all consumer taps.
11. Respond to customer complaints within the workday.

#### **6.6 RECOMMENDATIONS**

The following are recommended actions towards achieving water quality goals.

##### **6.6.1 Source Quality**

1. When Gallagher well and pipeline is completed, develop a salinity avoidance strategy that takes advantage of this separate source of supply either wholly or by blending with the coast guard well supply.

### **6.6.2 Treatment**

1. Continue permitting, design, and construction work to eliminate backwash discharge to land.

### **6.6.3 Distribution**

1. Install additional DBP reduction sprayers at tank sites where they are found to be effective and as they are needed related to salinity intrusion.
2. Improve flushing by including Engineering in annual update of flushing routes adding new mains.
3. Continue to install flushing blow-offs at dead-end valves.
4. A valve replacement program with identified goals should be considered.
5. Review security issues and address vulnerabilities as appropriate. Consider SCADA-based security alarms and general SCADA security.
6. Consider electronic collection of cross connection control test results in the field that can be downloaded upon return to the office.
7. Continue to replace the older NMWD-design fire service double check detector assembly and rely on fire systems with approved single detector checks and rely on the alarm check in the fire system to provide redundancy. The older checks should be removed to eliminate head loss, lead components and liability.

### **6.6.4 Other Issues**

1. Maintain laboratory service ability to meet customer priorities and provide feedback to operational issues. Utilize contract laboratory services to monitor regulated contaminants that are not a concern and testing and/or maintaining laboratory certification is not cost effective.
2. Integrate all District Information management systems including the development of a Laboratory Information Management System (LIMS). Information is critical to effective application of resources.
3. Provide laboratory services to County and other agencies.

## SECTION 7

### HYDRAULIC EVALUATION

#### 7.1 INTRODUCTION

The hydraulic evaluation of the West Marin Water System is presented in Section 7. The 2001 West Marin Long Range plan did not include a hydraulic evaluation to identify hydraulic adequacy under several demand conditions, including a fire flow evaluation. Only limited hydraulic evaluation is performed under the present Master Plan however, some recommendations are discussed as appropriate to address distribution system hydraulic improvements. A future study is suggested to address an improved and calibrated hydraulic model.

#### 7.2 HYDRAULIC MODELS

EPANET 2, public domain software developed by the US Environmental Protection Agency, is used for hydraulic flow modeling by NMWD staff. Over the years, simple hydraulic models have been developed to evaluate fire flow capacity for local developer projects in certain service zones using EPANET 2. These models are for Pt. Reyes, Bear Valley, Inverness Park and PRE service zones.

##### 7.2.1 Modeling Criteria

Establishing hydraulic modeling criteria is important for development, calibration and use of the hydraulic network model, as well as interpreting the results. Key criteria utilized in development and use of the District's hydraulic models is as follows:

- All pipes 4 -inch diameter and larger are included in the model, with some key 2- inch diameter pipes that complete loops or are essential to water flow also included. Demands at the end of these pipelines are placed at the nearest node.
- Pipe lengths and nominal diameters were obtained from the District's facility maps maintained by the Engineering Department.
- The pipe roughness coefficient, Hazen-Williams "C" value, was assigned to each pipe segment based on pipe material and age.
- Water entering a modeled zone is represented by pumps utilizing pump curves provided by the District. Water leaving a modeled zone (such as at upper zone pump stations) is represented as a node with a demand indicating the number pumps operating as necessary.
- Tank dimensions and elevations were input for all storage facilities.
- Ground surface elevations were obtained from the District's facility maps, or Marin County orthophoto mapping in some cases.
- Water demands and flow rates are expressed in gallons per minute (gpm).

##### 7.2.2 Water Demands

The model demands are based on average annual daily demands in the past 13 years as presented in Section 4. For model runs under conditions other than average day demands, a multiplier was used to determine those demands. Multipliers for maximum day and peak hour

demands vary with service (or pressure) zones, however, the billing data was not analyzed to determine individual service (or pressure) zone multipliers. Therefore, multipliers for the whole West Marin Distribution system were used for the individual zones.

### **7.3 DISTRIBUTION SYSTEM ANALYSIS**

The hydraulic network models were utilized to evaluate the performance of the PRS and Bear Valley water distribution systems under current (FY 2013) and future buildout (FY 2035) water demands. The hydraulic model output results include flow, velocity and head loss for all pipe segments, and pressure and hydraulic gradient for all network nodes in the system. This information is compared to specific evaluation criteria to determine hydraulic adequacy. Solutions to correct identified deficiencies are then run with the model to determine their effectiveness. Limited modeling was performed in the Inverness Park-Paradise Ranch Estates zone and no modeling was performed in the Olema zone.

Model runs are steady-state runs, which represent a specific snapshot in time. The status of zone pumps, outflows from the zone, peaking factors, and pipelines and tanks that are in service or out of service is all input into the model as boundary conditions. The model output results indicate system operation at that particular point in time.

Extended-period or dynamic model runs were not performed during this analysis.

#### **7.3.1 Evaluation Criteria**

In order to effectively evaluate the model runs, the model output results were compared against established evaluation criteria. These criteria include: minimum and maximum pressure, maximum velocity, maximum head loss, residual pressure at fire nodes, and fire flow requirements. In addition, other system reliability criteria also govern the analysis. A detailed discussion of the development of these criteria is presented in Section 2, and the pertinent criteria are summarized below:

- Minimum normal pressure = 40 psi
- Minimum pressure under max day demand = 35 psi
- Minimum pressure under peak hour demand = 30 psi
- Maximum normal pressure = 80 psi
- Maximum pipeline velocity = 8 fps; 10 fps under fire demand conditions
- Maximum pipeline head loss = 10 feet per 1000 feet
- Minimum fire flow requirement = 2,000 gpm for Point Reyes Station and 1,000 gpm elsewhere (for 2 hours). Note this is the recommended fire flow by Marin County Fire Department and has increased over time (initially 500 gpm to 1,000 gpm for 15 minutes in rural areas) <sup>(1)</sup>.
- Residual pressure under fire flow = 20 psi

### **7.4 MODEL SIMULATION APPROACH**

The service zone models were run separately under three basic steady-state demand conditions that stress the distribution system: 1) maximum day demand; 2) peak hour demand;

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<sup>1</sup> Paradise Ranch Estates Water System Improvements EIR (NMWD, 1979)

and 3) maximum day demand plus fire flow. The modeled pressure, pipe head loss and velocity were compared with the evaluation criteria noted above. Deficiencies were noted and improvements recommended as necessary. These modeled demand scenarios were intended to stress the system with the highest expected flow rates throughout the system, with the intent that if the system functioned adequately under these stressed conditions, then it is anticipated that lower demands can be accommodated.

A review of all fire hydrant flow tests to determine low fire flow areas and hydraulic modeling to identify potential pipeline improvement and replacement projects to increase fire flows to these hydrants is beyond the scope of this master plan. The District can conduct a review of the fire hydrant flow tests and target specific areas for more detailed evaluation of fire protection capabilities.

## **7.5 PT REYES STATION (PRS) ZONE HYDRAULIC ANALYSIS**

### **7.5.1 Assumptions**

PRS model simulations are run under the following assumptions:

- The storage tanks are operated at a water level less than full that represents a typical level during maximum day demand.
- The maximum day to average day demand multiplier is 2.11 and the peak hour to average day demand multiplier is 4.0.
- Maximum fire flow rate is 2,000 gpm in Pt Reyes Station and 1,000 gpm in other areas.
- For FY 2013, the average day demand is 163 gpm; maximum day demand is 344 gpm; and peak hour demand is 652 gpm.
- For FY 2035, the average day demand is 235 gpm; maximum day demand is 496 gpm; and peak hour demand is 940 gpm.

**Table 7-1  
PRS Zone Model Parameters**

<b><u>Model Run Scenario</u> Model Input Parameter</b>	<b>Maximum Day</b>	<b>Peak Hour</b>	<b>Maximum Day + Fire Flow</b>
Multiplier – Existing (Buildout)	2.11	4.0	14.3
PRS Tank 1 Water Elevation (ft)	212.8	212.8	212.8
PRS Tank2 Water Elevation (ft)	212.8	212.8	212.8
PRS Tank 3 Water Elevation (ft)	212.8	212.8	212.8
Flow out to other zones (gpm)	120	228	2,120

## **7.5.2 General Modeling Information - PRS**

The Coast Guard Wells pump water through the PRSTP to PRS Tanks and also to the distribution system simultaneously. In the present modeling, the Coast Guard Wells were not included. Instead, gravity flow from the PRS Tanks was used. The flow out of the system to other service zones was applied to the model node at the B Street and 1st Street intersection. The demands were randomly applied at different nodes of the model (not based on billing data).

## **7.5.3 Maximum Day Demand Scenario**

The PRS model was run under current maximum day demand to ascertain potential existing system hydraulic adequacy. In this scenario, 344 gpm flows out of the PRS Tanks and into the distribution system and 120 gpm leaves to the other pressure zones. Under these conditions, except at 2 nodes on a 2-inch private line on Hwy 1 in the north east corner of the PRS service zone, there were no pressures less than 35 psi or pipelines with high head loss or velocity. These results indicate that there is ample pipe capacity to meet existing maximum day demand.

## **7.5.4 Peak Hour Demand Scenario**

Similar results occur during peak hour demand scenarios. The primary impact is that more water must be delivered from the tanks to meet demands. There are no additional low pressure locations or pipelines with high head loss or velocity.

## **7.5.5 Maximum Day Demand + Fire Flow Scenario**

The fire flow analysis was conducted utilizing one location to place the fire flow in the model. The fire flow of 2,000 gpm was applied at the western end of the PRS service zone at the intersection of 1st and B Street. Maximum day demand was also randomly distributed as mentioned earlier.

Although in the model simulations only tank storage is utilized, there is direct pumping from the Coast Guard wells that can supplement flow and pressure. This conservative approach will identify any hydraulic deficiencies to meet fire flows in the PRS zone.

The fire flow analysis consisted of applying fire flow and maximum day demand and determining if the 20 psi residual pressure criterion is met. A few areas showed less than 20 psi pressure (between and 10 and 20 psi). However, the velocity in these segments remains below the criteria for deficiency, and these pipeline segments are not candidates for replacement strictly for hydraulic benefit alone. It is not uncommon for many locations that are deficient at the higher fire flows to meet the requirements at the lower fire flows. These are the upper elevation areas on the 12-inch main on Shoreline Highway.

## **7.5.9 Buildout Demand Scenarios**

Buildout demands were applied at the same locations as the present day simulations but used the 2035 multiplier to reach 940 gpm for peak hour demand. There were no additional deficiencies other than that previously described in the peak hour demand scenario.

## **7.6 BEAR VALLEY ZONE HYDRAULIC ANALYSIS**

Limited modeling was performed. Fire flow criteria of 1,000 gpm in Bear Valley is approximately 50 times the pumping rate due to low residential demand in this pressure zone. Therefore, sizing pipes for fire flow goal of 1,000 gpm rate seems extreme and modeling was performed with 500 gpm flow. Marin County Fire Department has allowed minimum fire flow of 500 gpm for residential projects in this area. The modeling shows that 500 gpm flow rate creates negative pressure at a node 900 ft downstream of the tank where the 4-inch main branches into a 4-inch and a 6-inch loop at 370 ft elevation. If this 900 ft of pipe downstream from Bear Valley tanks is upsized to a 6-inch, the 500 gpm flow can be achieved with 36 psi residual pressure at that node meeting the minimum 20 psi pressure criteria and 1,000 gpm flow is achievable with 17 psi residual pressure at that node. If the 4-inch pipe is replaced with an 8-inch pipe, the 1,000 gpm flow could be achieved with a minimum residual pressure of 38 psi.

## **7.7 INVERNESS PARK - PARADISE RANCH ESTATES ZONE HYDRAULIC ANALYSIS**

Limited model simulations were performed to check if 500 gpm fire flow can be obtained with the existing system. No pressure or velocity deficiencies were noted.

## **7.8 OLEMA ZONE HYDRAULIC ANALYSIS**

Modeling was not performed for this zone. However, it is noted that the only supply line to Olema Tank is along Highway 1. Installing bypass connections along the existing 4-inch main or installing a second supply main from Bear Valley system along Bear Valley Road will improve reliability of service to the Olema service zone. Since current Bear Valley storage is limited, this proposed improvement would also require increasing Bear Valley Tank storage.



## SECTION 8

### ASSET MANAGEMENT

#### 8.1 INTRODUCTION

The North Marin Water District (NMWD) West Marin Asset Management (WMAM) Program is a staff-driven program that has been developed following the Novato program. From this effort, staff recommended defining WMAM for NMWD as a long-range planning document that can be used to understand the following:

- The assets that NMWD owns, their current physical condition, and the services that they provide;
- The present and future demands on the NMWD assets that are critical for delivering the level of service to customers and the community;
- The current estimate of the short-term and long-term financial requirements (both capital and operational) necessary to maintain the assets and the services that they provide;
- The current and proposed policies, strategies, and programs that are necessary to meet the long-term provision of services;
- The business risk exposure associated with the potential failure of the assets to meet the expected levels of service;
- The linkages necessary between strategic business objectives and the service that the assets are delivering; and
- The organizational continuity that will span staffing changes and the transfer of asset management knowledge between successive generations of utility managers and staff.

[NOTE: This is NMWD's 1st draft of the WMAM Plan and as such, does not meet all of the long-range goals for a fully-developed WMAM Program.]

It is intended that the production of a 5-year WMAM Plan will be updated as part of the NMWD ongoing Master Plan process.

The District's WMAM Plan has a short-term focus (five years) within the WMAM Program of the longer-term period (100 years) covering the full life cycle of the assets. It is based on a set of systematic planning activities to assess asset performance and demands, improve reliability of asset performance, improve forecasts for both capital and operational budgets based on asset performance and reliability needs, identify and quantify business risks and trends, formulate and evaluate both capital and operational options for meeting service levels, and plan continuous improvements related to delivering the lowest life cycle cost service solutions.

WMAM Program Development & Planning is related to the assets that are currently owned and will be owned in the future, and how the business decisions related to these assets will affect its ability to sustain asset performance and consequently sustain provision of economical services to its customers. NMWD has traditionally performed many of these tasks across the organization; however, the results of this work have not been collated into a single, concise

document to allow the organization to clearly understand the overall business planning ramifications.

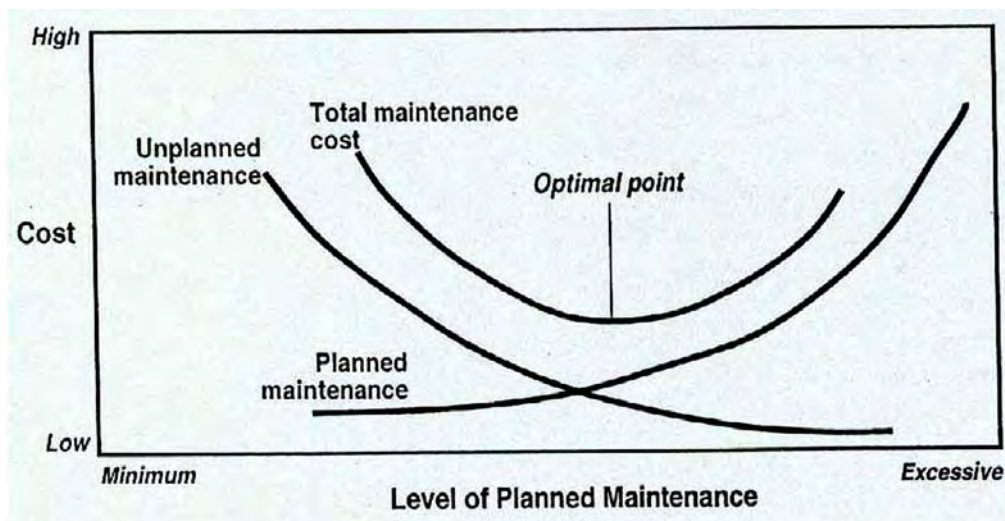
## 8.2 WMAM PROGRAM OBJECTIVES AND GOALS

The District's mission is to provide "... an adequate supply of safe, **reliable** and high quality water ... to our customers at **reasonable cost** ...". Accordingly, it is appropriate that the goals of the District's WMAM Plan are to: (1) improve water system reliability by reducing system failure rates; (2) minimize the time and money spent reacting to problems through proactive implementation of necessary WMAM projects; (3) forecast exhausted asset replacement costs; and (4) develop a practical replacement plan.

Without an effective WMAM Program, infrastructure reliability cannot be achieved in a cost-effective manner. As an example, consider the graphical illustration contrasting total repair and replacement (R&R) costs versus planned and unplanned R&R activities as shown in Figure 8-1. From this graph, it is apparent that there is an optimal point at which total R&R costs are lowest.

With the District approaching community build-out, more of the daily construction and maintenance activities have switched from new construction to R&R of aging infrastructure. In addition, a greater percentage of funds for these R&R projects will come from District operating revenues and not connection fees associated with new development.

**Figure 8-1**  
**Level of Planned Maintenance**



Managing water facility infrastructure R&R projects has always been a part of the District's annual Capital Improvement Projects (CIP) budgeting process. However, in the past, many of the R&R projects have been developed based primarily on an intuitive process utilizing the knowledge of senior construction and maintenance staff. Since the District will be losing much of

this historical and institutional knowledge due to retirements, it is important that the program moves toward a fact-based WMAM plan rather than one that is intuitive-driven.

Over the next five years, District staff will focus on Asset Data Management, development of asset evaluation matrices and methods to be considered for asset condition and performance assessment.

### **8.3 CURRENT ASSETS**

#### **8.3.1 Asset Categories**

The West Marin water system includes the following major components:

- 13 storage tanks
- 9 pump stations
- 27 miles of pipeline
- 168 fire hydrants
- 281 valves
- 776 active (820 total) service connections

#### **8.3.2 8.3.2 Asset Value**

Asset values for District infrastructures installed over time are shown in Fig. 8-2. The asset values were derived from original installation costs and are adjusted for inflation. Current infrastructure asset values are in excess of \$6.25 million. Most of the District's assets are associated with buried facilities (i.e., transmission and distribution pipelines and appurtenances). Accordingly, the following discussion will focus on NMWD's buried assets (so-called "horizontal" assets) so that the WMAM Plan is focused on the greatest need within the District. Expansion of the Plan to include above-ground ("vertical" assets) infrastructure such as storage tanks, treatment plants and pump stations will occur at a later date after more experience is gained with this step.

#### **8.3.3 Recent Improvements**

As part of ongoing WMAM and business planning processes with NMWD, the following efforts continue:

- Best appropriate practices for WMAM, as well as development of case studies that can be used to learn how to implement strategic WMAM tools; and
- Development of tools for decision analysis and implementation of asset management practices. This includes a cost tool and a refined gap tool that helps to compare NMWD WMAM practices to those of other utilities. These tools will allow NMWD to benchmark against other utilities.

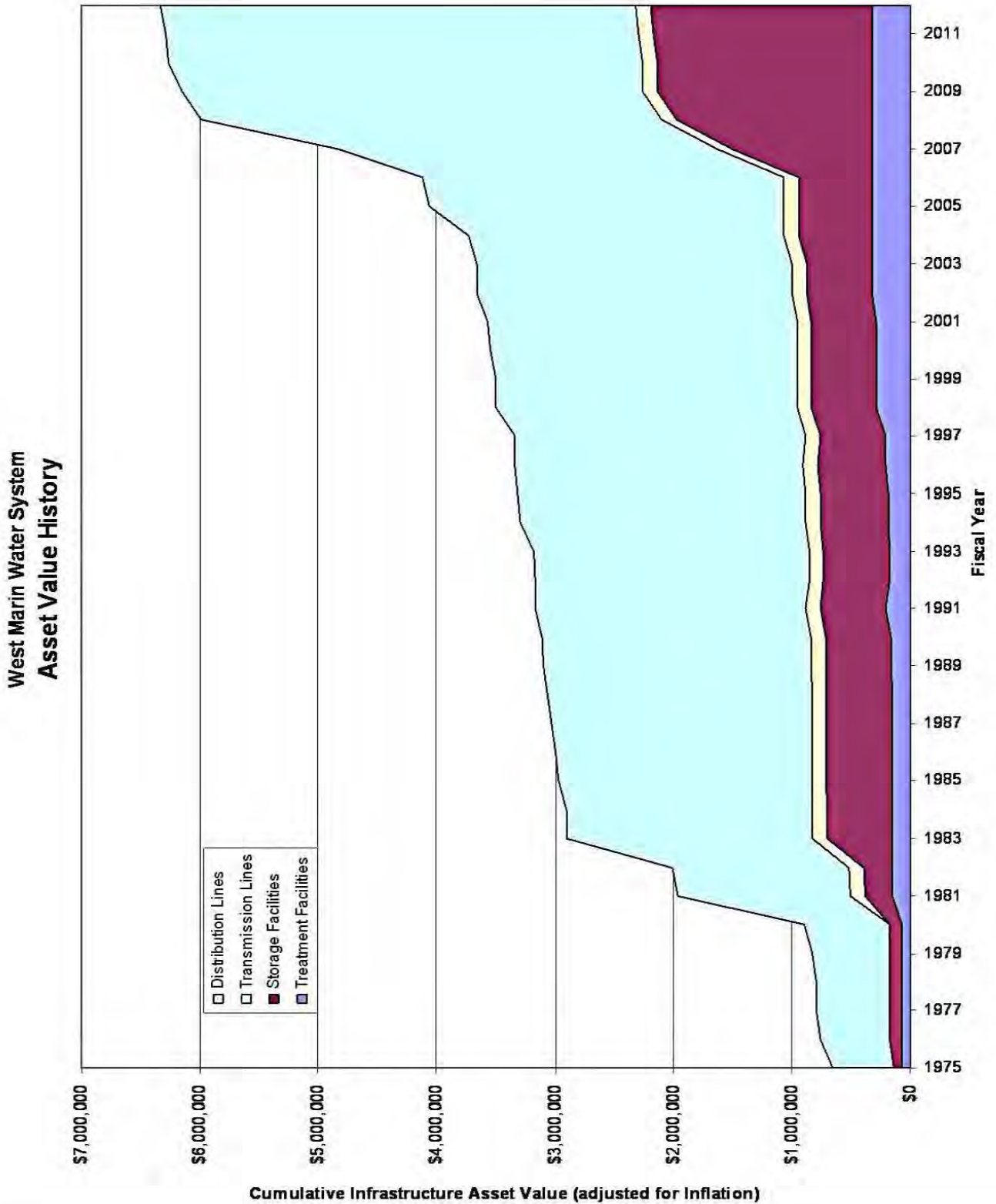
#### **8.3.4 Levels of Service**

NMWD will develop a summary of its present and future Levels of Service requirements and incorporate into asset matrices for the next Plan period.

#### **8.3.5 Focus Area**

Whether planned or unplanned, maintenance costs associated with District facilities have been trending higher as the District's assets have expanded and aged over time as shown in Figure 8-3, annual and 10-year running average expenditures (adjusted for inflation). For both FY12 and FY13, maintenance expenditures have exceeded \$70,000. When compared against the total FY 2013 Operating Expenses of \$545,482, maintenance costs account for about 13% of the total budget. A tabulation of total maintenance costs for the District's nine categories (from FY83/84 to FY12/13) is provided in Table 8-1. This tabulation, ranked from lowest to highest expenditures shows that maintenance of storage facilities, main lines and copper and PB (polybutylene) services consumed over 50% of the annual maintenance costs during this period. Note that the identified costs do not include major replacement projects that are typically budgeted as Capital Improvement Projects. Furthermore, some large repair projects are not included in the aforementioned costs since they too are budgeted as a Capital Improvement Project. Recent examples of this are a 2012 Point Reyes Well #3 Replacement at the Coast Guard site (\$263K), PB Service replacements (\$58K), PRE2 Tank Retaining Wall Repair (\$56K), and Viento Way main line costs (\$21K). These four projects alone are nearly 50% more than the expenditures shown for replacement of aging facilities. In FYs 14 & 15, NMWD has planned respective costs of \$235K and \$220K over this two-year period for more of this same type of aging facility replacement. These costs account for 25% of the total CIP budget and will continue to get higher, as a majority of the CIP budget for FY15 is the pipeline project from Gallagher Well site to the Pt. Reyes TP.

**Figure 8-2  
Asset Value History**



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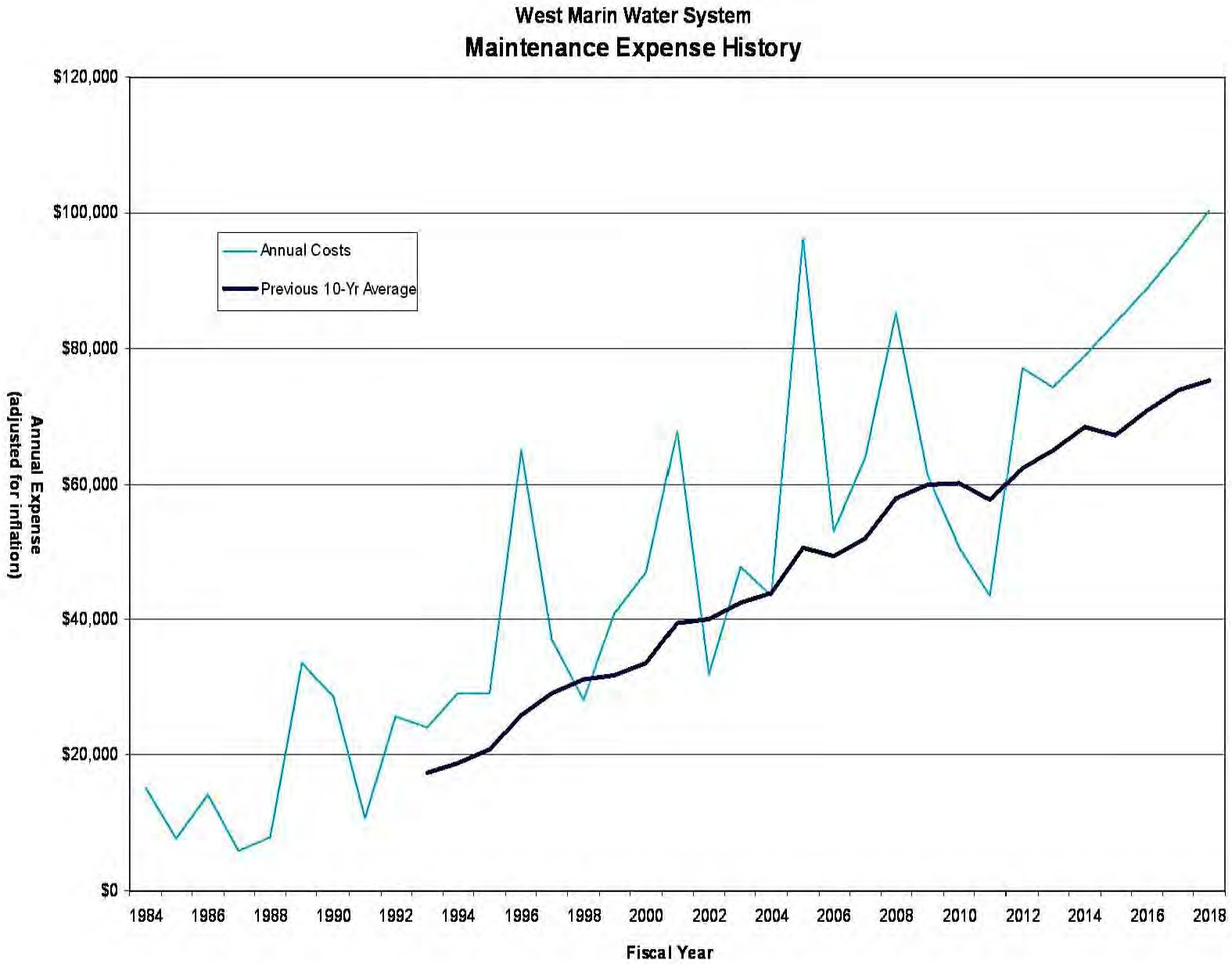


Figure 8-3  
Maintenance Expense History

Table 8-1  
Total Annual Maintenance Costs (adjusted for inflation)  
West Marin Service Area

	Detector Check Assembly Maint	Maintenance of Copper Services	Maintenance of Hydrants	Backflow Prevention Program	Maintenance of Valves & Reliefs	Maintenance of Meters	Maintenance of PB Service Lines	Maintenance of Mains	Maintenance of Storage Facilities	Annual Costs
FY 2013	\$0	\$7,205	\$0	\$1,698	\$6,642	\$3,398	\$34,996	\$0	\$20,310	\$74,249
FY 2012	\$1,877	\$7,590	\$3,468	\$6,004	\$5,070	\$1,847	\$22,156	\$427	\$28,586	\$77,025
FY 2011	\$233	\$4,518	\$4,080	\$4,288	\$8,326	\$2,073	\$8,304	\$2,304	\$9,404	\$43,531
FY 2010	\$404	\$3,593	\$2,281	\$1,237	\$6,259	\$3,335	\$19,235	\$752	\$13,520	\$50,616
FY 2009	\$0	\$255	\$4,389	\$1,191	\$6,226	\$4,813	\$16,917	\$16,353	\$11,147	\$61,292
FY 2008	\$670	\$6,327	\$2,705	\$6,744	\$6,886	\$10,500	\$21,663	\$12,764	\$16,969	\$85,228
FY 2007	\$240	\$115	\$1,082	\$4,927	\$1,966	\$9,906	\$17,265	\$18,561	\$9,933	\$63,995
FY 2006	\$0	\$770	\$3,258	\$7,718	\$3,792	\$3,638	\$23,295	\$5,989	\$4,593	\$53,051
FY 2005	\$0	\$3,654	\$2,523	\$0	\$4,590	\$5,618	\$7,347	\$22,696	\$49,836	\$96,265
FY 2004	\$0	\$5,810	\$7,062	\$2,098	\$4,470	\$1,986	\$1,872	\$11,129	\$9,143	\$43,571
FY 2003	\$0	\$2,688	\$1,490	\$1,889	\$866	\$4,295	\$11,928	\$7,278	\$17,401	\$47,835
FY 2002	\$0	\$0	\$3,211	\$5,260	\$3,490	\$2,018	\$5,304	\$6,151	\$6,584	\$32,018
FY 2001	\$0	\$4,138	\$2,311	\$6,213	\$5,633	\$1,703	\$12,961	\$2,492	\$32,402	\$67,853
FY 2000	\$0	\$5,051	\$5,031	\$1,490	\$4,355	\$4,719	\$6,084	\$4,191	\$16,088	\$47,008
FY 1999	\$0	\$1,101	\$5,725	\$5,151	\$8,222	\$6,195	\$0	\$4,321	\$10,223	\$40,939
FY 1998	\$0	\$2,535	\$3,640	\$2,017	\$3,814	\$2,136	\$0	\$7,847	\$6,182	\$28,172
FY 1997	\$0	\$224	\$6,788	\$1,757	\$2,694	\$14,019	\$0	\$4,990	\$6,524	\$36,996
FY 1996	\$0	\$185	\$2,954	\$3,636	\$7,032	\$21,975	\$7,432	\$9,362	\$12,388	\$64,965
FY 1995	\$0	\$0	\$1,032	\$1,378	\$4,196	\$6,206	\$0	\$6,523	\$9,716	\$29,050
FY 1994	\$0	\$0	\$3,563	\$5,541	\$3,657	\$2,509	\$0	\$4,728	\$9,153	\$29,151
FY 1993	\$0	\$0	\$0	\$4,475	\$3,967	\$1,928	\$0	\$6,030	\$7,684	\$24,084
FY 1992	\$0	\$0	\$0	\$3,844	\$476	\$1,506	\$0	\$15,610	\$4,308	\$25,743
FY 1991	\$0	\$0	\$1,464	\$1,244	\$1,450	\$2,211	\$0	\$2,957	\$1,323	\$10,648
FY 1990	\$0	\$0	\$1,354	\$2,484	\$938	\$1,890	\$0	\$5,794	\$16,355	\$28,814
FY 1989	\$0	\$0	\$1,444	\$2,831	\$1,301	\$2,817	\$0	\$21,489	\$3,697	\$33,578
FY 1988	\$0	\$0	\$973	\$1,189	\$1,993	\$273	\$0	\$2,438	\$1,041	\$7,907
FY 1987	\$0	\$0	\$1,493	\$34	\$1,453	\$231	\$0	\$1,448	\$1,269	\$5,928
FY 1986	\$0	\$0	\$3,098	\$0	\$1,375	\$360	\$0	\$4,672	\$4,658	\$14,162
FY 1985	\$0	\$0	\$0	\$2,421	\$1,583	\$713	\$0	\$1,721	\$1,313	\$7,752
FY 1984	\$0	\$0	\$3,967	\$9	\$1,708	\$473	\$0	\$5,998	\$3,053	\$15,207
<b>Category Total</b>	<b>\$3,423</b>	<b>\$48,555</b>	<b>\$80,388</b>	<b>\$87,070</b>	<b>\$107,790</b>	<b>\$121,892</b>	<b>\$181,762</b>	<b>\$217,015</b>	<b>\$324,490</b>	<b>\$1,246,633</b>

(1) Does not include related project costs budgeted as a CIP.

## **8.4 ASSET CONDITION AND PERFORMANCE ASSESSMENT**

The focus of this Plan is the development of a standardized Plan and assembly of current information. Assessment of overall condition, performance and remaining useful life for water facilities installed will be part of continuing AM efforts. The District collects a significant amount of information regarding maintenance costs and line breaks. The planning of repair and replacement projects has primarily been based on the intuitive knowledge base of senior staff. While this approach has its merits, it should not serve as the sole source of asset management planning. Historically, the District has been “data rich” but “knowledge poor” when it comes to reporting and analyzing much of this data. Efforts have been made and/or are in progress to help move the District from an intuitive based R&R decision process to a data-based R&R decision process. These improvements include:

- Expanded use of the District’s computerized maintenance management system (CMMS) – “MaintScape;”
- Improved tagging, filing, and diagnosis of worn facilities taken out of the ground when performing repairs;
- Improved proactive subsurface investigation program (i.e., soil sampling) to better quantify areas of poor infrastructure condition;
- Development of a GIS system that will allow expansion of the existing facility map database to serve as a key database repository for infrastructure information (in progress);
- Development of asset condition & evaluation matrices, based on the database connected to the GIS system (in progress);
- Better characterization of existing asset inventory (as contained herein); and
- Better exchange of information between NMWD departments as it relates to condition assessment/repair (as contained herein).

### **8.4.1 Condition/Performance**

Historically, service lines have been the highest cost for maintenance activities, most of which have been unplanned due to the randomness of both PB & CU (copper) service line failures. Over the past 10 years, however, staff has focused more efforts to better understand the modes of service failures and have identified a few key aspects to help plan replacements and extend service life. For all new CU service installations, we are installing CP anodes as well as adding CP anodes to recent installations. Moving forward, specific testing methods will need to be developed to aid in condition assessments. Storage facilities’ costs have surpassed those for maintenance of pipeline mains.

### **8.4.2 Inventory of Assets**

The average age and value of the assets which NMWD owns is increasing steadily over time, and the asset replacement obligation is rising. As a consequence, NMWD needs to plan for decreased capital expenditures for capacity expansion and increased renewal expenditures in the future relative to past expenditure levels. More focus is necessary to ensure that appropriate operation and maintenance strategies are being applied in consideration to the varying ages of assets being maintained.



As previously mentioned under the “Current Assets” section, NMWD’s assets can generally be categorized into two simple groups: those assets which are buried, or below ground (“horizontal” assets) and those which are above ground (“vertical” assets). Below-ground assets include transmission and distribution (T&D) pipelines and appurtenances (valves and regulators). Above-ground assets include storage tanks, pump stations, regulating stations, fire hydrants, treatment facilities, service connections (meters), and backflow prevention assemblies (BFPAs).

Figures 8-4 to 8-6 (based on currently-available data) represent the history and age profiles of the assets within these two groups (vertical and horizontal), with the exception of meters (see “Maintenance of Meters”) and BFPAs. The monitoring (testing) of BFPAs is done on an annual basis, and depending on the type of device, maintenance and/or repairs are the responsibility of both NMWD and the customer being served.

### 8.4.3 Asset Evaluation

The table below presents the current replacement and depreciated values of NMWD’s assets. The replacement value represents the cost in June 2014 dollars to completely rebuild all the assets to a new condition. The depreciated value is the replacement value (depreciated) of the assets based on their age, and limited Operations & Maintenance data, which is a prediction of their current condition. A formal current condition assessment has not been performed and will be part of the continued development of a full WMAM program.

<b>Valuation</b>	<b>Transmission &amp; Distribution</b>	<b>Storage Tanks</b>	<b>Treatment Plants</b>	<b>Total</b>
Replacement Value (\$M)	\$9.5	\$3.1	\$0.8	\$13.4
Depreciated Value (\$M)	\$5.3	\$2.3	\$0.2	\$7.7

In time, the District WMAM Program will develop a schedule when these assets are due to be replaced.

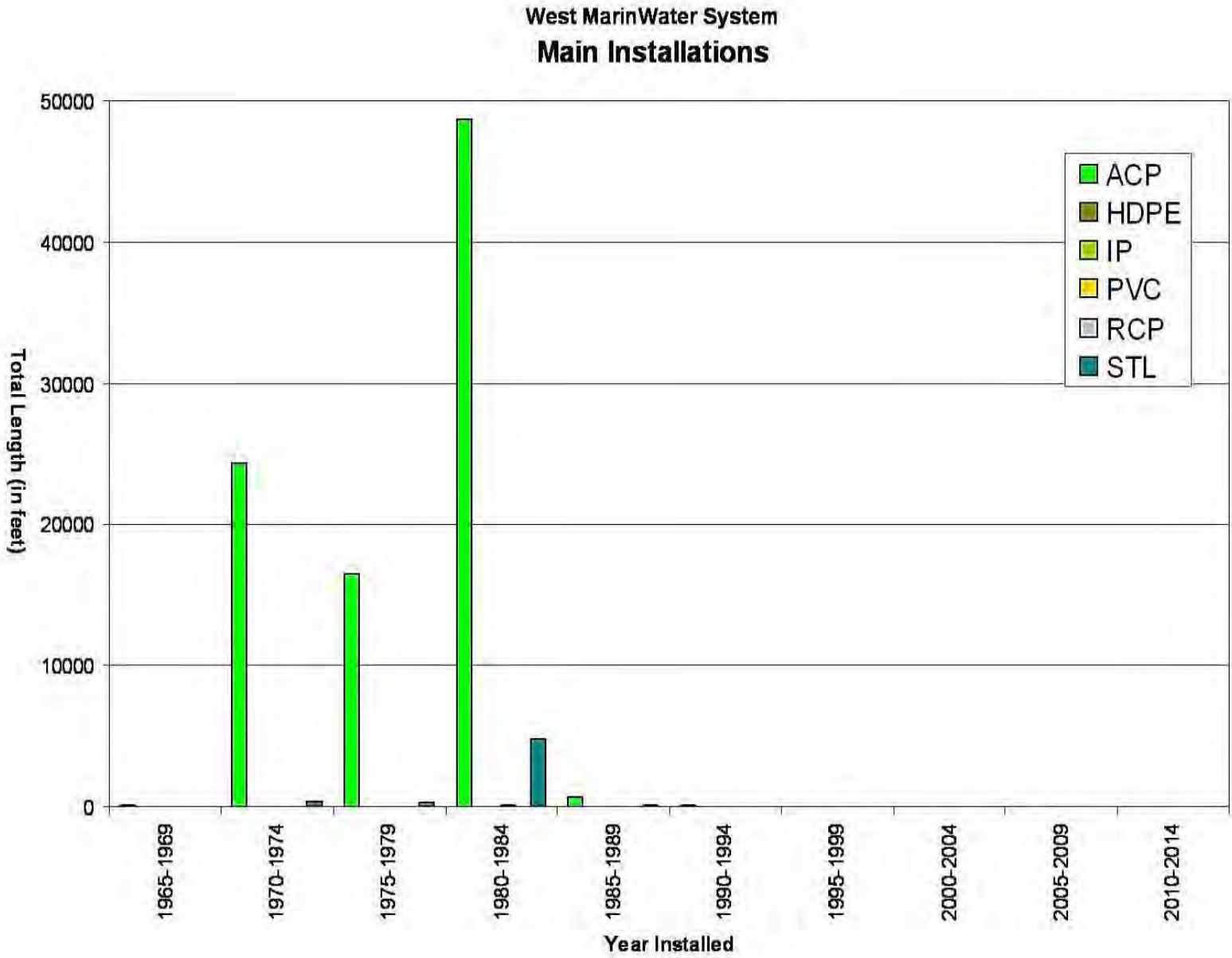


Figure 8-4  
Main Installations

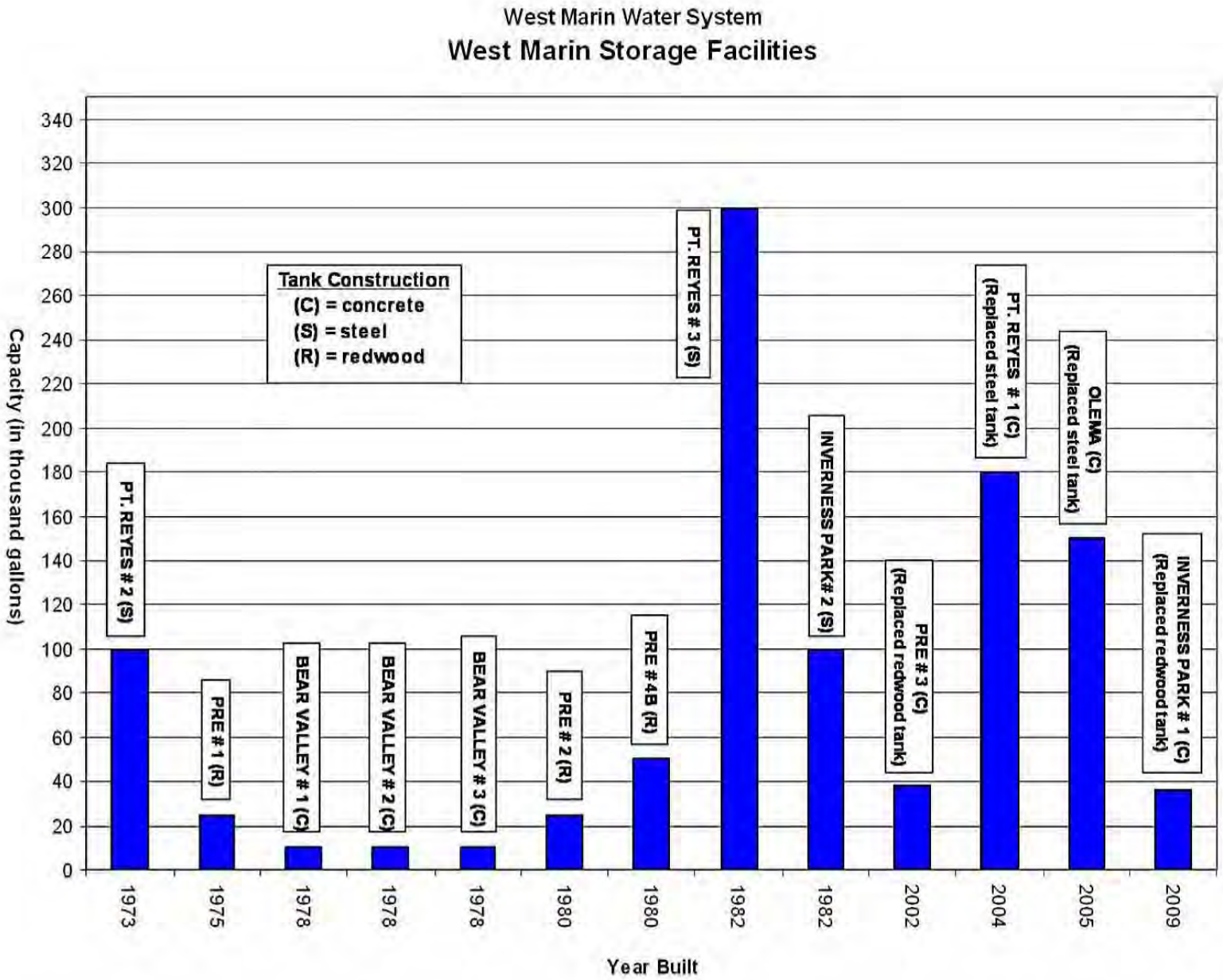
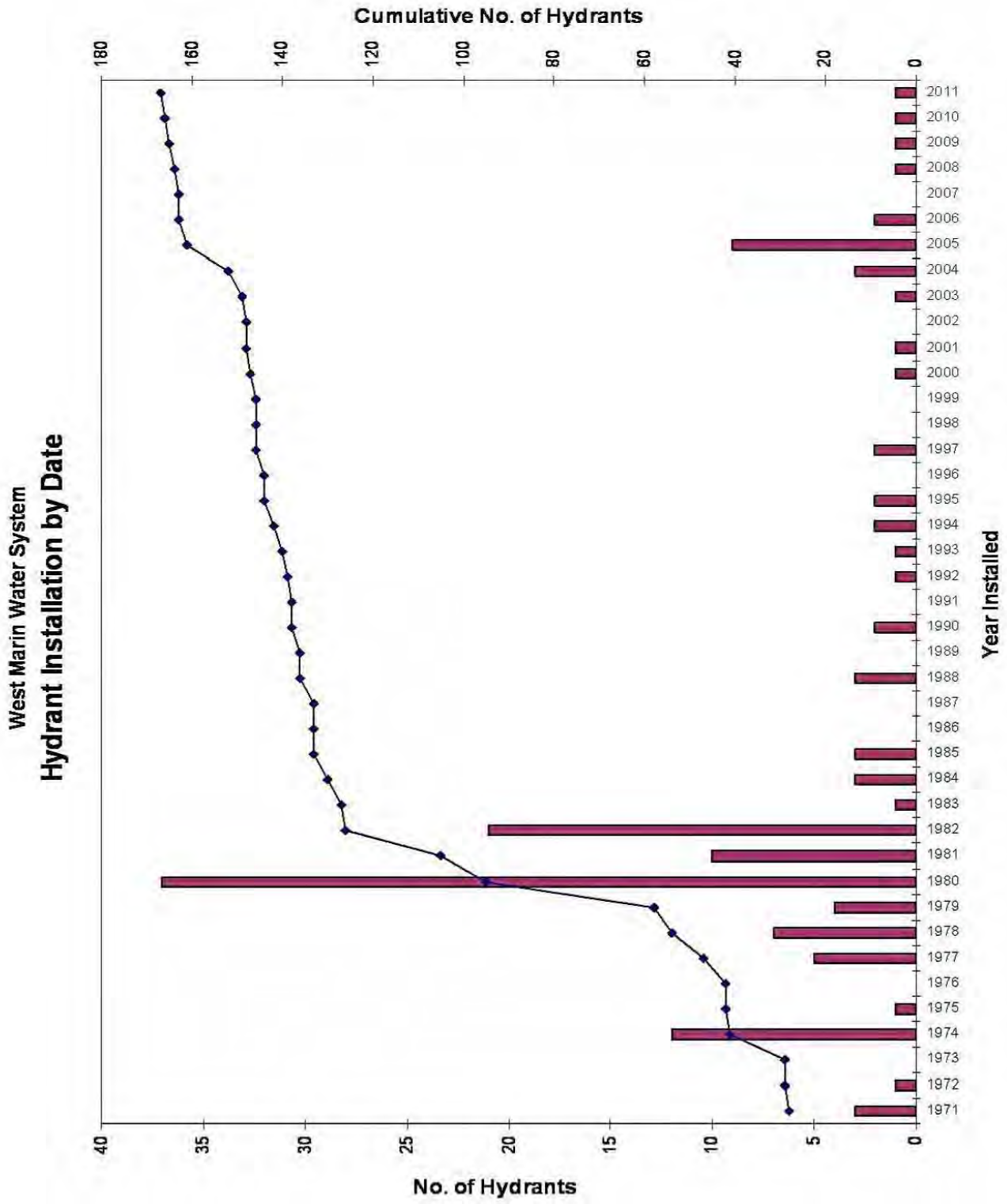


Figure 8-5  
West Marin Storage Facilities

**Figure 8-6  
Hydrant Installation by Date**



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## 8.5 WMAM PROGRAM SUMMARY

The District's WMAM program consists of four components: monitoring, managing, evaluating infrastructure condition, and replacement planning. A computerized maintenance management system (CMMS) is used to systematically gather (monitor) information about the current condition of facilities, most of which are below ground. Once collected, the software manages how the information is stored, organized and accessed. District staff then can utilize the CMMS program to evaluate the data to identify items in need of rehabilitation or replacement. In addition to the existing CMMS program, other miscellaneous databases are used as part of the infrastructure monitoring and evaluation process.

With the outline used in the Novato Master Plan, staff attempted to create an evaluation summary for the buried assets in West Marin. This data, shown in Figures 8.7 – 8.13, has been found to be inconsistent and lacking information needed to make reliable assessments. For instance, the Service Leak / Replacement History costs do not match the number of services identified as being replaced for both PB (polybutylene) and CU (copper) services. While this information is important to have in the graphical format, incomplete information can lead to inaccurate conclusions.

To improve the District's capabilities for identifying the most appropriate method for AM, we will work on these five focus areas:

- Improve Operational Cost Accounting
- Improve Repair and Replacement Tracking
- Storage, Main Line and Service Asset Matrices
- Facility Map and Data Coordination
- GIS of West Marin Service Area

### West Marin Water System Service Lateral Leak and Replacement History

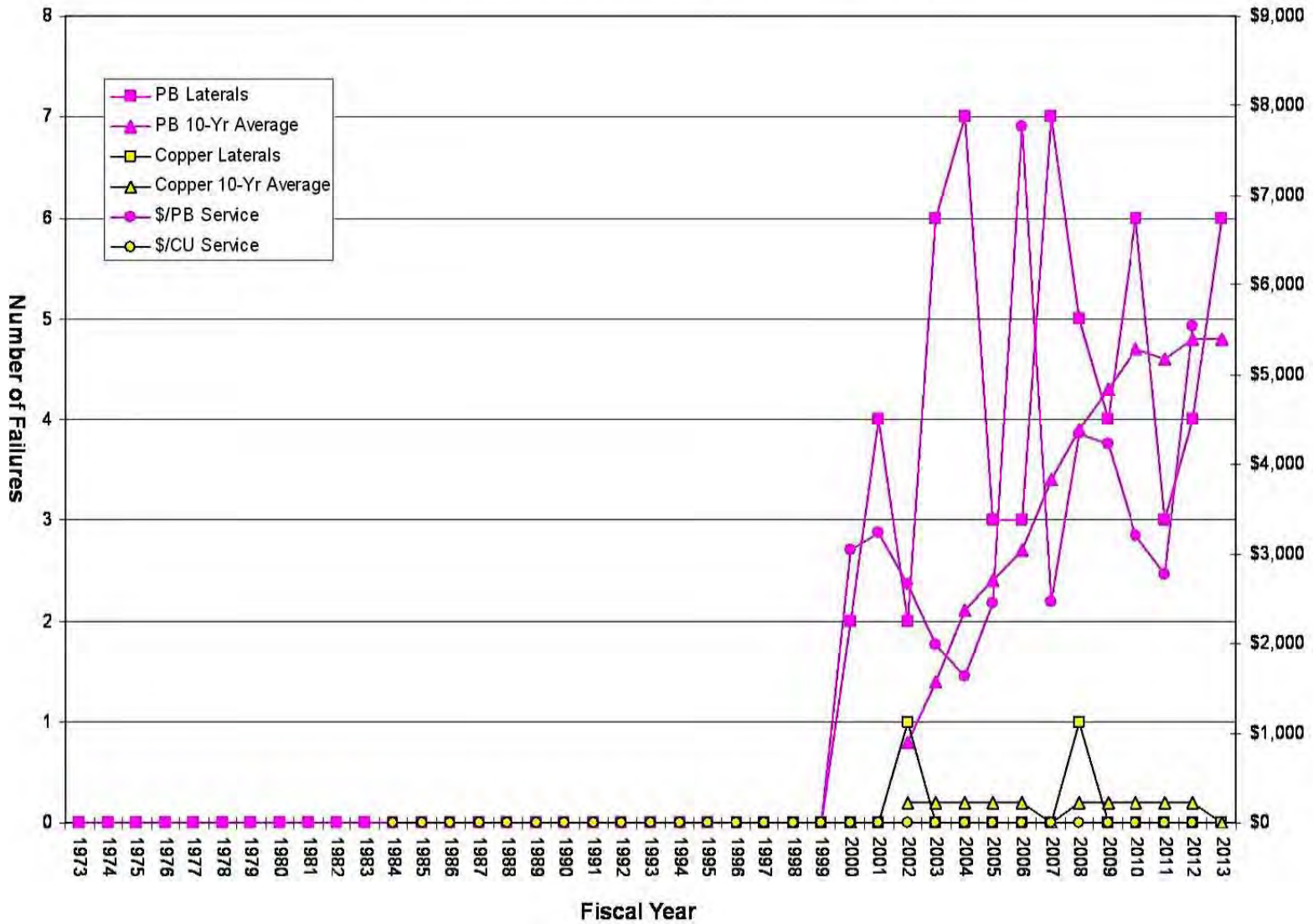


Figure 8-7  
 Service Lateral Leak and Replacement History

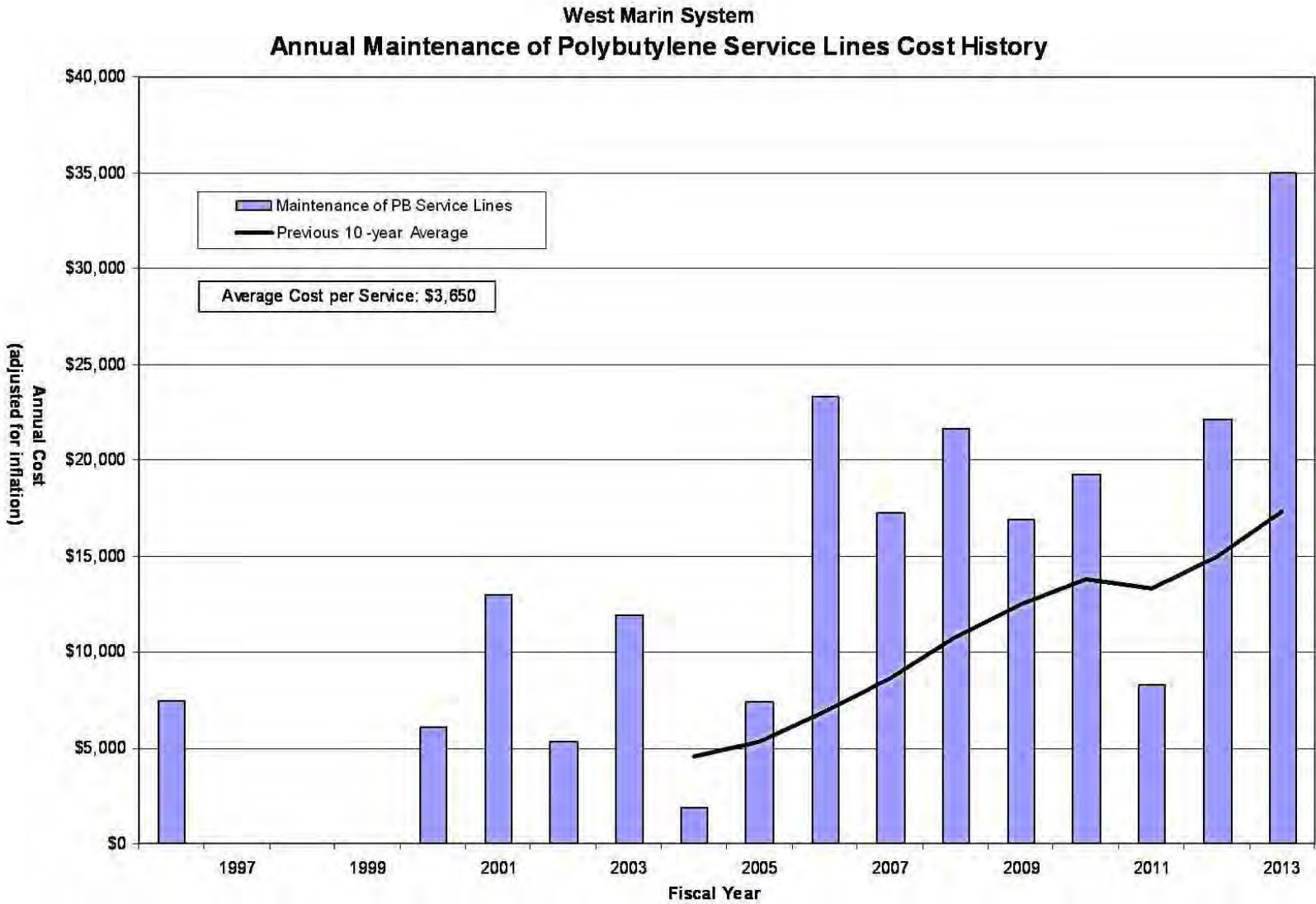


Figure 8-8  
Annual Maintenance of Polybutylene Service Lines Cost History

R:\Folders by Job No\8000 jobs\8600s\8687 (West Marin)\8687.01 WM Master Plan Update 2013\_2014\Ch 8 Asset Mgmt\WM Total Annual Maint Cost for MP[PB].xls

### West Marin System Annual Maintenance of Copper Services Lines Cost History

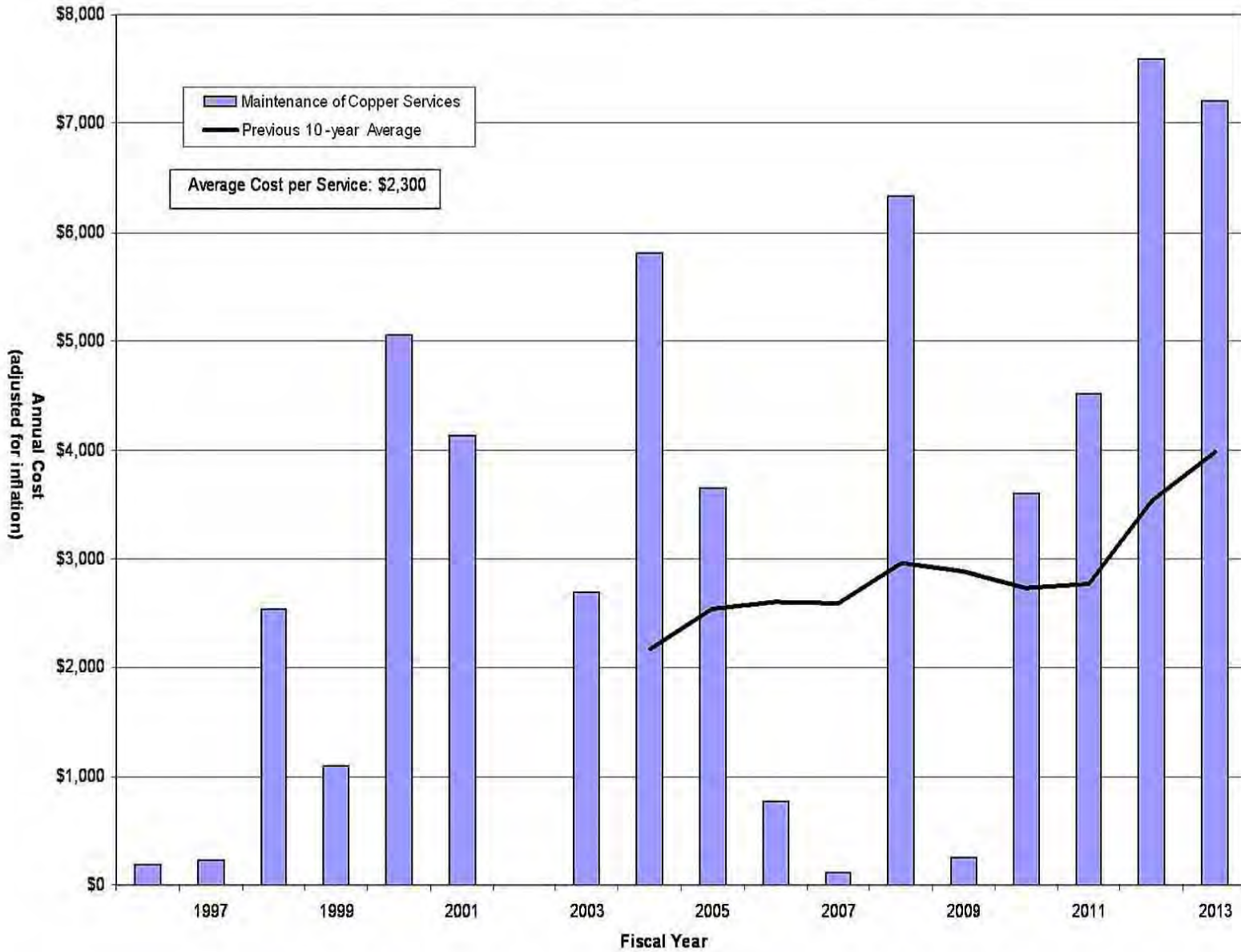


Figure 8-9  
Annual Maintenance of Copper Service Lines Cost History



### West Marin System Annual Maintenance of Meters Cost History

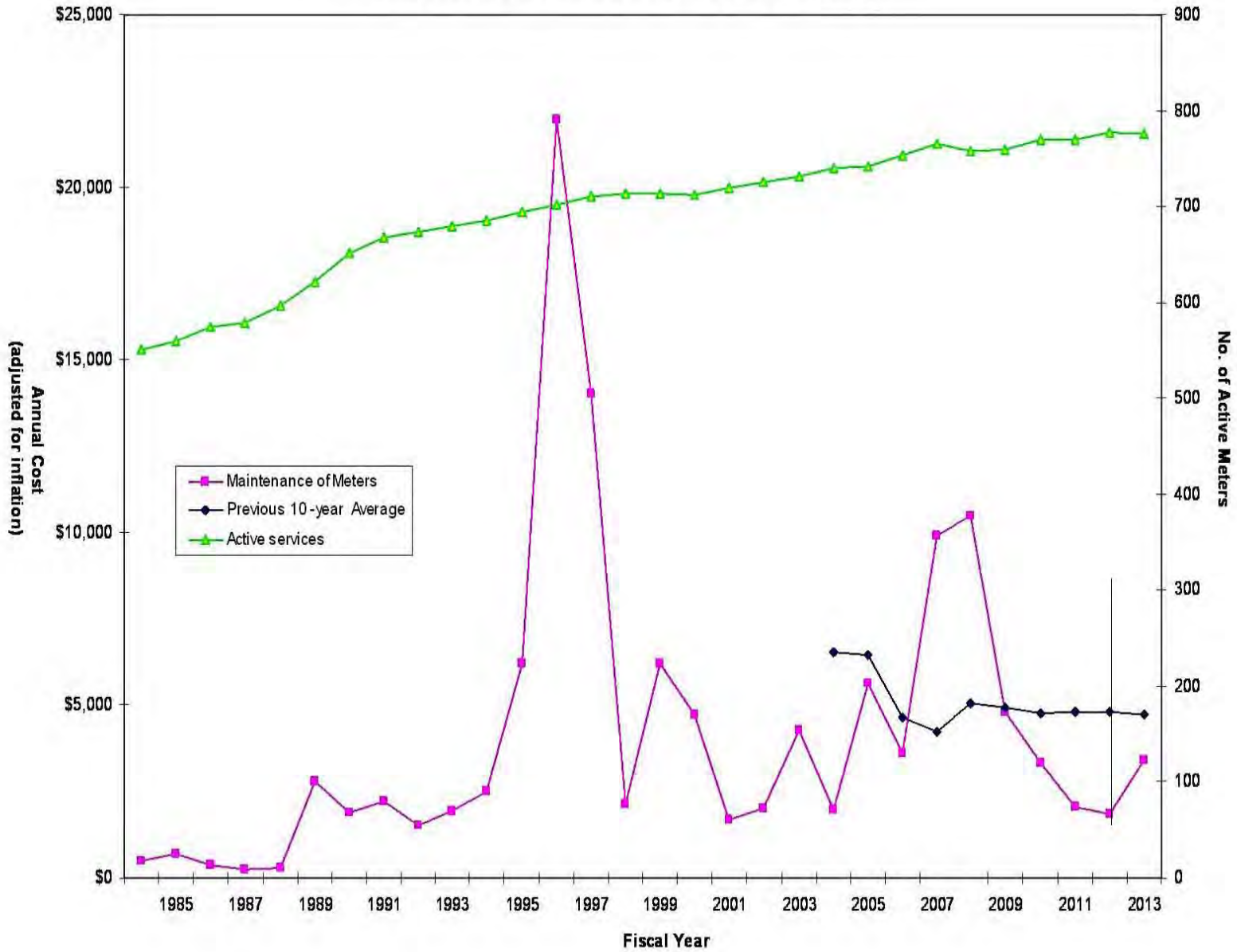


Figure 8-10  
 Annual Maintenance of Meters Cost History

### West Marin System Maintenance of Valves Cost History

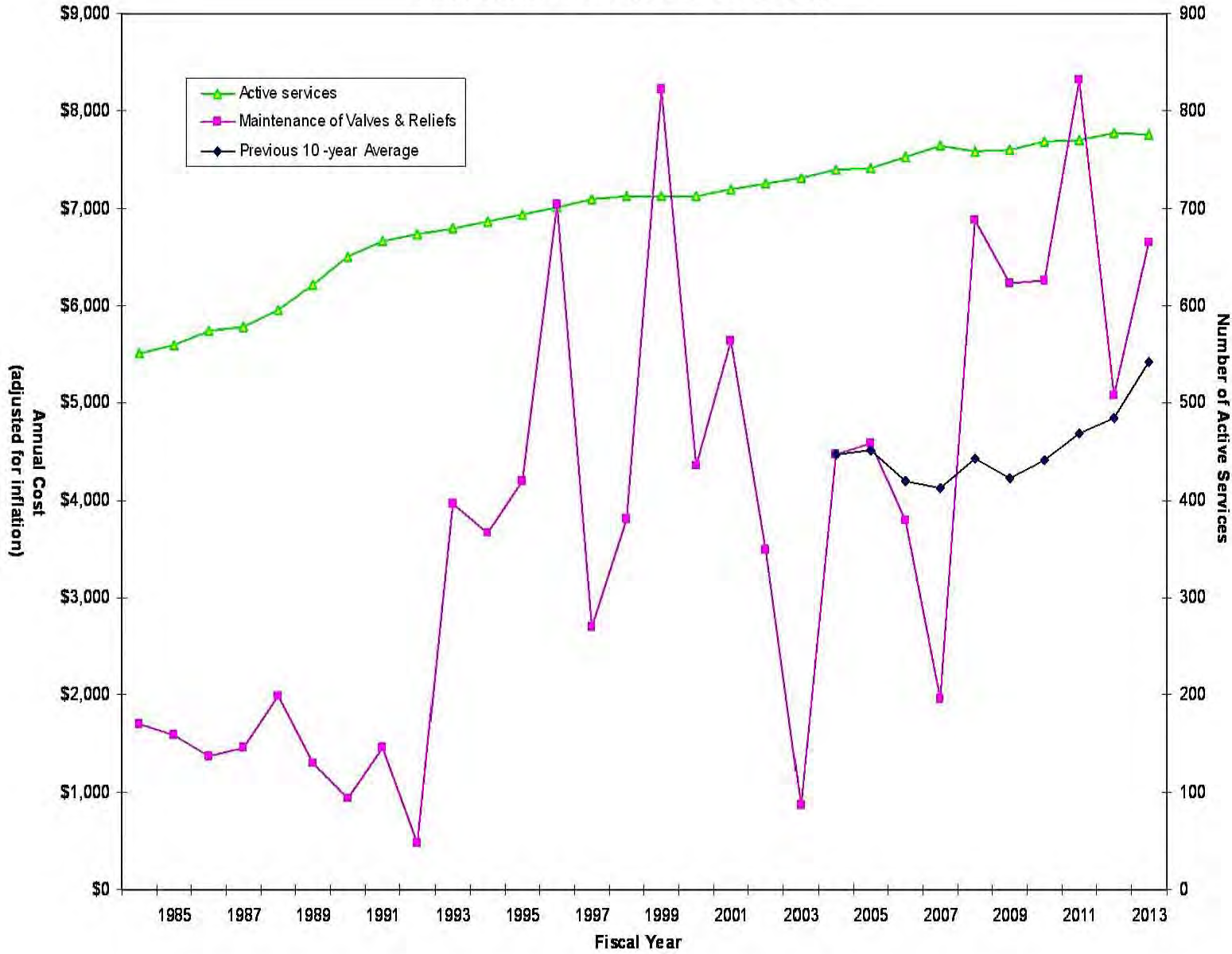


Figure 8-11  
 Maintenance of Valves Cost History

### West Marin System Maintenance of Mains Cost History

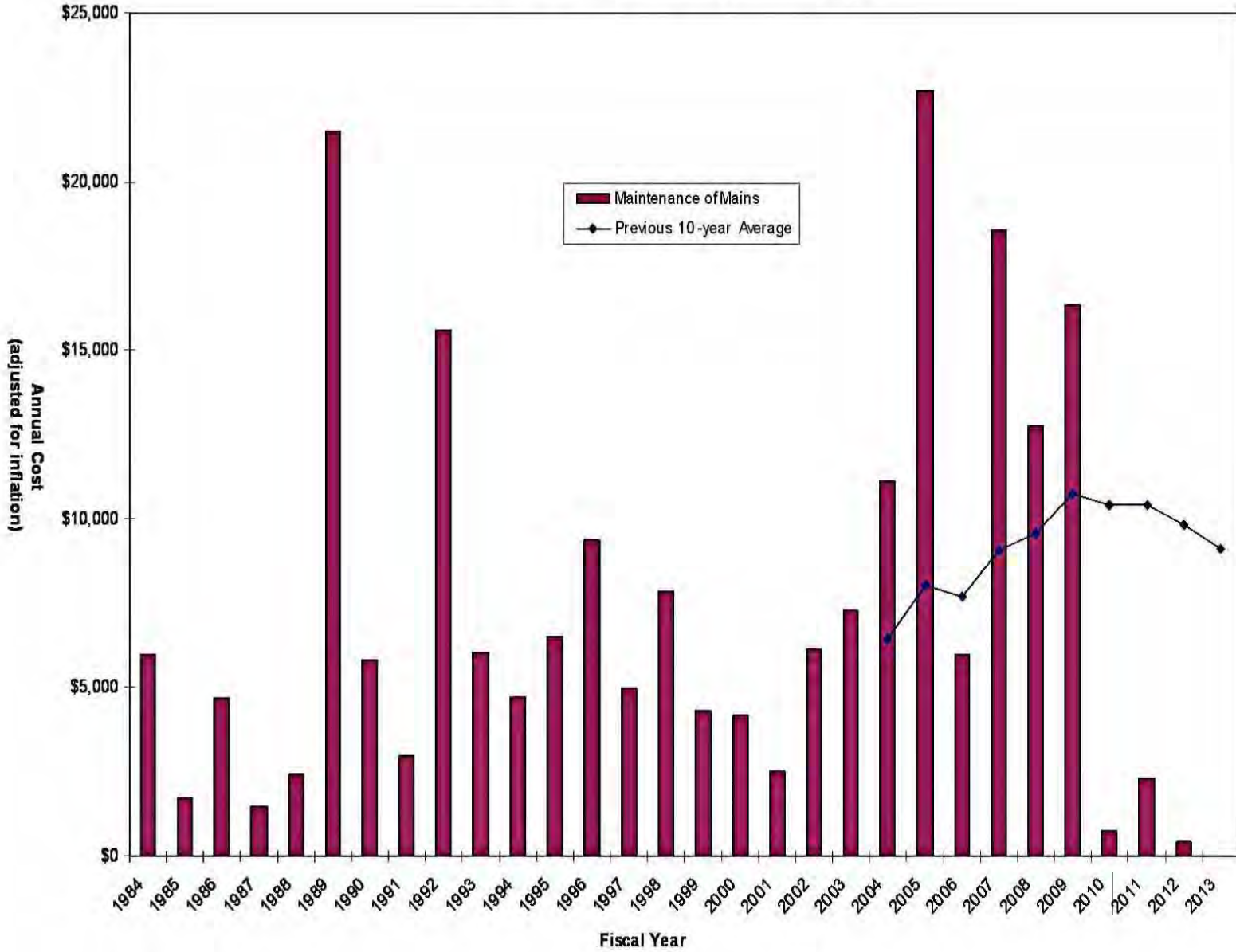


Figure 8-12  
Maintenance of Mains Cost History

## SECTION 9

### EVALUATION OF IMPROVEMENT PROJECTS

#### 9.1 INTRODUCTION

The capital improvement projects and other studies and investigations that have been identified through this study are summarized in Section 9. All of these projects discussed in this section are included in the Capital Improvement Program presented in Section 10. Cost estimates and project phasing are presented in Section 10.

#### 9.2 PROJECT SUMMARIES

##### 9.2.1 Project Categories

In order to coordinate with the District annual budgeting process, the projects listed herein will be separated by category as shown below:

- *Pipeline Replacements/Additions (CIP budget):*  
Pipeline replacement projects and additional pipelines needed.
- *System Improvements (CIP budget):*  
Improvement projects not specifically related to tanks, pump stations or pipelines.
- *Treatment Plant (CIP Budget)*  
Projects that are related to the Point Reyes Water Treatment Plant.
- *Storage Tanks/Pump Stations (CIP budget):*  
Projects that are related to the storage tanks and pump station facilities.
- *Preliminary Project Engineering and Studies (OPS budget):*  
Engineering studies and investigations that are identified in the Master Plan and may lead to capital improvements at a later date.

Other categories also exist for which specific projects have been identified elsewhere and are not included in this Master Plan. These categories include:

- Water Conservation
- Liability/Safety Modifications

Projects have been identified through several processes, many of which are presented in this Master Plan. Each listed project references the process by which it was found and the Master Plan section where is discussed, using the following codes:

SP - Storage and Pumping Capacity Analysis (section 5)  
WQ - Water Quality Evaluation (section 6)  
HA - Hydraulic Analysis (section 7)  
AM - Asset Management (section 8)  
DP - District Planning  
CC - County Coordination

## **9.2.2 Project Timing**

Within the CIP list it is necessary to prioritize the projects over the 22-year period until buildout in year 2035. Projects are given a completion goal to identify the urgency with which each project is needed. Each 5-year incremental period (FY 2015, FY 2020, FY 2025, FY 2030, FY 2035) signifies that the project should be included in one or more of the annual budgets for that five year interval. It is expected that the projects within each interval be evaluated at each annual budgeting cycle to determine which year's budget to assign it. The District regularly updates its 2-year and 5-year CIP budget, and this regular review enables the projects to be developed as funds are more available and priorities change. Approval of this Master Plan does not constitute adoption or approval of individual projects. Each project will be considered for inclusion in specific annual budgets. Note that the FY 2015 interval includes only one year (FY 2015).

## **9.3 PIPELINE REPLACEMENTS/ADDITIONS**

Projects within this category fall into two main areas: 1) replacement of existing pipelines; or 2) installation of new pipelines required to improve system operation. Pipeline replacement and pipeline addition improvement projects are shown in Table 9-1.

## **9.4 SYSTEM IMPROVEMENTS**

System improvements include valving projects, installation, repair or replacement of appurtenances, and other non-pipeline, tank or pump station facilities, or those projects related to improving water quality. System improvement projects are shown in Table 9-2.

## **9.5 PRTP IMPROVEMENTS AND OTHER IMPROVEMENTS**

The improvements to existing wells or installing new wells and improvements to the treatment plant are addressed in this section. System improvement projects are shown in Table 9-3.

## **9.6 STORAGE TANKS AND PUMP STATIONS**

Storage tank and pump station projects include storage or pumping capacity additions, tank modifications and pump station modifications, based on the results of the storage and pumping capacity analysis summarized in Section 5, and asset management projects related to tanks and pump stations discussed in Section 8. Capital improvement projects at storage tanks and pump stations are shown in Table 9-4.

## **9.7 PRELIMINARY PROJECT ENGINEERING AND STUDIES**

As a result of initial investigations and evaluations conducted in this Master Plan, several additional engineering studies are recommended to be included in the Studies budget (which were historically CIP projects, but are now funded by the West Marin Operations). These studies are beyond the scope of the master plan or cannot be completed within the time frame of the master plan. These studies may identify additional capital improvement projects that will need to be included in subsequent CIPs. These studies are identified in Table 9-5.

**Table 9-1  
Pipeline Replacement and Addition Projects**

<b>Pipeline Replacement Projects</b>			
<b>ID #</b>	<b>Project Name &amp; Description</b>	<b>When</b>	<b>Category</b>
<b>1a-01</b>	<b>Replace Aging Galvanized Steel Pipe</b>  Replace 2,152 feet of galvanized steel (GS) pipe, with priority given to the oldest pipe. Replace 500 feet annually from 2020 until the program is completed in FY 2025. Locations tracked in the database " WMPipeCount.xls" which is maintained by the Engr Dept and shown in Appendix C-1.	<i>2025</i>	<i>AM</i>
<b>1a-02</b>	<b>Replace 4" main on Bear Valley Road</b>  Replace and upsize 900 feet of 4" main on Bear Valley Road starting from the tank. In order to provide a minimum of 500 gpm fire flow, the main needs to be upsized to 6-inch or 8-inch to avoid negative pressure at the high point at the end of 900 ft.	<i>2015</i>	<i>HA</i>
<b>1a-03</b>	<b>Replace All TW Plastic Pipe</b>  Replace and upsize 6,100 feet of Thin Wall (TW) 2-inch plastic pipe with priority given to the oldest pipe. Replace 1,000 ft biennially until the program is completed in FY 2027. Locations tracked in the database " WMPipeCount.xls" which is maintained by the Engr Dept and shown in Appendix C-1.	<i>ongoing</i>	<i>AM</i>
<b>Pipeline Addition Projects</b>			
<b>ID #</b>	<b>Project Name &amp; Description</b>	<b>When</b>	<b>Category</b>
<b>1c-01</b>	<b>Replace Polybutylene Service Lines</b>  Replace 48 PB services on Sir Francis Drake Blvd and Highway 1. Develop a data base that would eventually replace all PB services with copper in the other areas.	<i>ongoing</i>	<i>AM</i>
<b>1d-01</b>	<b>Relocations to Synchronize with County Projects</b>  Relocation of existing District water facilities of County of Marin street improvement projects. Specific projects to be included in each annual CIP as appropriate.	<i>ongoing</i>	<i>CC</i>
<b>1d-02</b>	<b>Install Gallagher Well Pipeline</b>  Install approximately 1 mile of 12-inch PVC pipe from Gallagher well to connect to the 6-inch main leading to PRTP near Downey well site	<i>2015</i>	

**Table 9-2  
System Improvement Projects**

<b>ID #</b>	<b>Project Name &amp; Description</b>	<b>When</b>	<b>Category</b>
2-01	<b>Replace Untestable Detector Checks</b> Replace 2 assemblies per year with District-standard assemblies. 6 untestable assemblies are listed in the database "DCVA_WM DB.exl" which is maintained by Maintenance Dept and is shown in Appendix C-5.	<i>ongoing</i>	<i>WQ/AM</i>
2-02	<b>Install Flushing Taps at Dead-End Valves</b> Review dead end valves that need flushing and develop a database. Install 4 taps at dead-end valves biennially	<i>ongoing</i>	<i>WQ</i>
2-03	<b>Install Permanent Water Quality Sampling Stations</b> Install sample stations at Red Barn (PRS, 510 Mesa Rd), 22 Portola (Inverness Park, PRE-1) and 95 Drakes View (PRE-2).	<i>2020</i>	<i>WQ</i>

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**Table 9-3**

**Pt Reyes Treatment Plant Improvements and Other Improvements**

<b>ID #</b>	<b>Project Name &amp; Description</b>	<b>When</b>	<b>Category</b>
3-01	<b>Replace Well #2 at Coast Guard Site</b>  Well #2 is nearing the end of its useful life and has decreased in production capacity over the years.	2020	WQ/AM
3-02	<b>Install Gallagher Well #2</b>  Existing Gallagher well #1 has only 120 gpm capacity. A second well is needed to meet the 300 gpm combined capacity at Gallagher wells to meet the buildout demand.	2025	DP
3-03	<b>Pt Reyes Treatment Plant Solids Handling Tank</b>  Constructing a 100,000 gallon solids handling dual concrete tank.	2020	SP
3-04	<b>Major PRTP Upgrade</b>  Construct a new Treatment Plant to replace the existing facility that has reached the end of its useful life	2030	DP
3-05	<b>Abandon Downey Well</b>  The Downey well is no longer functional and needs to be properly sealed and abandoned per Marin County and State Standards.	2020	DP

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**Table 9-4  
Storage Tank & Pump Station Projects**

<b>ID #</b>	<b>Project Name &amp; Description</b>	<b>When</b>	<b>Category</b>
4-01	<b>Add Storage Capacity at Bear Valley Tanks</b> Construct 65,000 gallon tank and piping modifications (to address zone deficiency of 94,000 gal now and 95,000 gal at buildout).	2030	SP
4-02	<b>Add Storage Capacity at Silver Hills (Bear Valley Area)</b> Construct 30,000 gallon tank and piping modifications (to address zone deficiency of 94,000 gal now and 95,000 gal at buildout).	2025	SP
4-03	<b>Inspect and assessment of Pt Reyes Tank #2</b> Pt. Reyes tank #2 was constructed in 1973 and need assessment of the condition of the tank	2020	SP
4-04	<b>Replace 25,000 gallon PRE-1 Tank</b> Replace PRE-1 Redwood Tank	2025	SP
4-05	<b>Replace 25,000 gallon PRE-2 Tank</b> Replace PRE-2 Redwood Tank	2025	SP
4-06	<b>Replace PRE-4A Tank</b> Replace 25,000 gallon PRE-4A with 80,000 gallon tank	2020	AM
4-07	<b>Olema Pump Station Flood Protection and RTU Upgrade</b> Modify existing structure to prevent flooding of facilities by Olema Creek and RTU upgrade	2015	AM
4-08	<b>Recoat Pt Reyes Tank #3</b> Recoat Pt Reyes Tank #3 .	2020	AM
4-09	<b>Emergency Generator Connections</b> For PRE and Olema Pump Stations	2015	AM
4-10	<b>Add Aeration at PRE-2 and Inverness Park Tanks</b> Install aeration systems to help reduce THMs in PRE	2020	WQ
4-11	<b>Install an RTU at PRE-4</b> Include with PRE Tank 4-B construction	2020	WQ

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**Table 9-5  
 Preliminary Project Engineering and Study Projects**

<b>ID #</b>	<b>Project Name &amp; Description</b>	<b>When</b>	<b>Category</b>
<b>S-01</b>	<b>Master Plan Update</b> Update of 2014 Master Plan (every ten years)	<i>2025</i>	<i>DP</i>
<b>S-02</b>	<b>Hydraulic Model Development</b> Study of actual data to calibrate hydraulic model, then use model to predict low fire flow areas.	<i>2020</i>	<i>DP</i>
<b>S-03</b>	<b>Prepare Electronic Facility Maps</b> Convert West Marin Facility Maps to digital format .	<i>2020</i>	<i>DP</i>

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## **9.8 PT REYES WATER TREATMENT PLANT IMPROVEMENTS**

In 2005, SPH Associates prepared the Point Reyes Water Treatment Plant Upgrade Study to identify feasible capital improvement project alternatives to meet both present and future requirements. The SPH study recommended construction of the following near term improvement projects: (1) Pressure Contact Tank, (2) Third Pressure Filter and (3) Backwash pumps. A pressurized contact tank was constructed in 2007 at a cost of approximately \$120,000. In addition, modifications made by NMWD operations staff to improve current backwash operations have negated the need for installation of backwash pumps at this time. Finally, due to reductions in overall peak system demands, the need for a third pressure filter can be delayed into the future. As a case in point, respective average day peak month demands in FY 2004 and FY 2005 were approximately 0.47 MGD and 0.54 MGD. Since the 2009 drought, West Marin Customers have reduced overall consumption by approximately 30 percent resulting in current average day peak month water demands less than 0.35 MGD.

The study does identify significant future long term plant upgrades to improve performance, address salinity intrusion and enhance reliability. The minimum cost for a major plant upgrade (in 2005 dollars) was projected by the SPH report to be \$2.8 M. This cost is significant and will need to be paid financed through a combination of grants and loans. This future project is projected to be required on or before 2030 at which time the original Treatment Plant (installed in 1975) will be over 50 years old.

Other necessary near term projects related to the PR Treatment Plant include: (1) a new Solids Handling Tank and (2) rehabilitation of Coast Guard Well No. 2. A new Solids Handling Tank is recommended to eliminate the off-site discharge of filter backwash water. Once constructed, this project would allow for storage of backwash water for re-treatment at the plant and settled solids would be off hauled to a remote location for treatment and disposal. The rehabilitation of Coast Guard Well No. 2 is a similar project to the recently completed Well No.4 installation to replace the old and failing Well No. 3. Although the condition of Well No. 2 (installed in 1973) is not as dire as was the case with Well No. 3, it is acknowledged that the well is over 40 years old and near the end of its useful life.

## **9.9 LIABILITY/SAFETY MODIFICATIONS**

All of the District facilities (pumps, tanks, regulating stations, etc.) are designed to provide security against unlawful entry and/or operation. In recent years, District staff has increased security awareness and made improvements as necessary at its facilities. At the present time, security at tanks has been identified as a risk and a project to alarm access hatches to the SCADA System is planned.

Since the terrorist attacks in September 2001, water utilities have increased awareness of possible threats to the water systems. A vulnerability assessment is recommended for West Marin Water System to define projects for protecting water quality and tank overflow monitoring. Emergency disinfection plans are to be developed to address emergency situations.

## **9.10 FUTURE DEVELOPMENT**

As discussed in Section 4, the average annual demand in the West Marin Water System is projected to increase by up to 43% at buildout in Year 2035. All of the projected new development known at this time will occur within the current existing pressure zones and service

areas. Therefore, it is not expected that new pressure zones will be required or that facilities will require extension beyond the current boundaries.

Each of the development projects that come up for review and approval in the future will be evaluated on a case-by-case basis for impacts to the existing water system. The District requires specific projects or system upgrades for domestic water service and fire protection to serve any new development and to bolster the distribution system in the vicinity of the new development. All new construction of water facilities will be governed by District Regulations.

## SECTION 10

### CAPITAL IMPROVEMENT PLAN

#### 10.1 INTRODUCTION

Section 10 presents the Capital Improvement Plan for water system projects that were identified through this master plan and described in Section 9. Total project costs are developed for each project. The projects are then scheduled for implementation within each five-year incremental period through buildout in year 2035.

#### 10.2 CAPITAL IMPROVEMENT PROJECTS

The capital improvement projects developed through this master plan are presented in Section 9 and separated by classifications which are consistent with the District budget:

- Pipeline Replacement/Additions
- System Improvement Projects
- Point Reyes Treatment Plant Improvements and Other Improvements
- Storage Tank/Pump Station Projects
- Preliminary Project Engineering and Study

Those projects presented in Section 9 were identified by District staff as projects that would provide benefit to the West Marin Water System and should be included in the long-range Capital Improvement Plan for the District.

#### 10.3 PROJECT COST ESTIMATES

Project cost estimates were developed for each capital improvement project described in Section 9. In addition, annual budgets are established for general projects that are not well-defined at the present time.

The following cost estimating criteria serves as the guideline for developing the cost estimates that will be used in the Capital Improvement Plan and as assistance in evaluating developer proposals. Total project cost estimates include the following:

- Baseline construction cost – a conceptual-level estimate of probable construction cost;
- Contingency – added to the construction cost to cover unknowns;
- Design/Construction Management/Administration – non-construction related costs;
- CEQA cost – to cover environmental review (if necessary); and
- Property acquisition – costs to cover easements and property purchases for facilities (if necessary).

Project cost estimates for all capital improvement projects identified in Section 9 are provided in Appendix D-1.

##### 10.3.1 Baseline Construction Costs

Construction costs for new facilities are based on cost curves, engineering judgment, recent bid prices, historical trends and recent District experience, and are not based on detailed

engineering design and analysis. Therefore, conceptual-level construction cost estimates are considered to range from approximately -10% to +35% of the expected bid price.

The unit construction costs reflect an Engineering News Record (ENR) construction cost index for the San Francisco Bay Area of 10,894, which represents costs for the 1st quarter 2014. Costs are based on normal construction. Unusual construction must be addressed individually on a project-by-project basis. Contractor overhead and profit costs are included in the baseline construction costs.

### **10.3.2 Pipelines.**

A majority of the projects are pipeline installation and replacement projects. Therefore, it is appropriate to develop unit prices for various pipe diameters constructed in pavement and in non-paved areas. The estimated unit cost of pipelines includes pipe material, trenching (at minimum cover), installation of the pipe, fittings, appurtenances, service connections, backfill, pavement restoration (as applicable), traffic control and testing. Pipeline costs are for PVC C-900 (Class DR14) pipe up to 12 inches in diameter. Pipeline unit prices are shown in Table 10-1.

**Table 10-1  
Pipeline Unit Prices**

Pipe Diameter	PVC Pipe Unit Cost (\$/lf)		Steel Pipe Unit Cost (\$/lf)	
	In Paved Road <sup>(1)</sup>	In Unpaved Road	Paved Road	Unpaved Road
6	110	95	-	-
8	130	105	-	-
12	170	140	-	-

<sup>(1)</sup> Note: Unit cost for paved roads can increase by \$10 to \$15 per foot due to increased paving requirements. Application is on a case-by-case basis.

It should be noted that the unit pipeline costs in the 2014 Master Plan include all ancillary items, including line valves, air relief valves, and tie-ins. Previous Mater Plans utilized pipeline unit costs that represented solely pipeline installation costs.

### **10.3.3 Storage Tanks.**

Based on the District's experience with water storage tank construction, tank construction costs cannot be easily developed with cost curves and unit prices. It is possible to determine the tank structure cost with unit prices. However, site limitations, excavation cost, access road cost and other site-specific conditions vary greatly between sites. Therefore, storage tank construction cost estimates will be determined on a project-by-project basis utilizing recent bid prices and conceptual level site-specific estimates of non-structure costs.

### **10.3.4 Pump Stations.**

Pump stations and pumping capacity modifications are unique in nature and conceptual-level cost estimates will be provided on a project-by-project basis.

### **10.3.5 Construction Contingency**

Since site-specific conditions are unknown for projects in the early planning stages in a master plan, a 30 percent construction contingency will be added to each project baseline construction cost to account for unforeseen events and unknown conditions.

### **10.3.6 Non-Construction Costs**

At this preliminary stage of development, the final costs for administration, engineering, construction management are not known. Therefore, a cost equal to 25% of the sum of the baseline construction cost and the construction contingency is applied to the cost estimate to cover these items.

Some projects will require environmental review to comply with the California Environmental Quality Act (CEQA). For those projects that will likely require environmental review, a cost to cover this work is included. Some projects may require purchase of easements or right-of-way. If known during development of the master plan, additional costs are included for those projects.

## **10.4 CAPITAL IMPROVEMENT PLAN**

Placement of projects within the CIP is based on a number of factors, including relative cost in relation to other required projects, timing of new demand, physical need for the project, and equitable distribution of funds for each interval.

In addition, the projects identified in this Master Plan are those associated with the distribution and transmission system. Other projects in the categories listed herein and in other categories as well may be identified by other means and included in the annual budgets as they are developed.

The Capital Improvement Plan is presented in Tables 10-2 through 10-6 in accordance with the appropriate budget categories. The Capital Improvement Plan summary separated by 5-year increments is shown in Table 10-7



**Table 10-2  
Pipeline Replacements/Additions Projects  
Capital Improvement Plan**

ID #	Project	Improvement Project Cost (\$)				
		FY 2014 to FY 2015	FY 2016 to FY 2020	FY 2021 to FY 2025	FY 2026 to FY 2030	FY 2031 to FY 2035
1a-01	Replace Aging Galvanized Steel Pipe			\$385,000		
1a-02	Replace 4" main on Bear Valley Road	\$191,000				
1a-03	Replace All TW Plastic Pipe		\$273,000	\$273,000	\$273,000	
1c-01	Replace Polybutylene Service Lines		\$48,750	\$48,750	\$48,750	\$48,750
1d-01	Relocations to Synchronize with County Projects	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
1d-02	Gallagher Well Pipeline	\$1,486,000				
1d-03	Ongoing Pipeline Replacements					
	<b>Totals</b>	<b>\$1,702,000</b>	<b>\$346,750</b>	<b>\$731,750</b>	<b>\$346,750</b>	<b>\$73,750</b>

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**Table 10-3  
System Improvement Projects  
Capital Improvement Plan**

ID #	Project	Improvement Project Cost (\$)				
		FY 2014 to FY 2015	FY 2016 to FY 2020	FY 2021 to FY 2025	FY 2026 to FY 2030	FY 2031 to FY 2035
2-01	Replace Untestable Detector Checks		\$32,500	\$32,500	\$32,500	
2-02	Install Flushing Taps at Dead-End Valves		\$32,500	\$32,500		
2-03	Install Permanent Water Quality Sampling Stations		\$27,000			
2-04	To be determined (TBD)					\$100,000
		<b>\$0</b>	<b>\$92,000</b>	<b>\$65,000</b>	<b>\$32,500</b>	<b>\$100,000</b>

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**Table 10-4  
Storage Tank/Pump Station Projects  
Capital Improvement Plan**

ID #	Project	Improvement Project Cost (\$)				
		FY 2014 to FY 2015	FY 2016 to FY 2020	FY 2021 to FY 2025	FY 2026 to FY 2030	FY 2031 to FY 2035
3-01	Replace Well #2 at Coast Guard Site		\$300,000			
3-02	Install Gallagher Well #2			\$300,000		
3-03	Pt Reyes Treatment Plant Solids Handling Tank		\$910,000			
3-04	Major PRTP Upgrade			\$2,800,000		
3-05	To Be Determined (TBD)				\$200,000	\$200,000
	<b>Totals</b>	<b>\$0</b>	<b>\$1,210,000</b>	<b>\$3,100,000</b>	<b>\$200,000</b>	<b>\$200,000</b>

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**Table 10-5  
Storage Tank/Pump Station Projects  
Capital Improvement Plan**

ID #	Project	Improvement Project Cost (\$)				
		FY 2014 to FY 2015	FY 2016 to FY 2020	FY 2021 to FY 2025	FY 2026 to FY 2030	FY 2031 to FY 2035
4-01	Add Storage Capacity at Bear Valley Tanks				\$530,000	
4-02	Add Storage Capacity at Silver Hills			\$245,000		
4-03	Inspect and assessment of Pt Reyes Tank #2				\$10,000	
4-04	Replace 25,000 gallon PRE-1 Tank				\$250,000	
4-05	Replace 25,000 gallon PRE-2 Tank				\$250,000	
4-06	Replace PRE-4A Tank		\$650,000			
4-07	Olema Pump Station Flood Protection and RTU Upgrade	\$100,000				
4-08	Recoat Pt Reyes Tank #3		\$255,000			
4-09	Emergency Generator Connections	\$15,000				
4-10	Add Aeration at PRE-2 and Inverness Park Tanks		\$10,000			
4-11	Install an RTU at PRE-4			\$20,000		
4-12	To be determined (TBD)					\$300,000
	<b>Totals</b>	<b>\$115,000</b>	<b>\$915,000</b>	<b>\$265,000</b>	<b>\$1,040,000</b>	<b>\$300,000</b>

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**Table 10-6  
Preliminary Project Engineering and Study Projects  
Capital Improvement Plan**

ID #	Project	Improvement Project Cost (\$)				
		FY 2014 to FY 2015	FY 2016 to FY 2020	FY 2021 to FY 2025	FY 2026 to FY 2030	FY 2031 to FY 2035
S-01	Master Plan Update			\$30,000		\$40,000
S-02	Hydraulic Model Development		\$25,000			
S-03	Prepare Electronic Facility Maps		\$30,000			
	<b>Totals</b>	<b>\$0</b>	<b>\$55,000</b>	<b>\$30,000</b>	<b>\$0</b>	<b>\$40,000</b>

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**Table 10-7  
Capital Improvement Plan Summary**

Category		Improvement Project Cost (\$)					Totals
		FY 2014 to FY 2015	FY 2016 to FY 2020	FY 2021 to FY 2025	FY 206 to FY 2030	FY 2031 to FY 2035	
1a	Main/Pipeline Replacements	\$191,000	\$273,000	\$658,000	\$273,000	\$0	\$1,395,000
1c	PB Service Line Replacements	\$0	\$48,750	\$48,750	\$48,750	\$48,750	\$195,000
1d	Relocations to Sync w/ County CIP & New Pipe	\$1,511,000	\$25,000	\$25,000	\$25,000	\$25,000	\$1,611,000
2	System Improvements	\$0	\$92,000	\$65,000	\$32,500	\$100,000	\$289,500
3	PRTP Improvements and Other Improvements	\$0	\$1,210,000	\$3,100,000	\$200,000	\$200,000	\$4,710,000
4	Storage Tanks/Pump Stations	\$115,000	\$915,000	\$265,000	\$1,040,000	\$300,000	\$2,635,000
Study	Preliminary Project Engineering and Studies	\$0	\$55,000	\$30,000	\$0	\$40,000	\$125,000
	<b>Totals</b>	<b>\$1,817,000</b>	<b>\$2,618,750</b>	<b>\$4,191,750</b>	<b>\$1,619,250</b>	<b>\$713,750</b>	<b>\$10,960,500</b>

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Expanded CIP Table													
By:	Carmela Chandrasekera												
Date:	2/20/2014												
Category	ID#	Project Name	Description	Project Summary	Recommended by	Unit	Qty	Unit Price	Baseline Construction Cost	Contingency	Admin/Design/CMS	Total Project Cost	Notes
	1a-01	Replace Aging Galvanized Steel Pipe	Replace 2,152 feet of galvanized steel (GS) pipe, with priority given to the oldest pipe. Replace 500 feet annually from 2020 until the program is completed in FY 2025. Locations tracked in the database "WMPipeCount.xls" which is maintained by the Engr Dept and shown in Appendix C-1.			ft	2,152	110	\$236,720	\$71,016	\$76,934	\$384,670	cost based on unit price for 6" T-10.1
	1a-02	Replace 4" main on Bear Valley Road	Replace and upsize 900 feet of 4" main on Bear Valley Road starting from the tank. In order to provide a minimum of 500 gpm fire flow, the main needs to be upsized to 6-inch or 8-inch to avoid negative pressure at the high point at the end of 900 ft.			ft	900	130	\$117,000	\$35,100	\$38,025	\$190,125	cost based on unit price for 8" T-10.1
	1a-03	Replace All TW Plastic Pipe	Replace and upsize 6,100 feet of Thin Wall (TW) 2-inch plastic pipe with priority given to the oldest pipe. Replace 1,000 ft biennially until the program is completed in FY 2027. Locations tracked in the database "WMPipeCount.xls" which is maintained by the Engr Dept and shown in Appendix C-1.			ft	6,100	110	\$671,000	\$201,300	\$218,075	\$1,090,375	baseline cost based on unit price for 6" T-10.1
	1c-01	Replace Polybutylene Service Lines	Replace 48 PB services on Sir Francis Drake Blvd and Highway 1. Develop a data base that would eventually replace all PB services with copper in the other areas.			ea	48	2500	\$120,000	\$36,000	\$39,000	\$195,000	estimated repl. 2 services/crew day
	1d-01	Relocations to Synchronize with County Projects	Relocation of existing District water facilities of County of Marin street improvement projects. Specific projects to be included in each annual CIP as appropriate.									\$25,000	
	1d-02	Gallagher Well Pipeline Project	Install approximately 1 mile of 12" pipeline from Gallagher well to connect to the 6" main leading to PRTP near Downey well site									\$1,400,000	Project Summary
	2-01	Replace Untestable Detector Checks	Replace 2 assemblies per year with District-standard assemblies. 6 untestable assemblies and are listed in the database "DCVA_WM DB.exl" which is maintained by Maintenance Dept and is shown in Appendix C-5.			ea	2	10000	\$20,000	\$6,000	\$6,500	\$32,500	~\$14,000/replacement Novato project (J-1.7007.07)
	2-02	Install Flushing Taps at Dead-End Valves	Review dead end valves that need flushing and develop a database. Install 4 taps at dead-end valves biennially			ea	4	5000	\$20,000	\$6,000	\$6,500	\$32,500	Novato project J-1.8677.18 ~ total \$5,700/location
	2-03	Install Permanent Water Quality Sampling Stations	Install sample stations at Red Barn (PRS, 510 Mesa Rd), 22 Portola (Inverness Park, PRE-1) and 95 Drakes View (PRE-2).			ea	3	5500	\$16,500	\$4,950	\$5,363	\$26,813	total \$5,065/location in Novato project 1.8650.19
	2-04	TBD										\$100,000	
	3-01	Replace Well #2 at Coast Guard Site	Well #2 is nearing the end of its useful life and has decreased in production capacity over the years.			ea	1	185000	\$185,000	\$55,500	\$60,125	\$300,625	Well No. 2 repl. Cost was \$270k in 2013

Category	ID#	Project Name	Description	Project Summary	Recommended by	Unit	Qty	Unit Price	Baseline Construction Cost	Contingency	Admin/Design/CMS	Total Project Cost	Notes
	3-02	Install Gallagher Well #2	second well is needed to meet the 300 gpm combined capacity at Gallagher wells to meet the buildout demand.			ea	1	185000	\$185,000	\$55,500	\$60,125	\$300,625	Well No. 2 repl. Cost was \$270k in 2013
	3-03	Pt Reyes Treatment Plant Solids Handling Tank	Construction of a backwash waste water treatment system to eliminate discharge of untreated backwash water and reclamation of clarified backwash water for recycling.	yes	DJ	ea	1	560000	\$560,000	\$168,000	\$182,000	\$910,000	from Project summary
	3-04	Major PRTP Upgrade	Construct a new Treatment Plant to replace the existing facility that has reached the end of its useful life			ea	1	2500000	\$2,500,000	\$750,000	\$812,500	\$4,062,500	July 2005 \$1.9M const cost adjusted to 2014 (31.8% increase)
	3-05	Abandon Downey Well	The Downey well is no longer functional and needs to be properly sealed and abandoned per Marin County and State Standards.									\$100,000	Estimate from Nor-Cal wells
	4-01	Add Storage Capacity at Bear Valley Tanks	Construct 65,000 gallon tank and piping modifications (to address zone deficiency of 94,000 gal now and 95,000 gal at buildout).			ea	1	325000	\$325,000	\$97,500	\$105,625	\$528,125	unit price \$5/gal (see App D-2)
	4-02	Add Storage Capacity at Silver Hills (Bear Valley Area)	Construct 30,000 gallon tank and piping modifications (to address zone deficiency of 94,000 gal now and 95,000 gal at buildout).			ea	1	150000	\$150,000	\$45,000	\$48,750	\$243,750	unit price \$5/gal (see App D-2)
	4-03	Inspect and assessment of Pt Reyes Tank #2	Pt. Reyes tank #2 was constructed in 1973 and need assessment of the condition of the tank									\$10,000	assessment by consultant
	4-04	Replace 25,000 gallon PRE-1 Tank	Replace PRE-1 Redwood Tank			ea	1	125000	\$125,000	\$37,500	\$40,625	\$203,125	unit price \$5/gal (see App D-2)
	4-05	Replace 25,000 gallon PRE-2 Tank	Replace PRE-2 Redwood Tank			ea	1	125000	\$125,000	\$37,500	\$40,625	\$203,125	unit price \$5/gal
	4-06	Replace PRE-4A Tank	Replace 25,000 gallon PRE-4A with 80,000 gallon tank			ea	1	400000	\$400,000	\$120,000	\$130,000	\$650,000	unit price \$5/gal (see App D-2)
	4-07	Olema Pump Station Flood Protection and RTU Upgrade	Modify existing structure to prevent flooding of facilities by Olema Creek and RTU upgrade	yes	DJ							\$100,000	from Project summary
	4-08	Recoat Pt Reyes Tank #3	Recoat Pt Reyes Tank #3.			sq ft	13,000	12	\$156,000	\$46,800	\$50,700	\$253,500	unit price \$12/sq ft- estimates from tank coating contractor (Blastco) & MMWD
	4-09	Emergency Generator Connections	For PRE and Olema Pump Stations									\$15,000	
3-02	4-10	Add Aeration at PRE-2 and Inverness Park Tanks	Install aeration systems to help reduce THMs in PRE									\$10,000	
3-03	4-11	Install an RTU at PRE-4	Include with PRE Tank 4-B construction									\$20,000	
	S-01	Master Plan Update	Update of 2014 Master Plan (every ten years)									\$30,000	
	S-02	Hydraulic Model Development	Study of actual data to calibrate hydraulic model, then use model to predict low fire flow areas.									\$25,000	
3-04	S-03	Prepare Electronic Facility Maps	Convert West Marin Facility Maps to digital format .			days	23	1000	\$23,000	\$6,900		\$30,000	time estimate by AutoCAD Draftsman (AC)



Tank Construction and re-coating costs  
 Prepared By: Carmela Chandrasekera  
 Date: Jun-14

Construction Projects (total project cost)  
 NMWD

Year	Job No.	Tank	Description	Tank Material	Size (gal)	Cost*	cost/gallon
2002-2003	2.6259	PRS Tank 1	Replace	Concrete	100,000	\$399,707	\$4.00
2002-2003	2.6262	PRE #3	Replace	Concrete	38,000	\$91,821	\$2.42
2007-2008	1.6233.00	Palmer Tank	Replace	welded steel	3,000,000	\$2,934,745	\$0.98
2007-2008	2.6253.21	IP Tank	Replace	Concrete	30,000	\$164,300	\$5.48
2008-2009	1.6235.00	Crest Tank	New+ re-coat exterior of ex.	welded steel	500,000	\$969,875	\$1.94
2011-2012	5.6055.14	Plum Tank	Re-hab	Steel	500,000	612866	\$1.23
AVERAGE							\$2.67

MMWD (Tank Construction cost only) Total const. \$ Tank \$/gal

2005		Fairfax Manor First		Bolted Steel	20,000	\$327,000	\$16.35	\$2.15
2007		Sequoia 2		Bolted Steel	51,000	\$299,718	\$5.88	\$2.13
2005		Monte Mar Vista		Bolted Steel	60,000	\$249,202	\$4.15	\$0.98
2006		Fair Hills Tank		Bolted Steel	60,000	277,888	\$4.63	\$1.42
2007		Tam woods Top		Bolted Steel	80,000	\$369,581	\$4.62	\$1.63
2006		Kent		Bolted Steel	100,000	\$452,500	\$4.53	\$1.40
1998		Wilson Way Tank		welded steel	100,000	\$493,147	\$4.93	\$1.80
2008		Summit Lower Tank		welded steel	100,000	\$676,347	\$6.76	\$3.38
2008		Oak Manor First Lift		welded steel	100,000	\$578,322	\$5.78	\$2.80
2008		Beacon Hill		welded steel	100,000	\$677,060	\$6.77	\$2.86
2009		Slide Gulch		welded steel	100,000	\$670,000	\$6.70	\$3.70 Eng. Est
2007		Sequoia 1		Bolted Steel	114,000	\$340,908	\$2.99	\$1.05
2005		Scott Tanks		Bolted Steel	120,000	\$444,955	\$3.71	\$1.12
2009		Cascade		Bolted Steel	120,000	\$349,044	\$2.91	\$1.37
2008		Friar Tuck Lane Tank		welded steel	125,000	\$642,075	\$5.14	\$2.87
2002		Corte Madera Top		Bolted Steel	132,000	\$235,200	\$1.78	\$0.59
2005		Bay Rd		Bolted Steel	132,000	\$388,000	\$2.94	\$0.72
2006		Marin City Tank		welded steel	200,000	\$813,860	\$4.07	\$1.59
2004		Oak Woodland		welded teel	230,000	\$840,440	\$3.65	\$1.50
2009		Sugar Loaf Tank		welded steel	254000	\$1,155,000	\$4.55	\$2.76 Eng. Est
2006		Santa Venetia		welded steel	310,000	\$844,450	\$2.72	\$1.73
2007		Mt Tiburon Tank		welded teel	590,000	\$830,000	\$1.41	\$0.78
2002		Spring Lane		welded steel	1,500,000	\$1,011,725	\$0.67	\$0.31
AVERAGE							\$4.68	\$1.77

MMWD Average Costs Based on Tank Type and Size

Total cost WELDED	Total cost BOLTED	tank only WELDED	tank only BOLTED	total cost size <100k gal	total cost size >=100k gal	tank only size <100k gal	tank only size >=100k gal
\$4.43	\$4.95	\$2.17	\$1.32	\$6.46	\$3.05	\$2.20	\$1.37

NMWD Re-coat Projects

Year	Job No.	Tank	Description	Material	Size (gal)	Cost*	cost/gallon
2003-2004	1.6200.20	Air Base Tank	Re-coat	welded steel	1,000,000	\$242,689	\$0.24
2008-2009	1.6219.20	Ponti Tank	Re-coat	welded steel	500,000	\$314,587	\$0.63
2011-2012	1.6206.22	Crest Tank 1 -interior	Re-coat	welded steel	500,000	\$176,487	\$0.35
AVERAGE							\$0.41

Notes:

\* Cost from NMWD Job transaction detail records - includes all project costs including design and management  
 MMWD costs do not include design and other costs (construction costs only)

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Reference Project Job #	Wilson Way Tank F9903 Welded Steel W/ Anchors	Corte Madera Top D9931 Bolted Steel W/O Anchors	Spring Lane D99061 Welded Steel W/O Anchors	Oak Woodland D04028 Welded Steel W/Anchors	Monte Mar Vista D03035 Bolted Steel W/Anchors	Fairfax Manor First D03025 Bolted Steel W/Anchors	Scott Tanks D03034 Bolted Steel W/Anchors	Bay Rd D04023 Bolted Steel W/O Anchors	Fairhills D04033 Bolted Steel W/ Anchors	Santa Venetia Bids D04026 Welded Steel W/Anchors	Marin City Tank D06024 Welded Steel W/Anchors	Kent Woodlands D05053 Bolted Steel W/ Anchors	Mt Tiburon Tank D06002 Welded Steel w/ anchor	Sequoia D05052 TK-215 Bolted Steel W/ Anchors	TK-216 Bolted Steel W/ Anchors	Tam Woods Top Tank D07031 Bolted Steel W/ Anchors	Summit Lower Tank D07016 Welded Steel W/ Anchors	Friar Tuck Lane Tank D08004 Welded Steel W/ Anchors	Oak Manor First LIR D06025 Welded Steel W/ Anchors	Beacon Hill D05049 Welded Steel W/ Anchors	Cascade D08045 2-Bolted Steel w/o temp tanks	Sugar Loaf Tank D08006 Welded Steel w/o temp tanks	Slide Gulch D06023 Welded Steel w/ temp tanks	
Design Report Estimate Owner's Estimate Extrapolated Bid	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Contractor Cost Breakdown	Extrapolated Bid	Engineer's Estimate	
Capacity (gal)	100,000	132,000	1,500,000	230,000	60,000	20,000	120,000	132,000	60,000	310,000	200,000	100,000	590,000	114,000	TK-216 Bolted Steel W/ Anchors	80,000	100,000	125,000	100,000	100,000	2 at 60,000 gallons	2 at 127,000 gallons	Engineer's Estimate	
Bid Date/ Date of Estimate	11/10/1998	9/27/2000	6/27/2002	9/28/2004	1/24/2005	2/8/2005	3/21/2005	4/11/2005	11/8/2005	6/6/2006	7/20/2006	9/21/2006	5/3/2007	9/18/2007		9/20/2007	7/1/2008	7/22/2008	9/5/2008	10/6/2008	4/28/2009	4/20/2009	10/1/2009	
Mobilization	\$ 7,000	\$ 6,500	\$ 22,700	\$ 29,300	\$ 2,500	\$ 10,500	\$ 8,500	\$ 10,000	\$ 10,000	\$ 35,000	\$ 18,000	\$ 25,000	\$ 8,000	\$ 7,000	\$ 3,000	\$ 26,831	\$ 22,000	\$ 32,103	\$ 32,072	\$ 25,000	\$ 5,000	\$ 55,000	\$ 25,000	
Survey						\$ 6,850					\$ 7,200			\$ 3,000					\$ 3,500					
Submittals	\$ 6,500										\$ 7,200													
Clear and Grub Site	\$ 13,500		\$ 10,500		\$ 13,467		\$ 10,500	\$ 26,410	\$ 4,228		\$ 6,000	\$ 8,000		\$ 13,250	\$ 9,250		\$ 10,000		\$ 7,000		\$ 10,000	\$ 20,000	\$ 10,000	
Temp. Tanks		\$ 14,163									\$ 69,000	\$ 20,000				\$ 9,000	\$ 5,082	\$ 59,662	\$ 24,000	\$ 10,560		\$ 15,000	\$ 15,000	
Demo Existing TKS	\$ 10,250	\$ 21,240		\$ 47,025	\$ 11,102	\$ 15,000	\$ 21,500	\$ 16,680	\$ 20,100		\$ 37,500	\$ 20,500		\$ 30,600	\$ 27,600	\$ 7,500	\$ 27,810	\$ 31,890	\$ 15,000	\$ 20,000	\$ 25,000	\$ 25,000	\$ 30,000	
Site Excavation/Grading	\$ 55,817	\$ 37,116	\$ 211,800	\$ 45,375	\$ 18,095	\$ 47,000	\$ 56,500	\$ 22,780	\$ 5,095	\$ 175,800	\$ 39,000	\$ 10,000	\$ 52,000	\$ 20,100	\$ 13,097	\$ 15,500	\$ 25,327	\$ 65,900	\$ 20,000	\$ 35,000		\$ 20,000	\$ 25,000	
Recompact Site		\$ 8,025																						
Storm Drainage System	\$ 12,500		\$ 24,450	\$ 52,530		\$ 1,500		\$ 30,370		\$ 24,360				\$ 14,593	\$ 5,500	\$ 4,000	\$ 12,410		\$ 7,200	\$ 8,200	\$ 15,000	\$ 15,000	\$ 10,000	
Cathodic Protection							\$ 7,850		\$ 9,000	\$ 5,000						\$ 4,000		\$ 4,000	\$ 2,500			\$ 5,000		
Concrete V-Ditches	\$ 3,500																							
Water Pipe System	\$ 23,250		\$ 75,125	\$ 75,000	\$ 45,494	\$ 38,000	\$ 58,350		\$ 35,700	\$ 25,000	\$ 72,120	\$ 62,500	\$ 65,000	\$ 25,800	\$ 38,500	\$ 20,000	\$ 55,134		\$ 36,000	\$ 26,000		\$ 25,000	\$ 50,000	
Tank Piping		\$ 16,650						\$ 18,660	\$ 23,500	\$ 10,000	\$ 6,500			\$ 15,482	\$ 14,700		\$ 9,803				\$ 20,000	\$ 20,000	\$ 10,000	
Install Fire Hydrant Offsite		\$ 5,525								\$ 5,000														
Wood Retaining Wall		\$ 7,930				\$ 35,200						\$ 14,000	\$ 60,000			\$ 16,600							\$ 5,000	
Pile Wall	\$ 36,500		\$ 55,515		\$ 35,831		\$ 18,800							\$ 20,628		\$ 49,750	\$ 56,293		\$ 38,000	\$ 87,000		\$ 80,000	\$ 80,000	
Elect. Controls	\$ 47,250	\$ 5,736		\$ 17,300	\$ 18,250	\$ 18,000	\$ 40,850	\$ 29,930	\$ 8,250	\$ 31,200	\$ 49,800	\$ 5,000	\$ 75,000	\$ 24,100	\$ 20,100	\$ 14,500	\$ 35,000	\$ 25,000	\$ 9,500	\$ 8,500	\$ 25,000	\$ 30,000	\$ 25,000	
Tank Foundation	\$ 18,750	\$ 18,360	\$ 68,750	\$ 122,400	\$ 44,611	\$ 46,250	\$ 38,470	\$ 26,200	\$ 44,611	\$ 46,250	\$ 38,470	\$ 26,200	\$ 44,611	\$ 46,250	\$ 38,470	\$ 26,200	\$ 44,611	\$ 46,250	\$ 38,470	\$ 26,200	\$ 44,611	\$ 46,250	\$ 38,470	\$ 26,200
Under Tank Fill & Paving	\$ 4,100	\$ 5,520		\$ 3,239		\$ 9,575	\$ 14,350	\$ 6,200		\$ 11,000		\$ 4,721	\$ 4,721	\$ 3,000	\$ 20,674		\$ 12,000				\$ 25,000	\$ 20,000	\$ 20,000	
Site Paving	\$ 9,250		\$ 23,000	\$ 53,900	\$ 10,070	\$ 22,601	\$ 21,300	\$ 47,000	\$ 15,000	\$ 30,000	\$ 47,000	\$ 15,000	\$ 30,000	\$ 47,000	\$ 15,000	\$ 30,000	\$ 47,000	\$ 15,000	\$ 30,000	\$ 47,000	\$ 15,000	\$ 30,000	\$ 47,000	
Sub Grade Roadway	\$ 3,400					\$ 46,580	\$ 42,790																	
Landscaping	\$ 32,600	\$ 1,830		\$ 3,158	\$ 16,500	\$ 3,158		\$ 3,158		\$ 2,000		\$ 2,000												
Site Fencing	\$ 21,000	\$ 7,320	\$ 2,000	\$ 16,000	\$ 3,750	\$ 27,500	\$ 11,750	\$ 13,910	\$ 23,000	\$ 17,000	\$ 22,000	\$ 35,000		\$ 5,850	\$ 4,850	\$ 12,500	\$ 11,353	\$ 6,000	\$ 26,500	\$ 25,000	\$ 25,000	\$ 20,000	\$ 20,000	
Site Stairs				\$ 8,657	\$ 750			\$ 8,657		\$ 3,500									\$ 13,750					
Construct Road Tank	\$ 73,935		\$ 68,840	\$ 42,988	\$ 134,500	\$ 94,500	\$ 85,000	\$ 405,450	\$ 187,780	\$ 140,000	\$ 125,000	\$ 130,000	\$ 265,304	\$ 200,000	\$ 116,000	\$ 164,044	\$ 700,000	\$ 370,000						
Submittals & Engineering	\$ 8,500			\$ 98,000							\$ 33,500		\$ 13,580			\$ 175,125								
Shop Fabricated Material	\$ 62,000		\$ 153,400	\$ 127,000							\$ 96,000	\$ 119,784	\$ 108,800		\$ 62,889		\$ 85,000							
Tank Construction	\$ 84,499		\$ 104,850	\$ 45,100							\$ 31,000	\$ 21,600		\$ 100,000	\$ 108,000		\$ 75,000							
Shop Coating	\$ 10,150		\$ 155,915	\$ 120,000																				
Field Coating	\$ 21,508																							
Delivery of Tanks	\$ 3,300	\$ 3,525																						
Tank subtotal	\$ 179,955	\$ 77,460	\$ 459,285	\$ 345,000	\$ 58,840	\$ 42,988	\$ 134,500	\$ 94,500	\$ 85,000	\$ 536,450	\$ 317,380	\$ 140,000	\$ 458,000	\$ 119,784	\$ 108,800	\$ 130,000	\$ 334,000	\$ 358,620	\$ 280,000	\$ 286,000	\$ 164,044	\$ 700,000	\$ 370,000	
Testing				\$ 20,500		\$ 20,310										\$ 2,500	\$ 2,000		\$ 1,000					
Concrete slope protection																								
Shore, OverExcavation, 1	\$ 8,025	\$ 1,825	\$ 38,120	\$ 16,300													\$ 10,000							
Pump Station (break down elsewhere)																								
5% Contingency for Estimates Only																								
Contract Total	\$ 493,147	\$ 235,200	\$ 1,011,725	\$ 840,440	\$ 249,202	\$ 327,000	\$ 444,955	\$ 388,000	\$ 277,988	\$ 844,450	\$ 813,960	\$ 452,500	\$ 830,000	\$ 340,908	\$ 299,718	\$ 369,581	\$ 676,347	\$ 642,075	\$ 578,322	\$ 677,060	\$ 349,044	\$ 1,155,000	\$ 670,000	
COST PER GALLON T#	\$ 1.80	\$ 0.59	\$ 0.31	\$ 1.50	\$ 0.98	\$ 2.15	\$ 1.12	\$ 0.72	\$ 1.42	\$ 1.73	\$ 1.59	\$ 1.40	\$ 0.78	\$ 1.05	\$ 2.13	\$ 1.63	\$ 33.39	\$ 2.87	\$ 2.80	\$ 2.88	\$ 1.37	\$ 2.76	\$ 3.70	
COST PER GALLON - T	\$ 4.93	\$ 1.78	\$ 0.67	\$ 3.65	\$ 4.15	\$ 16.35	\$ 3.71	\$ 2.94	\$ 4.63	\$ 2.72	\$ 4.07	\$ 4.53	\$ 1.41	\$ 2.99	\$ 5.88	\$ 4.62	\$ 66.76	\$ 5.14	\$ 5.78	\$ 6.77	\$ 2.91	\$ 4.55	\$ 6.70	

NORTH MARIN WATER DISTRICT  
WATER SYSTEM IMPROVEMENTS/SPECIAL PROJECTS  
PROJECT SUMMARY  
AS OF March 2013

Job No. 2.6601.32	Title: PRTP Solids Handling Tank										
Facility No. 6601					Facility Type (Pipelines, Pump Stations, etc.) Treatment Plant						
<b>Description</b> Purchasing land, constructing a 100,000 gallon solids handling concrete tank and pipe line extension from PRTP to Four G's property where the tank will be located. Change 3/11: Railroad Property Purchased, Dual tank design planned.											
<b>Project Justification</b> Point Reyes Water Treatment Plant Upgrade Study by SPH Associates (July 2005) recommended construction of a backwash waste water treatment system to eliminate discharge of untreated backwash water and reclamation of clarified backwash water for recycling.											
	Baseline Cost Estimate	Design/ Permit	Constr. Ph (Original)	Expended to Date	Total Est (3/11)	Total Est (5/12)	Total Est (3/13)		Start	Finish (Est.)	Finish (Actual)
1	Project Development (1)	\$20,000		\$12,000	\$12,000	\$12,000	\$12,000	Project Dev.	Mar-09	Jun-09	
2	Prelim. Design(2)	\$10,000		\$10,800	\$10,800	\$10,800	\$10,800	Prelim.	Jul-09	Sep-09	
3	Land Purchase (3)	\$250,000		\$40,000	\$40,000	\$40,000	\$40,000				
4	Surveying/Mapping	\$5,000		\$8,000	\$8,000	\$8,000	\$8,000		Jul-09	Aug-09	
5	Geotech. Invest	\$5,000		\$5,000	\$5,000	\$5,000	\$5,000		Jul-09	Aug-09	
6	CEQA / Permitting	\$20,000		\$35,600	\$20,000	\$20,000	<b>\$52,000</b>	Permitting	Jul-09	Sep-09	Jul-12
7	Final Design	\$10,000		\$40,000	\$30,000	\$40,000	<b>\$45,000</b>	Final Design	Aug-12	Jul-13	
8	Design Phase Staff Costs	\$5,000		\$17,800	\$10,000	\$10,000	<b>\$25,000</b>				
9	Bidding Services	\$5,000			\$5,000	\$5,000	\$5,000				
10	Construction(4)&(7)		\$327,000		\$313,000	\$530,000	\$530,000				
11	Fence & retaining wall (5)		\$75,000		above						
12	Pipe extension (6)		\$137,500		Included below	Included above	Included above				
13	Pump		\$10,000								
14	Elec. / Mech.		\$5,000		\$260,000						
15	Const. Admin		\$10,000		\$20,000	\$20,000	\$20,000	Construction	Jan-13	Jun-13	
16	Project Closeout		\$3,000		\$5,200	\$5,200	\$5,200	Project Closeout	Jun-13	Aug-13	
	Project Subtotal		\$567,500		\$739,000	\$706,000	<b>\$758,000</b>				
	Project Contingency		\$56,750		\$100,000	\$140,000	<b>\$150,000</b>				
	Sub-Total	\$330,000	\$624,250	\$169,200	\$839,000	\$846,000	<b>\$908,000</b>				
	Grand Total		\$954,250								

Notes:

Note revisions in BOLD

- (1) Conceptual Design Report (Job #2.7102.00)
- (2) Preliminary Design (\$5,000 staff costs, \$5,000 consultant)
- (3) Purchase of 1.5 acres from Four G's property. (RR Right-a-Way purchased, 1.3 A)
- (4) based on estimate for PRE tank #4 100,000 gallon tank (Prelim Est for Concrete Dual tanks)
- (5) Fence and Retaining wall estimate from SPH report
- (6) Pipe extension from Four G's property to existing PRTP (approx. 1,100 ft x\$125) (NOT REQUIRED)
- (7) Inserted Construction Cost estimate from Pre-Design Report, HydroScience Engineers.
- (8) Added costs due to Coastal Permit - Fees \$11,000; LCA \$13,000; HSE \$8,200

**NORTH MARIN WATER DISTRICT  
WATER SYSTEM IMPROVEMENTS/SPECIAL PROJECTS  
PROJECT SUMMARY**

COMPLETED BY: Robert Clark

Updated by: David Jackson

DATE: 3/5/2012

Date: 3/18/2014

SERVICE AREA:  NOVATO       WEST MARIN       OCEANA MARIN

Job No.  Title: Olema PS Flood Protection & RTU upgrade

2.6130 Facility Type: Pump Station

**Description:** Raise the building above flood level and replace RTU.

**Project Justification:** The Olema Pump station has flooded every year during heave winter rains. The flood level is 18"-24" AFF prohibiting staff from entering site for service. The intent is to use reinforced concrete blocks to raise the foundation and build a retaining wall around the building and back fill adjcent area for safe vehicle access. The RTU has failed twice over the past three years and TESCO recomends a full replacement. The cost is 5x the Automation Direct unit to replace. Over the years we have not had communications failures during the winter rains and have had to trouble shoot to make repairs we need to locate the damagend section of cable and make repairs to save time and money and annual down time..

Baseline Cost Estimate	Initial (03/12)	Updated (3/13)	Updated (3/14)	Expended to Date	Baseline Schedule	Start	Finish (Est.)	Finish (Actual)
Project Dev.			\$ 5,000	\$5,000.00	Project Dev.	07/01/13		02/01/14
Design	\$ 1,000	\$ 5,000	\$ 13,000	\$ 300.00	Design	03/15/14	05/30/14	
Permitting					Permitting			
Land					Procurement			
Procurement	\$ 9,000	\$ 15,000	\$ 10,000		Construction	06/01/14	09/30/14	
Construction	\$ 15,000	\$ 65,000	\$ 55,000					
Const. Admin.		\$ 5,000	\$ 2,000		Project Closeout			
Project Closeout		\$ 2,000	\$ 2,000					
Project Contingency		\$ 8,000	\$ 13,000					
<b>Total</b>	<b>\$ 25,000</b>	<b>\$ 100,000</b>	<b>\$ 100,000</b>					

**NORTH MARIN WATER DISTRICT  
WATER SYSTEM IMPROVEMENTS/SPECIAL PROJECTS  
PROJECT SUMMARY  
AS OF 4/23/2014 - Invoice 1 Prop 50**

Job No. 2.7087	Title: <b>Gallagher Well Pipeline— West Marin</b>						
Facility No.	Facility Type (Pipelines, Pump Stations, etc.): Pipeline & other						
	<b>Description</b> Project involves Gallagher pipeline final design (7,200 <del>5,200</del> ft of 12" pipeline), Environmental and Geotechnical review, Permitting, Construction and contract administration costs and installing 3 new wells at Gallagher. rehabilitation of existing Gallagher well.						
	<b>Project Justification:</b> Lagunitas Creek Salinity Intrusion Study (1998) prepared by Soldati Engineering Services recommended that the District construct a pipeline to the existing Gallagher well for additional supply or for blending with the Coast Guard supply. One is currently at the site with a reliable capacity of approx. 120 GPM. It is assumed that additional wells at Gallagher are required to provide a fully redundant 700 GPM well field. <b>(which will be a future project(s))</b>						
<b>Baseline Cost Estimate</b>	<b>2007 (Est.) \$</b>	<b>2014 (Est.) \$</b>	<b>Expended To Date \$</b>	<b>Baseline Schedule</b>	<b>Start</b>	<b>Finish (Est.)</b>	<b>Finish (Actual)</b>
Project Dev.		13,000	12,627	Project Dev.	2007		Feb-13
Design (1)	115,000	<del>100,000</del>	<del>80,397</del>	Design	Mar-13	Oct-13	Feb-14
Geotechnical Review & Testing(2)*	<del>30,000</del>	40,000	9,900	Geotechnical Review			
Environmental Review(3)	15,000	25,000	17,161	Environmental Review		2009	
Encroachment Permit(4)	65,832	<del>5,000</del>		Permitting			
Grant funding and Pre-Const.project admin(5)	30,800	18,000	10,500	Bid Phase			
Construction(6)	856,000	1,040,000		Construction		Oct-14	
Material(6a)				Project Closeout			
CM/Inspection.(7)	60,000	<del>60,000</del>					
Wells (8)	241,200	70,000	70,316				
Admin/Design Support(9)	27,000	<del>20,000</del>					
Project Closeout(10)	12,000	<del>13,000</del>				Dec-14	
Project Contingency(11)	219,440	57,000					
<b>Total</b>	<b>1,672,272</b>	<b>1,486,000</b>	<b>\$200,901</b>				
<b>Comments:</b> (Note: for the 2007 Cost Estimate, the original 1999 costs were inflated to represent current (2007) costs based on San Francisco Construction Cost Index published in Engineering News Record. CCI (Dec. 1998) = 6845.6, CCI (Dec, 2007) = 9131.8. Increase in costs= 9131.8 / 6845.6 =1.3339.). The following represents 2013 (1) 10% of construction cost - CSW bridge crossing design and NMWD eng. (2) Material testing and geotech services estimate including geotech report. expended (\$9,900 from .01) (3) Consultant for CEQA + SWPPP. expended are all AP costs in 2.7087.00. (4) Estimate County Encroachment Permit (5) 2% of construction cost for Staff costs for funding application preparation, plan check, includes topo survey, bid evaluation and general pre-design project administration. expended cost is topo survey (\$10,500 from .01). (6) Current construction cost updated after bid opening (\$1,039,858) (7) NMWD Inspection cost. (8) 2007 estimate for two additional wells. 2014 estimate is only for rehabilitation of existing well and permitting (Auxiliary gage). (9) Engineering svcs during construction plus overall admin. (10) 1.5% of construction. Includes As-built drawings and close out (11) 12.5% Contingency based on Construction cost only							

Prop 50 Grant Funding Categories: Invoice 1 - Prop 50  
 yellow -preliminary costs (\$120,504); blue-engineering costs (\$80,397); green-equipment costs

9

## MEMORANDUM

To: Board of Directors  
 From: Drew McIntyre, Chief Engineer   
 Subject: Water Service Agreement – Walnut Meadows Subdivision  
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June 20, 2014

**RECOMMENDED ACTION: The Board approve authorization of this agreement.**

**FINANCIAL IMPACT: None: Developer Funded**

The Walnut Meadow Subdivision subdivides an existing 3.4-acre parcel into 12 lots for single-family homes, and includes a private roadway. The project is located at 840 McClay Road between Center Road and Novato Blvd (see attached map). This agreement will provide water service to twelve new residences. The existing single-family residence has been removed from the parcel and the existing water wells have been abandoned per state requirements. The existing water service will be killed.

The developer has applied for and received permits for the water main and sanitary sewer line to cross Wilson Creek. The new water main will be looped between existing water mains in McClay and Meyers Ct.

New Zone 1 water facilities required include 420 feet of 8-inch PVC main, 65 feet of 8-inch steel pipe, 280 feet of 1-inch copper, two residential fire hydrants, and twelve 1-inch meters. All lots will receive normal pressure Zone 1 water service. Total new water demand is eleven equivalent dwelling units.

Sanitary sewer service will continue to be provided by Novato Sanitary District. The Tentative Map for this project was approved by the City of Novato on August 17, 2009.

Environmental Document Review

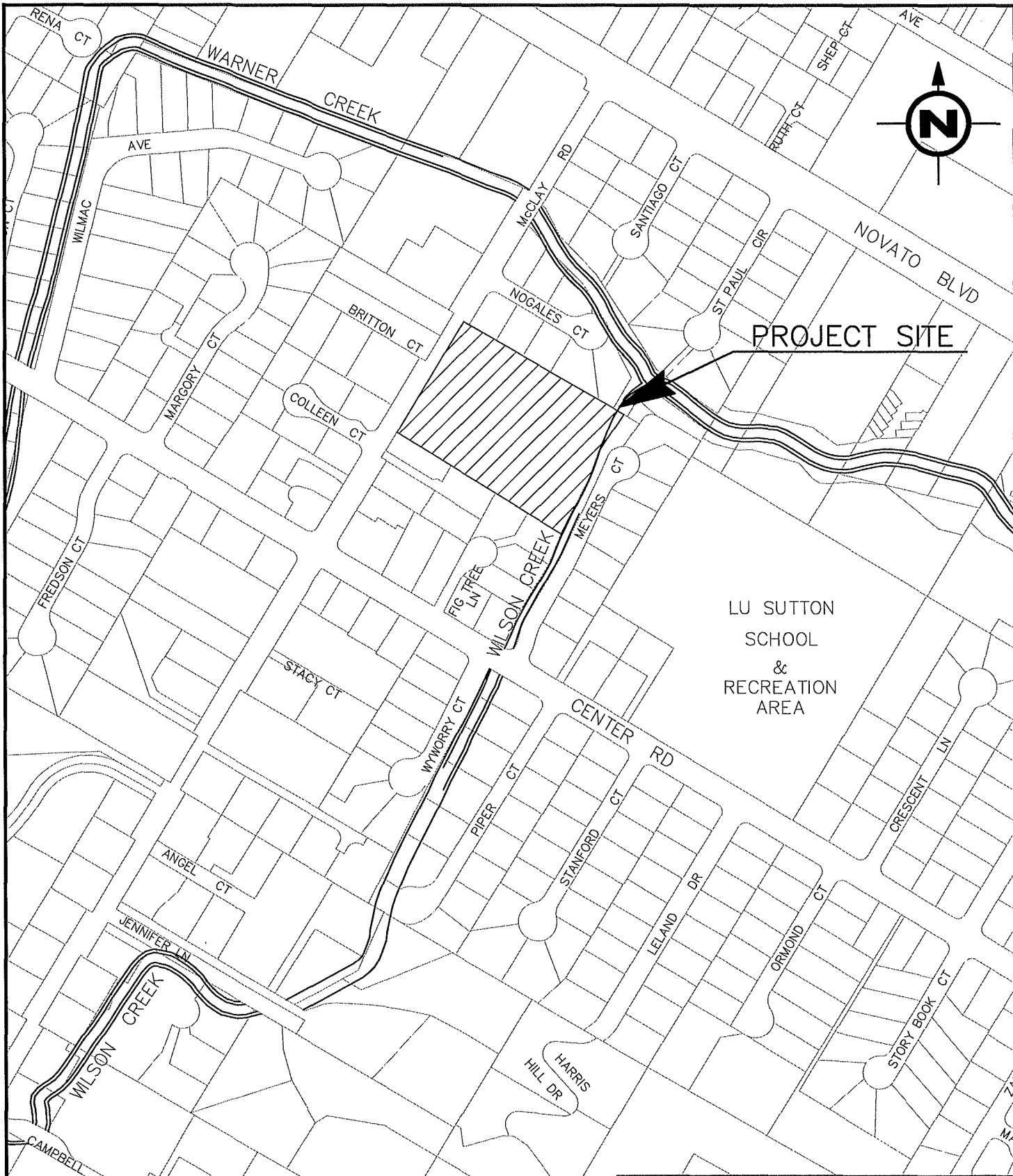
The City of Novato has determined that this project is exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Sections 15303.

RECOMMENDATION:

That the Board approve authorization of this agreement.

Approved by GM CD

Date 6/20/2014



### WALNUT MEADOWS WATER FACILITIES

DATE	SCALE	JOB.NO.	DWG.NO.
6/19/14	NTS	2777	MAP



RESOLUTION NO. 14-  
AUTHORIZATION OF EXECUTION  
OF  
WATER SERVICE FACILITIES CONSTRUCTION AGREEMENT  
WITH  
RYDER NOVATO INVESTORS, LLC

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BE IT RESOLVED by the Board of Directors of NORTH MARIN WATER DISTRICT that the President and Secretary of this District be and they hereby are authorized and directed for and on behalf of this District to execute that certain water service facilities construction agreement between this District and Ryder Novato Investors, LLC, a California Corporation and Limited Liability Company, providing for the installation of water distribution facilities to provide domestic water service to that certain real property known as 840 McCLAY ROAD, Marin County Assessor's Parcel Number 140-091-01, NOVATO, CALIFORNIA.

\* \* \*

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 24th day of June, 2014, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

(SEAL)

---

Katie Young, Secretary  
North Marin Water District

PART ONE  
WATER SERVICE FACILITIES CONSTRUCTION AGREEMENT  
FOR  
WALNUT MEADOWS SUBDIVISION

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*THIS AGREEMENT*, which consists of this Part One and Part Two, Standard Provisions, attached hereto and a part hereof, is made and entered into as of \_\_\_\_\_, 2014, by and between NORTH MARIN WATER DISTRICT, herein called "District," and RYDER NOVATO INVESTORS, LLC, A California Corporation and Limited Liability Company, herein called "Applicant."

*WHEREAS*, the Applicant, pursuant to District Regulation 1, the State of California Subdivision Map Act and all applicable ordinances of the City of Novato and/or the County of Marin, has pending before the City or County a conditionally approved Tentative Subdivision Map, Precise Development Plan, Tentative Parcel Map or other land use application for the real property in the District commonly known as Marin County Assessor's Parcel Number 140-091-01 and the project known as WALUNT MEADOWS SUBDIVISION, consisting of twelve (12) lots for residential development; and

*WHEREAS*, prior to final approval by the City or County of a Subdivision Map, Precise Development Plan, Parcel Map or other land use application and recording of a final map for the project, the Applicant shall enter into an agreement with the District and complete financial arrangements for water service to each lot, unit or parcel of the project; and

*WHEREAS*, the Applicant is the owner of real property in the District commonly known as 840 McClay Road, Novato (Marin County Assessor's Parcel 140-091-01); and

*WHEREAS*, single family residential water service to the parcel first began on October 21, 1970 and the District installed a 5/8-inch meter at 840 McClay Road; and

*NOW THEREFORE*, the parties hereto agree as follows:

1. The Applicant hereby applies to the District for water service to said real property and project and shall comply with and be bound by all terms and conditions of this agreement, the District's regulations, standards and specifications and shall construct or cause to be constructed the water facilities required by the District to provide water service to the real property and project. Upon acceptance of the completed water facilities, the District shall provide water service to said real property and project in accordance with its regulations from time to time in effect.

2. Prior to the District issuing written certification to the City, County or State that financial arrangements have been made for construction of the required water facilities, the Applicant shall complete such arrangements with the District in accordance with Section 6 of this agreement.

3. Prior to release or delivery of any materials by the District or scheduling of either construction inspection or installation of the facilities by the District, the Applicant shall:

a. deliver to the District vellum or mylar prints of any revised utility plans approved by the City or County to enable the District to determine if any revisions to the final water facilities construction drawings are required. The proposed facilities to be installed are shown on Drawing No. 1 2777.001, entitled, "WALNUT MEADOWS SUBDIVISION", a copy of which is attached, marked Exhibit "A", and made a part hereof. (For purposes of recording, Exhibit "A" is not attached but is on file in the office of the District.)

b. grant or cause to be granted to the District without cost and in form satisfactory to the District all easements and rights of way shown on Exhibit "A" or otherwise required by the District for the facilities.

c. deliver to the District a written construction schedule to provide for timely withdrawal of guaranteed funds for ordering of materials to be furnished by the District and scheduling of either construction inspection or construction pursuant to Section 6 hereof.

4. Except for fire service, new water service shall be limited to the number and size of services for which Initial Charges are paid pursuant to this agreement. Initial Charges for new services, estimated District costs and estimated applicant installation costs are as follows:

**Initial Charges**

Meter Charges (Domestic) (Included in Estimated District Costs) ....	..Twelve 1-inch @	\$	0.00	\$	0.00
Reimbursement Fund Charges .....	.....Twelve @	\$	420.00	\$	5,040.00
Facilities Reserve Charges.....	.....Twelve @	\$	28,600.00	\$	343,200.00
Credit for Existing Service (\$28,600 FRC+\$420 RFC 5/8" existing) ..	..... @	<	\$29,020.00>	<	\$29,020.00>

**Subtotal - Initial Charges..... \$319,220.00**

**Estimated District Costs**

Pipe, Fittings & Appurtenances.....	\$	28,280.00
District Construction Labor.....	\$	36,514.00
Engineering & Inspection.....	\$	8,309.00
Bulk Materials.....	\$	4,345.00

**Subtotal –Estimated District Costs..... \$ 77,448.00**

**Estimated Applicant Installation Costs**

Installation Labor.....	\$	54,280.00
Contractor Furnished – Pipe Fittings & Appurtenances.....	\$	12,043.00
Bulk Materials.....	\$	4,089.00

<b>Subtotal- Estimated Applicant Installation Costs.....</b>	<b>\$ 70,412.00</b>
<b>TOTAL ESTIMATED WATER FACILITIES COSTS.....</b>	<b>\$467,080.00</b>

(Bulk materials are such items as crushed rock, imported backfill, concrete, reinforcing steel, paving materials, and the like, which are to be furnished by the contractor performing the work.)

5. In addition to the Initial Charges, Estimated District costs and Contributions, and Estimated Applicant Installation costs set forth in Section 4 above, the Applicant shall furnish at no cost to the District all PVC pipe (4-inch diameter and larger), valves and water line fittings shown on Exhibit "A" or otherwise required by the District. The quantities, type and quality of said materials shall be approved by the District prior to purchase by the Applicant and shall conform to District standards as stated and shown on Specifications (15100 Valves, 15056 Pipeline Fittings, 15064 Polyvinyl Chloride (PVC) Pressure Pipe) marked as Exhibit "B" attached hereto and made a part hereof and as otherwise may be required. (For purposes of recording, Exhibit "B" is not attached but is on file in the office of the District.) The cost of said materials is estimated to be **\$12,043**. The District reserves the right to reject and prohibit installation of all nonconforming materials furnished by the Applicant.

6. Financial Arrangements to be made by the Applicant shall consist of the following:

Initial Charges and Estimated District Costs

The Applicant shall either pay to the District or provide a two (2) year irrevocable letter of credit in form satisfactory to the District and payable at sight at a financial institution in the Novato area the sum of Initial Charges and Estimated District Costs as set forth in Section 4 hereof in the amount of **\$ 396,668**. If the Applicant provides the two (2) year irrevocable letter of credit, the District shall immediately draw down Initial Charges and shall draw upon the remaining funds guaranteed by the letter at any time the District deems appropriate to recover the Estimated District Costs which normally will be at least thirty (30) days prior to the anticipated start of construction for the ordering of materials to be furnished by the District.

Estimated Installation Costs

Alternate No. 1 – Installation By Applicant: If the Applicant elects to install the facilities or hire a private contractor to install the facilities, the Applicant shall provide financial guarantees satisfactory to the District in the form of a performance bond in the amount of **\$ 70,412** conditioned upon installation of the facilities and furnishing of bulk materials and a maintenance bond in the amount of **\$ 17,603** conditioned upon payment of the cost of maintaining, repairing, or replacing the facilities during the period of one (1) year following completion of all the facilities and acceptance by the District.

Performance and maintenance bonds shall be executed by a California admitted surety insurer with a minimum A.M. Best rating of A-VII. In lieu of posting bonds, the Applicant may provide an irrevocable letter or letters of credit payable at sight at a financial institution in the Novato area guaranteeing funds in the same amounts. All financial guarantees shall be provided by the Applicant rather than the contractor. The Applicant or contractor, whichever performs the work, shall be properly licensed therefore by the State of California and shall not be objectionable to the District.

Alternate No. 2 – Installation By District: If the Applicant requests the District to install the facilities and the District consents to do so, the Applicant shall either pay to the District the total Estimated Installation Costs set forth in Section 4 hereof in the amount of **\$70,412** or shall include such amount in the irrevocable letter of credit provided for the Initial Charges and Estimated District Costs set forth first above. The District shall draw upon installation funds guaranteed by the letter at any time the District deems appropriate which normally will be at least thirty (30) days prior to the anticipated start of construction.

Whenever an irrevocable letter of credit is required by this agreement, the Applicant may substitute a certificate of deposit at a financial institution in the Novato area provided the certificate may be cashed at sight by the District at any time.

7. The applicant shall not resell any water furnished pursuant to this agreement. If multiple services from a single connection to the District's system through a master meter are allowed pursuant to District Regulation 4(b) the Applicant shall not submeter the individual services. The District's bills for water measured by a master meter shall be paid by the Applicant or a responsible homeowner's association. If a rental unit served through a master meter is converted into a separately owned unit the District may require the installation of a separate connecting main and meter for water service to the unit at the cost of the owner of the unit.

8. Water service through the facilities to be installed pursuant to this agreement will not be furnished to any building unless the building is connected to a public sewer system or to a waste water disposal system approved by all governmental agencies having regulatory jurisdiction. This restriction shall not apply to temporary water service during construction.

9. New construction in the District's Novato service area is required to be equipped with high efficiency water conserving equipment and landscaping specified in Regulation 15 sections e. and f. Applicant shall install front loading, horizontal axis washing machines with a modified water factor of 5.5 or less. Dishwashers shall be energy star rated and use no more than 5 gallons per load. Toilets shall be District approved High Efficiency Toilets that meet the EPA water sense specification. Applicant shall install District approved weather-based irrigation controllers, drip irrigation on non-turf

areas, and is subject to turf limitations. Refer to the aforementioned water conservation regulation for a complete listing of all requirements.

10. All estimated costs set forth in this agreement shall be subject to periodic review and revision at the District's discretion. In the event the Applicant has not completed financial arrangements with the District in accordance with Section 6 hereof prior to expiration of six (6) months from the date of this agreement, all Initial Charges and estimated costs set forth in Section 4 hereof shall be revised to reflect then current District charges and estimates. In the event the Applicant has not secured final land use approval for the project from the City of Novato or County of Marin, recorded a final map and diligently commenced construction of improvements required by those agencies and the District prior to expiration of one (1) year from the date of this agreement, the District may, at its option, either retract financial certifications issued to City, County and State agencies and terminate this agreement or require amendment of this agreement and review of all Initial Charges and estimated costs contained herein. The Applicant shall pay any balance due upon demand or furnish a guarantee of such payment satisfactory to the District.

11. All extensions of time granted by the City of Novato or the County of Marin for the Applicant to comply with conditions of land use approval or to construct improvements pursuant to a subdivision improvement agreement shall require concurrent extensions of this agreement and shall be cause for review and revision of all Initial Charges and estimated costs set forth in Section 4 hereof. The Applicant shall apply to the District for extension of this agreement prior to approval of the Applicant's requests for such extensions by either the City of Novato or the County of Marin.

12. This agreement shall bind and benefit the successors and assigns of the parties hereto; however, this agreement shall not be assigned by the Applicant without the prior written consent of the District. Assignment shall be made only by a separate document prepared by the District at the Applicant's written request.

**NORTH MARIN WATER DISTRICT**  
"District"

**ATTEST:**

\_\_\_\_\_  
Dennis Rodoni, President

\_\_\_\_\_  
Katie Young, Secretary

(SEAL)

Ryder Novato Investors, LLC  
Ryder Homes of California, Inc.  
Its: Manager  
"Applicant"

(SEAL)

---

N. Jay Ryder, President

NOTES: *If the Applicant executing this agreement is a corporation, a certified copy of the bylaws or resolutions of the Board of Directors of said corporation authorizing designated officers to execute this agreement shall be provided.*

*This agreement must be executed by the Applicant and delivered to the District within thirty (30) days after it is authorized by the District's Board of Directors. If this agreement is not signed and returned within thirty days, it shall automatically be withdrawn and void. If thereafter a new agreement is requested, it shall incorporate the Initial Charges (connection fees) and cost estimates then in effect.*

**ALL SIGNATURES MUST BE ACKNOWLEDGED BEFORE A NOTARY PUBLIC.**

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## MEMORANDUM

To: Board of Directors

June 20, 2014

From: Ryan Grisso, Water Conservation Coordinator *RG*

Subject: Approve Content and Layout for Summer 2014 Bill Insert/Flyer

W:\Memos to Board\Summer Bill Insert 0614.doc**RECOMMENDED ACTION:** Approve Summer 2014 Bill Insert/Flyer**FINANCIAL IMPACT:** \$2,000 (included in proposed FY 2014/2015 Budget)

Content and layout for a Summer 2014 Bill Insert/Flyer targeting Novato Customers is attached for your review (Attachment 1). The Bill Insert/Flyer contains information regarding conservation programs offered by the District. Staff is currently pursuing options to send this out as a direct mail flyer so all customers will receive the flyer at once in July. Staff also considered delivering the information as a bill insert, in which some customers could receive the flyer as late as September, but recommend the direct mail method. Should any Board member have individual comments please provide them to the General Manager at the Board meeting on June 24, 2014. It is expected the Summer 2014 Bill Insert/Flyer will be mailed in mid-July 2014.

RECOMMENDATION

Board authorize the General Manager to approve final content and design of Summer 2014 Bill Insert/Flyer.

Approved by GM *WD*Date *6/20/2014*



**NORTH MARIN  
WATER DISTRICT**

# The Drought Is Still On

Since July 2013, Novato has received less than 13 inches of rain making it the third driest year since 1916.

## *Join Your Neighbors in Saving Water!*

Preserve our water supply. Reduce water use by 20%.  
Waste and nonessential use of water is prohibited.

North Marin Water District is asking customers to reduce water use by 20%.

## How do you save 20%?



	<i>Estimated Savings</i>
• Repair leaks and broken sprinkler heads	50 - 100 gallons per day
• Adjust sprinklers to prevent over spray	15 - 25 gallons per day
• Shorten irrigation cycles	100 - 165 gallons per day
• Install a pool and hot tub cover	30 gallons per day
• Remove lawn and install low water use plants	33 - 60 gallons per 1,000 sq ft
• Turn off the water when brushing teeth	5 - 10 gallons per day
• Fix leaky toilets	30 - 50 gallons per day per toilet
• Replace older, inefficient clothes washers	20 - 30 gallons per load
• Replace toilets installed before 1992	6 - 10 gallons per day

**There's a Drought On. Turn the Water Off.**

## The Water Smart Home Survey

It's free. It's easy. And may save you some money.



Call to schedule at 707-547-1909  
or visit [www.NMWD.com](http://www.NMWD.com).

### The Water Smart Home Survey includes:

- Free outdoor and indoor water efficiency check.
- Free landscape irrigation schedule.
- Free leak detection test.
- Free rebate and incentive information.
- Free low-flow showerheads and aerators.



# Free Glass Water Bottle

Receive a free 32 oz glass water bottle when you sign up for a free Water Smart Home Survey!

**NORTH MARIN  
WATER DISTRICT**

The survey includes:

- Free outdoor and indoor water efficiency check.
- Free landscape irrigation schedule.
- Free leak detection test.
- Free rebate and incentive information.
- Free low-flow showerheads and aerators.



To Schedule Your Free Water Smart Home Survey and Receive Your Free Bottle  
**707-547-1909 [www.NMWD.com](http://www.NMWD.com)**

## Water Saving Landscape Rebates

North Marin Water District is offering customers cash in exchange for reducing the amount of lawn in their landscape. NMWD will pay \$50 per 100 sq ft of lawn replaced with low water use plants or synthetic turf. Limit of \$400 per house.

Replace your old sprinklers with more water efficient equipment including a drip system or new sprinklers. NMWD will pay 50% of the cost up to a maximum of \$100.

Call or visit the website for more details on these programs.

*Note: In order to be eligible for these rebates you MUST have a pre-inspection before doing any work.*



**415-761-8944 [www.NMWD.com](http://www.NMWD.com)**

*Printed on 100% recycled paper*

## New Rebate Programs Available!



### Pool Cover

Up to \$50 rebate for installing a new solar or safety pool cover with non-netted material. Limit one rebate per household.

### Ultra High Efficiency Toilet

Up to \$150 per pre-1992 toilet replaced with a model that uses 1.1 gallons per flush or less. See [www.NMWD.com](http://www.NMWD.com) for the list of qualifying UHET models. The \$100 HET rebate is also still available for qualifying HET models.

### Lawn Be Gone

Free mulch, compost and cardboard to sheet mulch. Sheet mulching is an effective way to transform grass into a low water use garden without lawn killing chemicals or a sod cutter.

### Hot Water Recirculating

\$75 rebate for a manually activated hot water recirculating pump.

All rebates require a pre-inspection appointment prior to installation/participation. Call 707-547-1909 to schedule.

11

## MEMORANDUM

To: Board of Directors

June 20, 2014

From: Ryan Grisso, Water Conservation Coordinator *RG*Subject: Approve Text for West Marin *Water Line*, Volume 12

W:\Memos to Board\Summer 2014 WM WaterLine Text 0614.doc

**RECOMMENDED ACTION:** Approve Summer 2014 West Marin "*Water Line*"**FINANCIAL IMPACT:** \$2,000 (included in proposed WM FY 2014/2015 Budget)

Text for the West Marin Summer 2014 "*Water Line*", Volume 12 (Attached), is enclosed for your review and approval. This issue includes a message from the General Manager reminding customers of the dry year conditions on Lagunitas Creek and mandatory water use restrictions, Drought Drive Up Day and Ultra High Efficiency Toilet Giveaway information, and a list of conservation programs offered. Should any Board member have individual comments please provide them to the General Manager at the Board meeting on June 24, 2014. It is expected the Summer 2014 West Marin "*Water Line*" will be mailed in Early July 2014.

RECOMMENDATION

Board authorize the General Manager to approve final text and design of the West Marin Summer 2014 "*Water Line*", Volume 12.

Approved by GM *CD*Date *6/20/2014*



NORTH MARIN  
WATER DISTRICT

# THE WATER LINE

WEST MARIN'S WATER CONSERVATION NEWSLETTER • VOLUME 12 • SUMMER 2014

## It's A Drought – Save Water!

Dry year conditions exist on Lagunitas Creek

**N**MWD water supply for our West Marin customers is diverted from shallow wells adjacent to Lagunitas Creek near the U.S. Coast Guard Housing Facility in Point Reyes Station. On June 16th flow in Lagunitas Creek can drop to 6 cubic feet per second (cfs). This is 25% below the normal Lagunitas Creek summer flow and the first summer in which NMWD has operated the West Marin Water System with such low creek flow and without the Giacomini Ranch summer dam to prevent salinity intrusion into the water supply.

A mandatory 25% reduction in water use is in place, but there is currently no individual rationing required. Together, as a community we expect customers will work to conserve so that Lagunitas

Creek water will be available for both people and fish. You can see your water use history and target to reduce 25% by visiting the NMWD website [www.nmwd.com](http://www.nmwd.com)



, select the YOUR ACCOUNT tab and click on Account Balance & Consumption. Once you determine your water use reduction target, visit [www.wateroff.org](http://www.wateroff.org) and access the WATER

SAVINGS CALCULATOR link under the TIPS button to explore water saving measures that you can undertake to reach your target.

Residential customers using less than 200gpd (gallons per day) are already in compliance, but are requested to conserve more if possible. Commercial accounts and residential customers using more than 200gpd are subject to a "drought surcharge" of \$2.50/1000gpd consumed (1/4c/gallon).

NMWD customers are encouraged to use water efficiently during this drought period and to participate in NMWD Water Use Efficiency Programs described elsewhere in this *Water Line*.

## Drought Drive-Up

Thursday, August 14<sup>th</sup>  
10:00am - 2:00pm

Visit our drive-up location for your **FREE** "drought tool kit"  
Point Reyes Station - Dance Palace

**BUILD YOUR CUSTOM DROUGHT TOOL KIT FROM THE FOLLOWING WATER FRIENDLY GADGETS:**

**FREE** aerators  
dye tabs  
showerheads  
conservation tip card

[www.nmwd.com](http://www.nmwd.com)

There's a **Drought On.**  
Turn the **Water Off.**



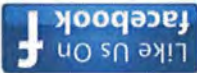
# Water Smart Savings Program

Call (415) 761-8944 for program details or visit [www.nmwd.com](http://www.nmwd.com)



North Marin Water District wants to help customers use water efficiently. That's why we've put all of our water saving promotions under one umbrella. The *Water Smart Savings Program* encompasses all you need to get started on saving water and saving money. Call (415) 761-8944 for program details or visit [www.nmwd.com](http://www.nmwd.com).

- ◆ **Water Smart Home Survey:** This free service includes indoor and outdoor water efficiency checks: a landscape irrigation system evaluation and basic leak detection test.
- ◆ **Water Conserving Fixtures:** Free showerheads, faucet aerators and self-closing hose nozzles are available upon request.
- ◆ **High Efficiency Toilet Rebate:** Customers who replace an old water-guzzling toilet with a high efficiency toilet are eligible for a rebate.
- ◆ **High Efficiency Clothes Waster Rebate:** NMWD offers a rebate to customers when they purchase a qualifying high efficiency clothes washer.
- ◆ **Cash for Grass Rebate:** Get Cash for removing irrigated and maintained lawn and replacing it with low water use plants or synthetic lawn.
- ◆ **Water Smart Landscape Rebate:** Rebates available for water efficient landscape equipment, like anew drip irrigation system replacing a spray system or a rain shut off device.
- ◆ **Smart Controller Rebate:** A Smart Controller uses weather data and site specific information like type of plant to automatically adjust run times.
- ◆ **Rainwater Catchment Rebate:** Rebate for collection and storage of rainwater for reuse.
- ◆ **Greywater Rebate:** Rebate for the reuse of water from washing machine, shower or bathroom sink to water plants.



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STRAHMCOM

**NORTH MARIN WATER DISTRICT**  
[www.nmwd.com](http://www.nmwd.com)  
999 Rush Creek Place  
PO Box 146  
Novato, CA 94948  
(415) 897-4133



## Ultra High Efficiency Toilet Giveaway

**N**MWD will be distributing a limited number of (FREE) Ultra High Efficiency Toilets in summer 2014. The free toilets are available only to customers who are replacing toilets installed prior to the year 1993. Toilets previously rebated or provided by NMWD will not be eligible for replacement with the new Ultra High Efficiency Toilets. Post inspection to verify installation will be required.

NMWD is collecting a list of interested customers and will select recipients from the list of eligible customers. Reply to [waterconserve@nmwd.com](mailto:waterconserve@nmwd.com) with your name, address, phone number and email address to get your name on the list.



*Niagara Stealth 0.8 gallons per flush*

12



## MEMORANDUM

TO: Board of Directors June 20, 2014  
 FROM: Drew McIntyre, Chief Engineer   
 SUBJ: Atherton Avenue Land Division Renewal of Letter Agreement with the Novato Fire Protection District

R:\Folders by Job No\1000 jobs\1895\2014\1895 NFPD Atherton Ave BOD Memo June 2014.doc

**RECOMMENDED ACTION:** That the Board authorize renewal of the letter agreement financial guarantee for another forty-eight months.

**FINANCIAL IMPACT:** None, information only

In February 1996, North Marin Water District and Novato Fire Protection District (NFPD) executed a letter agreement to serve as financial guarantee by the Fire District for all costs associated with construction of water distribution facilities to serve the above referenced project (see Vicinity Map in Attachment 1). This letter agreement expired in February 1998, and an extension was granted to NFPD for another two (2) years. Subsequently, three more extensions have been given to NFPD, the most current expires June 21, 2014. NFPD intends to revert the parcel to acreage for construction of a training facility, but has not yet initiated the land use approval process. NFPD is requesting another four (4) year renewal of the letter agreement (see Attachment 2).

A brief history of this project is as follows:

1. The property was divided into three lots for single family homes by NFPD. The Preliminary Map was approved by the County of Marin on January 5, 1981. The water agreement is dated June 28, 1982.
2. The property was sold to John Groshak and Doris Groshak in 1986. The water agreement was assigned to Mr. & Mrs. Groshak on July 29, 1986. The lots were not developed.
3. The property was sold to Grace Lutheran Church in 1989. The water agreement was assigned to the church on September 14, 1989. The new church planned by Grace Lutheran Church was not built.
4. Grace Lutheran Church merged with the Lutheran Church of the Resurrection and sold the three lots back to NFPD in 1996. The Fire District has expressed its intent to cause the land division to revert to acreage and to utilize the land for a new classroom/storage facility. The proposed facility would be accessed from the adjacent fire station/training center.

Staff updated the water agreement initial charges and cost estimate and released the assignment documents for signatures by the Lutheran Church and NFPD. Formal authorization of the assignment to NFPD was approved at the February 20, 1996 meeting, with an

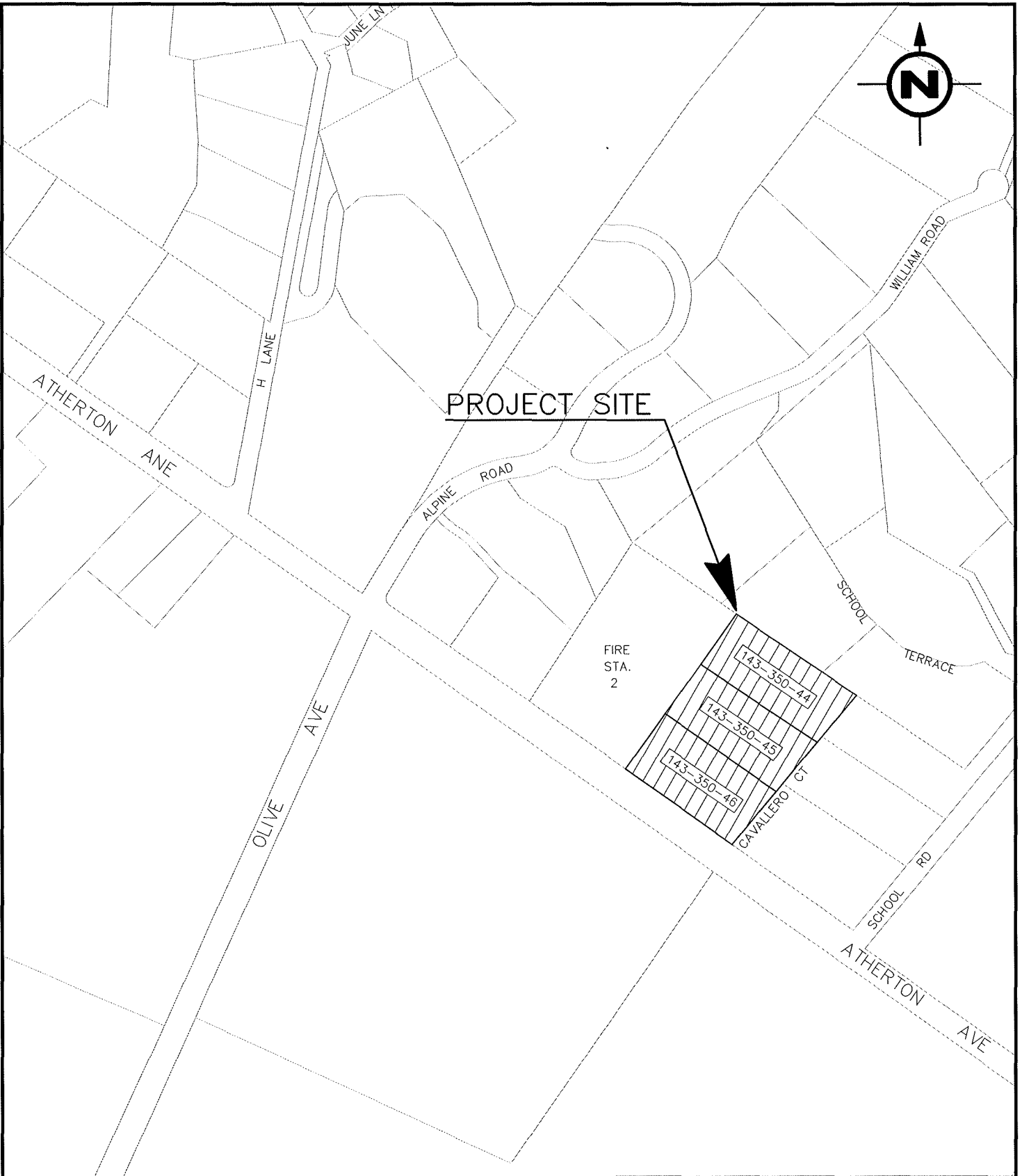
accompanying letter agreement a providing a financial guarantee of \$29,711.00. With the most recent NFPD extension request, the initial charges and construction costs of \$145,662 remain unchanged from 2010. If there is further assignment from the Fire District to another party or should the Fire District construct a training facility the agreement would be revised (including an update of all agreement costs).

The water agreement including financial guarantee for this project must remain in effect as long as the three marketable lots exist. Should the Fire District secure approval from the County of Marin for a reversion to acreage, the agreement can be canceled.

RECOMMENDATION:

That the Board authorize renewal of the letter agreement financial guarantee for another forty-eight months.

Jun 18, 2014 - 2:04pm W:\JOB\SET\_UP\TEMP\_MAP\_TEMPLATE.dwg User: ACANTILLER



ATHERTON LAND AGREEMENT			
APN: 143-350-44, 45, 46			
DATE	SCALE	JOB.NO.	DWG.NO.
06/18/14	NTS	1895	MAP



# NOVATO FIRE DISTRICT

95 Rowland Way, Novato, CA 94945 • 415.878.2690 • Fax 415.878.2660 • www.novatofire.org

June 5, 2014

North Marin Water District  
PO Box 146  
Novato, CA 94948-0146

Subject: Atherton Avenue Land Division APN#143-180-44, 45, and 46  
NMWD File 1 11895.00

This letter shall constitute an agreement by and between the Novato Fire Protection District and North Marin Water District as follows:

The Board of Directors for the Novato Fire Protection District hereby request that the Water District accept this letter of agreement in lieu of requiring the Fire District to post cash payments, bonds, or letters of credit from financial institutions as guarantee of payment to the Water District of all costs associated with construction of water distribution facilities to provide water service to each parcel of the above referenced project in accordance with the terms and condition of that certain Water Service Facilities Construction Agreement between the Water District and the Fire District dated June 28, 1982, and revised by that certain Letter Agreement dated January 24, 2006. The amount of his guarantee is currently estimated to be One Hundred Forty Five Thousand, Six Hundred and Sixty-Two (\$145,662) U.S. Dollars.

As requested, the North Marin Water District accepts this letter as a financial guarantee to secure payment by the Fire District of all costs associated with construction of said water distribution facilities to serve the above referenced project subject to the following conditions:

This guarantee shall remain in full force and effect unless or until either the Novato Fire Protection District causes said land division to revert to acreage by consolidation of the three individual parcels into one parcel by the County of Marin or until this guarantee is released in writing by the Water District.

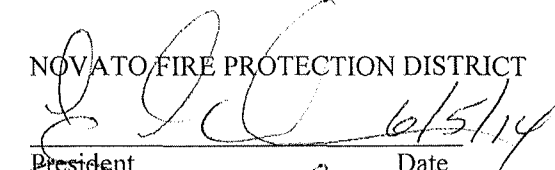
In the event of sale by the Fire District of any or all of the parcels created by the above-reference Atherton Avenue Land Division or elapse for forty-eight (48) months from the date of execution of this letter agreement, then (i) the full amount of this financial guarantee shall immediately and upon demand become due and payable to the Water District; (ii) the existing water service agreement between the Water District and the Fire District shall terminate; and (iii) the Water District and the Fire District, or its successors, shall enter into new water service agreements, subject to the then existing rules and regulations of the Water District.

NORTH MARIN WATER DISTRICT

\_\_\_\_\_  
President Date

\_\_\_\_\_  
Secretary Date


NOVATO FIRE PROTECTION DISTRICT

  
\_\_\_\_\_  
President Date

  
\_\_\_\_\_  
Secretary Date

13

## MEMORANDUM

To: Board of Directors  
From: Brad Stompe, Treatment and Distribution Supervisor   
Subject: Chemical bids

June 20, 2014

\\172.16.100.6\ops\ops sup\distribution operator file\brad\memos\memo to board chemical bids fin.doc

**RECOMMENDED ACTION:** Information Only

**FINANCIAL IMPACT:** Savings of approximately \$58,000/year

North Marin Water District is now participating in a bay area bulk chemical bid process with the Bay Area Chemical Consortium (BACC) made up of these agencies:

**East Bay:** Alameda County Water District, City of Hayward and Oro Loma Sanitary District.

**South Bay:** City of San Jose and Santa Clara Valley Water District.

**Tri-Valley:** City of Livermore and Zone 7 Water Agency.

**Peninsula:** City of San Mateo and City of South San Francisco.

**Marin-Sonoma-Napa:** Central Marin Sanitation Agency City of Mill Valley/Sewerage Agency of Southern Marin, Napa Sanitation District, North Marin Water District and Sausalito Marin City Sanitary District.

**Central Valley:** City of Fresno, City of Manteca and City of Stockton.

The chemicals of interest to the District are sodium hydroxide (pH adjustment), ferric chloride (coagulant) and sodium hypochlorite (disinfectant). One other bulk chemicals that we use, sodium chlorite for chlorine dioxide generation, was not put out to bid due to lack of participants. The bid prices that came back for sodium hydroxide, ferric chloride and sodium hypochlorite were 38%, 25% and 64% lower than our current costs respectively. The bid evaluations are included for reference.

Assuming Stafford Treatment Plant production of 2300 acre feet per year our chemical savings would amount to approximately \$58,000/year. For fiscal year 2014-15 we expect to spend \$30,000 for sodium hydroxide, \$97,000 for ferric chloride and \$12,000 for sodium hypochlorite. The lowest bidding vendors for these chemicals are vendors that we have used or are currently using and the District has a good working relationship with each.

Staff is taking advantage of this opportunity to increase our purchasing power through this collaborative bulk purchasing agreement with our neighboring agencies.

**DUBLIN  
SAN RAMON  
SERVICES  
DISTRICT**



7051 Dublin Boulevard  
Dublin, California 94568  
Phone: 925 828 0515  
FAX: 925 829 1180  
www.dsrtd.com

May 13, 2014

Univar USA Inc.  
Attention: WER Muni team  
8201 S. 212<sup>th</sup> Street  
Kent, WA 98032

**Re: Notice of Intent to Award Contract in Response to Bay Area Chemical Consortium (BACC)  
Bid No. 15-2014 for Supply and Delivery of Sodium Hydroxide**

Dear WER Muni team:

After completing our review of the bids that were received in response to the Bay Area Chemical Consortium (BACC) solicitation for sodium hydroxide, Bid No. 15-2014, we are pleased to advise you that the bid submitted by Univar USA Inc. has been found to be complete and in compliance with all of the specifications described in the bid documents. Enclosed is a copy of the bid tabulation results. Furthermore, the bid submitted by Univar USA Inc. was determined to be the lowest responsive bid for the supply and delivery of sodium hydroxide during the period July 1, 2014 through June 30, 2015. Therefore, our review of the bids is complete, and the participating BACC agencies should be contacting you shortly to discuss entering into contracts with Univar for their respective facilities.

Bay Area Chemical Consortium sincerely appreciates your efforts and participation in this competitive bid process.

If you have any questions, please feel free to contact me at (925) 875-2398.

Sincerely,

Louanne Ivy  
Administrative Analyst II – Operations  
DUBLIN SAN RAMON SERVICES DISTRICT

Cc: Bay Area Chemical Consortium Member Agencies  
Enclosure

BAY AREA CHEMICAL CONSORTIUM  
 BID TABULATION FOR BID NO. 15-2014  
 SUPPLY AND DELIVERY OF SODIUM HYDROXIDE  
 OPEN DATE: TUESDAY, April 15, 2014 @ 9:00 A.M. PDT

	North Bay	North Bay	East Bay	East Bay	South Bay	Tri-Valley	Tri-Valley	Marin-Sonoma-Napa	Marin-Sonoma-Napa	Central Valley	Central Valley
	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price
	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.	Per Dry Lb.
Bidder	30% NaOH	50% NaOH	25% NaOH	50% NaOH	50% NaOH	25% NaOH	50% NaOH	25% NaOH	50% NaOH	25% NaOH	50% NaOH
Brenntag Pacific, Inc.	\$0.265	\$0.247	\$0.277	\$0.2485	\$0.2495	\$0.274	\$0.247	\$0.2795	\$0.2495	\$0.2795	\$0.2495
Olin Corporation	\$0.265	\$0.245	\$0.26645	\$0.24495	\$0.22895	\$0.271	\$0.248	\$0.282	\$0.257	\$0.315	\$0.25
Univar USA Inc.	\$0.2229	\$0.2165	\$0.2312	\$0.2165	\$0.2175	\$0.2332	\$0.2175	\$0.2352	\$0.2202	\$0.2352	\$0.2202
Sierra Chemical Co.	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid

OPTIONAL BID ITEM

Special Bid Price  
 for Union SD  
 Per Dry Lb.

Brenntag Pacific, Inc.	\$1.01
Olin Corporation	No Bid
Univar USA Inc.	No Bid
Sierra Chemical Co.	No Bid

Lowest Responsive Bid



**DUBLIN  
SAN RAMON  
SERVICES  
DISTRICT**



7051 Dublin Boulevard  
Dublin, California 94568  
Phone: 925 828 0515  
FAX: 925 829 1180  
www.dsrsd.com

May 13, 2014

Kemira Water Solutions  
Attention: Christina M. Addington  
4321 W. 6<sup>th</sup> Street  
Lawrence, KS 66049

**Re: Notice of Intent to Award Contract in Response to Bay Area Chemical Consortium (BACC)  
Bid No. 06-2014 for Supply and Delivery of Ferric Chloride**

Dear Ms. Addington:

After completing our review of the bids that were received in response to the Bay Area Chemical Consortium (BACC) solicitation for Ferric Chloride, Bid No. 06-2014, we are pleased to advise you that the bid submitted by Kemira Water Solutions has been found to be complete and in compliance with all of the specifications described in the bid documents. Enclosed is a copy of the bid tabulation results. Furthermore, the bid submitted by Kemira Water Solutions was determined to be the lowest overall responsive bid for the supply and delivery of ferric chloride during the period July 1, 2014 through June 30, 2015. Therefore, our review of the bids is complete, and the participating BACC agencies should be contacting you shortly to discuss entering into contracts with Kemira Water Solutions for their respective facilities.

Bay Area Chemical Consortium sincerely appreciates your efforts and participation in this competitive bid process.

If you have any questions, please feel free to contact me at (925) 875-2398.

Sincerely,

A handwritten signature in cursive script, appearing to read "Livy", is written over a horizontal line.

Louanne Ivy  
Administrative Analyst II – Operations  
DUBLIN SAN RAMON SERVICES DISTRICT

Cc: Bay Area Chemical Consortium Member Agencies  
Enclosure

BAY AREA CHEMICAL CONSORTIUM  
 BID TABULATION FOR BID NO. 06-2014  
 SUPPLY AND DELIVERY OF FERRIC CHLORIDE  
 OPEN DATE: TUESDAY, APRIL 15, 2014 @ 9:00 A.M. PDT

Bidder	East Bay	East Bay	South Bay	South Bay	Tri-Valley	Tri-Valley	Peninsula	Peninsula	Marin-Sonoma-Napa	Marin-Sonoma-Napa	Central Valley	Central Valley	Total
	Unit Price	Cost at Estimated	Unit Price	Cost at Estimated	Unit Price	Cost at Estimated	Unit Price	Cost at Estimated	Unit Price	Cost at Estimated	Unit Price	Cost at Estimated	
	Per Dry Ton	870 dry tons	Per Dry Ton	899 dry tons	Per Dry Ton	1,255 dry tons	Per Dry Ton	238 dry tons	Per Dry Ton	559 dry tons	Per Dry Ton	2,941 dry tons	Overall Cost
Thatcher Company of California, Inc.	\$544.50	\$473,715.00	\$552.25	\$187,212.75	\$536.68	\$673,533.40	\$552.70	\$131,542.60	\$527.06	\$294,526.54	\$567.65	\$1,669,458.65	\$3,430,088.94
Penco, Inc.	\$784.00	\$682,080.00	\$784.00	\$265,776.00	\$744.00	\$933,720.00	\$798.00	\$189,924.00	\$887.00	\$495,833.00	\$734.00	\$2,158,694.00	\$4,726,027.00
California Water Technologies, LLC	\$937.00	\$815,190.00	\$937.00	\$317,643.00	\$937.00	\$1,175,935.00	\$937.00	\$223,006.00	\$937.00	\$523,783.00	\$937.00	\$2,755,717.00	\$5,811,274.00
Kemira Water Solutions	\$540.00	\$469,800.00	\$579.00	\$196,281.00	\$540.00	\$677,700.00	\$543.00	\$129,234.00	\$540.00	\$301,860.00	\$497.00	\$1,461,677.00	\$3,236,552.00
Univar USA Inc.	No Bid		No Bid		No Bid		No Bid		No Bid	\$0.00	No Bid		

Lowest Responsive Bid

**DUBLIN  
SAN RAMON  
SERVICES  
DISTRICT**



7051 Dublin Boulevard  
Dublin, California 94568  
Phone: 925 828 0515  
FAX: 925 829 1180  
www.dsrdsd.com

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May 13, 2014

Univar USA Inc.  
Attention: WER Muni team  
8201 S. 212<sup>th</sup> Street  
Kent, WA 98032

**Re: Notice of Intent to Award Contract in Response to Bay Area Chemical Consortium (BACC)  
Bid No. 16-2014 for Supply and Delivery of 12.5% Sodium Hypochlorite**

Dear WER Muni team:

After completing our review of the bids that were received in response to the Bay Area Chemical Consortium (BACC) solicitation for 12.5% sodium hypochlorite, Bid No. 16-2014, we are pleased to advise you that the bid submitted by Univar USA Inc. has been found to be complete and in compliance with all of the specifications described in the bid documents. Enclosed is a copy of the bid tabulation results. Furthermore, the bid submitted by Univar USA Inc. was determined to be the lowest responsive bid for the supply and delivery of 12.5% sodium hypochlorite during the period July 1, 2014 through June 30, 2015. Therefore, our review of the bids is complete, and the participating BACC agencies should be contacting you shortly to discuss entering into contracts with Univar for their respective facilities.

Bay Area Chemical Consortium sincerely appreciates your efforts and participation in this competitive bid process.

If you have any questions, please feel free to contact me at (925) 875-2398.

Sincerely,

Louanne Ivy  
Administrative Analyst II – Operations  
DUBLIN SAN RAMON SERVICES DISTRICT

Cc: Bay Area Chemical Consortium Member Agencies  
Enclosure

BAY AREA CHEMICAL CONSORTIUM  
 BID TABULATION FOR BID NO. 16-2014  
 SUPPLY AND DELIVERY OF 12.5% SODIUM HYPOCHLORITE  
 OPEN DATE: TUESDAY, APRIL 15, 2014 @ 9:00 A.M. PDT

Bidder	North Bay	East Bay	South Bay	Tri-Valley	Peninsula	Marin-Sonoma-Napa	Central Valley
	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price	Unit Price
	Per Gallon	Per Gallon	Per Gallon	Per Gallon	Per Gallon	Per Gallon	Per Gallon
Olin Corporation	\$0.564	\$0.564	\$0.564	\$0.524	\$0.574	\$0.584	\$0.594
Univar USA Inc.	\$0.4027	\$0.4221	\$0.4221	\$0.4170	\$0.4354	\$0.5450	\$0.4895
Sierra Chemical Co.	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid
Hasa Inc.	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid	No Bid

OPTIONAL BID  
ITEM

City of Gilroy

Unit Price

Bidder	Per Gallon
Hasa Inc.	No Bid
Olin Corporation	No Bid
Univar USA Inc.	\$2.66
Sierra Chemical Co.	No Bid

Lowest Responsive Bid

**BACC FY 2014-2015 BID PRICES**

Chemical	GEOGRAPHIC AREA							Vendor
	North Bay	East Bay	South Bay	Tri-Valley	Peninsula	Marin-Sonoma Napa	Central Valley	
Aluminum Sulfate	\$0.5869/gal		\$0.5869/gal					Chemtrade Chemicals US
Ammonium Sulfate		\$3.03/gal		\$0.565/lb.				Brenntag Pacific, Inc.
Calcium Nitrate						\$2.19/gallon \$0.5093/lb of nitrate oxygen		Evoqua Water Technologies
Citric Acid	\$6.21/gal			\$6.21/gallon \$1.20/dry lb.			\$6.21/gal	Sierra Chemical Co.
Ferric Chloride		\$540.00/dry ton	\$579.00/dry ton	\$540.00/dry ton	\$543.00/dry ton	\$540.00/dry ton	\$497.00/dry ton	Kemira Water Solutions Inc.
Ferrous Chloride	\$600.00/dry ton	\$600.00/dry ton		\$600.00/dry ton	\$600.00/dry ton			Kemira Water Solutions Inc.
Granular Activated Carbon						\$1.142/lb.		Prominent Systems, Inc.
Hydrofluosilicic Acid	\$2.40/gal	\$2.44/gal		\$3.25/gal				Brenntag Pacific Inc.
Hydrogen Peroxide	\$2.38/gal		\$3.91/gal			\$1.99/gal		US Peroxide, LLC
Sodium Bifulfite	\$0.88/gal	\$0.88/gal	\$0.88/gal		\$0.88/gal	\$0.88/gal	\$0.88/gal	Univar USA Inc.
Sodium Hydroxide - 25%		\$0.2312/dry lb.		\$0.2332/dry lb.		\$0.2352/dry lb.	\$0.2352/dry lb.	Univar USA Inc.
Sodium Hydroxide - 30%	\$0.2229/dry lb.							Univar USA Inc.
Sodium Hydroxide - 50%	\$0.2165/dry lb.	\$0.2165/dry lb.	\$0.2175/dry lb.	\$0.2175/dry lb.		\$0.2202/dry lb.	\$0.2202/dry lb.	Univar USA Inc.
Sodium Hypochlorite	\$0.4027/gal	\$0.4221/gal	\$0.4221/gal	\$0.4170/gal	\$0.4354/gal	\$0.5450/gal	\$0.4895/gallon	Univar USA Inc.
Sulfur Dioxide							\$0.4005/lb.	Sierra Chemical Co.
Sulfuric Acid	\$1.143/gal		\$1.128/gal				\$2.60/gal	Sierra Chemical Co.

Chemical	GEOGRAPHIC AREA							Vendor
	North Bay	East Bay	South Bay	Tri-Valley	Peninsula	Marin-Sonoma Napa	Central Valley	
Aries Tek Superflock A-100				\$129.50/55 lb bag				Aries Tek Ltd.
CalChem CC2000							\$2.53/gal	CalChem Enterprises
Kemira PAX-XL19				\$2.85/gal				Kemira Water Solutions Inc.
Kemira PAX-XL8				\$2.11/gal				Kemira Water Solutions Inc.
Nalco CatFloc 8102 Plus				\$6.45/gal				Nalco Company
Nalco CatFloc LS				\$5.53/gal				Nalco Company
Polydyne C-331		\$1.0092/gal						Polydyne Inc.
Polydyne C-6267		\$8.50/gal						Polydyne Inc.
Polydyne Clarifloc A-3310				\$1.85/ lb.				Polydyne Inc.
Polydyne Clarifloc A-6320			\$12.615/gal					Polydyne Inc.
Polydyne Clarifloc C-308P			\$3.182/gal					Polydyne Inc.
Polydyne Clarifloc C-308P						\$5.59/gal		Polydyne Inc.
Polydyne Clarifloc C4410	\$2.72/gal							Polydyne Inc.
Polydyne Clarifloc C-9530					\$9.35/gal			Polydyne Inc.
Polydyne Clarifloc N-120P			\$12.615/gal					Polydyne Inc.
Polydyne Clarifloc WE-289					\$5.04/gal			Polydyne Inc.
Polydyne Clarifloc WE-821						\$10.148/gal		Polydyne Inc.
Polydyne N3300-P	\$1.85/lb.							Polydyne Inc.
Polydyne NW-127							\$1.0092/gal	Polydyne Inc.
Polydyne WE-1265	\$9.35/gal							Polydyne Inc.
Polydyne WE-1265		\$8.075/gal						Polydyne Inc.
Polydyne WE-267					\$1.85/lb.			Polydyne Inc.
Polydyne WE-385		\$8.075/gal						Polydyne Inc.
Polydyne WE-906							\$9.35/gal	Polydyne Inc.
Praestol K275FLX							\$11.43/gal	Hercules Inc.
Praestol K279FLX	\$12.53/gal							Hercules Inc.
Zetag 8846FS						\$17.63/gal		KubWater Resources, Inc.

**14**

**DISBURSEMENTS - DATED JUNE 19, 2014****Item #14**

Date Prepared: 6/17/14

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:

<u>Seq</u>	<u>Payable To</u>	<u>For</u>	<u>Amount</u>
1	Alpha Analytical Labs	Lab Testing	\$1,722.00
2	AT&T	Telephone Charges: Voice Lines	146.16
3	Autoworld	Resistor	5.20
4	Basque, Ron	Novato "Cash for Grass" Program	400.00
5	Bastogne	Refund Overpayment on Open Account	40.00
6	Bruininks, Todd	Novato "Toilet Rebate" Program	300.00
7	Buckelew Programs	Refund Overpayment on Closed Account	111.39
8	California State Disbursement	Wage Assignment Order	1,018.50
9	CalPERS	CalPERS Side Fund Pay-off	2,073,701.00
10		Vision Reimbursement	116.52
11	Cummings Trucking	Sand (65 yds) & Rock (65 yds)	5,580.01
12	Danzger, Norma	Novato "Washer Rebate" Program	50.00
13	Diggs, James	Retiree Exp Reimb (June Health Ins)	1,017.68
14	GFS Chemicals	Turbidity Standard (STP)	137.83
15	Gradl, Michael	Novato "Toilet Rebate" Program	100.00
16	Grainger	Pressure Washer Nozzle	98.66
17	Hensley, Melissa	Novato "Toilet Rebate" Program	200.00
18		Cafeteria Plan: Uninsured Medical Reimbursement	8.00
19	Lab Support	Temporary Staffing During Pregnancy Leave (Lab) (42 hrs) (Balance Remaining on Contract \$12,401)	1,743.00
20	Lacy, Elinor	Novato "Washer Rebate" Program	50.00



Seq	Payable To	For	Amount
21	Landeros, Dianne	Expense Reimb: Baywork Executive Committee Meeting on 6/11/14. Bridge Toll (\$6), Parking (\$13) & Lunch (\$25)	78.10
22	Lavrov, Nicholas	Refund on Closed Account	23.93
23	Lincoln Life	Deferred Compensation PPE 6/15/14	12,920.87
24	Lynch, Steve	Novato "Toilet Rebate" Program	74.99
25	Marin Landscape Materials	Concrete (42 bags) & Rock (18yds) (\$961)	1,171.97
26	Marin County Recorder	Copy of Official Records (4)	28.00
27	Marin County Treasurer	Semi-Annual Bond Service PR-6 Revenue Bond	11,100.00
28	Matchette, Tim	Retiree Exp Reimb (June Health Ins)	349.23
29	MCC Control Systems	Programming Modifications for PLC'S & SCADA (STP) (Balance Remaining on Contract \$950)	1,050.00
30	Miller Pacific Engineering	Engineering Services: Gallagher Well Pipeline (Balance Remaining on Contract \$61,452)	3,247.50
31	Moore, Doug	Retiree Exp Reimb (June Health Ins)	943.40
32	Moyer, Brady	Refund Alternative Compliance Reg 15 Deposit	630.00
33	Nationwide	Deferred Compensation PPE 6/15/14	1,025.00
34	NMWD SRF Account	Safe Drinking Water State Revolving Fund Loan Principal & Interest	574,460.90
35	North Marin Water District	NMWD Employee Association Dues 4/15-5/31/14	890.00
36	Novato Sanitary District	Recycled Water for January 2014	3,569.91
37	Novato Chevrolet	Air Bag Wire Harness (\$48), Bolts for Seat Base ('04 Chevy Silverado), Fan Belts (2) (\$99), Exhaust Flange Gasket, Horn Contact Switch, Oil Filters (2), Air Filters (2), Transmission Filter (\$49) & Motor Oil (14 qts) (\$55)	426.46
38	Office Depot	Speaker Podium for Board Room (\$140) & Laser Pointer	171.11
39	On-Line Resource	Refund Overpayment on Closed Account	74.12

Seq	Payable To	For	Amount
40	Pace Supply	Couplings (9) (\$1,359), Meter Stops (6) (\$201), Bushing (3), Nipples (30) (\$87), 1" Copper Pipe (3,000) (\$13,203), Corp Stops (28) (\$516), Elbows (31) (\$496), Rubber Gasket Meters (1,000) (\$267), Pipe Lube (12 qts) & Dewatering Hand Pump (6) (\$179)	16,377.11
41	Pacific Coast Cutters	Saw Cut Asphalt (Balance Remaining on Contract \$1,728)	1,097.21
42	Pedone, John	Novato "Toilet Rebate" Program	200.00
43	PG&E	Power: Bldgs/Yard (\$3,665), Rectifier/Controllers (\$1,978.03), Pumping (\$28,088.13), Treatment (\$127) & Other (\$279)	34,299.90
44	Point Reyes Prop Mgmt Assn	January Through June 2014 HOA Dues (25 Giacomini Rd)	450.30
45	Radio Shack	Memory Cards for Tank Security Camera (3) (\$33) & Pressure Recorder Batteries (2)	54.46
46	Roberts, Renee	Retiree Exp Reimb (June Health Ins)	349.23
47	Sequoia Safety Supply	Brief Relief Urine Bags (100) (\$231), Safety Glasses (12) & Sting Relief Wipes (40)	277.38
48	Shirrell Consulting Services	June Dental Insurance Admin Fee	288.15
49	Staff, Kimberly	Refund Alternative Compliance Reg 15 Deposit	315.00
50	State Water Resources Control	Clean Drinking Water State Revolving Fund Annual Loan Principal & Interest	96,153.16
51	Sullivan, David & Mary	Novato "Washer Rebate" Program	50.00
52	Syar Industries	Asphalt (9 tons)	1,131.49
53	TelePacific	June Telephone Charges	462.91
54	Thompson, Bruce W.	Novato "Toilet Rebate" Program	100.00
55	Univar	Sodium Hydroxide (25,748 lbs)	9,127.67
56	USA BlueBook	Phosphoric Acid	78.49
57	US Bank	May Safekeeping Fee- Treasury Security	64.25

Seq	Payable To	For	Amount
58	Vali Cooper & Associates	Construction Management Services to AEEP Reaches A-D MSN B3 Project (Balance Remaining on Contract \$1,245,572)	34,840.06
59	Verizon California	Telephone Charges: Leased Lines	191.33
60	Yamagata, Cynthia	Novato "Toilet Rebate" Program	98.00
<b>TOTAL DISBURSEMENTS</b>			<b><u><u>\$2,894,787.54</u></u></b>

The foregoing payroll and accounts payable vouchers totaling \$2,894,787.54 are hereby approved and authorized for payment.



Auditor-Controller

6/17/14

Date



General Manager

6/17/2014

Date

**MEMORANDUM**

To: Board of Directors  
 From: Nancy Williamson, Senior Accountant  
 Subject: May 2014 Equipment Auction Report  
t:\finance\memos\bod memo vehicle auction 0514.doc

June 20, 2014

**RECOMMENDED ACTION:** Information Only  
**FINANCIAL IMPACT:** \$48,552 Income Received

At the March 18, 2014 Board of Directors meeting the Board approved the disposal of surplus equipment at auction. At that time staff estimated an \$11,500 return. The following equipment was sold at auction by 1<sup>st</sup> Capitol Auction on April 25, 2014, and payment was received May 20, 2014.

<u>Equip. No.</u>	<u>Description</u>	<u>Miles</u>	<u>Est Value</u>	<u>Net Received<sup>1</sup></u>
#29	1993 Ford F250 4X4, Needs Trans and Steering work	150,111	\$1,000	\$1,248
#30	1994 Chevrolet C1500 PU, does not drive	135,600	\$500	\$768
#42	2001 Dodge Dakota, Runs and Drives	123,206	\$1,500	\$1,248
#55	1999 International 5yd dump, Needs Engine rebuild, does not drive	67,588	\$2,000	\$12,000
#76	2003 Vac Tec Vacuum Excavator, Runs and works	8,050 hrs.	\$3,000	\$13,440
#64	1989 Case 360 Trencher VIN#JAF00223371	245 hrs.	\$1,000	\$3,360
#60	1973 John Deere 350B Dozer VIN#191797 Runs and works	194hrs	\$1,000	\$12,960
#902C	1997 Hyster S-25 XL Forklift, Runs and works	----	\$1,000	\$1,632
	2005 Quincy QT-15 Duplex compressor, Pumps need overhaul	8,200 hrs	\$500	\$1,440
	Royal Utility Truck Body	----	\$0	\$456
		Total	<u>\$11,500</u>	<u>\$48,552</u>

<sup>1</sup>Net of Capitol Auction's 4% commission.



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## State regulators regain right over

### Russian River water drain

Bob Egelko

Published 1:44 pm, Tuesday, June 17, 2014

A state appeals court has restored the authority of California water regulators to direct reductions in cold-weather sprays by grape growers and other waterfront farmers along the Russian River that have led to deaths of endangered species of salmon.

A Mendocino County judge had ruled that the state Water Resources Control Board lacked authority to restrict longtime users of river water. The First District Court of Appeal in San Francisco disagreed Monday, saying the board has the power to prohibit growers from "using water in an unreasonable manner" and to decide whether the protection of wildlife habitat outweighs growers' commercial needs.

The case dates from April 2008, when young salmon were found dead along the banks of the Russian River and its tributaries in Sonoma and Mendocino counties. The National Marine Fisheries Service estimated the deaths at 25,000 and said the main cause was sudden decreases in water levels due to spraying by farmers, mostly grape growers, to protect their crops from freezing during unseasonably cold weather.

Three years later, the state water board adopted regulations to reduce growers' use of river water in similar conditions. The board said it would allow designated groups of growers to propose detailed restrictions on water diversions, along with alternative crop-protection measures, subject to the board's approval.

Superior Court Judge Ann Moorman blocked the board's action, saying riverbank growers had historic rights to use river water, and also finding that the board had not shown the need for the restrictions.

Monday's appellate ruling allows the board to go ahead with its plans. The board has said it would collect and analyze data for 2 1/2 years before imposing limits on water use.

During cold and dry weather, the diversion of Russian River water by large numbers of growers for frost protection "has the potential to inflict long-lasting damage on already fragile salmon populations," said Justice Sandra Margulies in the 3-0 ruling. She said the river and its tributaries contain more than 1,700 miles of potential salmon habitat.

Although the state board cannot require permits from farmers who have historically used river water, Margulies said, the board has the authority to prohibit them from "using water in an unreasonable manner," and to decide whether the protection of wildlife habitat outweighs growers' commercial needs.

She also said the board reasonably concluded that voluntary measures by growers would not solve the problem and that other frost-protection methods, such as heaters and wind machines, were available.

The growers could ask the state Supreme Court to review the case. Attorney Jack Rice of the California Farm Bureau Federation, which filed arguments in the growers' support, said the ruling was an unwarranted expansion of the state water board's authority to impose regulations, an issue that is "particularly important given this drought year."

"It's a real blow to folks working collaboratively to find good solutions," Rice said. He also questioned the federal agency's estimates of the 2008 salmon deaths and said the species was thriving three years later.

The ruling can be viewed here: <http://bit.ly/1qmdIfh>.

*Bob Egelko is a San Francisco Chronicle staff writer. E-mail: [begelko@sfgate.com](mailto:begelko@sfgate.com)*