

KINNELOA IRRIGATION DISTRICT
ADJOURNED MEETING – BOARD OF DIRECTORS
1999 KINCLAIR DRIVE, PASADENA, CA 91107
TUESDAY – APRIL 22, 2014
6:45 P.M.

AGENDA

A. EXECUTIVE SESSION – 6:45 p.m.

REVIEW OF GENERAL MANAGER'S PERFORMANCE

B. REGULAR SESSION – 7:30 p.m.

1. CALL TO ORDER

- A. Declaration of a Quorum
- B. Review of Agenda

2. PUBLIC COMMENT – Comments from the public regarding items on the Agenda or other items within the jurisdiction of the District.

3. REVIEW & ACCEPT 2013 YEAR AUDIT

4. SELECTION OF LAFCO REPRESENTATIVE

5. REPORT ON METROPOLITAN WATER DISTRICT – Director Johnson

6. REPORT ON WATER SUPPLY ALTERNATES – General Manager

7. REPORT ON PASADENA GLEN FIRE SAFE COUNCIL ACTIVITIES

8. REVIEW AND APPROVAL OF REVISED MASTER PLAN

9. GENERAL MANAGER'S REPORT

10. REVIEW MINUTES – March 18, 2014

11. REVIEW FINANCIAL REPORTS – March 31, 2014

12. ITEMS FOR NEXT AGENDA

13. CALENDAR – May 20, 2014

June 17, 2014

July 15, 2014

14. ADJOURNMENT

Each item on the Agenda, no matter how described, shall be deemed to include any appropriate motion, whether to adopt a minute motion, resolution, payment of any bill, approval of any matter or action, or any other action. Material related to an item on this agenda submitted after distribution of the Agenda Packet is available for public review at the District Office or online at the District's website <http://www.kinneloairrigationdistrict.info>.

KINNELOA IRRIGATION DISTRICT

FINANCIAL STATEMENTS

**FOR THE YEARS ENDED
DECEMBER 31, 2013 AND 2012**

AND INDEPENDENT AUDITORS' REPORT

**KINNELOA IRRIGATION DISTRICT
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DECEMBER 31, 2013 AND 2012**

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KINNELOA IRRIGATION DISTRICT
BOARD OF DIRECTORS AND DISTRICT PERSONNEL
DECEMBER 31, 2013 AND 2012

BOARD OF DIRECTORS

<u>NAME</u>	<u>OFFICE</u>	<u>TERM EXPIRES</u>
Gerrie G. Kilburn	Chairman	2015
Steven G. Sorell	Treasurer	2015
Gordon Johnson	Secretary	2017
Frank J. Griffith	Director	2017
Timothy Eldridge	Director	2015

MANAGEMENT PERSONNEL

Melvin L. Matthews General Manager

OFFICE PERSONNEL

Shirley Burt	Administrative Assistant
Bernadette Allen	Accounting Assistant

FIELD PERSONNEL

Chris Burt	Facilities Supervisor
Brian Fry	Facilities Operator
Chris Mellinger	Facilities Operator
Felix Galindo	Groundskeeper

KINNELOA IRRIGATION DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
DECEMBER 31, 2013 AND 2012

Management's discussion and analysis of the financial performance of Kinneloa Irrigation District (the "District") provides an overview of the District's financial activities for the fiscal year ended December 31, 2013. Please read it in conjunction with the District's financial statements, which begin on page 9.

FINANCIAL HIGHLIGHTS

The District's operating revenues, consisting primarily of water sales, increased by 3% to \$1,433,013 as compared to 2012 operating revenues of \$1,391,759. The increase is primarily the result of increased water sales to our retail customers due to the continuation of an extended period of drought conditions and rate increases.

Total operating, maintenance, administrative and general expenses including depreciation decreased by \$21,432 to \$1,176,994 as compared to 2012 operating expenses of \$1,198,426. The net decrease is primarily due to lower expenses for system maintenance and the contractors who do leak repair and other projects for the District as offset by the higher administrative and general expenses for office labor and insurance.

DESCRIPTION OF BASIC FINANCIAL STATEMENTS

The District operates as a utility enterprise and its annual report consists of a series of financial statements presented on the full accrual basis of accounting. The Balance Sheets and the Statements of Revenues, Expenses and Changes in Net Assets provide information about the District as a whole and present a longer-term view of the District's finances.

DESCRIPTION OF OPERATIONS

The District provides water to 581 retail customers in a service area that includes a portion of the unincorporated Los Angeles County that is east of Altadena and an adjacent portion of the City of Pasadena. The District also sells excess groundwater when available to the City of Pasadena on a wholesale basis.

The District obtains its water from two vertical wells and five horizontal wells. These sources are sufficient to meet customer demand except in periods of extreme drought or other emergency. The District has five interconnections with the City of Pasadena municipal water system which allow either agency to supply water to the other agency under emergency conditions.

More information about the Kinneloa Irrigation District can be found on our Internet site at <http://www.kinneloairrigationdistrict.info>.

KINNELOA IRRIGATION DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
DECEMBER 31, 2013 AND 2012

CONDENSED FINANCIAL INFORMATION

The following condensed financial information provides an overview of the District's financial activities for the year ended December 31, 2013 and 2012.

NET ASSETS

	<u>2013</u>	<u>2012</u>
Capital assets, net	\$4,092,080	\$4,221,215
Other assets, net	1,400,956	978,369
Total assets	<u>5,493,036</u>	<u>5,199,584</u>
Other liabilities	104,318	71,484
Total liabilities	<u>104,318</u>	<u>71,484</u>
Invested in capital assets, net of debt	4,092,080	4,221,215
Unrestricted	<u>1,296,638</u>	<u>906,885</u>
Total net assets	<u>\$5,388,718</u>	<u>\$5,128,100</u>

Capital and other assets – The change in capital and other assets is net of an increase in capital and other assets less current year's depreciation of \$252,442.

Net assets – Unrestricted net assets increased from the prior year due to the current year's excess of revenues over expenses. Unrestricted net assets consist of net assets that do not meet the definition of "restricted" or "invested in capital assets, net of related debt". The District is required to apply the Government Accounting Standards Board (GASB) Statement No. 34. GASB 34 requires, among other things, that the difference between assets and liabilities be reported as net assets, not equity.

**KINNELOA IRRIGATION DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
DECEMBER 31, 2013 AND 2012**

CHANGES IN NET ASSETS

	<u>2013</u>	<u>2012</u>
Total operating revenues	\$ 1,433,013	1,391,759
Total non-operating revenues	<u>4,599</u>	<u>5,688</u>
 Total revenues	 <u>1,437,612</u>	 1,397,447
 Total operating expenses	 <u>1,176,994</u>	 1,198,426
Total non-operating expenses	<u>-</u>	<u>1,762</u>
 Total expenses	 <u>1,176,994</u>	 1,200,188
 Change in net assets	 260,618	 197,259
 Net assets, beginning of year	 <u>5,128,100</u>	 4,930,841
 Net assets, end of year	 <u>\$ 5,388,718</u>	 <u>5,128,100</u>

Revenues – Retail water sales by volume increased 4% to 711 acre-feet as compared to 685 acre-feet in 2012 and total operating revenue including the revenue from wholesale water sales increased by 3% to \$1,433,013 from \$1,391,759.

The District also received \$4,599 in non-operating revenue primarily from interest on its temporary investments. The District's temporary investments at year end were \$1,236,543 and \$838,987 in 2013 and 2012, respectively. The increase in 2013 as compared to 2012 is attributed to the planned decrease in capital projects for 2013 in order to provide funds for future major capital improvement projects in 2015 and 2016. The District has identified \$3,945,000 in future projects in its Water Master Plan. The temporary investments will be used for these projects and also provide an operating reserve in accordance with the District's reserve policy.

Expenses – The District's operating and maintenance expenses decreased by \$43,950 in 2013 as compared to 2012. The decrease is due primarily to lower expenses for system maintenance and for the contractors who do leak repair and other projects. The District's administrative and general expenses increased by \$23,467 due primarily to expanding the accounting assistant's responsibilities from a part-time to a full-time position.

KINNELOA IRRIGATION DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
DECEMBER 31, 2013 AND 2012

BUDGET ANALYSIS AND VARIANCES

Revenue from retail and wholesale water sales for 2013 was \$1,433,013 as compared to the budgeted amount of \$1,383,000. The budgeted revenue was based on the actual amount from the previous year, adjusted for rate changes and/or expected new service connections for the year. Although revenue from wholesale water sales was much less than the budgeted amount for 2013, increased revenue from retail water sales allowed the District to exceed its overall revenue goal for 2013 by \$50,013. Wholesale water sales are not predictable since only the water not needed to meet the demand of our retail customer is available for sale to our wholesale customer.

Overall, for 2013, the net revenue surplus before depreciation was \$513,060, as compared to the budgeted amount of \$345,860. Capital and planned maintenance projects in the amount of \$123,307 were completed as compared to the budgeted amount of \$256,681. A portion of the budgeted amount not spent in 2013 will be carried over to future projects. The cash reserve at year end was \$1,236,543 as compared with the target range between \$1,000,000 and \$5,500,000 established by the Board in the *Reserve Policy Funding Guidelines* in the District's *Rules and Regulations*. Each year the District budgets amounts for capital projects and planned maintenance projects based on its expected operations and available reserves. In 2013, the major projects and equipment purchases included: purchase of replacement water meters; rebuilding of two booster pumps; removal and reinstallation of a well pump; facility maintenance; electrical upgrades at several facilities; and improvements to our data acquisition and control system.

CAPITAL ASSET AND DEBT ADMINISTRATION

Capital Assets – At December 31, 2013 and 2012, the District had investments in land, water rights, buildings, wells and distribution systems, machinery and equipment as follows:

	<u>2013</u>	<u>2012</u>
Land	\$ 96,700	96,700
Water rights	52,060	52,060
Buildings, wells and distribution system	6,631,528	6,529,271
Machinery and equipment	<u>759,755</u>	<u>738,705</u>
Totals	<u>\$ 7,540,043</u>	<u>7,416,736</u>

KINNELOA IRRIGATION DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
DECEMBER 31, 2013 AND 2012

ECONOMIC FACTORS AND NEXT YEAR'S BUDGETS AND RATES

Inflation as measured by the consumer price index for all urban consumers in the Los Angeles area was 1.1% for the 12 months ended December 2013.

The general economic picture in 2014 is expected to reflect a continued slow recovery from the multi-year recession. Because water service is a basic necessity, we do not expect any significant change in water sales. However we will continue to emphasize water use efficiency consistent with the official drought declaration and the "20% by 2020" water-use reduction mandate by the State of California and the 30% reduction in our local ground water supply that is available for production.

In order to build our reserves for a major pipeline project and a booster station project in 2015 and to reduce the amount needed for financing, the Board of Directors has approved a budget for 2014 that produces a net operating surplus at approximately the same level as 2013. Expenditures for capital improvement and maintenance projects for 2014 will continue to be limited to high-priority time-critical projects.

The District has maintained current rates for 2014 but the Board will consider rate increases during the budgeting process for 2015. The budgeted wholesale water sales for 2014 was significantly reduced to reflect the expected supply of surplus available water and the projected demand by our retail customers.

Weather will continue to play a significant role in determining retail water sales for 2014. We will continue to have the option of selling surplus water to the City of Pasadena if there is significant rainfall in 2014 and/or if there is a decline in retail sales due to higher than normal rainfall or greater conservation efforts. These factors when combined are anticipated to have a neutral effect on the District's operations in 2014. The District also has the flexibility to adjust expenditures for capital improvements and planned maintenance if necessary to meet the overall budget objectives for 2014.

CONTACTING THE DISTRICT'S FINANCIAL MANAGEMENT

This financial report is designed to provide our purveyors, customers, and creditors with a general overview of the District's finances and to show the District's accountability for the money it receives. If you have any questions about this report, or need additional financial information, contact the District's finance office at 1999 Kinclair Drive, Pasadena, CA 91107. Current and archived documents of the Kinneloa Irrigation District can also be found on our Internet site at <http://www.kinneloairrigationdistrict.info>.

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GLENDALE, CA 91202
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INDEPENDENT AUDITORS' REPORT

The Board of Directors
Kinneloa Irrigation District
Pasadena, California

We have audited the accompanying financial statements of Kinneloa Irrigation District (the "District") as of December 31, 2013 and 2012 and the related notes to the financial statements which collectively comprise the District's basic financial statements listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles, this includes the design, implementation, and maintenance of internal controls relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion

Opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Kinneloa Irrigation District as of December 31, 2013 and 2012, the changes in its financial position and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis supplementary information on pages 2 to 6 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the District's basic financial statements. The introductory and statistical sections are presented for the purposes of additional analysis and are not a required part of the basic financial statements.

The introductory and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by Government Auditing Standards

In accordance with Government Auditing Standards, we have also issued our report dated _____ on our consideration of the District's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the District's internal control over financial reporting and compliance.

April ___, 2014

**KINNELOA IRRIGATION DISTRICT
BALANCE SHEETS
DECEMBER 31, 2013 AND 2012**

	<u>2013</u>	<u>2012</u>
ASSETS		
Current assets		
Cash and cash equivalents	\$ 986,543	588,987
Cash, restricted as to use	250,000	250,000
Receivables		
Water sales, net of allowance for doubtful accounts of	119,545	97,778
Prepaid expenses	24,868	21,604
Materials and supplies	<u>20,000</u>	<u>20,000</u>
Total current assets	1,400,956	978,369
Capital assets, net of accumulated depreciation	<u>4,092,080</u>	<u>4,221,215</u>
TOTAL ASSETS	<u>\$ 5,493,036</u>	<u>5,199,584</u>
LIABILITIES AND NET ASSETS		
Current liabilities		
Current portion of lease payable	\$ 18,979	
Accounts payable and accrued expenses	86,080	36,227
Accrued payroll and payroll taxes	17,855	15,932
Customer deposits	<u>383</u>	<u>346</u>
Total current liabilities	104,318	71,484
Net assets		
Invested in capital assets, net of related debt	4,092,080	4,221,215
Unrestricted	<u>1,296,638</u>	<u>906,885</u>
Total net assets	<u>5,388,718</u>	<u>5,128,100</u>
TOTAL LIABILITIES AND NET ASSETS	<u>\$ 5,493,036</u>	<u>5,199,584</u>

The accompanying notes are an integral part of the financial statements.

KINNELOA IRRIGATION DISTRICT
STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET ASSETS
FOR THE YEARS ENDED DECEMBER 31, 2013 AND 2012

	2013	2012
Operating revenues		
Water sales and service fees	\$ <u>1,433,013</u>	<u>1,391,759</u>
Operating expenses		
Operating and maintenance	592,971	636,921
Administration and general	331,581	306,352
Depreciation	<u>252,442</u>	<u>255,153</u>
Total operating expenses	<u>1,176,994</u>	<u>1,198,426</u>
Operating income	<u>256,019</u>	<u>193,333</u>
Non-operating revenues (expenses)		
Interest	4,599	3,671
Interest expense		(1,762)
Federal disaster assistance		2,017
Total non-operating revenue	<u>4,599</u>	<u>3,926</u>
Change in net assets	260,618	197,259
Net assets, beginning of year	<u>5,128,100</u>	<u>4,930,841</u>
Net assets, end of year	<u>\$ 5,388,718</u>	<u>5,128,100</u>

The accompanying notes are an integral part of the financial statements.

**KINNELOA IRRIGATION DISTRICT
STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2013 AND 2012**

Cash flows from operating activities:	2013	2012
Cash received from customers	\$ 1,411,246	1,425,952
Cash payments to employees for services	(375,765)	(330,935)
Cash payments for services and goods	<u>(500,275)</u>	<u>(590,910)</u>
Net cash provided by operating activities	<u>535,206</u>	<u>504,107</u>
 Cash flows from capital and related financing		
Cash paid for construction and acquisition of capital	(123,307)	(42,065)
Principal paid on lease obligation	(18,979)	(18,119)
Customer deposits	37	(2,154)
Federal disaster assistance	<u> </u>	<u>2,017</u>
Cash used by capital and related financing activities	<u>(142,249)</u>	<u>(60,321)</u>
 Cash flows from investing activities:		
Interest received	4,599	3,671
Interest paid	<u> </u>	<u>(1,762)</u>
Cash provided by investing activities	<u>4,599</u>	<u>1,909</u>
Net increase in cash and cash equivalents	397,556	445,695
Cash and temporary investments, beginning of the year	<u>838,987</u>	<u>393,292</u>
Cash and temporary investments, end of the year	<u>\$ 1,236,543</u>	<u>838,987</u>
 SUMMARY OF BALANCE SHEET CASH and CASH EQUIVALENTS		
Cash	\$ 986,543	588,987
Temporary investments, restricted as to use	<u>250,000</u>	<u>250,000</u>
Total cash	<u>\$ 1,236,543</u>	<u>838,987</u>

The accompanying notes are an integral part of the financial statements.

**KINNELOA IRRIGATION DISTRICT
STATEMENTS OF CASH FLOWS (CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2013 AND 2012**

Reconciliation of operating income to net cash operating activities:	<u>2013</u>	<u>2012</u>
Operating income	\$ 256,019	193,333
Adjustments to reconcile operating loss to net cash provided by operating activities:		
Depreciation	252,442	255,153
Decrease (increase) in receivables	(21,767)	34,193
Decrease (increase) in prepaid expenses	(3,264)	828
(Decrease) increase in accounts payable and accrued expenses	<u>51,776</u>	<u>20,600</u>
Net cash provided by operating activities	<u>\$ 535,206</u>	<u>504,107</u>

DRAFT

The accompanying notes are an integral part of the financial statements.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Kinneloa Irrigation District (the "District") is a special district organized in 1953 under the provisions of Division 11 of the Water Code of the State of California. The District delivers water to the residents in a specific area of Los Angeles County, northeast of the City of Pasadena. This District is not a subdivision of a larger governmental organization.

The District is governed by an elected Board of Directors. At December 31, 2013, the Board of Directors were as follows:

<u>Name</u>	<u>Title</u>
Gerrie G. Kilburn	Chair
Steven G. Sorrell	Treasurer
Gordon Johnson	Secretary
Frank J. Griffith	Director
Timothy Eldridge	Director

The accounting policies of the District conform to generally accepted accounting principles as applicable to governmental enterprise funds. The more significant policies reflected in the financial statements are summarized as follows:

a. Fund Accounting

The District's accounts are organized on the basis of funds, each of which is considered a separate accounting entity. The operations of each fund are accounted for with a set of self-balancing accounts that comprise its assets, liabilities, retained earnings, revenues and expenses. The District has one fund, which is presented in the accompanying financial statement as a Proprietary Fund category, Enterprise Fund type.

b. Basis of Accounting

The District uses the accrual method of accounting. Revenues are recorded when earned and expenses are recorded when the related liability is incurred. Unbilled receivables are not reflected in the accompanying financial statements because the amounts are not material.

The District maintains its financial statements using accounting principles for Enterprise Funds.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, continued

c. Utility Plant

Utility plant is stated at cost. The District capitalizes applicable overhead costs in connection with self-constructed assets. Depreciation of all exhaustible utility plant is charged as an expense in the accompanying statements of income. Depreciation is provided over the estimated useful lives of the asset using the straight-line method. Estimated useful lives are as follows:

	<u>Number of Years</u>
Water system	5 to 50
Autos and trucks	3 to 5
Office equipment	5 to 10
Office and production facilities	10 to 40

d. Restricted Assets

The Board of Directors has designated a portion of the District's cash and cash equivalents to be maintained for future capital improvements.

e. Uncollectible Accounts

The District's management estimates that accounts receivable are collectible. Unpaid water accounts receivable become a lien on the property and must be paid upon the sale of the property.

f. Cash and Cash Equivalents

The District defines cash and cash equivalents as demand account balances, cash on hand and money market accounts.

The District invests cash in excess of its operating requirements primarily with the State Treasurer's Local Agency Investment Fund (LAIF) and CalTrust, a money market account.

g. Materials and Supplies

Materials and supplies are stated at cost and consist of expendable supplies held for consumption or future additions to Utility Plant.

h. Concentration of Credit Risk

The District's receivables are from consumers within a specific geographic area.

i. Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, continued

j. Budgetary Process

Each year, the District adopts a budget which provides for its general operations. Budgets are prepared on the accrual basis of accounting. The District follows these procedures in establishing the budget for the fiscal year:

- i. Formal budgetary integration is employed as a management control device during the year for the operations.
- ii. The Board approves the total budget for the year for the District. The Board is authorized to make any budget adjustments during the year.
- iii. Unused appropriations lapse at the end of the year unless extended into the subsequent year by a vote of the Board of Directors.

k. Income Taxes

The District is exempt from income taxes under provisions of the Internal Revenue Code and related California statutes; accordingly, no provision for income taxes is required.

l. Compensated Absences

It is the District's policy to permit employees to accumulated paid time off for either vacation or illness in accordance with the limits expressed in its employee handbook. Upon termination, retirement or death of an employee, the District pays eligible accrued time in a lump-sum payment to the employee or beneficiary. Accumulated paid time off is recorded as an expense and a liability at the time the benefit is earned.

m. Operating Revenues and Expenses

Operating revenues, principally water sales, are charges for services resulting from exchange transactions associated with the principal activity of the District and billed monthly. Exchange transactions are those in which each party receives and gives up essentially equal values. Nonoperating revenues result from nonexchange transactions or ancillary activities in which the District gives or receives value without directly receiving or giving equal value in exchange.

n. Property taxes

The Constitution of the State of California, Article 13A, limits the District's ability to levy taxes on property within the District. Taxes may be imposed upon the vote of a two-thirds vote of the qualified electors of the District. Such taxes would be limited for a specific purpose such as bond indebtedness or improvements to the water system.

o. Subsequent Events

The District has evaluated subsequent events through the date at which the financial statements were available to be issued. No material subsequent events required disclosure.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 2. CASH AND CASH EQUIVALENTS

At December 31, 2013 and 2012 cash and cash equivalents consist of:

	<u>2013</u>	<u>2012</u>
Insured with financial institutions	\$ 403,361	259,683
Local Agency Investment Fund ("LAIF")	118,257	117,931
Uninsured and uncollateralized	714,925	461,373
	<u>\$ 1,236,543</u>	<u>838,987</u>

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, a government will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty (e.g., broker-dealer) to a transaction, a government will not be able to recover the value of its investment or collateral securities that are in the possession of another party. With respect to investments, custodial credit risk generally applies only to direct investments in marketable securities. Custodial credit risk does not apply to a local government's indirect investment in securities through the use of mutual funds or government investment pools (such as LAIF).

The California Government Code and the District's investment policy do not contain legal or policy requirements that would limit the exposure to custodial credit risk for deposits or investments, other than the following provision for deposits: The California Government Code requires that a financial institution secure deposits made by state or local governmental units by pledging securities in an undivided collateral pool held by a depository regulated under state law (unless so waived by the governmental unit). The market value of the pledged securities in the collateral pool must equal at least 110% of the total amount deposited by the public agencies. California law also allows financial institutions to secure District deposits by pledging first trust deed mortgage notes having a value of 150% of the secured public deposits. Of the bank balances, up to \$250,000 is federally insured and the remaining balance is collateralized in accordance with the Code; however, the collateralized securities are not held in the District's name.

The District is a voluntary participant in LAIF, which is regulated by California Government Code under the oversight of the Treasurer of the State of California. The fair value of the District's investment in this pool is reported in the accompanying financial statements at amounts based upon the District's prorata share of the fair value provided by LAIF for the entire LAIF portfolio. The balance available for withdrawal is based on the accounting records maintained by LAIF, which are recorded on an amortized cost basis.

The District invests in CalTrust, a Joint Powers Authority established by public agencies in California for the purpose of pooling and investing local agency funds. A Board of Trustees, comprised of experienced investment officers and policy-makers of the members, supervises and administers the investment program of the Trust. CalTrust invests in fixed income securities eligible for investment pursuant to California Government Code. Investment in CalTrust accounts are uninsured and uncollateralized.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 2. CASH AND CASH EQUIVALENTS, continued

Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of an investment. The District manages its exposure to interest rate risk by participating in LAIF. Credit risk is the risk that an issuer of an investment will not fulfill its obligation to the holder of the investment. This is measured by the assignment of a rating by a nationally recognized statistical rating organization. The District does not believe a credit risk exists from its deposits with LAIF.

NOTE 3. CAPITAL ASSETS

Capital asset activity for the years ended December 31, 2013 and 2012 was as follows:

	2013			
	Balance January 1	Additions	Transfers	Balance December 31
Land	\$ 96,700			96,700
Water rights	52,060			52,060
Buildings, wells and distribution system	6,529,271	102,257		6,631,528
Machinery and equipment	738,705	21,050		759,755
Less accumulated	(3,195,521)	(252,442)		(3,447,963)
Total capital assets	<u>\$ 4,221,215</u>	<u>(129,135)</u>		<u>4,092,080</u>
	2012			
	Balance January 1	Additions	Transfers	Balance December 31
Land	\$ 96,700			96,700
Water rights	52,060			52,060
Buildings, wells and distribution system	6,525,057	4,214		6,529,271
Machinery and equipment	716,128	22,577		738,705
Less accumulated	(2,955,642)	(239,879)		(3,195,521)
Total capital assets	<u>\$ 4,434,303</u>	<u>(213,088)</u>		<u>4,221,215</u>

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 4. PENSION PLAN

Plan Description

The District contributes to the State of California Public Employees Retirement System ("PERS"), an agent multi-employer public employee defined benefit pension plan. PERS provides retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. PERS acts as a common investment and administrative agent for participating public entities within the State of California. Benefit provisions and all other requirements are established by statute and city ordinance. Copies of PERS' annual financial report may be obtained from their offices or through their web site.

All full time employees are eligible to participate as members of PERS. Benefits vest after five years of service. District employees are eligible to retire upon attaining age 60. Annual retirement benefits are determined based upon the age at retirement, the length of membership service and the amount of earnings based upon the highest twelve consecutive months average.

Funding Policy

For the years ended December 31, 2013 and 2012, participants were required to contribute 7 % of their annual covered salary. The District is required to contribute at an actuarially determined rate. The contribution requirements of plan members and the District are established and may be amended by PERS.

Annual Pension Cost

Annual pension cost was 5.903% and 6.786% for the periods January 1, 2013 through June 30, 2013 and the period July 1, 2013 through December 31, 2013, respectively. The District made contributions of \$17,408 and \$14,341 for the years ended December 31, 2013 and 2012, respectively. The District does not have a Net Pension Obligation under current generally accepted accounting principles.

Actuarial Assumptions and Methods

The actuarial valuation is computed using the entry age normal actuarial cost method. The actuarial assumptions include: (a) an investment rate of return of 7.50% compounded annually, after June 30, 2013, the rate was 7% (b) projected annual salary increases that vary by duration of service, and (c) payroll cost-of-living adjustments of 3.30%. The rates used in (a) and (b) are compounded annually at 3%. The actuarial value of PERS assets was determined using techniques that smooth the effects of short-term volatility in the market value of investments over a three-year period. Initial unfunded liabilities are amortized over a specific period that depends upon the plan's date of entry into PERS. Subsequent plan amendments are amortized as a level percentage of projected payroll over a closed 20-year period. The District does not have an unfunded liability.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 4 - PENSION PLAN, continued

The following presents a short history of the funded status of the entire PERS plan, covered payroll and related actuarial information:

Valuation Date	<u>Dollars in 1,000; Zeros Omitted</u>					
	Accrued Liabilities	Actuarial Assets	PERS Unfunded Liabilities (UL)	Funded Ratio %	Annual Covered Payroll	UL as a % of Payroll %
06/30/12	876,657	707,246	169,411	80.7	234,726	72.2
06/30/11	896,216	760,869	135,347	84.9	234,453	57.7
06/30/10	624,423	467,904	156,519	74.9	186,778	83.8

NOTE 5. INSURANCE POOLS

The District is a member of the Joint Powers Insurance Authority (“JPIA”), which pools together members of the Association of California Water Agencies for the purpose of paying group property, general liability and workers' compensation claims. Premiums are remitted directly to the JPIA by its members. The property portion is entirely self-funded, and the general liability self-funded portion is capped at \$500,000. Excess liability insurance in the amount of \$29,500,000 has been purchased by the Authority, bringing the total liability coverage to \$30,000,000.

To date, the District and its counsel are not aware of any material claims incurred through the period ended December 31, 2013 regarding these insurance plans. The District does not anticipate the need for a reserve for IBNR.

NOTE 6. NET ASSETS

The District is required to present the difference between assets and liabilities as net assets, not equity. Net assets are classified as either restricted, unrestricted or invested in capital assets, net of debt.

Net assets that are invested in capital assets, net of debt consist of capital assets, net of accumulated depreciation and amortization, and reduced by the outstanding balances of any bonds, notes or other borrowings attributable to the acquisition or construction of those assets.

KINNELOA IRRIGATION DISTRICT
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 2013 AND 2012

NOTE 6. NET ASSETS, continued

Restricted net assets are those net assets that have external constraints placed on them by creditors, grantors, contributors, or laws or regulations of other governments, or imposed by law through constitutional provisions of enabling legislation.

Unrestricted net assets consist of net assets that do not meet the definition of "restricted" or "invested in capital assets, net of debt." Unlike the restricted net assets, the Board has discretion in determining the use and establishing minimum/maximum balance requirements for the unrestricted cash and investment portion of net assets. The Board may at any time change or eliminate amounts established for these purposes.

NOTE 7 - CONTINGENCIES

The District is the subject of certain claims and assessment arising in the normal course of its operations. Management of the District does not believe that the resolution of these matters will have a material adverse effect on the District's financial condition.

DRAFT

SUPPLEMENTARY INFORMATION

KINNELOA IRRIGATION DISTRICT
SCHEDULE OF OPERATING EXPENSES
FOR THE YEARS ENDED DECEMBER 31, 2013 AND 2012

	<u>2013</u>	<u>2012</u>
Operating & Maintenance		
Power	\$ 107,499	103,626
Leased water rights	47,275	37,200
Labor	159,921	160,019
Engineering	14,960	9,116
Maintenance and repairs	22,036	56,164
Water analysis	15,784	21,178
Outside contractors	95,629	122,387
Truck maintenance and fuel	15,014	15,722
Insurance	83,936	66,971
Safety equipment	570	99
Water master	9,731	11,360
Administrative fees	3,002	
Other	<u>20,616</u>	<u>30,077</u>
	<u>\$ 592,971</u>	<u>636,921</u>
Administrative and General		
Administrative salaries	\$ 126,300	124,931
Office labor	80,639	63,922
Payroll taxes	27,815	26,018
CalPERS retirement	17,408	14,341
Outside services	9,604	9,299
Legal fees	2,421	3,645
Professional dues	7,517	7,872
Board meetings	4,300	5,200
Office expense	23,840	19,588
Telephone	6,829	8,237
Accounting fees	6,200	6,200
Permits and operational fees	11,218	14,272
Information systems	<u>7,490</u>	<u>2,827</u>
	<u>\$ 331,581</u>	<u>306,352</u>

*Lagerlof Senecal
Gosney & Kruse, LLP*

301 NORTH LAKE AVENUE, 10TH FLOOR
PASADENA, CALIFORNIA 91101
PHONE: (626) 793-9400 • FAX (626) 793-5900

William F. Kruse
E-MAIL: WFKRUSE@lagerlof.com

TO: PRESIDING OFFICER OF EACH INDEPENDENT SPECIAL DISTRICT IN LOS ANGELES COUNTY

FROM: WILLIAM F. KRUSE

RE: BALLOT; SPECIAL DISTRICT LAFCO REPRESENTATIVE

DATE : APRIL 8, 2014

Enclosed is the Ballot and the supplementary materials submitted for each of the candidates for Special District LAFCO REPRESENTATIVE for the term expiring in May 2018. Nominations closed as of 5:00 p.m. on April 7, 2014.

Please vote for ONE candidate on the BALLOT. The marked ballot should be placed in the envelope marked "Ballot Envelope." Please write the name of your agency and sign your name on the outside of the ballot envelope and return the completed ballot by mail to:

**William F. Kruse, Esq.
Lagerlof, Senecal, Gosney & Kruse, LLP
301 N. Lake Avenue, 10th Floor
Pasadena, CA 91101-5123.**

No ballot will be counted if it is missing the name of the voting agency and the signature of the Presiding Officer on the ballot envelope.

The candidate receiving the highest number of votes will be declared the special district representative to LAFCO.

Ballots must be returned by 5:00 p.m. on June 2, 2014.

WFK/pjc
Enclosures

cc: Paul Novak, w/enc.

BALLOT

SPECIAL DISTRICT LAFCO **REPRESENTATIVE**

Please vote for no more than one candidate.



E.G. "JERRY" GLADBACH

Occupation: Water District Director
Sponsor: Castaic Lake Water Agency
Sponsor: Water Replenishment District of Southern California



MELVIN L. MATTHEWS

Occupation: Vice President/Director
Sponsor: Foothill Municipal Water District

NOMINATION
OF
INDEPENDENT SPECIAL DISTRICT **REPRESENTATIVE**
TO THE
LOS ANGELES COUNTY LOCAL AGENCY FORMATION COMMISSION

To: Independent Special District Selection Committee

From: Castaic Lake Water Agency

Date: February 26, 2014

Name of Candidate: E. G. "Jerry" Gladbach

Castaic Lake Water Agency is pleased to nominate
E.G. "Jerry" Gladbach as a candidate for appointment as special district
REPRESENTATIVE to the Los Angeles Local Agency Formation Commission. The nominee is an
elected official or a member of the board of an independent special district appointed for a fixed term.
For your consideration, we submit the following additional information together with a resume of the
candidate's qualifications.

Elective office: Director

Agency: Castaic Lake Water Agency

Type of Agency: Special Act Water Agency

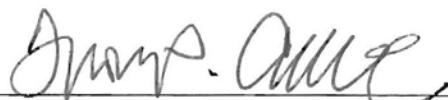
Term Expires: January 2017

Residence Address: 27491 Hillcrest Place, Valencia, CA 91354

Telephone Number: (661) 297-2200

PLEASE ATTACH RESUME OR CANDIDATE STATEMENT (limit one page)

Castaic Lake Water Agency
(Name of Agency)

By: 

Its: President

NOMINATION
OF
INDEPENDENT SPECIAL DISTRICT **REPRESENTATIVE**
TO THE
LOS ANGELES COUNTY LOCAL AGENCY FORMATION COMMISSION

To: Independent Special District Selection Committee

From: Water Replenishment District

Date: 3-20-14

Name of Candidate: E. G. "Jerry" Gladbach

Water Replenishment District is pleased to nominate E. G. "Jerry" Gladbach as a candidate for appointment as special district **REPRESENTATIVE** to the Los Angeles Local Agency Formation Commission. The nominee is an elected official or a member of the board of an independent special district appointed for a fixed term. For your consideration, we submit the following additional information together with a resume of the candidate's qualifications.

Elective office: _____

Agency: _____

Type of Agency: _____

Term Expires: _____

Residence Address: _____

Telephone: _____

PLEASE ATTACH RESUME OR CANDIDATE STATEMENT (limit one page)

WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA
(Name of Agency)

By: ROBERT KATHERMAN
Its: PRESIDENT

E.G. "Jerry" Gladbach

27491 Hillcrest Place / Valencia, CA 91354
Phone: (661) 297-2200 / Email: ejglad@aol.com

EXPERIENCE / COMMITMENT / DEDICATION

I would be honored to continue serving you on the Local Agency Formation Commission for Los Angeles County. As Chair of Los Angeles LAFCO I have urged the Commission to become more customer oriented. If reelected I would also be able to continue representing Los Angeles County on the California Association of Local Agency Formation Commissions' Board of Directors, even though I am not a member of the CALAFCO Board. Recognizing that Special Districts are an important segment of government in California, I will represent your concerns at LAFCO for Los Angeles County and CALAFCO.

LAFCO

<i>Chair</i>	<i>2006 – present</i>
<i>First Vice-Chair</i>	<i>2005 – 2006</i>
<i>Commissioner</i>	<i>2002 – present</i>
<i>Alternate Commissioner</i>	<i>2001 – 2002</i>

California Association of LAFCOs

<i>President</i>	<i>2011 – 2012</i>
<i>Vice President</i>	<i>2010 – 2011</i>
<i>Treasurer</i>	<i>2008 – 2010</i>
<i>Secretary</i>	<i>2006 – 2008</i>
<i>Chair, CALAFCO Conference Committee</i>	<i>2008</i>
<i>Member, Board of Directors</i>	<i>2005 – 2013</i>
<i>Member, Water Committee</i>	<i>2005 – 2008</i>

Association of California Water Agencies (ACWA)

<i>President</i>	<i>2004 – 2005</i>
<i>Vice President</i>	<i>2002 – 2003</i>
<i>Region Chair</i>	<i>1998 – 2001</i>
<i>Board of Directors</i>	<i>1998 – present</i>

ACWA – Joint Powers Insurance Authority

<i>President</i>	<i>2010 – present</i>
<i>Executive Committee</i>	<i>2002 – 2003, 2006 – present</i>
<i>Board of Directors</i>	<i>2002 – present</i>

Castaic Lake Water Agency

<i>Board of Directors</i>	<i>1985 – present</i>
<i>President</i>	<i>1987 – 1990</i>
<i>Chair, Water Resources Committee</i>	<i>2003 – present</i>
<i>Chair, Finance, Administration, PR Committee</i>	<i>1991 – 2002</i>

CALAFCO's "Outstanding Commissioner" Award 2013

Water Education Foundation, Board of Directors 1987 – 2009

Los Angeles Department of Water and Power

Leadership in Engineering, Management, Environmental Planning / retired after 35 years

Past Member, United States EPA Groundwater Task Force

Provided technical assistance to U.S. Commission on Water Quality

Past Member, Advisory Committee, CalPoly State University, Civil and Environmental Engineering

Professional Engineer, Registered in California

Life Member, American Society of Civil Engineers

Master of Science Degree in Civil Engineering / Water Resources

PERSONAL

Married with 3 children, and 6 grandchildren, I have lived in the Santa Clarita Valley for over 45 years and have been devoted to community service for that entire period.

NOMINATION
OF
INDEPENDENT SPECIAL DISTRICT **REPRESENTATIVE**
TO THE
LOS ANGELES COUNTY LOCAL AGENCY FORMATION COMMISSION

To: Independent Special District Selection Committee

From: FOOTHILL MUNICIPAL WATER DISTRICT

Date: FEBRUARY 25, 2014

Name of Candidate: MELVIN L. MATTHEWS

FOOTHILL MUNICIPAL WATER DISTRICT is pleased to nominate MELVIN L. MATTHEWS as a candidate for appointment as special district **REPRESENTATIVE** to the Los Angeles Local Agency Formation Commission. The nominee is an elected official or a member of the board of an independent special district appointed for a fixed term. For your consideration, we submit the following additional information together with a resume of the candidate's qualifications.

Elective office: VICE-PRESIDENT / DIRECTOR

Agency: FOOTHILL MUNICIPAL WATER DISTRICT

Type of Agency: MUNICIPAL WATER DISTRICT / SPECIAL DISTRICT

Term Expires: JANUARY 1, 2015

Residence Address: 2121 GLEN SPRINGS ROAD
PASADENA, CA 91107

Telephone: 626-622-9137

PLEASE ATTACH RESUME OR CANDIDATE STATEMENT (limit one page)

FOOTHILL MUNICIPAL WATER DISTRICT
(Name of Agency)

By: Tarun Dabekh
Its: TREASURER

Melvin L. Matthews
2121 Glen Springs Road
Pasadena, CA 91107-1015
Phone: 626-794-4167
Mobile: 626-622-9137
E-mail: melmatthews@outlook.com



Mel is the general manager of the Kinneloa Irrigation District, a water company serving the Kinneloa Ranch area east of Altadena and portions of the City of Pasadena. He has served in this position for ten years. Before becoming general manager, he was elected to the Board of Directors of the Kinneloa Irrigation District in 1997 and served as chairman of the board or treasurer for seven years.

Mel is also concurrently serving as a director and vice-president on the board of the Foothill Municipal Water District. FWMD is a member of the Metropolitan Water District of Southern California and provides supplemental imported water to eight local water agencies. He also serves on the finance committee which oversees the financial matters of the district including the preparation of the budget.

Previously, Mel was in the cable television business for 32 years as founder and president of KTS Corporation and later with Charter Communications serving as the director of government and community relations after selling his cable systems to Charter in 1993.

Mel has extensive experience working on various projects and issues with the County of Los Angeles and cities as well as participating in community groups, homeowners' associations and service clubs. Mel has extensive education and experience in finance and has served as treasurer for many of these organizations.

Mel is active with the California Special Districts Association and the Association of California Water Agencies and has gained first-hand knowledge and experience of the issues and challenges facing special districts and public water agencies in providing services to the citizens of the County of Los Angeles and State of California.

Mel is a graduate of the University of California at Berkeley with a BS in Chemical Engineering. He has also earned a MBA in Operations Management from the Anderson Graduate School of Business at UCLA. He was born in Pasadena and still lives there with his wife, Donna. They have five children and ten grandchildren.



Water Supply Issues and Plan of Action

February 28, 2014

Melvin L. Matthews, General Manager

Introduction

The periodic droughts and the voluntary reduction in adjudicated pumping rights by the Kinneloa Irrigation District (KID) and other Raymond Basin aquifer members have made it necessary for the KID to lease additional water pumping rights from other Raymond Basin members to meet our customer demands. Although this continuing need for additional supply has been reduced by the extraordinary voluntary conservation effort by our customers, there has been no long-term solution implemented since my last report to the Board in 2004. Our adjudicated pumping rights, spreading credit and tunnel water are still not adequate to meet customer demand in most years. Although the KID has a storage account with credit for approximately one year of customer demand, this is considered an emergency supply and cannot be replenished under the current rules of the Raymond Basin Management Board.

Issues

The drought has been a major contributor to the District supply problems. The combined production from our tunnels and the credit for spreading surface water is less than half of what it has been in years with normal or heavy rainfall. On the demand side, larger homes built since the 1993 fire generally have caused water sales to increase despite water use efficiency efforts. Since our adjudicated pumping rights are not adequate to meet customer demand and our other sources of supply are not reliable, it is imperative that the KID develop both a short and long term plan of action.

Possible Solutions

1. Continue to lease pumping rights from other agencies that are not using all of their pumping rights.

Potential challenges:

- a. *There is no guarantee that rights will be available on a continuing basis and/or at a price that is economically feasible.*

- b. *Problems with our wells, either mechanically or due to groundwater levels, or lack of available pumping time could make it difficult to get the additional water into our system.*
- 2. Investigate purchasing unused water rights from other agencies.
Potential challenges:
 - a. *Water supply shortages are a challenge to all water agencies in our area.*
 - b. *Reduction in the availability of imported water and the cost of that water make local supplies much more valuable now than it was in the past.*
 - c. *The KID would need to find financing for the purchase of water rights.*
- 3. Purchase water from the City of Pasadena.
Potential challenges:
 - a. *The rate charged by Pasadena would most likely be their retail rate.*
 - b. *Water quality/taste issues could come from our customers.*
 - c. *Differing water treatment methods could cause operational problems and additional expense.*
- 4. Purchase water from Foothill Municipal Water District (FMWD)/Metropolitan Water District (MWD).
Potential challenges:
 - a. *No physical pipeline exists to directly deliver the water to our system.*
 - b. *Constructing a pipeline and other required facilities such as additional storage reservoirs would require a large capital expenditure.*
 - c. *Wheeling water through Pasadena's system would require negotiating a contract and would add expense.*
 - d. *Water quality/taste issues could come from our customers.*
 - e. *Differing water treatment methods could cause operational problems and additional expense.*
 - f. *Cost of FMWD/MWD water is ten times greater than locally-produced water.*
- 5. Continue to encourage voluntary or impose mandatory conservation measures.
Potential challenges:
 - a. *Our prior conservation efforts have been successful so that the most effective methods to change consumption have already been done.*
 - b. *Even if conservation efforts continue to succeed, there is a negative financial consequence to the District due to reduced sales.*
- 6. Participate with Foothill Municipal Water District or other agency in the construction of a local water recycling plant.
Potential challenges:
 - a. *Preliminary feasibility studies indicated that the output would be limited to about 300 acre-feet/year.*
 - b. *Output of the plant would need to be spread and/or injected into the basin if no direct-use customers were available.*

- c. *Cost was estimated to be about \$3 million with about 50% of that cost funded by local, federal and state grants. In spite of receiving a \$1.5 million grant and a favorable cost for the water that would be produced, the FMWD Board suspended design work on a proposed plant in the La Cañada area due to lack of support by the member agencies.*
- d. *Net capital cost and operating cost would be shared by the agencies receiving pumping credit for the water produced and spread or injected into the Raymond Basin.*
- e. *Raymond Basin Management Board (the Watermaster) and the Regional Water Quality Board would need to approve the introduction of the water into the basin from an operational and water quality standpoint.*

Recommended Plan of Action

The best possible short and medium term solution continues to be leasing pumping rights from other water agencies. The most recent lease negotiated was \$305 per acre-foot which is very reasonable as compared to alternate sources of water even after considering the additional cost of about \$100 per acre-foot to pump it using our own facilities. While this source and its current price are not guaranteed, it appears that we can continue to depend on this source for at least five years.

Beyond this immediate recommendation, we will pursue the following additional long term supply alternatives and provide information and recommendations to the Board for consideration:

1. Investigate the possibility of purchasing (rather than leasing) additional ground water pumping rights from other agencies.
2. Support any future effort to build a recycled water plant in our area.
3. Support the continuing effort of the Raymond Basin Management Board to build a pipeline for replenishing the basin with untreated imported water.
4. Support the projects being undertaken by the County of Los Angeles to capture a greater quantity of storm water to help recharge the basin.
5. Continue to encourage water use efficiency through education and rebates for water efficient devices and landscaping alternatives.
6. Negotiate an agreement with Foothill Municipal Water District for delivery of imported water from the Metropolitan Water District of Southern California via our interconnection with the City of Pasadena or from a new direct connection with the existing MWD pipeline that runs near our system.

Supplemental Information

1. Production and Sales Data:

The production from the Kinneloa Irrigation District's sources of supply vary from year to year based on customer demand, available sources of supply and operational considerations. I have been accumulating data for the watermaster year that runs from July 1 through June 30 since 1994 to summarize the annual production and sales. This data is show on the following pages.

2. Metropolitan Water District of Southern California Treated Water Rates:

The following historical and forecasted rates do not include the FMWD charges nor potential wheeling charges for delivering imported treated water to the KID.

<u>Year</u>	<u>Cost per Acre-Foot (\$)</u>
2003	408
2004	418
2005	443
2006	453
2007	478
2008	508
2009	579
2010	701
2011	744
2012	794
2013	847
2014	890
2015 (forecasted)	917
2016 (forecasted)	945

Figure 1
Data for Watermaster Year (July through June)

Production in Acre-Feet		1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Source		1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Wilcox Well		93.2	119.6	170.2	165.4	209.6	272.4	216.9	203.7	213.7	148.9
K-3 Well		285.3	238.3	263.8	330.9	567.3	562.5	425.2	514.3	457.1	551.0
Total Well		378.5	357.9	434.0	496.3	776.9	834.9	642.1	718.0	670.8	699.9
Holly Tunnel		71.3	217.0	177.2	146.6	143.1	132.6	111.1	86.0	57.6	59.8
House Tunnel		37.8	43.9	35.4	33.1	41.1	31.5	26.2	21.5	16.7	12.7
Eucalyptus Tunnel		56.5	64.9	62.6	58.7	62.4	54.0	44.3	38.6	29.5	41.5
Delores Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
Far Mesa Tunnel		73.6	69.1	67.7	68.3	78.9	74.1	56.7	52.0	47.7	45.6
Total Tunnel		239.2	394.9	342.9	306.7	325.5	292.2	238.3	198.1	151.5	162.0
Total Production		617.7	752.8	776.9	803.0	1102.4	1127.1	880.4	916.1	822.3	861.9
Deliveries from Pasadena		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0
Deliveries to Pasadena		0.0	0.0	0.0	-139.5	-325.8	-222.9	-64.1	-87.3	-61.7	0.0
Net Import/Export		0.0	0.0	0.0	-139.5	-325.8	-222.9	-64.1	-87.3	-30.2	0.0
Total Production for Retail Customers		617.7	752.8	776.9	663.5	776.6	904.2	816.3	828.8	792.1	861.9
Diversions in Acre-Feet		1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Source		1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Holly Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.0
House Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0
Kinneloa Canyon		140.7	50.2	54.3	56.8	48.6	52.1	33.4	28.9	12.2	9.5
Eucalyptus Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0
Brown		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eaton Wash Sub Total		140.7	50.2	54.3	56.8	48.6	52.1	33.4	28.9	38.0	9.5
Delores Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.4	31.1	21.5
Long Tunnel		35.8	37.2	39.2	39.2	38.9	37.7	38.1	38.0	36.0	35.3
Far Mesa Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0
Glen Wash		429.3	396.3	262.5	321.3	359.1	174.8	156.7	52.7	26.7	28.1
Tent Tunnel		5.1	5.5	5.4	5.3	5.8	3.4	2.4	2.3	2.1	2.0
Pasadena Glen Sub Total		470.2	439.0	307.1	365.8	403.8	215.9	201.8	134.4	95.9	86.9
Sierra Madre Villa DB Outflow		-256.7	-32.8	-7.2	-33.7	0.0	0.0	0.0	0.0	0.0	0.0
Net Pasadena Glen Sub Total		213.5	406.2	299.9	332.1	403.8	215.9	201.8	134.4	95.9	86.9
Total Diverted		354.2	456.4	354.2	388.9	452.4	268.0	235.2	163.3	133.9	96.4
Other Data		1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Rainfall (inches)		43.61	22.64	22.80	52.29	14.46	18.82	20.04	7.86	24.48	10.12
Water Sales (Acre-Feet)		584.3	668.8	679.9	600.4	666.3	782.9	710.9	739.1	717.7	772.6
Water Loss (Acre-Feet)		33.4	84.0	97.0	63.1	110.3	121.3	105.4	89.7	74.4	89.3
Water Loss (%)		5.4	11.2	12.5	9.5	14.2	13.4	12.9	10.8	9.4	10.4
RBMB Storage Account (Acre-Feet)		71,086	55,137	68,132	57,193	86,488	97,064	77,780	111,676	111,062	100,410
Power (\$)		115	73	88	71	78	86	88	122	135	116
Power (\$ per AF of Total Production)											

Figure 1
Data for Watermaster Year (July through June)

Production in Acre-Feet		2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Source										
Wilcox Well		60.2	37.2	70.2	5.6	5.6	7.3	7.1	9.5	57.6
K-3 Well		319.3	423.5	860.1	543.9	611.2	610.6	580.2	708.0	584.2
	Total Well	379.5	460.7	930.3	549.5	616.7	617.8	587.3	717.5	641.9
Holly Tunnel		125.6	171.9	131.0	107.6	89.2	80.1	98.8	94.3	53.5
House Tunnel		12.6	44.9	26.5	20.6	12.8	13.8	14.5	15.7	14.3
Eucalyptus Tunnel		50.0	50.4	44.6	43.2	39.1	37.4	39.8	40.5	40.7
Delores Tunnel		126.5	223.3	83.6	63.7	40.2	44.8	98.5	57.7	17.4
Far Mesa Tunnel		68.2	39.6	13.1	48.6	42.9	38.9	41.2	41.2	39.3
	Total Tunnel	382.9	530.1	298.8	283.7	224.2	215.0	292.8	249.3	165.2
	Total Production	762.5	990.8	1229.0	833.2	840.9	832.9	880.0	966.8	807.0
Deliveries from Pasadena		0.0	18.8	0.0	0.0	1.5	0.0	0.0	1.2	0.0
Deliveries to Pasadena		0.0	-160.6	-321.8	0.0	-42.4	-105.1	-217.4	-239.0	-47.8
	Net Import/Export	0.0	-141.8	-321.8	0.0	-40.9	-105.1	-217.4	-237.8	-47.8
	Total Production for Retail Customers	762.5	849.0	907.2	833.2	800.0	727.8	662.7	729.1	759.3
Diversions in Acre-Feet										
Source		2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Holly Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
House Tunnel		25.6	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0
Kinneloa Canyon		31.2	40.4	45.4	27.2	21.4	21.2	37.8	37.8	35.6
Eucalyptus Tunnel		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brown		24.9	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Eaton Wash Sub Total	81.7	57.2	45.4	27.2	25.6	21.2	37.8	37.8	35.6
Delores Tunnel		44.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Tunnel		46.8	44.7	37.4	36.0	34.3	33.8	39.8	38.4	34.4
Far Mesa Tunnel		0.0	30.2	42.5	0.0	0.0	0.0	0.0	0.0	0.0
Glen Wash		933.9	161.4	74.0	56.7	59.0	45.1	188.0	88.7	89.2
Tent Tunnel		3.2	3.5	2.9	2.5	2.1	2.0	1.8	2.8	2.3
Pasadena Glen Sub Total		1028.5	239.8	156.7	95.2	95.4	80.8	229.6	129.9	125.9
Sierra Madre Villa DB Outflow		-459.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Net Pasadena Glen Sub Total	568.8	239.8	156.7	95.2	95.4	80.8	229.6	129.9	125.9
	Total Diverted	650.5	297.0	202.1	122.4	121.0	102.1	267.4	167.7	161.4
Other Data		2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Rainfall (inches)		58.00	21.79	5.81	24.61	16.10	23.63	31.34	11.77	8.32
Water Sales (Acre-Feet)		672.6	785.8	847.3	754.1	729.7	771.0	590.8	654.9	696.2
Water Loss (Acre-Feet)		89.8	63.2	59.9	79.0	70.3	61.9	71.8	74.2	63.1
Water Loss (%)		11.8	7.4	6.6	9.5	8.8	8.5	10.8	10.2	8.3
RBMB Storage Account (Acre-Feet)		326.9	847.9	728.6	797.9	790.0	790.0	790.0	790.0	790.0
Power (\$)		87,537	82,476	112,924	89,011	92,204	92,700	92,700	93,964	105,248
Power (\$ per AF of Total Production)		115	83	92	107	110	111	105	97	130



**WATER MASTER PLAN
FOR
THE KINNELOA IRRIGATION DISTRICT**

Adopted by the Board of Directors on June 20, 2000

**Revision 1 dated June 20, 2005
Adopted September 20, 2005**

**Revision 2 dated October 21, 2007
Adopted January 15, 2008**

**Revision 3 dated January 2, 2014
Adopted January 21April 22, 2014**

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WATER MASTER PLAN EXECUTIVE SUMMARY

The KID Water Master Plan provides a description of the Kinneloa Irrigation District's (KID) domestic water distribution system. It describes present, historical, and future water demands and potential future changes in the source of water supply. The Master Plan identifies and prioritizes necessary improvements and sets out cost estimates for implementing the improvements.

Since its formation in 1953, the KID has made minor renovations or upgrades to its system, based on a policy only to repair or replace facilities and pipelines as needed. However, by the mid 1990s a number of factors convinced the Board and many residents that significant upgrades to the system were needed.

Originally in 1953, the KID's parent systems' minimum fire flow standard was 750 gallons per minute (gpm) for 2 hours. This means that a fire truck could pump 750 gpm for up to 2 hours for a fire and all others~~s~~ homes in the same pressure zone would have enough residual pressure for basic domestic needs. Then in 1973 the Improvement District No. 1 (formerly Mira Loma Mutual Water Company) was designed for an average fire flow of 1000 gpm with 20 pounds per square inch (psi) residual. However, average means not every fire hydrant would meet this current standard. Currently, the County of Los Angeles Fire Department has a minimum standard of 1250 gpm to be pumped for 2 hours. Today, in 200714, approximately ~~4025~~ % of the current system ~~doesn't does not~~ meet the new standard for fire flow and fire hydrant location. The firestorm of October 1993 exposed weaknesses in the KID's pipeline delivery capacities. The Fire Preparedness Policy (FPP) was developed in February 1997 and revised in April 2005. The intent of the FPP was to set goals to be achieved to prepare for future multiple structure fires within the KID community. As a result, the KID Fire Preparedness Policy now requires that all new facilities, including pipe, be sized to support a fire flow of 1250 gpm with 20 psi minimum residual for 4 hours. The FPP is included as Exhibit III in the Appendix.

The information and data used in the Water Master Plan were developed from a number of sources:

- Discussions with the KID staff.
- A review of KID files dating back to 1953 was used for a baseline to build the initial data.
- Hydraulic studies completed for the Kinneloa Ridge Development and the Doyne Road Development contributed important information to the plan.
- The average day and maximum day demands were developed during the 1990-1991 droughts.

In April of 1996, ASL Consulting Engineers conducted a study of the KID to identify water main and reservoir improvements required to increase water system capabilities to deliver domestic demands plus 1,250 gpm-~~fire~~ flows. As a part of this plan ASL Consulting Engineers prepared cost estimates in April 1996, with updates in February of 2000. Staff reviewed these estimates and made adjustments for inflation and other factors to update the plan for 2005, ~~2007~~ and again for this update in 200714.

The difference between the 2000 costs and 2005 costs was an increase of \$1,064,400. The net increase was attributed to the following factors:

- Inclusion of planned maintenance items in the amount of \$687,400 that are expected over the next ten years.
- The estimated cost of remaining projects after removing completed projects and adding new projects identified since the master plan was adopted.
- Adjustment of previous costs to reflect inflationary and other factors in current project costs.
- Exclusion of projects paid by developers.

| The following projects ~~were have been~~ completed ~~between the 2005 and since the~~ 2005 revisions:

- East Tank ~~washas been~~ refurbished.
- K-3 Well pump and motor ~~have been were~~ rebuilt.
- One of the Holly booster pumps ~~has beenwas~~ rebuilt.
- Safety upgrades were completed at Holly Tanks.
- Maintenance agreement with tank maintenance company was established for all five steel tanks.
- Earthquake-sensing valves ~~have beenwere~~ installed as part of our emergency preparedness program at all tank and reservoir facilities except for the Brown Reservoir.
- Continuous chlorine analyzers ~~have been were~~ installed at all production sources.
- Major upgrades to our SCADA system were completed to allow continuous monitoring and alarms on additional components of our production and distribution system.
- Permanent repairs and pipeline replacement were completed on the House Tunnel and the High/Low Pressure Tunnel production sources.
- The Vosburg booster pump was replaced with a new 25 HP submersible unit.

| The total estimated costs for remaining projects as revised and updated in ~~this the~~ 2007 Revision using our engineers' estimates and our internal estimates ~~are were~~:

1. Pipeline Improvements	\$3,128,000
2. Pump Station Improvements	\$ 190,000
3. Tunnels	\$ 321,000
4. Other Improvements	\$ 189,000
5. Planned Maintenance	\$ 542,000
Total	\$4,370,000

| The difference between the 2005 costs and 2007 costs is an increase of \$1,187,400. The net increase ~~is was~~ attributed to the following factors:

- Adjustment of previous costs to reflect inflationary and other factors in current project costs.
- A significant increase in pipeline construction costs based on bids for current projects.
- The estimated cost of remaining projects after removing completed projects and adding new projects identified since the master plan was adopted.

The following projects have been completed since the 2007 revision:

- All five steel tanks have been refurbished as necessary to maintain “as-new” condition.
- K-3 Well pump inspected and lowered 20 feet.
- New main installed connecting K-3 Well with the Wilcox Reservoir.
- Installed replacement mains in Kinneloa Mesa area.
- Replaced chlorine generators at two sites with Chlortec® units.
- Installed earthquake-sensing valve at the Brown Reservoir as part of our emergency preparedness program.
- Replaced pipeline in a portion of Villa Knolls Drive.
- Continuing upgrades to our SCADA system were completed to allow continuous monitoring and alarms on additional components of our production and distribution system.
- Solar power and SCADA installed at Brown Reservoir.
- Completed joint emergency interconnect project with Pasadena at two locations.
- Purchased additional emergency generators for three facilities.
- Installed utility electrical service at the East Tank to supplement existing solar power supply.
- Rebuilt Wilcox Reservoir 75 HP booster pump and motor.
- Rebuilt Pasadena Glen booster pump and motor.
- Installed replacement mains in Windover Road and portions of Sierra Madre Villa Avenue.
- Installed replacement connection and valves at the Vosburg Reservoir.
- Installed Variable Frequency Motor Control on K-3 Well pump.
- Replaced and added valves on main line on Villa Heights Road in East Tank pressure zone.
- Upgraded Chlorine analyzer at K-3 Well to include pH measurement.
- Replaced water depth measuring tube at Wilcox Well.
- Converted PCIC Interconnection facility to radio-based telemetry system.
- Rebuilt two of the Eucalyptus booster pumps.
- Installed transponders for radio reading of customer water meters.

The total estimated costs for remaining projects as revised and updated in this 2014 Revision using our engineers’ estimates and our internal estimates are:

1. Pipeline Improvements	\$2,564,000
2. Pump Station Improvements	\$ 520,000
3. Tunnels	\$ 361,000
4. Other Improvements	\$ 105,000
5. Planned Maintenance	\$ 397,000
Total	\$3,947,000

The difference between the 2007 costs and 2014 costs is a decrease of \$423,000. The net decrease is primarily attributed to the completion of many master plan projects during the past seven years offset by the higher costs of some of the remaining projects. The overall cost of completing the master plan as compared to the original 2000 master plan is subject to the following factors:

- Adjustment of the previous costs of uncompleted projects to reflect inflationary and other factors.
- Adjustment of the previous costs based on the bidding results of similar projects.
- The estimated cost of remaining projects after removing completed projects and adding new projects identified since the master plan was adopted.

In conclusion, many of the distribution and transmission facilities predate 1953, and are nearing the end of their useful service life. Originally, water facilities in the KID provided domestic supply, plus a fire flow of 750 gpm. As the population of the KID has grown over the years, the demand placed upon the entire system, including distribution and transmission mains, water sources, reservoirs, and pump stations have encroached upon the ability of the system to meet the required demands. The need for increased fire flow to meet the minimum Fire Department requirements for every fire hydrant will require the KID to construct improvements to the water system in the years ahead. Although many projects identified in the Water Master Plan adopted in 2000 and subsequent revisions have been completed, failure to continue to undertake the expenditures for the remaining projects leaves the KID vulnerable to serious and sustained service failure in the event of natural disaster or unanticipated breakage. Moreover, the cost to replace facilities and pipelines under non-optimal emergency conditions is likely to be much higher than if done under a planned program.

As a footnote to this ~~2007~~¹⁴ Revision, it should be noted once again that this Master Plan was primarily developed to address fire flow issues and general emergency preparedness issues that were raised after the 1993 firestorm. Although many operational improvements are gained through completion of recommended projects, this Master Plan does not address many worthwhile projects that would improve the operational efficiency and reliability of the production and distribution system. For example, ~~we are currently in a period of sustained drought with no expectation of normal rainfall in 2007-2008 season.~~ Since the Wilcox Well is no longer a major production facility due to declining pumping levels in the Raymond Basin and ~~since~~ production level from the tunnels has also been declining due to lower average rainfall, the drought, That has made the KID~~we are~~ increasingly dependent on a single production source – the K-3 Well. If the current conditions continue or worsen in the years ahead, the K-3 Well may not be able to meet our production demands for normal or emergency conditions. Therefore, the KID staff will continue to examine possible new production sources such as drilling a new well and/or constructing a connection with Foothill Municipal Water District in order to receive imported water from the Metropolitan Water District. However, the cost of developing new production sources is not currently reflected in this Master Plan. Therefore, unless additional funding sources are identified, voluntary or mandatory conservation programs may continue to be necessary in the future to avoid major additional capital expenditures not included in this revision of the Master Plan.

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN
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KINNELOA IRRIGATION DISTRICT

WATER MASTER PLAN

2.0 SYSTEM DESCRIPTION

2.1 General

The Kinneloa Irrigation District is divided into two distinct geographic areas. They are the east service area and the west service area, which are generally, divided by the Wilcox Canyon watercourse. Presently, the east and west service zones are connected by pipelines consisting of 6-inch and 8-inch pipe connecting the Holly Booster Pump Station, the East Tank, and the Vosburg Booster Station.

Almost all of the services in the KID are residential services for single family homes. The need for irrigating hillsides on relatively large lots creates much of the demand. Services and meters range from 3/4" to 2" in size.

Within each service area are several pressure zones which are serviced by a piping network, reservoirs, booster pump stations, wells, and horizontal water tunnels. See Exhibit II for a schematic drawing of the existing KID system.

2.2 Water Sources

2.2.1 Water Wells

The KID owns ~~five and operates two~~ water wells. ~~Two of these wells are operational and are, which are the the~~ primary source of water for the District. Those wells are the Wilcox Well which supplies the Wilcox Reservoir and the K-3 Well which supplies the Eucalyptus Reservoir. Both wells pump from the Raymond Basin. The District's adjudicated pumping allowance is 516 acre-feet per year plus an allowance for spreading. ~~The current pumping allowance has been reduced by 30% to 361 acre-feet by informal agreement among water agencies to help maintain basin water levels. Current production is approximately 900 acre feet per year.~~ Both wells are equipped with deep-well, oil-lubricated, vertical turbine pumps and on-site generated sodium hypochlorite (0.8%) chlorinators with ~~LMI~~ metering pumps for disinfection. Well status signals are received via radio telemetry and start-stop commands are based on reservoir levels ~~and time-of-use schedules to take advantage of off-peak electricity rates.~~ See Table 2-~~2-1A~~ for a summary of well data.

**TABLE 2-2-1A
WELL DATA**

Well Name	Year Drilled & Depth	Casing Size (inches)	Motor Horsepower	20 <u>06142</u> - <u>2007123</u> Production
Wilcox Well	1924 500'	14"	100	<u>701058</u> acre-feet
K-3 Well	1965 700'	14" I.D.	125	<u>860708584</u> acre-feet*

* Includes production of wholesale water sold to the City of Pasadena.

2.2.2 Tunnels

The KID owns and operates 15 water supply tunnels. The tunnels were originally constructed by hand in the 1800's and, in recent times, have supplied groundwater to the KID system and for spreading. Tunnel flow rate varies continuously according to the time of year. Tunnel water is delivered via gravity. Table 2-2AB summarizes the tunnels, their status, and production.

**TABLE 2-2B-2A
TUNNEL SUPPLIES**

Tunnel Name	Current Status	20 <u>06142</u> - <u>2007123</u> Production
High & Low Pressure Tunnels (4)	Currently in Service – feeds the Holly Tanks	<u>1319454</u> acre-feet
House Tunnel	In service – feeds the Holly Tanks	<u>27164</u> acre-feet
Eucalyptus Tunnel	In service – feeds the Eucalyptus Reservoir	<u>451</u> acre-feet
Long Tunnel	In service for spreading	<u>3784</u> acre-feet
Delores Tunnel	In service – feeds the Vosburg Reservoir or used for spreading	<u>845817</u> acre-feet
Far Mesa Tunnels (2)	In service – feed the Glen Reservoir	<u>134139</u> acre-feet
Tent Tunnel	In service for spreading	<u>32</u> acre-feet
Falls Tunnel	In service for spreading	<u>Not measured</u> <u>Measured for spreading credit only</u>
Diversion Tunnel	In service for spreading	<u>Not measured</u> <u>Measured for spreading credit only</u>
Winifred Tunnels (2)	Not in service	Not measured

~~The KID also receives spreading credit from the Sierra Madre Villa Debris Basin and the Kinneloa Canyon Debris Basins. Total production from these sources for 2006¹¹ 2007¹² was 2021¹⁶⁸ acre feet.~~

Depending on the season of the year, the tunnels are each capable of supplying anywhere from a few gallons per minute up to a hundred gallons per minute or more.

The tunnels have traditionally been a low cost source of water for the KID. However, the firestorm of October 1993 damaged the High and Low-Pressure Tunnel delivery pipelines. The rainstorms of the winter of 1993-94 further damaged the High and Low Pressure Tunnel pipelines. The High and Low Pressure Tunnel pipelines were further damaged in the winter storms of 1994-95. As a result of the aforementioned natural disasters, temporary repairs were made to return these sources to service and permanent repairs were made in 2006. Old age, rockslide damage, and rain storm runoff washed out the Delores Tunnel delivery pipeline. This pipeline was replaced in 2001 after being out of service since 1979.

Because of the age of the tunnels and their vulnerability to damage from natural causes, the tunnel supply is not considered as a reliable source of supply for the purpose of calculating available water source supply. In this respect, the tunnel supply should be thought of as a reserve or "back-up" supply.

2.2.3 Spreading Credit and Leased Water Rights

~~The KID receives spreading credit for surface water diversion to the Sierra Madre Villa and the Kinneloa Canyon Debris Basins. Total credit from these sources for 2012-2013 was 161 acre-feet. Leased Water Rights are available in some years from other water agencies to supplement our adjudicated pumping rights. Water from these sources is produced by the K-3 and Wilcox Well pumps and is included in the totals for those production sources.~~

2.2.4 Imported Water

~~The Kinneloa Irrigation District is a member of the Foothill Municipal Water District (FMWD) which supplies imported water from the Metropolitan Water District of Southern California (MWD) to eight member agencies in the area. Although there is no physical pipeline connection from FMWD to the KID, arrangements could be made to deliver the water through the distribution systems of an adjacent water agency if supplemental water is ever needed.~~

2.2.3.5 Interconnections with the City of Pasadena

The KID currently has ~~six~~ interconnections with the City of Pasadena to deliver ~~excess~~ KID excess water to the City of Pasadena and/or to receive ~~and has~~ water in the event of an emergency interconnections. These interconnections are shown in Table 2.~~-2-2BC~~. The capacity of interconnections 3 and 5 ~~were as increased are planned to be increased in 2007 or 2008 as a joint project with the City of Pasadena.~~

TABLE 2.~~-2-2BC~~
INTERCONNECTIONS WITH CITY OF PASADENA

ID	Location	Description	Size	Capacity	Purpose
1	1776 Kinneloa Canyon Road	KID-Eucalyptus (1125 HWL) to Pasadena-Sheldon (1050 HWL)	4"	800 gpm	Deliver excess KID excess water to City of Pasadena
2	1727 Kinneloa Canyon Road	Pasadena-Calaveras (1209 HWL) to KID-Eucalyptus (1125 HWL)	4"	650 gpm	Emergency interconnection to KID-Eucalyptus (K-3 Well System)
3	3560 Ranch Top Road	Pasadena-Don Benito (1432 HWL) to KID-Vosburg (1430 HWL)	48"	4800 gpm	Emergency interconnection to KID-Vosburg & Brown/Glen System and to deliver excess KID water to Pasadena
4	2999 New York Drive	Pasadena-Sheldon (1050 HWL) to KID-Wilcox Reservoir (944 HWL)	6"	1200 gpm	Emergency interconnection to KID-Wilcox-Well/Wilcox Reservoir
5	3410 Fairpoint Street	KID-Vosburg (1430 HWL) to Pasadena-Murray System (1176 HWL)	28"	2400 gpm	Emergency interconnection to Pasadena-Murray/Calaveras System and to deliver excess KID water to Pasadena
6	2650 New York Drive	Pasadena-Calaveras (1209 HWL) to KID-Eucalyptus (1125 HWL)	8"	1500 gpm	Emergency interconnection to KID to provide additional Fire Protection for Dove Creek Town Homes

2.2.6 Portable Booster Pumps and Generators

The KID currently has two (2) trailer mounted portable boosters available for emergency operations and to supplement fire flows in some or all pressure zones. These pumps are capable of 1050 gallons per minute (gpm) at 360 feet Total Dynamic Head (TDH). The KID also has ~~four~~ diesel-powered trailer mounted portable generator~~s~~ to supply emergency power to any of the KID facilities.

2.3 Reservoirs

The KID operates and maintains ~~nine~~ (910) water storage tanks and reservoirs. Overflow elevations range from 940 feet to 1,637 feet. Reservoir data is shown in Table 2-3A.

TABLE 2-3A
STORAGE RESERVOIR DATA

Reservoir Name	Number & Capacity	Zone Served	HWL High Water Line	Construction
Eucalyptus	1 - 0.180 MG	Eucalyptus	1,125'	Partially Buried Reinforced Concrete
Wilcox	1 - 1.125 MG	N/A	940'	Partially Buried Concrete
Holly Tanks	2 - 0.150 MG	Holly/Sage	1,460'	Circular, Welded Steel Aboveground
Vosburg	1 - 1.250 MG	Vosburg	1,430'	Partially Buried Reinforced Concrete
Glen	1 - 0.125 MG	Glen/Brown	1,265'	Buried Reinforced Concrete
Brown	1 - 0.125 MG	Glen/Brown	1,265'	Buried Reinforced Concrete
East Tank	1 - 0.150 MG	East	1,637'	Circular Welded Steel, Aboveground
Sage Tank	1 - 0.225 MG	Holly/Sage	1,457'	Circular Welded Steel, Aboveground
West Tank	1 - 0.500 MG	West	1,634'	Circular Welded Steel, Aboveground
Total Storage	3.980 MG			

MG = Million Gallons

Existing storage capacity by zone is shown in Table 2-3B.

TABLE 2-3B
STORAGE CAPACITY BY SERVICE ZONE

Zone	Storage Capacity
Eucalyptus	0.180 MG
Holly/Sage	0.525 MG
Glen/Brown	0.250 MG
East Tank	0.150 MG
Vosburg	1.250 MG
West Tank	0.500 MG

2.4 *Booster Pumping Facilities*

The KID operates and maintains five (5) separate booster-pumping facilities. All booster pumps are operated via telemetry and based upon reservoir levels. Booster pump facility data is shown in Table 2-4.

TABLE 2-4
BOOSTER PUMPING FACILITIES

Facility Name	No. of Pumps	Horsepower	Head (feet)	Approx. Capacity (gpm)	Service
Eucalyptus	3	50 HP each	346'	400 each	Eucalyptus Reservoir to the Holly/ <u>Sage</u> Tanks
Holly	2	20 HP each	205'	200 each	Holly Tanks to East Tank
Vosburg	1	25 HP	195'	280	Vosburg Reservoir to East Tank
Glen	1	25 HP	165'	345	Glen Reservoir to Vosburg Reservoir
Sage	2	25 HP each	205'	400 each	Sage Tank to West Tank
Wilcox Reservoir	1*	75 HP	325'	515	Wilcox Reservoir to <u>Brown/Glen</u> Reservoirs
		75 HP	490'	360	Wilcox Reservoir to Vosburg Reservoir
	2**	50 HP & 75 HP	325'	650	Wilcox Reservoir to <u>Brown/Glen</u> Reservoirs
		50 HP & 75 HP	490'	433	Wilcox Reservoir to Vosburg Reservoir

* Condition when pumping to either Brown/Glen Reservoirs or Vosburg Reservoir with just the 75 HP pump.

** Condition when pumping to either Brown/Glen Reservoirs or Vosburg Reservoir with both ~~the 75 HP and 50 HP~~ pumps.

2.5 *Piping*

2.5.1 Existing Piping

There are approximately 66,000 L.F.Linear Feet of transmission and distribution mains in the KID service area. The pipes range in size from 1" to 12-inch in diameter. Piping materials include galvanized steel, CML and CMC steel, asbestos cement (AC), ductile iron (DI) and AWWA C-900 PVC. There are approximately 90 fire hydrants in the system ranging in size from 2 ½" to 6" x 4" x 2 ½". All of the galvanized steel piping is old and obsolete. Some of the existing pipe is old and inadequate to provide current revised requirements for fire service.

2.5.2 Future Piping

Traditionally, piping in the KID was sized to provide for fire flows of 750 gpm. The firestorm of October 1993 exposed this pipeline delivery capacity weaknesses. As a result, the KID Fire Preparedness Policy now requires that all new facilities, including pipe, be sized to support a fire flow of 1,250 gpm with a

20 psi minimum residual. This represents a 500 gpm increase to the original system design capacity of 750 gpm fire flow at 20 psi minimum residual pressure. Some areas of the existing system meet the new requirements; however, portions of the distribution system will provide only the minimum original system design fire flows. Additionally, the County of Los Angeles has required 2000 gpm or more fire flow for some of the new larger homes currently being built where fire sprinklers are required. Future pipeline projects may need to be sized to support this flow.

KINNELOA IRRIGATION DISTRICT
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3.0 EXISTING SERVICE DEMANDS

The KID services approximately 600 customers with a population of approximately ~~4,450~~^{1,500}. Service sizes range from 3/4" to 2". All services within the District are residential with the following exceptions:

- High Point Academy
- Magic Growers
- Los Angeles County Fire Station No. 66
- Pasadena Church of Christ
- Equestrian Center

The KID produces water from two wells and several tunnels. The 20~~06~~¹²-20~~07~~¹³ production from those sources is shown in Table 3.~~40~~

**TABLE 3.~~40~~
TUNNEL AND WELL PRODUCTION
DELIVERED TO DISTRIBUTION SYSTEM 20~~06~~¹²-20~~07~~¹³**

Source	2006 ²⁰¹² - 2007 ²⁰¹³ Production
K-3 Well	860.1584.2 acre-feet*
Wilcox Well	7057.26 acre-feet
High and Low Pressure Tunnels	13453.05 acre-feet
Far Mesa Tunnel	1339.43 acre-feet
House Tunnel	2614.53 acre-feet
Eucalyptus Tunnel	44.640.7 acre-feet
Delores Tunnel	8317.46 acre-feet
TOTAL	1229.0807.0 acre-feet

* Includes production of wholesale water sold to the City of Pasadena.

Additional production from tunnels is delivered for spreading in the Raymond Basin. Water delivered for spreading can be recovered by the District by increased pumping allotments or can be sold to other water purveyors. In 20~~06~~¹²-20~~07~~¹³, water delivered for spreading by the KID amounted to ~~202161~~ acre-feet. The sources of this water in a particular year can include the High and Low Pressure Tunnels, the Long Tunnel, Delores Tunnel, Diversion Tunnel, Falls Tunnel, Winifred Tunnels, Tent Tunnel, and surface runoff from watershed owned by the District into the Glen Wash, Kinneloa Canyon ~~Debris Basins~~ and the Sierra Madre Villa Debris Basins.

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

4.0 FUTURE DEVELOPMENT

4.1 General

A report dated July 2, 1990, prepared for the KID by ASL Consulting Engineers identified a potential for 95 new dwelling units within the KID boundaries. The report identified 57 potential units which would be built by developers and another 38 units which would most probably be constructed as single units and not part of a development project. Since that time all major development work has been completed except for a potential development ~~of 8-12 homes~~ in the Doyne Road area as described below and the building or re-building of approximately 25 homes on individual vacant lots.

4.2 Doyne Road Development

Hydraulic studies were completed for a potential development (Tract no. 44323) that ~~is/was~~ planned to be constructed in the south central area of the KID. The new tract ~~was to would~~ be served from the existing Holly/Sage Zone. The development required~~s~~d the grading of ~~8-12~~ undeveloped lots ranging in size from 0.60 acres to 3.0 acres. Total area ~~is/was~~ approximately ~~13-18~~ acres ~~independently on~~ the final development plan. Water system improvements for this tract ~~were to would~~ include new distribution and transmission mains and a new booster pump station at the Wilcox Reservoir. ~~However, after grading was completed for 8 lots, the property was purchased from the developer by an individual who subsequently abandoned plans for the tract and combined the lots into two separate parcels. As of January 2014, the The status of for building homes on these parcelsthis project is not known.-is uncertain at the present time. There is also an adjacent two acre parcel under separate ownership on which the home was not rebuilt after it was destroyed in the 1993 Kinneloa-Altadena firestorm.~~

4.3 Potential Future Well Sites

The KID has a few potential future water source well sites within the District boundaries. The Equestrian Center north of New York Drive was acquired by Los Angeles County and incorporated into the Eaton Canyon Natural Area. The park status will allow for a well site for the District. The area of Wilcox Canyon, north or south of the Wilcox Reservoir also offers potential for a future well site.

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

5.0 CAPACITY CHARGE IMPROVEMENT FEE

Improvements were made to the KID water system during the Dove Creek Development in 1987-1990. These improvements included improvements to the K-3 Well, Eucalyptus Reservoir, and piping in New York Drive. At the time of these improvements, the KID decided to build in reserve system capacity and redundancy beyond that required by the Dove Creek Development. Because the cost of the improvements was beyond what was required by the Dove Creek Development, the KID funded the marginal increase of the cost of the improvements beyond the Dove Creek Development requirements.

To recover the cost of the reserve capacity, the Board of Directors of the KID in 1990 instituted a Capacity Charge Improvement Fee on all future development in the District. The fee is \$3,000.00 per lot and is only charged for existing or newly created lots that do not have an existing water service. This fee is in addition to reimbursement for the cost of installing the new water service and required system improvements.

OR:

$$\frac{1,029 \text{ B.U.}}{237 \text{ Services}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{2.26 \text{ Gal/Min}}{\text{Service}}$$

The ratio of the maximum day demand over the average day demand is the maximum day factor. For the existing Holly and East Tank Zone, the maximum day factor is as follows:

$$\frac{2.83}{1.02} = 2.77$$

Existing service demands for the number of services in 2007 for each zone were based on the calculated average day and maximum day demand factors for the Holly and East Tank Zone and are shown in Table 6-1.

TABLE 6-1
SERVICE DEMANDS BY ZONE IN THE
KINNELOA IRRIGATION DISTRICT

Service Zone	No. of Services	Average Day Demand 0.81 gpm/service (gpm)	Maximum Day Demand 2.26 gpm/service (gpm)
Eucalyptus	62	51	141
Holly/Sage	190	154	430
East	61	49.50	138
West*	25	33.47	90.119
Brown/Glen	70	56.57	159
Vosburg	192	156	432.434

*Homes in this area are newly constructed and average day demand is based on 1.3 gpm per acre and maximum day demand of 3.6 gpm per acre.

* West Tank service demand based on 1.85 gpm/acre average day and 5.12 gpm/acre maximum day demands and a 23.3 acre service area.

6.2 Future Service Demands

Future service demands for various zones in the KID system were calculated based on the number of existing services, the planned additional services and the estimated future customer service demands. Planned additional services in the KID service area have a higher potential for water use than the existing customer services. Planned additional services are estimated to be comparable to the Shaw Ranch Estate type properties. Shaw Ranch record data indicates the September 1990 – September 1991 annual demand for 24 active services, serving 16.94 acres was a total of 21,984 billing units. Average day demand for planned future services is calculated as follows:

$$\frac{21,984 \text{ B.U.}}{16.94 \text{ Acre/Yr}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Year}}{365 \text{ Days}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{1.85 \text{ gpm}}{\text{Acre}}$$

OR:

$$\frac{21,984 \text{ B.U.}}{24 \text{ Services}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Year}}{365 \text{ Days}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{1.30 \text{ gpm}}{\text{Service}}$$

Maximum day demand for planned future services is the average day demand multiplied by the developed maximum day factor as follows:

$$1.85 \text{ gpm/acre} \times 2.77 = 5.12 \text{ gpm/acre}$$

OR:

$$1.30 \text{ gpm/service} \times 2.77 = 3.60 \text{ gpm/service}$$

For master planning and calculation of future system demands, 5.12 gpm/acre or 3.60 gpm/service will be used to calculate future service demands per zone. Table 6.2A shows the future service demand of the potential new services by zone.

TABLE 6.-2A
FUTURE SERVICE DEMANDS BY ZONE IN THE
KINNELOA IRRIGATION DISTRICT

Service Zone	No. of Future Services	Average Day Demand 1.3 gpm/service (gpm)	Maximum Day Demand 3.6 gpm/service (gpm)
Eucalyptus	1	1.3	3.6
Holly/Sage	16	21.0	58.057.6
East	1	1.3	3.6
West	0	0.0	0.0
Brown/Glen	8	11.0	29.028.8
Vosburg	5	7.0	18.0

Table 6.2B3 shows the sum of the water demand for existing services in Table 6.1 and the potential new services in Table 6.2A.

**TABLE 6.2B3
TOTAL FUTURE SERVICE DEMANDS BY ZONE
IN THE KINNELOA IRRIGATION DISTRICT**

Service Zone	Total Services	Average Day Demand (gpm)	Maximum Day Demand (gpm)
Eucalyptus	63	<u>8352</u>	<u>227145</u>
Holly/Sage	206	<u>269175</u>	<u>742488</u>
East	62	<u>8451</u>	<u>224142</u>
West*	25	<u>4447</u>	119
Brown/Glen	78	<u>10168</u>	<u>284188</u>
Vosburg	197	<u>254163</u>	<u>702452</u>

* West Tank service demand based on 1.85 gpm/acre average day and 5.12 gpm/acre maximum day demands and a 23.3 acre service area.

KINNELOA IRRIGATION DISTRICT

WATER MASTER PLAN

7.0 SYSTEM IMPROVEMENTS

7.1 *General*

The KID was formed in 1953. Many of the distribution and transmission pipelines predate 1953 and are nearing the end of their useful service life. For the purposes of this plan, the useful service life of the pipelines is set at 50 years. Development of excessive numbers of leaks and/or reduced pipeline capacity are two of the indications of pipelines at the end of their useful service life.

Originally, water mains in the KID provided domestic supply plus a fire flow of 750 gpm. The existing distribution system meets the original fire flow design criteria. The firestorms of October 1993 exposed the KID pipeline delivery capacity weakness. As a result, the KID adopted a Fire Preparedness Policy which requires new water mains to be sized to provide 20 gpm per service, plus a fire flow of 1,250 gpm each at two fire hydrants simultaneously.

As the population of the KID has grown over the years, the demands placed upon the entire system, including distribution and transmission mains, water sources, reservoirs, and pump stations have encroached upon the ability of the system to meet the required demands. Population growth, plus the need for increased fire flow to provide adequate fire protection will require the KID to construct improvements to the KID water system.

7.2 *Piping*

In April 1996, ASL Consulting Engineers conducted a study for the KID to identify water main improvements required to increase water system capabilities to deliver domestic demands plus 1,250 gpm fire flows. ~~The results of the study are shown in Table 7.2.~~

All pipes that develop chronic leaks should be replaced to decrease waste of water and to achieve overall lower operational costs.

In addition, pipes which have exceeded their useful life should be replaced. It can be shown that replacing older pipelines will result in lower long-term operational costs. Pipelines which have become inaccessible due to development or are traversing private property in easements should also be replaced if practical and/or possible. Pipelines should be upsized where required to meet the fire preparedness goals. Upsizing is to be determined by hydraulic modeling and verified by field-testing.

Many Projects have been completed since the original master plan. The remaining projects that are listed in Table 7-1.2 provide a remedy for the following conditions:

- Chronically leaking pipes.
- Pipe requiring upgrade to meet domestic demand and fire preparedness goals.
- Piping which has exceeded its useful service life of 50 years.
- Piping which has become inaccessible due to development or traverses private property in easements.

TABLE 7-1.2
REQUIRED WATER MAIN REPLACEMENTS
TO MEET 1,250 GPM FIRE FLOW AND
450 FEET VEHICULAR DISTANCE

Main Size	Description	
	From	To
8"	1900 Windover Road	Corner of 2090 & 2060 Villa Heights Road
8"	Intersection Larmona Drive & Kinneloa Mesa Rd.	1908 N. Kinneloa Cano Rd.
12"	New Connection to Vosburg Reservoir	
16"	2014 Windover Road	Sierra Madre Villa Avenue
10"	Sierra Madre Villa Avenue and Windover Road	Vosburg Street
8"	Sierra Madre Villa at Windover Intersection of Sierra Madre Villa & Villa Mesa Rd.	Corner of 2090 & 2060 Villa Heights Rd. In Front of 3336 Villa Mesa Rd.
8"	Intersection of Meyerloa & Kinneloa Mesa Rd.	In Front of 2985 Meyerloa Ln.
8"	Intersection of Kinneloa Mesa Rd. & Clarmeya Ln.	In Front of 2924 Clarmeya Ln.
8"	Intersection of Kinneloa Mesa Rd. & Lindaloa Ln.	In Front of 2925 Lindaloa Ln.
8"	Intersection of Kinneloa Mesa Rd. & Doyne Rd.	In Front of 3069 Doyne Rd.
8"	Country Lane	Southeast Corner of 1747 Country Lane
12"	Glen Reservoir	Intersection Villa Highlands & Sierra Madre Villa Includes Slope from Pasadena Glen to Barhite
8"	Kinclair Dr.	Behind 2150 Kinclair Dr.
8"	Kinclair Dr.	#4 Cricklewood Path
8"	Kinneloa Canyon Rd.	Behind 2044 Piccadilly Ln.

Main Size	Description	
	From	To
8"	Intersection of Vosburg St. & Lower Pasadena Glen Rd.	In Front-front of 1658 Pasadena Glen Rd.

7.3 *Booster Pump Stations*

7.3.1 Existing Booster Pump Stations

The KID presently has sufficient booster pump capacity to provide for domestic demands. The 1,250~~-gpm~~ fire flow requires supplementing booster station flow with gravity flow from reservoirs.

There are booster pump facilities located at the Eucalyptus Reservoir, Holly Tanks, Sage Tank, Wilcox Reservoir, Glen Reservoir and at the Vosburg Reservoir. The booster pumps at the Eucalyptus Reservoir were replaced with high efficiency vertical turbine units in 2002 as part of the system improvements needed for the Kinneloa Ridge Development.

The booster pump at the Holly Tank is a horizontal, split case pump. A preferred installation would be high efficiency vertical turbine units set in cans.

The booster pump at the Vosburg Reservoir is a submersible, centrifugal pump. A preferred installation would be a high efficiency vertical turbine unit, but a replacement 25 HP submersible pump that was installed in 2006 is providing increased flow and efficiency as compared to the previous 20 HP unit. A permanent three-booster pump station is currently in the design process and is expected to be constructed in 2015 or 2016 if the project is approved by the KID Board.

Table 7-2.3A compares the required booster pump station capabilities with existing booster pump station capabilities. Required booster pump station capabilities will supply maximum day demand with an off-peak 16-hour maximum pumping period.

Required Booster Pump Capacity Calculations—: Each booster facility must provide capacity to serve all zones in the system above the booster station.

- Eucalyptus Booster Station must provide capacity to serve Holly/Sage Zone, West Zone, and ½ of the East Zone. Flow rates required are from Table 6-3.2B.

$$\text{Eucalyptus Booster Capacity} = \frac{24}{16} (\underline{738488} + 119 + \underline{220142}) = \underline{1,4511017} \text{ gpm}$$

- Holly Booster Station must provide ½ of the East Zone.

$$\text{Holly Booster Capacity} = \frac{24}{16} \cdot \frac{(220)142}{2} = 165\text{-}107 \text{ gpm}$$

- Vosburg Booster capacity is 285 gpm.
- Glen Booster must supply Vosburg Zone and ½ of East Zone.

$$\text{Glen Booster Capacity} = \frac{24}{16} \cdot \frac{(702452+119+220142)}{2} = 1,397\text{-}785 \text{ gpm}$$

- Sage Booster supplies the West Zone only.

$$\text{Sage Booster Capacity} = \frac{24}{16} \cdot (119) = 179 \text{ gpm}$$

- Wilcox Booster must supply Vosburg Zone, Brown/Glen Zone and ½ of East Tank Zone.

$$\text{Wilcox Booster Capacity} = \frac{24}{16} \cdot \frac{(702452+277188+220142)}{2} = 1,634\text{-}1067 \text{ gpm}$$

TABLE 7-2.3A
COMPARISON OF REQUIRED BOOSTER PUMP CAPACITIES

Booster Station	Required Future Pump Capacities (gpm)	Existing Capacity (gpm)**	Additional Capacity Required (gpm)
Eucalyptus	1,451\text{-}017	1,600\text{-}800	0
Holly	165\text{-}107	400\text{-}200	0
Vosburg*	165\text{-}107	285	0
Glen	1,397\text{-}785	345	1,052\text{-}440
Sage	179\text{-}179	400	0
Wilcox Reservoir	1,634\text{-}1067	650	984\text{-}417

* Additional capacity and redundancy will be provided with the proposed construction of a permanent booster station at the Vosburg Reservoir in conjunction with the proposed East-West Tank connector pipeline project.

** Existing capacity reflects normal operation. Some sites have additional capacity if all boosters are used simultaneously.

Table 7-2.3B shows the proposed concept for increasing booster pump improvements to increase station efficiencies and/or capacities and provide improved redundancy.

TABLE 7-2.3B
PROPOSED REQUIRED BOOSTER IMPROVEMENTS

Booster Station	Description
Glen	Increase booster pump capacity.
<u>Holly*</u>	<u>Replace existing pumps with two vertical turbine pumps in cans.</u>
<u>Vosburg</u>	<u>Replace existing submersible pump with three vertical turbine pumps in cans.</u>
<u>Holly*</u>	<u>Replace existing pumps with vertical turbine pumps in cans.</u>
Wilcox Reservoir**	Increase booster pump capacity.

* Not needed if East-West Tank Connector Pipeline project is completed.

** Pipeline upgrades also required to reduce pumping head.

7.3.2 Proposed Booster Pump Stations

Although the plan for an eight-home tract on Doyne Road has been abandoned, the building of two or more homes on Doyne Road Development if constructed will may require additional booster pump capacity at the Wilcox Reservoir and other pipeline upgrades. A portion of The cost of additional booster pump capacity may will be provided by the developer. The necessary improvements have already been made at the Eucalyptus Booster Pump Station in conjunction with the Kinneloa Ridge Development and the main on Doyne Road was replaced as part of the Kinneloa Mesa pipeline improvement project. However, two new 50 HP booster pumps at the Wilcox Reservoir will be needed to supply the Holly Tanks.

7.4 *Tunnels*

7.4.1 High Pressure Tunnel

The High Pressure Tunnel pipeline is currently in service and supplies water to the Holly Tanks or the West Tank. The High Pressure Tunnel pipeline was damaged during the firestorms of October 1993. Additional damage occurred from mudslides during the rainy season of subsequent years. In 1994, the High Pressure Tunnel pipeline was repaired with FEMA funding. In the winters of 1994-95 and 2004-05, the High Pressure Tunnel pipeline was again damaged by mudslides. The KID applied for FEMA funding as a result of the disaster declaration after the 2004-2005 storms and permanent repairs were completed in 2006 using a combination FEMA funds and KID funds.

7.4.2 Low Pressure Tunnels

Pipelines delivering water from the Low Pressure Tunnels to the Holly Tanks have been out of service at various times since 1993. Both low pressure tunnel pipelines were damaged during the fire storms of October 1993. Further damages occurred from mudslides during the rainy seasons of subsequent years. In 1994, the lower Low Pressure Tunnel pipeline was replaced using FEMA funding. In subsequent rainy seasons, the tunnel has since been buried by mudslides. The storms of 2004-2005 further damaged the lines. The KID applied for FEMA funding to repair— the lines in order to take advantage of the low cost water supply. The upper low pressure tunnel pipeline was replaced and put back in service in 2006. The lower low pressure tunnel was excavated to the tunnel face, but further work has been suspended due to lack of funding and safety concerns.

7.4.3 House Tunnel

The House Tunnel pipeline was also damaged in the 2004-2005 storms. The damaged section was replaced with flexible hose suspended from a cable and the rest of the pipeline was inspected and repaired at two locations. Since the majority of the pipeline is galvanized steel and was installed decades ago, it is expected that the pipeline will need to be replaced within the next 20 years even if there is no further storm damage.

7.4.4 Delores Tunnel

The Delores Tunnel was out of service between 1979 and 2001 due to rockslide and rain storm damage to the delivery pipeline. Although this pipeline was replaced in 2001 with flexible hose suspended from a cable for much of its length, it is still vulnerable to damage in the future. Therefore, it is expected that portions will need to be repaired or replaced within the time frame of this master plan.

The required tunnel maintenance and improvements are listed in Table 7-3.4.

TABLE 7-3.4
REQUIRED TUNNEL MAINTENANCE AND IMPROVEMENTS

Tunnel	Description
High Pressure	Periodically inspect pipeline for potential damage from landslides. Inspect for leaks and repair or replace pipeline as needed.
Low Pressure	Periodically inspect pipeline for potential damage from landslides. Continue excavation of lower tunnel and complete new tunnel face and pipeline between the tunnel and the injector if tunnel flow is significant.
House	Periodically inspect pipeline for potential damage from landslides. Inspect for leaks and repair or replace pipeline as needed.
Delores	Periodically inspect pipeline for potential damage from landslides. Inspect for leaks and repair or replace pipeline as needed.

7.5 *Other Improvements*

7.5.1 General

Within Section 7 of this master plan, necessary improvements have been identified which would connect tunnel water supplies to the system and improve system hydraulics in order to meet a 1,250 gpm fire flow for two hours. Also, improvements to reservoirs have been identified which are necessary to meet a minimum 1,250 gpm fire flow for two hours plus domestic demands. ~~Finally, developer financed improvements have been identified which are necessary to provide fire flow and domestic supply to the proposed developments.~~ This section will examine other necessary system improvements.

7.-5.2 Additional Improvements

The KID has identified other capital improvements necessary to upgrade existing facilities to provide increased operational efficiency, greater margins of safety, address emergency preparedness issues and to decrease maintenance costs. Additional capital improvements are shown in Table 7-4.5.

TABLE 7-4.5
ADDITIONAL IMPROVEMENTS AS IDENTIFIED BY THE
KINNELOA IRRIGATION DISTRICT

Description
Upgrade SCADA hardware, software and communications radios to prevent obsolescence (OPS) Provide power at the Brown Reservoir and install earthquake sensors and automatic shutoff valves and add telemetry equipment to the SCADA system to monitor conditions at this reservoir. [EP and OPS]
Replace obsolete Uniclor with Chlorite on-site chlorine generators. (OPS) Purchase 50 kw trailer mounted generator to be used at Glen Reservoir and Sage Tank [EP]
Purchase 250 kw trailer-mounted generator to be used at Wilcox and K-3 (EP) Purchase 50 kw generator for office [EP]
EP= Emergency Preparedness OPS= Operations Improvement

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

8.0 PLANNED MAINTENANCE PROGRAM

The KID has developed a Planned Maintenance Program for the KID's water distribution system which extends the life of existing capital improvements. These items of work include pump overhauls, motor overhauls and replacements, reservoir recoating, reservoir roof repairs, upgrade interconnections with other agencies, purchase of small tools, upgrading various facilities, and office improvements. The items of work identified in this section are typically referred to as operations and maintenance items but due to relatively high cost they need to be budgeted in the same manner as capital improvements. Planned maintenance items identified by the staff are listed in Table 8-4.0 and are not in priority order.

TABLE 8-4.0
PLANNED MAINTENANCE PROGRAM ITEMS

Item	Description	Est. Cost
<u>1</u>	Install Eye Wash Stations at six locations per JPIA request	\$9,000
<u>21</u>	Glen Reservoir - Install Polypropylene Liner Add protective sealer to roof to extend cap sheet	\$ 30,000
<u>32</u>	Upgrading of Fire Hydrant Heads- (\$ 500.00 to \$2,500 ea.)	\$34,000
<u>43</u>	Tunnel Maintenance (avg. \$ 7,000 per year) (amount is for a 10 year period)	\$70,000
<u>54</u>	Valve Maintenance (replacement cost averages \$2,500 per valve)	\$25,000
<u>6</u>	Vosburg Reservoir Add protective sealer to roof	\$ 15,000
<u>7</u>	Upgrade of Interconnections with the City of Pasadena	\$75,000
<u>85</u>	Office Maintenance & Improvements: 1. Replace carpet and do interior painting; 2. Add storage shed to exiting concrete pad	\$40,000
<u>96</u>	Brown Reservoir - Roof add protective sealer to extend cap sheet —Install liner	\$30,000
<u>107</u>	Holly Tanks Erosion Control (All Phases)	\$140,000
<u>118</u>	Holly Boosters - Paint Booster Station	\$1,000
<u>12</u>	Glen Well Remove & Replace protective wood cover with metal cap	\$ 6,000
<u>139</u>	Wilcox Reservoir - Pump stand/other repairs —permanent connections for portable pump	\$25,000
<u>14</u>	Vosburg Reservoir Expand and repave asphalt driveway and east side of reservoir	\$40,000
<u>1510</u>	Service Area - Emergency prep. - install or replace "Blue Dot" Markers for Fire Hydrants	\$1,000
<u>161</u>	Wilcox Well - Modify dump line to dispose of water on site	\$1,000
	Total	\$542,397,00 0

KINNELOA IRRIGATION DISTRICT

WATER MASTER PLAN

9.0 PROJECT PRIORITIES

Project priorities are based upon cost-benefit considerations. Projects that will realize higher revenues per unit cost are given a higher priority than projects that will realize lower revenue, or no revenue, per unit dollar spent. Priorities are also based upon increased fire protection, increased operational efficiencies and lower maintenance costs. Projects are listed in Table 9-~~1.0~~ in order of decreasing priority in each project category.

TABLE 9-~~1.0~~
CAPITAL IMPROVEMENT PROJECTS LISTED BY PRIORITY

Priority	Project	Description
1+	Pipeline	West Tank to East Tank (including portion of High/Low Pressure Tunnel line listed below). In Front of 3136 Mesaloa Lane to Intersection of Mesaloa Lane and Kinneloa Mesa Road
2	Pipeline	In Front of 2985 Meyerloa Lane to Intersection of Meyerloa Lane and Kinneloa Mesa Road
3	Pipeline	Intersection of Kinneloa Mesa Road and Clarmeya Lane to in Front of 2924 Clarmeya Lane
4	Pipeline	Intersection of Kinneloa Mesa Road and Lindaloa Lane to in Front of 2925 Lindaloa Lane
5	Pipeline	Intersection of Kinneloa Mesa Rd. & Doyne Road to 3069 Doyne Rd.
62	Pipeline	Sierra Madre Villa from Windover Road to Corner of 2090 and 2060 Villa Heights Road Replace service main in Edgecliff Lane from Villa Knolls Drive to cul-de-sac
3	Pipeline	Replace service main in eastern portion of Fairpoint Street portion of Fairpoint Street from 3410 to last service at 3500 Fairpoint
473	Pipeline	Country Lane to Southeast Corner of 1747 Country Lane Replace service main in East Fairpoint Street from Sierra Madre Villa Avenue to the last service
84	Pipeline	Country Lane to Southeast Corner of 1747 Country Lane
95	Pipeline	Kinclair Drive to rear of 2150 Kinclair Drive
106	Pipeline	Kinclair Drive to #4 Cricklewood Path
117	Pipeline	Kinneloa Canyon Road to rear of 2044 Piccadilly Lane
128	Pipeline	Intersection of Vosburg St. and lower Pasadena Glen Rd. to front of 1658 Pasadena Glen Rd.
139	Pipeline	Replace service main in Edgecliff Lane from Villa Knolls Drive to cul-de-sac 1900 Windover Road to Corner of 2090 and 2060 Villa Heights Road
140	Pipeline	1908 N. Kinneloa Cyn. Rd. to intersection of Larmona Drive & Kinneloa Mesa Road (Doyne Road project)
15	Pipeline	New Connection to Vosburg Reservoir
16	Pipeline	Sierra Madre Villa Avenue to 2014 Windover Road
17	Pipeline	Windover Road in Sierra Madre Villa Avenue to Vosburg Street
181	Pipeline	Replace service main from Villa Knolls Drive to end of Hartwood Point Drive
192	Pipeline	Replace service main in Villa Mesa Dr. from Sierra Madre Villa Ave. to 3336 Villa Mesa Dr.
2013	Pipeline	From Glen Reservoir to intersection of Villa Highlands and Sierra Madre Villa. Includes slope from Pasadena Glen to Barbrite
21	Pipeline	West Tank to East Tank
2214	Pipeline	Replace water main from Wilcox Well to Wilcox Reservoir
1	Tunnel	Construct permanent replacement pipeline section from High Pressure Tunnel to Holly and/or Sage Reservoir

Priority	Project	Description
2	Tunnel	Construct pipeline from lower Low Pressure Tunnel to junction with High Pressure Tunnel Pipeline north of Kinneloa Debris Basin
<u>3</u>	<u>Tunnel</u>	<u>Replace other tunnel pipelines as required</u>
1	Booster	Replace the existing 50 HP oil lubricated booster pump at Wilcox Reservoir with a water lubricated pump
2	Booster	Install additional booster pump and new electrical <u>(at Wilcox Reservoir) (for Doyne Road project) if needed</u>
3	Booster	Replace existing booster pump at Glen Reservoir with a higher capacity unit
4	Booster	Replace existing booster pumps at Holly Tank with vertical turbine pumps in a can (Not needed if West Tank to East Tank pipeline is constructed)
<u>+</u>	<u>Other (Telemetry)</u>	<u>Provide additional telemetry to SCADA system for Brown Reservoir</u>
<u>2</u>	<u>Other (Reservoir)</u>	<u>Install earthquake sensor and automatic shutoff valve at Brown Reservoir</u>
<u>3</u>	<u>Other (Emergency Preparedness)</u>	<u>Purchase 50 kw trailer-mounted generator for Glen Reservoir</u>
<u>41</u>	Other (Emergency Preparedness)	Purchase 250 kw trailer-mounted generator for Wilcox and K-3
<u>2</u>	<u>Other (Preventative Maintenance)</u>	<u>Upgrade SCADA hardware, software and communications radios to prevent obsolescence</u>
<u>3</u>	<u>Other (Preventative Maintenance)</u>	<u>Replace Uniclor with Chlortec chlorine generators to prevent obsolescence</u>
<u>5</u>	<u>Other (Emergency Preparedness)</u>	<u>Purchase 50 kw generator for office</u>

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

10.0 COST ESTIMATES FOR REQUIRED IMPROVEMENTS

10.1 *Pipelines*

Cost estimates for pipeline replacements as described in Section 7.1, are taken from a study prepared by ASL Consulting Engineers for the KID in April 1996. Cost estimates were up-dated in July 2002 and adjusted for inflation and current construction costs ~~in 2007 in 2014~~. Nearly all of the replacement pipelines are needed to meet 1,250 gpm fire flow and 450 feet vehicular distance requirements. Category definitions are as follows: EP-Emergency Preparedness; PM-Preventive Maintenance; OPS- Operational Improvement. The estimated costs are shown in Table 10-4.1. ~~All costs are in 2007 dollars.~~ In order for the district to get the best prices for these projects, the ~~smaller~~ projects should be bundled in dollar amounts not less than \$150,000.

TABLE 10-4.1
PIPING IMPROVEMENTS COST ESTIMATES

Priority	Main Size	Description		Category	Cost
		From	To		
+	8"	Intersection of Meyerloa Ln. & Kinneoa Mesa Rd.	Front of 2985 Meyerloa Ln.	EP/PM 425 ft.	\$70,000
2	8"	Intersection of Kinneoa Mesa Rd. & Clarmeya Ln.	Front of 2924 Clarmeya Ln.	EP/PM 230 ft.	-\$50,000
3	8"	Intersection of Kinneoa Mesa Rd. & Lindaloa Ln.	Front of 2925 Lindaloa Ln.	EP/PM 425 ft.	\$70,000
4	8"	Intersection of Kinneoa Mesa Rd. & Doyne Rd.	Front of 3069 Doyne Rd. (Doyne Rd. Project)	EP/PM 380 ft.	\$50,000
1	12"	West Tank	East Tank	EP/OPS 5000 ft.	\$1,150,000
52	8"	Sierra Madre Villa at Windover Rd. Edgecliff Lane from Villa Knolls	Corner of 2090 and 2060 Villa Heights Road End of Cul-de-sac	EP 1840 ft. EP/PM 700 ft.	\$188,000 \$80.00
3	4"	Eastern portion of Fairpoint St.	Last service on Fairpoint St.	EP/PM 950 ft.	\$84,000
63	4"	Last service on Fairpoint	Sierra Madre Blvd.	PM 950 ft.	\$84,000
74	8"	Country Lane	Southeast Corner of 1747 Country Lane	EP 270 ft.	\$28,000
85	8"	Kinclair Dr.	Rear of 2150 Kinclair Dr.	EP 250 ft.	\$38,000
96	8"	Kinclair Dr.	#4 Cricklewood Path	EP 400 ft.	\$50,000

Priority	Main Size	Description			
		From	To	Category	Cost
107	8"	Kinneloa Canyon Rd.	Rear of 2044 Piccadilly Ln.	EP 250 ft.	\$38,000
118	8"	Intersection of Vosburg St. & Lower Pasadena Glen Rd.	Front of 1658 Pasadena Glen Rd.	EP/PM 350 ft.	\$48,000
129	8"	<u>Edgecliff Lane from Villa Knolls to 900 Windover Road</u>	<u>End of Cul-de-sac Corner of 2090 and 2060 Villa Heights Road</u>	<u>EP/PM 700 ft. EP +840 ft.</u>	<u>\$80,000 \$188,00</u>
1310	8"	Larmona Drive & Kinneloa Mesa Road	1908 N. Kinneloa Canyon Rd.(Doyne Rd. Project)	EP	\$204,000
14	12"	New Connection at Vosburg Reservoir		EP/PM	\$26,000
15	16	Sierra Madre Villa at Windover Road	Vosburg Reservoir	EP/PM 1000 ft.	\$184,000
16	10"	Windover Road & Sierra Madre Villa	Vosburg Street	EP/PM 1010 ft.	\$134,000
171	8"	Villa Knolls Drive	End of Harwood Point	EP/PM 1960 ft.	\$204,000
182	8"	Sierra Madre Villa	3336 Villa Mesa	EP/PM 300 ft.	\$42,000
193	12"	Glen Reservoir	Intersection Villa Highlands & Sierra Madre Villa Includes Slope from Pasadena Glen to Barhite	EP/OPS 3100 ft.	\$442,000
20	10"	West Tank	East Tank	EP/OPS 5000 ft.	\$1,150,000
214	10"	Wilcox Well	Wilcox Reservoir Line	EP/OPS/PM 500 ft.	\$60,000
SUBTOTAL					\$2,778,000 \$2,656,000
Engineering, Design, and Planning					\$200,000
Construction Management and Inspection					\$150,000
SUBTOTAL					\$350,000
TOTAL PIPELINE PROJECTS					\$3,128,000 \$3,006,000

10.2 Booster Pump Station Improvements

Cost estimates for installation of some of the booster pump improvements at the Wilcox Reservoir that were required for the Doyne Road Development (Tract 44323) were developed in a report prepared by ASL Consulting Engineers for the KID and dated June 3, 1996. Cost estimates were up-dated in February 2002 but are/were not included in the KID capital project budget because it was expected that these improvements would be as they will be constructed at the developer's expense if the developer proceeds with the project. However, since the development as originally planned has been abandoned by a new owner of the property, the cost of an additional booster at the Wilcox Reservoir is not included.

Cost estimates for installation of other booster pump improvements were developed in a report prepared by ASL Consulting Engineers for the KID and dated November 3, 1995. Cost estimates were up-dated in February 2002. Although some of these projects are being deferred because of the purchase of portable pumps, they are listed for planning purposes in the event that the portable pumps are used for other purposes. Costs for improvements to the booster pumps at the Wilcox Reservoir, Glen Reservoir, Holly Tank and the Vosburg Reservoir are included in the KID capital project budget. Costs include engineering, inspection, management and contingency. All costs were updated in 2002 and have been adjusted for inflation to 200714 dollars.

Booster Pump Station Improvements are shown in Table 10-2.2.

TABLE 10-2.2
BOOSTER PUMP STATION IMPROVEMENTS

Priority	Description	Estimated Costs
N/A	Construct new 50 HP booster pump at Wilcox Reservoir (Tract 44323)	By Developer
1	Replace the existing 50 HP oil lubricated booster pump at Wilcox Reservoir with a water-lubricated pump.	\$10,000.00
2	Construct improvements to the Booster Pump at Glen Reservoir	\$60,000.00*
3	Construct <u>new improvements to the</u> Booster Pump <u>Station</u> at Vosburg Reservoir	\$ <u>639</u> 0,000.00*
4	Construct improvements to the Booster Pumps at Holly Tanks (Not needed if <u>East-West Tank-to East Tank connector</u> pipeline is constructed)	\$60,000.00*

*Previously ~~D~~eferred by purchase of portable pumps. Needed to maximize benefit if East-West Tank connector pipeline is constructed.

10.3 Tunnel Improvements

The pipeline from the upper Low Pressure Tunnel face to the new High/Low combiner was replaced in 2006. The existing High Pressure pipeline was not replaced but the line was suspended from a new cable to the combiner to protect it from landslides. The lower Low Pressure Tunnel pipeline was not replaced since there was no water exiting that tunnel at the time of the construction work in 2006. The combined High/Low Pressure pipeline from the combiner to the Kinneloa Canyon West Debris Basin may also need to be replaced in future years. The cost estimates for the remaining pipelines are shown in Table 10-3.3.

TABLE 10-3.3
TUNNEL IMPROVEMENTS

Priority	Description	Cost Estimate
1	Replace the combined High/Low Pressure Tunnel Pipeline from combiner to Kinneloa Canyon West Debris Basin	\$200,000.00
2	Replace the lower Low Pressure Tunnel Pipeline	\$ 61,000.00
3	Replace other tunnel pipelines as required	\$100,000.00

10.4 Costs of Other Improvements

Cost estimates for the construction or purchase of other improvements are based upon estimates by KID staff and are shown in Table 10-4.4.

TABLE 10-4.4
OTHER IMPROVEMENTS

Priority	Description	Estimated Cost
1	Purchase 250 kw portable generator for Wilcox and K-3	\$40,000
+2	Upgrade SCADA hardware, software and communications radios to prevent obsolescence	\$50,000
2	Install solar power, SCADA, earthquake sensor and automatic shutoff valve at Brown Reservoir	\$50,000
33	Replace Uniclor with Chortec chlorine generators	\$13,000
4	Purchase 50 kw portable generator for Glen Reservoir	\$18,000
5	Purchase 250 kw portable generator for Wilcox and K-3	\$40,000
6	Purchase 50 kw generator for office	\$18,000

10.5 Total Costs

Table 10-5.5 shows total estimated costs for all necessary improvements as identified in this master plan. Cost estimates include design, inspection, construction management and contingency costs. Improvements identified to be installed and financed by developers are not included. Costs for the items identified as other work were developed for this master plan from cost estimates by the KID staff.

TABLE 10-5.5
TOTAL ESTIMATED COSTS

No.	Description	Cost Estimate
1	Pipeline Improvements	\$3,128,000 2,564,000
2	Pump Station Improvements	\$190,000 520,000
3	Tunnels	\$321,000 361,000
4	Other Improvements	\$189,000 103,000
5	Planned Maintenance (from Section 8)	\$542,000 397,000
	TOTAL	\$4,370,000 3,945,000

RESERVOIR IMPROVEMENTS

Cost estimates for District funded improvements to reservoirs are not included in the Water Master Plan. ~~Since these costs were estimated in 1996, these projects will need to be re-evaluated if funding becomes available.~~ ~~Should funding become available consideration of these projects will~~ be re-evaluated ~~if they are pursued in the future.~~

Existing Reservoirs

In April 1996, ASL Consulting Engineers conducted a study for the KID to identify reservoir improvements, which would have to be made to comply with the KID Fire Preparedness Policy. The results of that study indicate that additional capacity is required at the Holly Tanks, Glen Reservoir and East Tank.

Table I compares the required future reservoir storage capacity with the existing reservoir capacity for each service zone. Wilcox Reservoir is a forebay for the Wilcox Well and is not included. Required capacity is the sum of maximum day demand, operational capacity, and fire flow.

TABLE I
REQUIRED RESERVOIR CAPACITY

Reservoir	Maximum Day Demand (Gal.) *	Operational Capacity (Gal.) ****	Fire Flow (Gal.) **	Required Capacity (Gal.)	Existing Capacity (Gal.)	Additional Capacity Required (Gal.)
Eucalyptus Reservoir	308,160	77,000	300,000	685,160	180,000	505,160
Holly/Sage Tanks	702,720	176,000	300,000	1,178,720	525,000	653,720
East Tank	230,400	58,000	300,000	588,400	150,000	438,400
West Tank****	135,360	0***	300,000	435,360	500,000	0
Brown/Glen Reservoir	298,080	7275,000	300,000	670,080	250,000	420,080
Vosburg Reservoir	643,680	161,000	300,000	1,104,680	1,250,000	0

* Maximum Day Demand = 60 min. x 24 hours x max day demand (gpm/service).

** Fire Flow = 1,250 gpm for 4 hours.

*** Operational storage not required.

**** West Tank Maximum Day Demand based on (gpm/acre).

***** 25% of maximum day demand.

The proposed reservoir improvements are shown in Table II.

TABLE II
PROPOSED RESERVOIR IMPROVEMENTS

Tank	Description
Holly Tanks*	Remove both existing reservoir in two stages. Construct new concrete reservoir in two stages and miscellaneous site improvements. Increase existing Holly Tanks to provide total 1-MG storage.
East Tank*	Site has 1 existing 0.15 MG reservoir. Add two additional 0.15 MG steel reservoirs and miscellaneous site improvements. Site limitations prevent construction of total required storage. Maximum day operation will require careful management of operational levels with potential of encroaching on peak pumping Edison rate.
Glen Reservoir**	Demolish existing 0.15 MG reservoir. Construct new 0.5 MG concrete reservoir and miscellaneous site improvements.
Eucalyptus Reservoir	Emergency connections, portable pumps and tunnel supply are considered to make up storage deficit.

* ~~Considers moving Holly Tanks to East Tank site. Low priority if East-West Tank connector pipeline is constructed.~~

** ~~Low Third~~ priority because Glen Reservoir has back up storage in Vosburg Reservoir.

Cost estimates for District funded improvements to reservoirs were developed in a study by ASL Consulting Engineers for the KID and dated April 1996. The Estimated cost for improvements to Holly Tanks, East Tanks, and Glen Reservoir are shown in Tables III, IV, and V respectively. All costs are in 1996 dollars.

TOTAL ESTIMATED COSTS

No.	Description	Cost Estimate
1	Holly Reservoir Improvements	\$612,000
2	East Tank Improvements	\$422,000
3	Glen Reservoir Improvements	\$624,000
	Total Reservoir Improvements	\$1,658,000



**WATER MASTER PLAN
FOR
THE KINNELOA IRRIGATION DISTRICT**

Adopted by the Board of Directors on June 20, 2000

**Revision 1 dated June 20, 2005
Adopted September 20, 2005**

**Revision 2 dated October 21, 2007
Adopted January 15, 2008**

**Revision 3 dated January 2, 2014
Adopted April 22, 2014**

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WATER MASTER PLAN EXECUTIVE SUMMARY

The KID Water Master Plan provides a description of the Kinneloa Irrigation District's (KID) domestic water distribution system. It describes present, historical, and future water demands and potential future changes in the source of water supply. The Master Plan identifies and prioritizes necessary improvements and sets out cost estimates for implementing the improvements.

Since its formation in 1953, the KID has made minor renovations or upgrades to its system, based on a policy only to repair or replace facilities and pipelines as needed. However, by the mid 1990s a number of factors convinced the Board and many residents that significant upgrades to the system were needed.

Originally in 1953, the KID's parent systems' minimum fire flow standard was 750 gallons per minute (gpm) for 2 hours. This means that a fire truck could pump 750 gpm for up to 2 hours for a fire and all other homes in the same pressure zone would have enough residual pressure for basic domestic needs. Then in 1973 the Improvement District No. 1 (formerly Mira Loma Mutual Water Company) was designed for an average fire flow of 1000 gpm with 20 pounds per square inch (psi) residual. However, average means not every fire hydrant would meet this current standard. Currently, the County of Los Angeles Fire Department has a minimum standard of 1250 gpm to be pumped for 2 hours. Today, in 2014, approximately 25% of the current system does not meet the new standard for fire flow and fire hydrant location. The firestorm of October 1993 exposed weaknesses in the KID's pipeline delivery capacities. The Fire Preparedness Policy (FPP) was developed in February 1997 and revised in April 2005. The intent of the FPP was to set goals to be achieved to prepare for future multiple structure fires within the KID community. As a result, the KID Fire Preparedness Policy now requires that all new facilities, including pipe, be sized to support a fire flow of 1250 gpm with 20 psi minimum residual for 4 hours. The FPP is included as Exhibit III in the Appendix.

The information and data used in the Water Master Plan were developed from a number of sources:

- Discussions with the KID staff.
- A review of KID files dating back to 1953 was used for a baseline to build the initial data.
- Hydraulic studies completed for the Kinneloa Ridge Development and the Doyne Road Development contributed important information to the plan.
- The average day and maximum day demands were developed during the 1990-1991 droughts.

In April of 1996, ASL Consulting Engineers conducted a study of the KID to identify water main and reservoir improvements required to increase water system capabilities to deliver domestic demands plus 1,250 gpm fire flows. As a part of this plan ASL Consulting Engineers prepared cost estimates in April 1996, with updates in February of 2000. Staff reviewed these estimates and made adjustments for inflation and other factors to update the plan for 2005, 2007 and again for this update in 2014.

After significant discussions and review of the original plan the Board determined that modification of the existing KID reservoirs was too expensive and would involve costly environmental studies. The Board determined that pump station improvements would better serve the District by concentrating on providing booster station flow capacities to achieve the desired fire flows of 1250 gpm. Cost estimates for KID funded improvements to reservoirs are in Exhibit I of the Appendix, but are not implemented in the Water Master Plan. However, should outside sources of funding become available consideration of these projects will be re-evaluated since increased reservoir storage capability is still an important objective of the District in order to prepare for all types of emergencies and to provide operational flexibility.

In addition to implementing pump station improvements the preparation of the Water Master Plan has revealed the following conclusions:

- All pipes that develop chronic leaks should be replaced to achieve overall lower operational cost.
- All pipes which have exceeded their useful life should be replaced. For the purpose of this plan, the useful service life of these facilities is set at 50 years.
- Pipelines, which have become inaccessible due to development or are traversing private property in easements, should be relocated.
- Pipelines should be upsized where required to meet the Fire Preparedness Policy goals.
- The KID presently has sufficient booster pump capacity to provide for domestic demands. The 1,250 gpm fire flow requires supplementing booster station flow with gravity flow from reservoirs.
- Preferred installation for booster pumps would be high efficiency vertical turbine units.
- High Pressure Tunnel should have a permanent replacement pipeline.
- Low Pressure Tunnel should have a permanent replacement pipeline.
- The KID should provide radio telemetry at all facilities.
- All reservoirs should have earthquake sensors and automatic shutoff valves.
- The KID should continue to fund planned maintenance on all facilities.

The total estimated costs of all necessary improvements as identified in the Water Master Plan adopted in 2000 were:

1. Pipeline Improvements	\$1,192,600
2. Pump Station Improvements	\$ 108,200
3. Tunnels	\$ 421,900
4. Other Improvements	\$ 395,500
Total	\$2,118,200

The total estimated costs as revised and updated in 2005 were:

1. Pipeline Improvements	\$1,899,600
2. Pump Station Improvements	\$ 3,600
3. Tunnels	\$ 321,000
4. Other Improvements	\$ 271,000
5. Planned Maintenance	\$ 687,400
Total	\$3,182,600

The difference between the 2000 costs and 2005 costs was an increase of \$1,064,400. The net increase was attributed to the following factors:

- Inclusion of planned maintenance items in the amount of \$687,400 that are expected over the next ten years.
- The estimated cost of remaining projects after removing completed projects and adding new projects identified since the master plan was adopted.
- Adjustment of previous costs to reflect inflationary and other factors in current project costs.
- Exclusion of projects paid by developers.

The following projects were completed between the 2005 and 2007 revisions:

- East Tank was refurbished.
- K-3 Well pump and motor were rebuilt.
- One of the Holly booster pumps was rebuilt.
- Safety upgrades were completed at Holly Tanks.
- Maintenance agreement with tank maintenance company was established for all five steel tanks.
- Earthquake-sensing valves were installed as part of our emergency preparedness program at all tank and reservoir facilities except for the Brown Reservoir.
- Continuous chlorine analyzers were installed at all production sources.
- Major upgrades to our SCADA system were completed to allow continuous monitoring and alarms on additional components of our production and distribution system.
- Permanent repairs and pipeline replacement were completed on the House Tunnel and the High/Low Pressure Tunnel production sources.
- The Vosburg booster pump was replaced with a new 25 HP submersible unit.

The total estimated costs for remaining projects as revised and updated in the 2007 Revision using our engineers' estimates and our internal estimates were:

1. Pipeline Improvements	\$3,128,000
2. Pump Station Improvements	\$ 190,000
3. Tunnels	\$ 321,000
4. Other Improvements	\$ 189,000
5. Planned Maintenance	<u>\$ 542,000</u>
Total	\$4,370,000

The difference between the 2005 costs and 2007 costs is an increase of \$1,187,400. The net increase was attributed to the following factors:

- Adjustment of previous costs to reflect inflationary and other factors in current project costs.
- A significant increase in pipeline construction costs based on bids for current projects.
- The estimated cost of remaining projects after removing completed projects and adding new projects identified since the master plan was adopted.

The following projects have been completed since the 2007 revision:

- All five steel tanks have been refurbished as necessary to maintain “as-new” condition.
- K-3 Well pump inspected and lowered 20 feet.
- New main installed connecting K-3 Well with the Wilcox Reservoir.
- Installed replacement mains in Kinneloa Mesa area.
- Replaced chlorine generators at two sites with Chlortec® units.
- Installed earthquake-sensing valve at the Brown Reservoir as part of our emergency preparedness program.
- Replaced pipeline in a portion of Villa Knolls Drive.
- Continuing upgrades to our SCADA system were completed to allow continuous monitoring and alarms on additional components of our production and distribution system.
- Solar power and SCADA installed at Brown Reservoir.
- Completed joint emergency interconnect project with Pasadena at two locations.
- Purchased additional emergency generators for three facilities.
- Installed utility electrical service at the East Tank to supplement existing solar power supply.
- Rebuilt Wilcox Reservoir 75 HP booster pump and motor.
- Rebuilt Pasadena Glen booster pump and motor.
- Installed replacement mains in Windover Road and portions of Sierra Madre Villa Avenue.
- Installed replacement connection and valves at the Vosburg Reservoir.
- Installed Variable Frequency Motor Control on K-3 Well pump.
- Replaced and added valves on main line on Villa Heights Road in East Tank pressure zone.
- Upgraded Chlorine analyzer at K-3 Well to include pH measurement.
- Replaced water depth measuring tube at Wilcox Well.
- Converted PCIC Interconnection facility to radio-based telemetry system.
- Rebuilt two of the Eucalyptus booster pumps.
- Installed transponders for radio reading of customer water meters.

The total estimated costs for remaining projects as revised and updated in this 2014 Revision using our engineers’ estimates and our internal estimates are:

1. Pipeline Improvements	\$2,564,000
2. Pump Station Improvements	\$ 520,000
3. Tunnels	\$ 361,000
4. Other Improvements	\$ 105,000
5. Planned Maintenance	<u>\$ 397,000</u>
Total	\$3,947,000

The difference between the 2007 costs and 2014 costs is a decrease of \$423,000. The net decrease is primarily attributed to the completion of many master plan projects during the past seven years offset by the higher costs of some of the remaining projects. The overall cost of completing the master plan as compared to the original 2000 master plan is subject to the following factors:

- Adjustment of the previous costs of uncompleted projects to reflect inflationary and other factors.
- Adjustment of the previous costs based on the bidding results of similar projects.
- The estimated cost of remaining projects after removing completed projects and adding new projects identified since the master plan was adopted.

In conclusion, many of the distribution and transmission facilities predate 1953, and are nearing the end of their useful service life. Originally, water facilities in the KID provided domestic supply, plus a fire flow of 750 gpm. As the population of the KID has grown over the years, the demand placed upon the entire system, including distribution and transmission mains, water sources, reservoirs, and pump stations have encroached upon the ability of the system to meet the required demands. The need for increased fire flow to meet the minimum Fire Department requirements for every fire hydrant will require the KID to construct improvements to the water system in the years ahead. Although many projects identified in the Water Master Plan adopted in 2000 and subsequent revisions have been completed, failure to continue to undertake the expenditures for the remaining projects leaves the KID vulnerable to serious and sustained service failure in the event of natural disaster or unanticipated breakage. Moreover, the cost to replace facilities and pipelines under non-optimal emergency conditions is likely to be much higher than if done under a planned program.

As a footnote to this 2014 Revision, it should be noted once again that this Master Plan was primarily developed to address fire flow issues and general emergency preparedness issues that were raised after the 1993 firestorm. Although many operational improvements are gained through completion of recommended projects, this Master Plan does not address many worthwhile projects that would improve the operational efficiency and reliability of the production and distribution system. For example, the Wilcox Well is no longer a major production facility due to declining pumping levels in the Raymond Basin and production level from the tunnels has also been declining due to lower average rainfall. That has made the KID increasingly dependent on a single production source – the K-3 Well. If the current conditions continue or worsen in the years ahead, the K-3 Well may not be able to meet our production demands for normal or emergency conditions. Therefore, the KID staff will continue to examine possible new production sources such as drilling a new well and/or constructing a connection with Foothill Municipal Water District in order to receive imported water from the Metropolitan Water District. However, the cost of developing new production sources is not currently reflected in this Master Plan. Therefore, unless additional funding sources are identified, voluntary or mandatory conservation programs may continue to be necessary in the future to avoid major additional capital expenditures not included in this revision of the Master Plan.

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KINNELOA IRRIGATION DISTRICT

WATER MASTER PLAN

1.0 INTRODUCTION, PURPOSE, AND HISTORY

1.1 *Introduction*

The Kinneloa Irrigation District (KID) is a State irrigation district which owns and operates a water system in the north-central part of the Los Angeles County with the city limits of Pasadena on the west, south, and east sides and the Angeles National Forest to the north. The service area of the District covers an area of approximately 500 acres. The District additionally encompasses a watershed area north of the District. The KID serves a population of approximately 1,450 and there are 600 active metered services in the District's service area as of this revision. Additionally, it is the KID's responsibility to provide fire protection water to its customers. The District maintains 100 fire hydrants.

Revenue for the KID is derived almost exclusively from the sale of water.

1.2 *Purpose*

The purpose of this Master Plan is to describe the existing water system facilities within the KID, identify weaknesses within the system, recommend improvements, prioritize the necessary improvements, and determine cost estimates for implementing the improvements. This plan will also identify undeveloped land within the KID and assess potential for future development of that land.

1.3 *History*

The Kinneloa Irrigation District, originally formed in 1953, is a state irrigation district established pursuant to Division 11 of the California Water Code. A five member publicly elected Board of Directors governs it. The District water system presently serves about 600 households as well as a school, nursery, church, and fire station. In 1974, the KID had 190 services.

In 1974 an improvement district was formed with the addition of the Mira Loma, Canyon Mutual, and Osborn Water Companies to the Kinneloa Irrigation District. The facilities in this area were replaced or upgraded to the current standards using funds from a bond issue. This added additional 225 services to the KID.

In 1978, the Wilcox Well was upgraded to provide additional production capacity for homes on the east side of the district.

In 1979, 24 homes were added on Villa Highlands Drive and Villa Knolls Drive by Falzone Development.

In 1983, Nordberg and Neimeyer developed the area known as Hastings Heights and provided lots for 27 homes.

In 1990, town homes were built by Dove Creek Development at a site near New York Drive and Altadena Drive which added 50 services.

In 2003, 21 building sites were completed in the Kinneloa Canyon area known as Kinneloa Ridge by Diamond-Segundo Development and 23 services are now active including two for watering common areas. Additional pumping and storage facilities were added to accommodate this development and to provide a benefit for the District as a whole.

Additionally, several individual lots have been developed to account for the 600 present metered services.

KINNELOA IRRIGATION DISTRICT

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2.0 SYSTEM DESCRIPTION

2.1 *General*

The Kinneloa Irrigation District is divided into two distinct geographic areas. They are the east service area and the west service area, which are generally, divided by the Wilcox Canyon watercourse. Presently, the east and west service zones are connected by pipelines consisting of 6-inch and 8-inch pipe connecting the Holly Booster Pump Station, the East Tank, and the Vosburg Booster Station.

Almost all of the services in the KID are residential services for single family homes. The need for irrigating hillsides on relatively large lots creates much of the demand. Services and meters range from 3/4" to 2" in size.

Within each service area are several pressure zones which are serviced by a piping network, reservoirs, booster pump stations, wells, and horizontal water tunnels. See Exhibit II for a schematic drawing of the existing KID system.

2.2 *Water Sources*

2.2.1 Water Wells

The KID owns five water wells. Two of these wells are operational and are the primary source of water for the District. Those wells are the Wilcox Well which supplies the Wilcox Reservoir and the K-3 Well which supplies the Eucalyptus Reservoir. Both wells pump from the Raymond Basin. The District's adjudicated pumping allowance is 516 acre-feet per year plus an allowance for spreading. The current pumping allowance has been reduced by 30% to 361 acre-feet by informal agreement among water agencies to help maintain basin water levels. Both wells are equipped with deep-well, oil-lubricated, vertical turbine pumps and on-site generated sodium hypochlorite (0.8%) chlorinators with metering pumps for disinfection. Well status signals are received via radio telemetry and start-stop commands are based on reservoir levels and time-of-use schedules to take advantage of off-peak electricity rates. See Table 2.2A for a summary of well data.

TABLE 2.2A
WELL DATA

Well Name	Year Drilled & Depth	Casing Size (inches)	Motor Horsepower	2012-2013 Production
Wilcox Well	1924 500'	14"	100	58 acre-feet
K-3 Well	1965 700'	14" I.D.	125	584 acre-feet*

* Includes production of wholesale water sold to the City of Pasadena.

2.2.2 Tunnels

The KID owns and operates 15 water supply tunnels. The tunnels were originally constructed by hand in the 1800's and, in recent times, have supplied groundwater to the KID system and for spreading. Tunnel flow rate varies continuously according to the time of year. Tunnel water is delivered via gravity. Table 2.2B summarizes the tunnels, their status, and production.

TABLE 2.2B
TUNNEL SUPPLIES

Tunnel Name	Current Status	2012-2013 Production
High & Low Pressure Tunnels (4)	Currently in Service – feeds the Holly Tanks	54 acre-feet
House Tunnel	In service – feeds the Holly Tanks	14 acre-feet
Eucalyptus Tunnel	In service – feeds the Eucalyptus Reservoir	41 acre-feet
Long Tunnel	In service for spreading	34 acre-feet
Delores Tunnel	In service – feeds the Vosburg Reservoir or used for spreading	17 acre-feet
Far Mesa Tunnels (2)	In service – feed the Glen Reservoir	39 acre-feet
Tent Tunnel	In service for spreading	2 acre-feet
Falls Tunnel	In service for spreading	Measured for spreading credit only
Diversion Tunnel	In service for spreading	Measured for spreading credit only
Winifred Tunnels (2)	Not in service	Not measured

Depending on the season of the year, the tunnels are each capable of supplying anywhere from a few gallons per minute up to a hundred gallons per minute or more.

The tunnels have traditionally been a low cost source of water for the KID. However, the firestorm of October 1993 damaged the High and Low-Pressure Tunnel delivery pipelines. The rainstorms of the winter of 1993-94 further damaged the High and Low Pressure Tunnel pipelines. The High and Low Pressure Tunnel pipelines were further damaged in the winter storms of 1994-95. As a result of the aforementioned natural disasters, temporary repairs were made to return these sources to service and permanent repairs were made in 2006. Old age, rockslide damage, and rain storm runoff washed out the Delores Tunnel delivery pipeline. This pipeline was replaced in 2001 after being out of service since 1979.

Because of the age of the tunnels and their vulnerability to damage from natural causes, the tunnel supply is not considered as a reliable source of supply for the purpose of calculating available water source supply. In this respect, the tunnel supply should be thought of as a reserve or "back-up" supply.

2.2.3 Spreading Credit and Leased Water Rights

The KID receives spreading credit for surface water diversion to the Sierra Madre Villa and the Kinneloa Canyon Debris Basins. Total credit from these sources for 2012-2013 was 161 acre-feet. Leased Water Rights are available in some years from other water agencies to supplement our adjudicated pumping rights. Water from these sources is produced by the K-3 and Wilcox Well pumps and is included in the totals for those production sources.

2.2.4 Imported Water

The Kinneloa Irrigation District is a member of the Foothill Municipal Water District (FMWD) which supplies imported water from the Metropolitan Water District of Southern California (MWD) to eight member agencies in the area. Although there is no physical pipeline connection from FMWD to the KID, arrangements could be made to deliver the water through the distribution systems of an adjacent water agency if supplemental water is ever needed.

2.2.5 Interconnections with the City of Pasadena

The KID has six interconnections with the City of Pasadena to deliver excess KID water and/or to receive water in the event of an emergency. These interconnections are shown in Table 2.2C. The capacity of interconnections 3 and 5 was increased in 2008 as a joint project with the City of Pasadena.

TABLE 2.2C
INTERCONNECTIONS WITH CITY OF PASADENA

ID	Location	Description	Size	Capacity	Purpose
1	1776 Kinneloa Canyon Road	KID-Eucalyptus (1125 HWL) to Pasadena-Sheldon (1050 HWL)	4"	800 gpm	Deliver excess KID water to City of Pasadena
2	1727 Kinneloa Canyon Road	Pasadena-Calaveras (1209 HWL) to KID-Eucalyptus (1125 HWL)	4"	650 gpm	Emergency interconnection to KID-Eucalyptus (K-3 Well System)
3	3560 Ranch Top Road	Pasadena-Don Benito (1432 HWL) to KID-Vosburg (1430 HWL)	8"	800 gpm	Emergency interconnection to KID-Vosburg & Brown/Glen System and to deliver excess KID water to Pasadena
4	2999 New York Drive	Pasadena-Sheldon (1050 HWL) to KID-Wilcox Reservoir (944 HWL)	6"	1200 gpm	Emergency interconnection to KID-Wilcox Well/Wilcox Reservoir
5	3410 Fairpoint Street	KID-Vosburg (1430 HWL) to Pasadena-Murray System (1176 HWL)	8"	400 gpm	Emergency interconnection to Pasadena-Murray/Calaveras System and to deliver excess KID water to Pasadena
6	2650 New York Drive	Pasadena-Calaveras (1209 HWL) to KID-Eucalyptus (1125 HWL)	8"	1500 gpm	Emergency interconnection to KID to provide additional fire protection for Dove Creek Town Homes

2.2.6 Portable Booster Pumps and Generators

The KID currently has two (2) trailer mounted portable boosters available for emergency operations and to supplement fire flows in some or all pressure zones. These pumps are capable of 1050 gallons per minute (gpm) at 360 feet Total Dynamic Head (TDH). The KID also has four diesel-powered trailer mounted portable generators to supply emergency power to any of the KID facilities.

2.3 *Reservoirs*

The KID operates and maintains ten (10) water storage tanks and reservoirs. Overflow elevations range from 940 feet to 1,637 feet. Reservoir data is shown in Table 2.3A.

TABLE 2.3A
STORAGE RESERVOIR DATA

Reservoir Name	Number & Capacity	Zone Served	High Water Line	Construction
Eucalyptus	1 - 0.180 MG	Eucalyptus	1,125'	Partially Buried Reinforced Concrete
Wilcox	1 - 1.125 MG	N/A	940'	Partially Buried Concrete
Holly Tanks	2 - 0.150 MG	Holly/Sage	1,460'	Circular, Welded Steel Aboveground
Vosburg	1 - 1.250 MG	Vosburg	1,430'	Partially Buried Reinforced Concrete
Glen	1 - 0.125 MG	Glen/Brown	1,265'	Buried Reinforced Concrete
Brown	1 - 0.125 MG	Glen/Brown	1265'	Buried Reinforced Concrete
East Tank	1 - 0.150 MG	East	1,637'	Circular Welded Steel, Aboveground
Sage Tank	1 - 0.225 MG	Holly/Sage	1,457'	Circular Welded Steel, Aboveground
West Tank	1 - 0.500 MG	West	1,634'	Circular Welded Steel, Aboveground
Total Storage	3.980 MG			

MG = Million Gallons

Existing storage capacity by zone is shown in Table 2.3B.

TABLE 2.3B
STORAGE CAPACITY BY SERVICE ZONE

Zone	Storage Capacity
Eucalyptus	0.180 MG
Holly/Sage	0.525 MG
Glen/Brown	0.250 MG
East Tank	0.150 MG
Vosburg	1.250 MG
West Tank	0.500 MG

2.4 *Booster Pumping Facilities*

The KID operates and maintains five (5) separate booster-pumping facilities. All booster pumps are operated via telemetry and based upon reservoir levels. Booster pump facility data is shown in Table 2.4.

**TABLE 2.4
BOOSTER PUMPING FACILITIES**

Facility Name	No. of Pumps	Horsepower	Head (feet)	Approx. Capacity (gpm)	Service
Eucalyptus	3	50 HP each	346'	400 each	Eucalyptus Reservoir to the Holly/Sage Tanks
Holly	2	20 HP each	205'	200 each	Holly Tanks to East Tank
Vosburg	1	25 HP	195'	280	Vosburg Reservoir to East Tank
Glen	1	25 HP	165'	345	Glen Reservoir to Vosburg Reservoir
Sage	2	25 HP each	205'	400 each	Sage Tank to West Tank
Wilcox Reservoir	1*	75 HP	325'	515	Wilcox Reservoir to Brown/Glen Reservoirs
		75 HP	490'	360	Wilcox Reservoir to Vosburg Reservoir
	2**	50 HP & 75 HP	325'	650	Wilcox Reservoir to Brown/Glen Reservoirs
		50 HP & 75 HP	490'	433	Wilcox Reservoir to Vosburg Reservoir

* Condition when pumping to either Brown/Glen Reservoirs or Vosburg Reservoir with just the 75 HP pump.

** Condition when pumping to either Brown/Glen Reservoirs or Vosburg Reservoir with both pumps.

2.5 *Piping*

2.5.1 Existing Piping

There are approximately 66,000 Linear Feet of transmission and distribution mains in the KID service area. The pipes range in size from 1" to 12-inch in diameter. Piping materials include galvanized steel, CML and CMC steel, asbestos cement (AC), ductile iron (DI) and AWWA C-900 PVC. There are approximately 90 fire hydrants in the system ranging in size from 2 ½" to 6" x 4" x 2 ½". All of the galvanized steel piping is old and obsolete. Some of the existing pipe is old and inadequate to provide current revised requirements for fire service.

2.5.2 Future Piping

Traditionally, piping in the KID was sized to provide for fire flows of 750 gpm. The firestorm of October 1993 exposed this pipeline delivery capacity weakness. As a result, the KID Fire Preparedness Policy now requires that all new facilities, including pipe, be sized to support a fire flow of 1,250 gpm with a 20 psi minimum residual. This represents a 500 gpm increase to the original system

design capacity of 750 gpm fire flow at 20 psi minimum residual pressure. Some areas of the existing system meet the new requirements; however, portions of the distribution system will provide only the minimum original system design fire flows. Additionally, the County of Los Angeles has required 2000 gpm or more fire flow for some of the new larger homes currently being built where fire sprinklers are required. Future pipeline projects may need to be sized to support this flow.

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3.0 EXISTING SERVICE DEMANDS

The KID services approximately 600 customers with a population of approximately 1,500. Service sizes range from 3/4" to 2". All services within the District are residential with the following exceptions:

- High Point Academy
- Magic Growers
- Los Angeles County Fire Station No. 66
- Pasadena Church of Christ
- Equestrian Center

The KID produces water from two wells and several tunnels. The 2012-2013 production from those sources is shown in Table 3.0.

TABLE 3.0
TUNNEL AND WELL PRODUCTION
DELIVERED TO DISTRIBUTION SYSTEM 2012-2013

Source	2012-2013 Production
K-3 Well	584.2 acre-feet*
Wilcox Well	57.6 acre-feet
High and Low Pressure Tunnels	53.5 acre-feet
Far Mesa Tunnel	39.3 acre-feet
House Tunnel	14.3 acre-feet
Eucalyptus Tunnel	40.7 acre-feet
Delores Tunnel	17.4 acre-feet
TOTAL	807.0 acre-feet

* Includes production of wholesale water sold to the City of Pasadena.

Additional production from tunnels is delivered for spreading in the Raymond Basin. Water delivered for spreading can be recovered by the District by increased pumping allotments or can be sold to other water purveyors. In 2012-2013, water delivered for spreading by the KID amounted to 161 acre-feet. The sources of this water in a particular year can include the High and Low Pressure Tunnels, the Long Tunnel, Delores Tunnel, Diversion Tunnel, Falls Tunnel, Winifred Tunnels, Tent Tunnel, and surface runoff from watershed owned by the District into the Glen Wash, Kinneloa Canyon and the Sierra Madre Villa Debris Basins.

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4.0 FUTURE DEVELOPMENT

4.1 *General*

A report dated July 2, 1990, prepared for the KID by ASL Consulting Engineers identified a potential for 95 new dwelling units within the KID boundaries. The report identified 57 potential units which would be built by developers and another 38 units which would most probably be constructed as single units and not part of a development project. Since that time all major development work has been completed except for a potential development in the Doyne Road area as described below and the building or re-building of approximately 25 homes on individual vacant lots.

4.2 *Doyne Road Development*

Hydraulic studies were completed for a potential development (Tract no. 44323) that was planned to be constructed in the south central area of the KID. The new tract was to be served from the existing Holly/Sage Zone. The development required the grading of 8 undeveloped lots ranging in size from 0.60 acres to 3.0 acres. Total area was approximately 13 acres in the final development plan. Water system improvements for this tract were to include new distribution and transmission mains and a new booster pump station at the Wilcox Reservoir. However, after grading was completed for 8 lots, the property was purchased from the developer by an individual who subsequently abandoned plans for the tract and combined the lots into two separate parcels. As of January 2014, the status for building homes on these parcels is not known. There is also an adjacent two acre parcel under separate ownership on which the home was not rebuilt after it was destroyed in the 1993 Kinneloa-Altadena firestorm.

4.3 *Potential Future Well Sites*

The KID has a few potential future water source well sites within the District boundaries. The Equestrian Center north of New York Drive was acquired by Los Angeles County and incorporated into the Eaton Canyon Natural Area. The park status will allow for a well site for the District. The area of Wilcox Canyon, north or south of the Wilcox Reservoir also offers potential for a future well site.

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5.0 CAPACITY CHARGE IMPROVEMENT FEE

Improvements were made to the KID water system during the Dove Creek Development in 1987-1990. These improvements included improvements to the K-3 Well, Eucalyptus Reservoir, and piping in New York Drive. At the time of these improvements, the KID decided to build in reserve system capacity and redundancy beyond that required by the Dove Creek Development. Because the cost of the improvements was beyond what was required by the Dove Creek Development, the KID funded the marginal increase of the cost of the improvements beyond the Dove Creek Development requirements.

To recover the cost of the reserve capacity, the Board of Directors of the KID in 1990 instituted a Capacity Charge Improvement Fee on all future development in the District. The fee is \$3,000.00 per lot and is only charged for existing or newly created lots that do not have an existing water service. This fee is in addition to reimbursement for the cost of installing the new water service and required system improvements.

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6.0 SERVICE DEMANDS

6.1 *Existing Service Demands*

Average day and maximum day service demands are based on water delivery records for the drought year (September 1990 – September 1991). Average day demand is the total annual water delivered as recorded by the individual customer water meters averaged over 365 days per year. Maximum day demand is the maximum day total water delivered, averaged over 24 hours. Maximum day delivery data is not available for individual customer water meters. Customer water meter demand is only recorded monthly. Individual pumping facility production and reservoir levels are recorded daily at roughly the same time each day. Individual facility records are used to determine maximum day total water delivery. To establish a comparison between average day and maximum day demands it is necessary to compare average day and maximum day demands of the same representative service area. Average day and maximum day data is available for the total Holly and East Tank service area.

The record data for this service area indicates the following:

- 237 services
- 189 total acres
- Annual delivery of 134,990 billing units (B.U.)
- Maximum day delivery (7/29/1990) of 1,029 billing units

Average Day Demand

$$\frac{134,990 \text{ B.U.}}{189 \text{ Acre/Year}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Year}}{365 \text{ Days}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{1.02 \text{ Gal/Min}}{\text{Acre}}$$

OR:

$$\frac{134,990 \text{ B.U.}}{237 \text{ Services}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Year}}{365 \text{ Days}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{0.81 \text{ Gal/Min}}{\text{Service}}$$

Maximum Day Demand

$$\frac{1,029 \text{ B.U.}}{189 \text{ Acre/Day}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{2.83 \text{ Gal/Min}}{\text{Acre}}$$

OR:

$$\frac{1,029 \text{ B.U.}}{237 \text{ Services}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{2.26 \text{ Gal/Min}}{\text{Service}}$$

The ratio of the maximum day demand over the average day demand is the maximum day factor. For the existing Holly and East Tank Zone, the maximum day factor is as follows:

$$\frac{2.83}{1.02} = 2.77$$

Existing service demands for the number of services in 2007 for each zone were based on the calculated average day and maximum day demand factors for the Holly and East Tank Zone and are shown in Table 6.1.

TABLE 6.1
SERVICE DEMANDS BY ZONE IN THE
KINNELOA IRRIGATION DISTRICT

Service Zone	No. of Services	Average Day Demand 0.81 gpm/service (gpm)	Maximum Day Demand 2.26 gpm/service (gpm)
Eucalyptus	62	51	141
Holly/Sage	190	154	430
East	61	50	138
West*	25	47	119
Brown/Glen	70	57	159
Vosburg	192	156	434

* West Tank service demand based on 1.85 gpm/acre average day and 5.12 gpm/acre maximum day demands and a 23.3 acre service area.

6.2 Future Service Demands

Future service demands for various zones in the KID system were calculated based on the number of existing services, the planned additional services and the estimated future customer service demands. Planned additional services in the KID service area have a higher potential for water use than the existing customer services. Planned additional services are estimated to be comparable to the Shaw Ranch Estate type properties. Shaw Ranch record data indicates the September 1990 – September 1991 annual demand for 24 active services, serving 16.94 acres was a total of 21,984 billing units. Average day demand for planned future services is calculated as follows:

$$\frac{21,984 \text{ B.U.}}{16.94 \text{ Acre/Yr}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Year}}{365 \text{ Days}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{1.85 \text{ gpm}}{\text{Acre}}$$

OR:

$$\frac{21,984 \text{ B.U.}}{24 \text{ Services}} \times \frac{748 \text{ Gal.}}{\text{B.U.}} \times \frac{1 \text{ Year}}{365 \text{ Days}} \times \frac{1 \text{ Day}}{1,440 \text{ Min.}} = \frac{1.30 \text{ gpm}}{\text{Service}}$$

Maximum day demand for planned future services is the average day demand multiplied by the developed maximum day factor as follows:

$$1.85 \text{ gpm/acre} \times 2.77 = 5.12 \text{ gpm/acre}$$

OR:

$$1.30 \text{ gpm/service} \times 2.77 = 3.60 \text{ gpm/service}$$

For master planning and calculation of future system demands, 5.12 gpm/acre or 3.60 gpm/service will be used to calculate future service demands per zone. Table 6.2A shows the future service demand of the potential new services by zone.

TABLE 6.2A
FUTURE SERVICE DEMANDS BY ZONE IN THE
KINNELOA IRRIGATION DISTRICT

Service Zone	No. of Future Services	Average Day Demand 1.3 gpm/service (gpm)	Maximum Day Demand 3.6 gpm/service (gpm)
Eucalyptus	1	1.3	3.6
Holly/Sage	16	21.0	57.6
East	1	1.3	3.6
West	0	0.0	0.0
Brown/Glen	8	11.0	28.8
Vosburg	5	7.0	18.0

Table 6.2B shows the sum of the water demand for existing services in Table 6.1 and the potential new services in Table 6.2A.

TABLE 6.2B
TOTAL FUTURE SERVICE DEMANDS BY ZONE
IN THE KINNELOA IRRIGATION DISTRICT

Service Zone	Total Services	Average Day Demand (gpm)	Maximum Day Demand (gpm)
Eucalyptus	63	52	145
Holly/Sage	206	175	488
East	62	51	142
West*	25	47	119
Brown/Glen	78	68	188
Vosburg	197	163	452

* West Tank service demand based on 1.85 gpm/acre average day and 5.12 gpm/acre maximum day demands and a 23.3 acre service area.

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7.0 SYSTEM IMPROVEMENTS

7.1 *General*

The KID was formed in 1953. Many of the distribution and transmission pipelines predate 1953 and are nearing the end of their useful service life. For the purposes of this plan, the useful service life of the pipelines is set at 50 years. Development of excessive numbers of leaks and/or reduced pipeline capacity are two of the indications of pipelines at the end of their useful service life.

Originally, water mains in the KID provided domestic supply plus a fire flow of 750 gpm. The existing distribution system meets the original fire flow design criteria. The firestorms of October 1993 exposed the KID pipeline delivery capacity weakness. As a result, the KID adopted a Fire Preparedness Policy which requires new water mains to be sized to provide 20 gpm per service, plus a fire flow of 1,250 gpm each at two fire hydrants simultaneously.

As the population of the KID has grown over the years, the demands placed upon the entire system, including distribution and transmission mains, water sources, reservoirs, and pump stations have encroached upon the ability of the system to meet the required demands. Population growth, plus the need for increased fire flow to provide adequate fire protection will require the KID to construct improvements to the KID water system.

7.2 *Piping*

In April 1996, ASL Consulting Engineers conducted a study for the KID to identify water main improvements required to increase water system capabilities to deliver domestic demands plus 1,250 gpm fire flows.

All pipes that develop chronic leaks should be replaced to decrease waste of water and to achieve overall lower operational costs.

In addition, pipes which have exceeded their useful life should be replaced. It can be shown that replacing older pipelines will result in lower long-term operational costs. Pipelines which have become inaccessible due to development or are traversing private property in easements should also be replaced if practical and/or possible. Pipelines should be upsized where required to meet the fire preparedness goals. Upsizing is to be determined by hydraulic modeling and verified by field-testing.

Many projects have been completed since the original master plan. The remaining projects that are listed in Table 7.2 provide a remedy for the following conditions:

- Chronically leaking pipes.
- Pipe requiring upgrade to meet domestic demand and fire preparedness goals.
- Piping which has exceeded its useful service life of 50 years.
- Piping which has become inaccessible due to development or traverses private property in easements.

TABLE 7.2
REQUIRED WATER MAIN REPLACEMENTS
TO MEET 1,250 GPM FIRE FLOW AND
450 FEET VEHICULAR DISTANCE

Main Size	Description	
	From	To
8"	Sierra Madre Villa at Windover Rd.	Corner of 2090 & 2060 Villa Heights Rd..
8"	Country Lane	Southeast Corner of 1747 Country Lane
12"	Glen Reservoir	Intersection Villa Highlands & Sierra Madre Villa Includes Slope from Pasadena Glen to Barbite
8"	Kinclair Dr.	Behind 2150 Kinclair Dr.
8"	Kinclair Dr.	#4 Cricklewood Path
8"	Kinneloa Canyon Rd.	Behind 2044 Piccadilly Ln.
8"	Intersection of Vosburg St. & Lower Pasadena Glen Rd.	In front of 1658 Pasadena Glen Rd.

7.3 *Booster Pump Stations*

7.3.1 Existing Booster Pump Stations

The KID presently has sufficient booster pump capacity to provide for domestic demands. The 1,250 gpm fire flow requires supplementing booster station flow with gravity flow from reservoirs.

There are booster pump facilities located at the Eucalyptus Reservoir, Holly Tanks, Sage Tank, Wilcox Reservoir, Glen Reservoir and at the Vosburg Reservoir. The booster pumps at the Eucalyptus Reservoir were replaced with high efficiency vertical turbine units in 2002 as part of the system improvements needed for the Kinneloa Ridge Development.

The booster pump at the Holly Tank is a horizontal, split case pump. A preferred installation would be high efficiency vertical turbine units set in cans.

The booster pump at the Vosburg Reservoir is a submersible, centrifugal pump. A preferred installation would be a high efficiency vertical turbine unit, but a replacement 25 HP submersible pump that was installed in 2006 is providing increased flow and efficiency as compared to the previous 20 HP unit. A permanent three-booster pump station is currently in the design process and is expected to be constructed in 2015 or 2016 if the project is approved by the KID Board.

Table 7.3A compares the required booster pump station capabilities with existing booster pump station capabilities. Required booster pump station capabilities will supply maximum day demand with an off-peak 16-hour maximum pumping period.

Required Booster Pump Capacity Calculations: Each booster facility must provide capacity to serve all zones in the system above the booster station.

- Eucalyptus Booster Station must provide capacity to serve Holly/Sage Zone, West Zone, and ½ of the East Zone. Flow rates required are from Table 6.2B.

$$\text{Eucalyptus Booster Capacity} = \frac{24}{16} (488+119+\underline{142}) = 1017 \text{ gpm}$$

- Holly Booster Station must provide ½ of the East Zone.

$$\text{Holly Booster Capacity} = \frac{24}{16} \cdot \frac{142}{2} = 107 \text{ gpm}$$

- Vosburg Booster capacity is 285 gpm.
- Glen Booster must supply Vosburg Zone and ½ of East Zone.

$$\text{Glen Booster Capacity} = \frac{24}{16} (452+\underline{142}) = 785 \text{ gpm}$$

- Sage Booster supplies the West Zone only.

$$\text{Sage Booster Capacity} = \frac{24}{16} (119) = 179 \text{ gpm}$$

- Wilcox Booster must supply Vosburg Zone, Brown/Glen Zone and ½ of East Tank Zone.

$$\text{Wilcox Booster Capacity} = \frac{24}{16} (452+188+\underline{142}) = 1067 \text{ gpm}$$

TABLE 7.3A
COMPARISON OF REQUIRED BOOSTER PUMP CAPACITIES

Booster Station	Required Future Pump Capacities (gpm)	Existing Capacity (gpm)***	Additional Capacity Required (gpm)
Eucalyptus	1,017	800	0
Holly	107	200	0
Vosburg*	107	285	0
Glen	785	345	440
Sage	179	400	0
Wilcox Reservoir	1,067	650	417

* Additional capacity and redundancy will be provided with the proposed construction of a permanent booster station at the Vosburg Reservoir in conjunction with the proposed East-West Tank connector pipeline project.

** Existing capacity reflects normal operation. Some sites have additional capacity if all boosters are used simultaneously.

Table 7.3B shows the proposed booster pump improvements to increase efficiencies and/or capacities and provide improved redundancy.

TABLE 7.3B
PROPOSED BOOSTER IMPROVEMENTS

Booster Station	Description
Glen	Increase booster pump capacity.
Holly*	Replace existing pumps with two vertical turbine pumps in cans.
Vosburg	Replace existing submersible pump with three vertical turbine pumps in cans.
Wilcox Reservoir**	Increase booster pump capacity.

* Not needed if East-West Tank Connector Pipeline project is completed.

** Pipeline upgrades also required to reduce pumping head.

7.3.2 Proposed Booster Pump Stations

Although the plan for an eight-home tract on Doyne Road has been abandoned, the building of two or more homes on Doyne Road may require additional booster pump capacity at the Wilcox Reservoir and other pipeline upgrades. The necessary improvements have already been made at the Eucalyptus Booster Pump Station in conjunction with the Kinneloa Ridge Development and the main on Doyne Road was replaced as part of the Kinneloa Mesa pipeline improvement project.

7.4 *Tunnels*

7.4.1 High Pressure Tunnel

The High Pressure Tunnel pipeline is currently in service and supplies water to the Holly Tanks or the West Tank. The High Pressure Tunnel pipeline was damaged during the firestorms of October 1993. Additional damage occurred from mudslides during the rainy season of subsequent years. In 1994, the High Pressure Tunnel pipeline was repaired with FEMA funding. In the winters of 1994-95 and 2004-05, the High Pressure Tunnel pipeline was again damaged by mudslides. The KID applied for FEMA funding as a result of the disaster declaration after the 2004-2005 storms and permanent repairs were completed in 2006 using a combination FEMA funds and KID funds.

7.4.2 Low Pressure Tunnels

Pipelines delivering water from the Low Pressure Tunnels to the Holly Tanks have been out of service at various times since 1993. Both low pressure tunnel pipelines were damaged during the fire storms of October 1993. Further damages occurred from mudslides during the rainy seasons of subsequent years. In 1994, the lower Low Pressure Tunnel pipeline was replaced using FEMA funding. In subsequent rainy seasons, the tunnel has since been buried by mudslides. The storms of 2004-2005 further damaged the lines. The KID applied for FEMA funding to repair the lines in order to take advantage of the low cost water supply. The upper low pressure tunnel pipeline was replaced and put back in service in 2006. The lower low pressure tunnel was excavated to the tunnel face, but further work has been suspended due to lack of funding and safety concerns.

7.4.3 House Tunnel

The House Tunnel pipeline was also damaged in the 2004-2005 storms. The damaged section was replaced with flexible hose suspended from a cable and the rest of the pipeline was inspected and repaired at two locations. Since the majority of the pipeline is galvanized steel and was installed decades ago, it is expected that the pipeline will need to be replaced within the next 20 years even if there is no further storm damage.

7.4.4 Delores Tunnel

The Delores Tunnel was out of service between 1979 and 2001 due to rockslide and rain storm damage to the delivery pipeline. Although this pipeline was replaced in 2001 with flexible hose suspended from a cable for much of its length, it is still vulnerable to damage in the future. Therefore, it is expected that portions will need to be repaired or replaced within the time frame of this master plan.

The required tunnel maintenance and improvements are listed in Table 7.4.

TABLE 7.4
REQUIRED TUNNEL MAINTENANCE AND IMPROVEMENTS

Tunnel	Description
High Pressure	Periodically inspect pipeline for potential damage from landslides. Inspect for leaks and repair or replace pipeline as needed.
Low Pressure	Periodically inspect pipeline for potential damage from landslides. Continue excavation of lower tunnel and complete new tunnel face and pipeline between the tunnel and the injector if tunnel flow is significant.
House	Periodically inspect pipeline for potential damage from landslides. Inspect for leaks and repair or replace pipeline as needed.
Delores	Periodically inspect pipeline for potential damage from landslides. Inspect for leaks and repair or replace pipeline as needed.

7.5 *Other Improvements*

7.5.1 General

Within Section 7 of this master plan, necessary improvements have been identified which would connect tunnel water supplies to the system and improve system hydraulics in order to meet a 1,250 gpm fire flow for two hours. Also, improvements to reservoirs have been identified which are necessary to meet a minimum 1,250 gpm fire flow for two hours plus domestic demands. This section will examine other necessary system improvements.

7.5.2 Additional Improvements

The KID has identified other capital improvements necessary to upgrade existing facilities to provide increased operational efficiency, greater margins of safety, address emergency preparedness issues and to decrease maintenance costs. Additional capital improvements are shown in Table 7.5.

TABLE 7.5
ADDITIONAL IMPROVEMENTS AS IDENTIFIED BY THE
KINNELOA IRRIGATION DISTRICT

Description
Upgrade SCADA hardware, software and communications radios to prevent obsolescence (OPS)
Replace obsolete on-site chlorine generators. (OPS)
Purchase 250 kw trailer-mounted generator to be used at Wilcox and K-3 (EP)
EP= Emergency Preparedness OPS= Operations Improvement

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

8.0 PLANNED MAINTENANCE PROGRAM

The KID has developed a Planned Maintenance Program for the KID's water distribution system which extends the life of existing capital improvements. These items of work include pump overhauls, motor overhauls and replacements, reservoir recoating, reservoir roof repairs, upgrade interconnections with other agencies, purchase of small tools, upgrading various facilities, and office improvements. The items of work identified in this section are typically referred to as operations and maintenance items but due to relatively high cost they need to be budgeted in the same manner as capital improvements. Planned maintenance items identified by the staff are listed in Table 8.0 and are not in priority order.

TABLE 8.0
PLANNED MAINTENANCE PROGRAM ITEMS

Item	Description	Est. Cost
1	Glen Reservoir - Install Polypropylene Liner	\$ 30,000
2	Upgrading of Fire Hydrant Heads (\$ 500.00 to \$2,500 ea.)	\$34,000
3	Tunnel Maintenance (avg. \$ 7,000 per year for a 10 year period)	\$70,000
4	Valve Maintenance (replacement cost averages \$2,500 per valve)	\$25,000
5	Office Maintenance & Improvements: 1. Replace carpet and do interior painting; 2. Add storage shed to exiting concrete pad	\$40,000
6	Brown Reservoir - Install liner	\$30,000
7	Holly Tanks Erosion Control (All Phases)	\$140,000
8	Holly Boosters - Paint Booster Station	\$1,000
9	Wilcox Reservoir - Pump stand/other repairs	\$25,000
10	Service Area - Emergency prep. - install or replace "Blue Dot" Markers for Fire Hydrants	\$1,000
11	Wilcox Well - Modify dump line to dispose of water on site	\$1,000
	Total	\$397,000

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

9.0 PROJECT PRIORITIES

Project priorities are based upon cost-benefit considerations. Projects that will realize higher revenues per unit cost are given a higher priority than projects that will realize lower revenue, or no revenue, per unit dollar spent. Priorities are also based upon increased fire protection, increased operational efficiencies and lower maintenance costs. Projects are listed in Table 9.0 in order of decreasing priority in each project category.

TABLE 9.0
CAPITAL IMPROVEMENT PROJECTS LISTED BY PRIORITY

Priority	Project	Description
1	Pipeline	West Tank to East Tank (including portion of High/Low Pressure Tunnel line listed below).
2	Pipeline	Sierra Madre Villa from Windover Road to Corner of 2090 and 2060 Villa Heights Road
3	Pipeline	Replace service main in portion of Fairpoint Street from 3410 to last service at 3500 Fairpoint
4	Pipeline	Country Lane to Southeast Corner of 1747 Country Lane
5	Pipeline	Kinclair Drive to rear of 2150 Kinclair Drive
6	Pipeline	Kinclair Drive to #4 Cricklewood Path
7	Pipeline	Kinneloa Canyon Road to rear of 2044 Piccadilly Lane
8	Pipeline	Intersection of Vosburg St. and lower Pasadena Glen Rd. to front of 1658 Pasadena Glen Rd.
9	Pipeline	Replace service main in Edgecliff Lane from Villa Knolls Drive to cul-de-sac
10	Pipeline	1908 N. Kinneloa Cyn. Rd. to intersection of Larmona Drive & Kinneloa Mesa Road (Doyne Road project)
11	Pipeline	Replace service main from Villa Knolls Drive to end of Hartwood Point Drive
12	Pipeline	Replace service main in Villa Mesa Dr. from Sierra Madre Villa Ave. to 3336 Villa Mesa Dr.
13	Pipeline	From Glen Reservoir to intersection of Villa Highlands and Sierra Madre Villa. Includes slope from Pasadena Glen to Barhite
14	Pipeline	Replace water main from Wilcox Well to Wilcox Reservoir
1	Tunnel	Construct permanent replacement pipeline section from High Pressure Tunnel to Holly and/or Sage Reservoir
2	Tunnel	Construct pipeline from lower Low Pressure Tunnel to junction with High Pressure Tunnel Pipeline north of Kinneloa Debris Basin
3	Tunnel	Replace other tunnel pipelines as required
1	Booster	Replace the existing 50 HP oil lubricated booster pump at Wilcox Reservoir with a water lubricated pump
2	Booster	Install additional booster pump and new electrical at Wilcox Reservoir if needed
3	Booster	Replace existing booster pump at Glen Reservoir with a higher capacity unit
4	Booster	Replace existing booster pumps at Holly Tank with vertical turbine pumps in a can (Not needed if West Tank to East Tank pipeline is constructed)
1	Other (Emergency Preparedness)	Purchase 250 kw trailer-mounted generator for Wilcox and K-3
2	Other (Preventative Maintenance)	Upgrade SCADA hardware, software and communications radios to prevent obsolescence
3	Other (Preventative Maintenance)	Replace Uniclor with Chlortec chlorine generators to prevent obsolescence

KINNELOA IRRIGATION DISTRICT
WATER MASTER PLAN

10.0 COST ESTIMATES FOR REQUIRED IMPROVEMENTS

10.1 *Pipelines*

Cost estimates for pipeline replacements as described in Section 7.1, are taken from a study prepared by ASL Consulting Engineers for the KID in April 1996. Cost estimates were up-dated in July 2002 and adjusted for inflation and current construction costs in 2014. Nearly all of the replacement pipelines are needed to meet 1,250 gpm fire flow and 450 feet vehicular distance requirements. Category definitions are as follows: EP-Emergency Preparedness; PM-Preventive Maintenance; OPS- Operational Improvement. The estimated costs are shown in Table 10.1. In order for the district to get the best prices for these projects, the smaller projects should be bundled in dollar amounts not less than \$150,000.

TABLE 10.1
PIPING IMPROVEMENTS COST ESTIMATES

Priority	Main Size	Description		Category	Cost
		From	To		
1	12"	West Tank	East Tank	EP/OPS 5000 ft.	\$1,150,000
2	8"	Sierra Madre Villa at Windover Rd.	Corner of 2090 and 2060 Villa Heights Road	EP 1840 ft.	\$188,000
3	4"	Eastern portion of Fairpoint St.	Last service on Fairpoint St.	EP/PM 950 ft.	\$84,000
4	8"	Country Lane	Southeast Corner of 1747 Country Lane	EP 270 ft.	\$28,000
5	8"	Kinclair Dr.	Rear of 2150 Kinclair Dr.	EP 250 ft.	\$38,000
6	8"	Kinclair Dr.	#4 Cricklewood Path	EP 400 ft.	\$50,000
7	8"	Kinneloa Canyon Rd.	Rear of 2044 Piccadilly Ln.	EP 250 ft.	\$38,000
8	8"	Intersection of Vosburg St. & Lower Pasadena Glen Rd.	Front of 1658 Pasadena Glen Rd.	EP/PM 350 ft.	\$48,000
9	8"	Edgecliff Lane from Villa Knolls	End of Cul-de-sac	EP/PM 700 ft.	\$80,000
10	8"	Larmona Drive & Kinneloa Mesa Road	1908 N. Kinneloa Canyon Rd.(Doyne Rd. Project)	EP	\$204,000
11	8"	Villa Knolls Drive	End of Harwood Point	EP/PM 1960 ft.	\$204,000
12	8"	Sierra Madre Villa	3336 Villa Mesa	EP/PM 300 ft.	\$42,000

Priority	Main Size	Description		Category	Cost
		From	To		
13	12"	Glen Reservoir	Intersection Villa Highlands & Sierra Madre Villa Includes Slope from Pasadena Glen to Barbite	EP/OPS 3100 ft.	\$442,000
14	10"	Wilcox Well	Wilcox Reservoir Line	EP/OPS/PM 500 ft.	\$60,000
SUBTOTAL					\$2,656,000
Engineering, Design, and Planning					\$200,000
Construction Management and Inspection					\$150,000
SUBTOTAL					\$350,000
TOTAL PIPELINE PROJECTS					\$3,006,000

10.2 *Booster Pump Station Improvements*

Cost estimates for installation of some of the booster pump improvements at the Wilcox Reservoir that were required for the Doyne Road Development (Tract 44323) were developed in a report prepared by ASL Consulting Engineers for the KID and dated June 3, 1996. Cost estimates were up-dated in February 2002 but were not included in the KID capital project budget because it was expected that these improvements would be constructed at the developer's expense. However, since the development as originally planned has been abandoned by a new owner of the property, the cost of an additional booster at the Wilcox Reservoir is not included.

Cost estimates for installation of other booster pump improvements were developed in a report prepared by ASL Consulting Engineers for the KID and dated November 3, 1995. Cost estimates were up-dated in February 2002. Although some of these projects are being deferred because of the purchase of portable pumps, they are listed for planning purposes in the event that the portable pumps are used for other purposes. Costs for improvements to the booster pumps at the Wilcox Reservoir, Glen Reservoir, Holly Tank and the Vosburg Reservoir are included in the KID capital project budget. Costs include engineering, inspection, management and contingency. All costs were updated in 2002 and have been adjusted for inflation to 2014 dollars.

Booster Pump Station Improvements are shown in Table 10.2.

TABLE 10.2
BOOSTER PUMP STATION IMPROVEMENTS

Priority	Description	Estimated Costs
1	Replace the existing 50 HP oil lubricated booster pump at Wilcox Reservoir with a water-lubricated pump.	\$10,000.00
2	Construct improvements to the Booster Pump at Glen Reservoir	\$60,000.00*
3	Construct new Booster Pump Station at Vosburg Reservoir	\$390,000.00*
4	Construct improvements to the Booster Pumps at Holly Tanks (Not needed if East-West Tank connector pipeline is constructed)	\$60,000.00*

*Previously deferred by purchase of portable pumps. Needed to maximize benefit if East-West Tank connector pipeline is constructed.

10.3 Tunnel Improvements

The pipeline from the upper Low Pressure Tunnel face to the new High/Low combiner was replaced in 2006. The existing High Pressure pipeline was not replaced but the line was suspended from a new cable to the combiner to protect it from landslides. The lower Low Pressure Tunnel pipeline was not replaced since there was no water exiting that tunnel at the time of the construction work in 2006. The combined High/Low Pressure pipeline from the combiner to the Kinneloa Canyon West Debris Basin may also need to be replaced in future years. The cost estimates for the remaining pipelines are shown in Table 10.3.

TABLE 10.3
TUNNEL IMPROVEMENTS

Priority	Description	Cost Estimate
1	Replace the combined High/Low Pressure Tunnel Pipeline from combiner to Kinneloa Canyon West Debris Basin	\$200,000.00
2	Replace the lower Low Pressure Tunnel Pipeline	\$ 61,000.00
3	Replace other tunnel pipelines as required	\$100,000.00

10.4 Costs of Other Improvements

Cost estimates for the construction or purchase of other improvements are based upon estimates by KID staff and are shown in Table 10.4.

TABLE 10.4
OTHER IMPROVEMENTS

Priority	Description	Estimated Cost
1	Purchase 250 kw portable generator for Wilcox and K-3	\$40,000
2	Upgrade SCADA hardware, software and communications radios to prevent obsolescence	\$50,000
3	Replace Uniclor with Chortec chlorine generators	\$13,000

10.5 Total Costs

Table 10.5 shows total estimated costs for all necessary improvements as identified in this master plan. Cost estimates include design, inspection, construction management and contingency costs. Improvements identified to be installed and financed by developers are not included. Costs for the items identified as other work were developed for this master plan from cost estimates by the KID staff.

TABLE 10.5
TOTAL ESTIMATED COSTS

No.	Description	Cost Estimate
1	Pipeline Improvements	\$2,564,000
2	Pump Station Improvements	\$520,000
3	Tunnels	\$361,000
4	Other Improvements	\$103,000
5	Planned Maintenance (from Section 8)	\$397,000
	TOTAL	\$3,945,000

APPENDIX

EXHIBIT I
RESERVOIR IMPROVEMENTS

RESERVOIR IMPROVEMENTS

Cost estimates for District funded improvements to reservoirs are not included in the Water Master Plan. Since these costs were estimated in 1996, these projects will need to be re-evaluated if they are pursued in the future.

Existing Reservoirs

In April 1996, ASL Consulting Engineers conducted a study for the KID to identify reservoir improvements, which would have to be made to comply with the KID Fire Preparedness Policy. The results of that study indicate that additional capacity is required at the Holly Tanks, Glen Reservoir and East Tank.

Table I compares the required future reservoir storage capacity with the existing reservoir capacity for each service zone. Wilcox Reservoir is a forebay for the Wilcox Well and is not included. Required capacity is the sum of maximum day demand, operational capacity, and fire flow.

TABLE I
REQUIRED RESERVOIR CAPACITY

Reservoir	Maximum Day Demand (Gal.) *	Operational Capacity (Gal.) *****	Fire Flow (Gal.) **	Required Capacity (Gal.)	Existing Capacity (Gal.)	Additional Capacity Required (Gal.)
Eucalyptus Reservoir	308,160	77,000	300,000	685,160	180,000	505,160
Holly/Sage Tanks	702,720	176,000	300,000	1,178,720	525,000	653,720
East Tank	230,400	58,000	300,000	588,400	150,000	438,400
West Tank****	135,360	0***	300,000	435,360	500,000	0
Brown/Glen Reservoir	298,080	75,000	300,000	670,080	250,000	420,080
Vosburg Reservoir	643,680	161,000	300,000	1,104,680	1,250,000	0

* Maximum Day Demand = 60 min. x 24 hours x max day demand (gpm/service).

** Fire Flow = 1,250 gpm for 4 hours.

*** Operational storage not required.

**** West Tank Maximum Day Demand based on (gpm/acre).

***** 25% of maximum day demand.

The proposed reservoir improvements are shown in Table II.

TABLE II
PROPOSED RESERVOIR IMPROVEMENTS

Tank	Description
Holly Tanks	Remove both existing reservoir in two stages. Construct new concrete reservoir in two stages and miscellaneous site improvements. Increase existing Holly Tanks to provide total 1-MG storage.
East Tank*	Site has 1 existing 0.15 MG reservoir. Add two additional 0.15 MG steel reservoirs and miscellaneous site improvements. Site limitations prevent construction of total required storage. Maximum day operation will require careful management of operational levels with potential of encroaching on peak pumping Edison rate.
Glen Reservoir**	Demolish existing 0.15 MG reservoir. Construct new 0.5 MG concrete reservoir and miscellaneous site improvements.
Eucalyptus Reservoir	Emergency connections, portable pumps and tunnel supply are considered to make up storage deficit.

* Low priority if East-West Tank connector pipeline is constructed.

** Low priority because Glen Reservoir has back up storage in Vosburg Reservoir.

Cost estimates for District funded improvements to reservoirs were developed in a study by ASL Consulting Engineers for the KID and dated April 1996. The Estimated cost for improvements to Holly Tanks, East Tanks, and Glen Reservoir are shown in Tables III, IV, and V respectively. All costs are in 1996 dollars.

TOTAL ESTIMATED COSTS

No.	Description	Cost Estimate
1	Holly Reservoir Improvements	\$612,000
2	East Tank Improvements	\$422,000
3	Glen Reservoir Improvements	\$624,000
	Total Reservoir Improvements	\$1,658,000

TABLE III
HOLLY RESERVOIR IMPROVEMENTS COST ESTIMATE

Item	Quantity	Unit	Description	Unit Price	Total Price
PHASE I					
1	1	L.S.	Mobilization/Demobilization	\$6,750.00	\$6,750.00
2	1	L.S.	Modify Existing Inlet/Outlet and Tunnel Well Piping	\$5,000.00	\$5,000.00
3	1	L.S.	Demolish and Remove West Reservoir	\$25,000.00	\$25,000.00
4	275	L.F.	Install Excavation Shoring, Entire Site	\$30.00	\$8,250.00
5	900	C.Y.	Excavate Entire Site	\$30.00	\$27,000.00
6	1	L.S.	Install Sub drain System	\$4,000.00	\$4,000.00
7	1	L.S.	Install Inlet/Outlet Piping	\$3,000.00	\$3,000.00
8	1	L.S.	Construct West Half of New Reservoir	\$200,000.00	\$200,000.00
9	1	L.S.	Test, Disinfect, and Place West Half of Reservoir in Service	\$2,000.00	\$2,000.00
PHASE II					
1	1	L.S.	Demolish and Remove East Reservoir	\$25,000.00	\$25,000.00
2	1	L.S.	Install Sub drain System	\$4,000.00	\$4,000.00
3	1	L.S.	Install Inlet/Outlet Piping	\$5,000.00	\$5,000.00
4	1	L.S.	Construct East Half of New Reservoir	\$200,000.00	\$200,000.00
5	1	L.S.	Test, Disinfect, and Place East Half of Reservoir in Service	\$2,000.00	\$2,000.00
6	200	C.Y.	Backfill and Remove Shoring	\$50.00	\$10,000.00
7	1	L.S.	Construct Site Improvements, A.C. Pavement, Landscaping and Irrigation, and Site Drainage Facilities	\$15,000.00	\$15,000.00
SUBTOTAL					\$542,000.00
Engineering Design and Planning					\$30,000.00
Soils Investigation					\$10,000.00
Environmental Documents					\$10,000.00
Construction Administration and Inspection					\$20,000.00
SUBTOTAL					\$70,000.00
TOTAL PROJECT					\$612,000.00

TABLE IV
EAST TANK IMPROVEMENTS COST ESTIMATE

Item	Quantity	Unit	Description	Unit Price	Total Price
1	---	L.S.	Mobilization/Demobilization	\$5,000.00	\$5,000.00
2	1,300	C.Y.	Excavation / Grading	\$50.00	\$65,000.00
3	---	L.S.	Access Road – Grading and Paving	\$22,000.00	\$22,000.00
4	2	EA.	Tank Footing and Oil Sand	\$15,000.00	\$30,000.00
5	---	L.S.	Sub drain System	\$10,000.00	\$10,000.00
6	---	L.S.	Slope Treatment	\$15,000.00	\$15,000.00
7	---	L.S.	Site Drainage	\$30,000.00	\$30,000.00
8	2	EA.	Tank Material and Construction	\$75,000.00	\$150,000.00
SUBTOTAL				\$327,000.00	
Engineering Design and Planning				\$25,000.00	
Soils Investigation				\$15,000.00	
Environmental Documents				\$15,000.00	
Construction Management and Inspection				\$40,000.00	
SUBTOTAL				\$95,000.00	
TOTAL PROJECT				\$422,000.00	

TABLE V
GLEN RESERVOIR IMPROVEMENTS COST ESTIMATE

Item	Quantity	Unit	Description	Unit Price	Total Price
1	1	L.S.	Mobilization/Demobilization	\$6,000.00	\$6,000.00
2	1	L.S.	Temporary Relocation of Long Tunnel Pipeline	\$2,000.00	\$2,000.00
3	1	L.S.	Salvage Pump, Electrical, and Chlorination Equipment	\$6,000.00	\$6,000.00
4	1	L.S.	Demolish A.C. Pavement	\$2,000.00	\$2,000.00
5	1	L.S.	Demolish and Remove Existing Reservoir Structure and Appurtenances	\$35,000.00	\$35,000.00
6	300	L.F.	Install Excavation Shoring	\$30.00	\$9,000.00
7	1,900	C.Y.	Excavate Reservoir Pad	\$35.00	\$66,500.00
8	1	L.S.	Install Sub drain System	\$8,000.00	\$8,000.00
9	1	L.S.	Install Reservoir Inlet/Outlet and Drain Piping	\$5,000.00	\$5,000.00
10	1	L.S.	Construct Reservoir	\$350,000.00	\$350,000.00
11	1	L.S.	Test, Disinfect, and Place Reservoir in Service	\$3,000.00	\$3,000.00
12	1	L.S.	Backfill and Grade Site	\$7,000.00	\$7,000.00
13	1	L.S.	Install Chlorination, Pump, and Electrical Equipment	\$15,000.00	\$15,000.00
14	1	L.S.	Construct Site Improvements, A.C. Pavement, Landscaping, and Irrigation	\$10,000.00	\$10,000.00
SUBTOTAL					\$524,500.00
Engineering Design and Planning					\$45,000.00
Soils Investigation					\$10,000.00
Environmental Documents					\$15,000.00
Construction Management and Inspection					\$30,000.00
SUBTOTAL					\$100,000.00
TOTAL PROJECT					\$624,500.00

EXHIBIT II
SCHEMATIC OF WATER SYSTEM

KINNELOA IRRIGATION DISTRICT HYDRAULIC SCHEMATIC

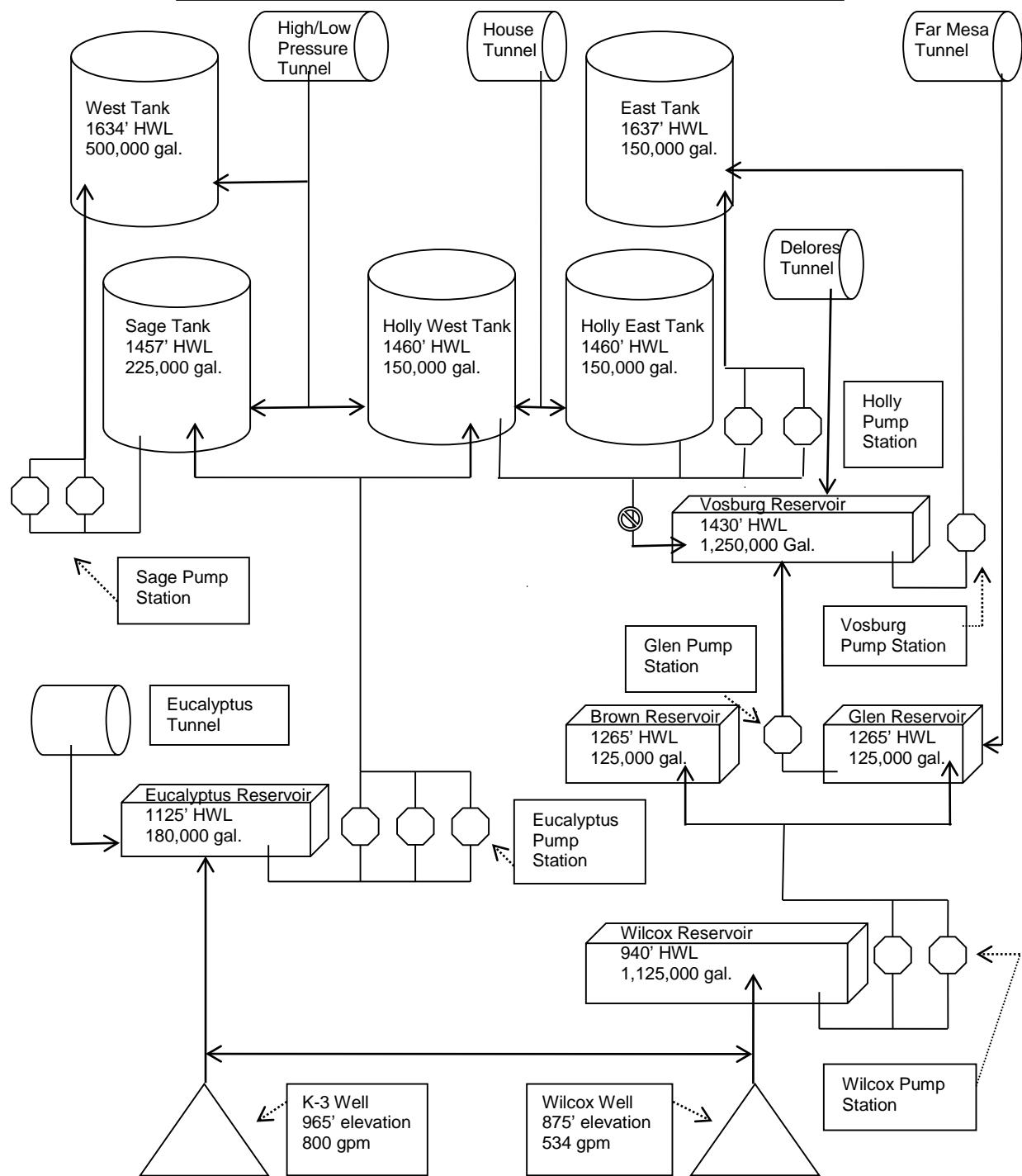


EXHIBIT III

FIRE PREPAREDNESS POLICY

FIRE PREPAREDNESS POLICY

FOR

THE KINNELOA IRRIGATION DISTRICT

Prepared for

The Kinneloa Irrigation District
1999 Kinclair Drive
Pasadena, CA 91107
(626) 797-6295

Prepared by:

ASL Consulting Engineers
3280 East Foothill Boulevard
Suite 350
Pasadena, CA 91107

February 1997

Revised by:

Melvin L. Matthews
General Manager

April 2005

KINNELOA IRRIGATION DISTRICT

FIRE PREPAREDNESS POLICY

INTRODUCTION

The Kinneloa Irrigation District (KID) provides water service to approximately 500 acres of hillside customers in northeast Pasadena. The Angeles National Forest borders the District on the north. Under certain weather conditions, wild fire danger is extremely high. Santa Ana winds have the capability to drive wild fires into the District with potential to cause major damage. The 1993 Altadena wild fire was the latest example of the potential fire danger. There are many factors that contributed to the Altadena wildfire damage. These factors are as follows:

- The availability of water for fire protection.
- Fuel source availability.
- Coordination of manpower.
- Equipment deployment.
- Limited ingress and egress.
- Fire preparedness.

Complete protection from major natural disasters such as wild fires is extremely difficult to provide. Preparation for all possible contingencies is impossible. The KID has determined that there are some water issues that exceed standard fire protection measures that may reduce wild fire damage to the community. These measures as applicable to the KID are identified in the KID Fire Preparedness Policy (FPP). The FPP issues identified are not necessarily immediately achievable. The FPP measures identified are a goal to be achieved to minimize future wild fire damage to the KID community.

The existing District facilities provide the level of structure fire protection originally intended. Recent wild fire events have identified several areas where water system performance above original design standards and in some cases additional capacities above current standards would be prudent. The FPP is an attempt to identify these areas and set goals to achieve reasonable standards.

The FPP identifies goals in four areas. These areas are as follows:

- Reservoir storage to maintain gravity supply to the distribution system for each pressure zone.
- Distribution piping to deliver the water supply to all areas of the District.
- Pumping capacity to supplement reservoir storage and transfer water to higher zones when necessary.
- Operational guidelines necessary to maximize system performance and minimize water loss during a wild fire event.

Following is a detailed discussion of each goal:

1. Reservoir Storage

The FPP reservoir storage goal is to provide storage in each zone to supply fire flow to multiple fire hydrants simultaneously in addition to customer demand. Fire flow storage goal is to provide 1,250 gpm at two locations for duration of two hours (300,000 gallons) plus 20 gpm for each customer for two hours (2,400 gallons per customer). The following table identifies the reservoir fire flow storage goals for each zone. Total services include planned developments.

Service Zone	Total Services	Customer Demand (gallons)	Fire Storage (gallons)	FPP Goal (gallons)	Existing Storage (gallons)
Eucalyptus Zone	62	148,800	300,000	448,800	180,000
Holly/Sage Zone	205	492,600	300,000	792,600	525,000
East Tank Zone	61	146,800	300,000	446,800	150,000
West Tank Zone	25	60,000	300,000	360,000	500,000
Brown/Glen Zone	77	184,800	300,000	484,800	250,000
Vosburg Zone	195	468,000	300,000	768,000	1,250,000

Note: FPP storage goal does not include reservoir operational storage. The FPP reservoir storage goal will be accomplished through new reservoir construction resulting from development and/or replacement or reconstruction of existing reservoir facilities.

2. Distribution Piping

The FPP distribution piping goal is to improve the distribution piping network to increase the delivery capability to all fire hydrants and customer services. The original system design required capability of delivering 750 gallons per minute of water to a single fire hydrant. The current distribution piping has the capability to meet this requirement. Flow requirements have been increased by revisions to the County Fire Department regulations. New construction within the District requires a minimum of 1,250 gpm flow for 2 hour duration.

The FPP goal is to improve the distribution system piping within each service zone to provide 1,250 gpm flows to two fire hydrants flowing simultaneously, plus a flow of 20 gpm for each customer service within the service zone. This goal is not immediately achievable. The goal will be accomplished by adequately sizing new water mains and replacing existing mains as required due to system modifications and pipe deterioration due to age. Additional fire hydrants will be added where required to meet the revised Los Angeles County requirement of 450 feet maximum vehicular distance to structures.

3. Pumping Capacity

The FPP pumping capacity goal is to improve the reliability, efficiency, and capacity of the District's pumping facilities. The existing pumping facilities have adequate capacity to provide maximum day domestic demands. Tunnel well water is required to meet maximum day domestic demand for some zones. Development of additional customer services will increase demand above current pumping capacities. Additional pumping capacity is required to meet the additional demands.

The FPP pumping capacity goal is to improve pumping facilities to the following standards:

- A. Pumping capacity for each zone will be sufficient to pump maximum day demand during Edison Company off-peak demand 16-hour daily pumping period.
- B. Pumping capacity will be sufficient to replace fire flow storage within a minimum of one 24-hour period.
- C. Pump facilities for each zone will include a minimum of two pumps:
 - One (1) Duty
 - One (1) Standby

There will be an alternative for larger capacity facilities having three pumps:

- Two (2) Duty
- One (1) Standby

Pumps will be high efficiency vertical turbine pumps, with pump can manifold, aboveground discharge, and pump control valve check valves to minimize system pressure surges. Each facility will include provisions for emergency generator lug connections. Emergency generator shall provide power to a minimum of one Duty pump. Pump station piping shall include provisions for bypass valve and bypass connections for fire engine pumping equipment or portable emergency pumping equipment.

The FPP goal will be accomplished by applying the above standards to all new pumping facility designs and upgrading existing facilities to above standards when capacity modifications are required or when pumping equipment is replaced.

4. System Operational Guidelines

The FPP guidelines were developed from discussions with KID staff focusing on the 1993 wild fire incident. The goal of the operational guidelines is to make efficient use of the water supply to protect the KID customers and maximize fire department suppression capabilities. In the event of wild fire danger, the KID staff will attempt to implement the following guidelines:

- A. General Manager or Facilities Supervisor will coordinate water system operation with fire department deployment of manpower and equipment.
- B. Whenever possible, KID staff will attempt to minimize water waste by stopping visible leaks from damaged structures and/or irrigation systems. Water service to damaged structures and/or irrigation system may be turned off.
- C. Fire department pumping equipment may be deployed and connected to inter zone transfer facilities.
- D. Bypass valves or pumping facilities may be operated as required to make up reservoir storage losses. Transfers between zones will be made only when necessary and only when transfer will not deplete zone storage below levels required to provide adequate fire protection. Transfer of water between zones will be at the discretion of the General Manager or Facilities Supervisor.

- E. District emergency portable generator will be maintained and tested monthly and placed in service when required to provide emergency power for pumping when anticipated power failure is expected for a duration of more than 2 hours. Additional emergency generators will be provided at the discretion of the General Manager or Facilities Supervisor.
- F. District's two portable pumps will be maintained and tested monthly and placed in service when prolonged power outages and/or failure of booster pumps require the use of the pumps to maintain adequate reservoir storage levels.

General Manager's Report for the Board of Directors Meeting on April 22, 2014

I. Customer Account Information and Internet Usage

A. Delinquent Accounts –

28 accounts received past-due notice
28 accounts received late charges in the total amount of \$461.96
8 accounts received door hanger shut off notice
0 accounts were shut off for non-payment
1 account remains shut off for non-payment

B. Aged Receivables –

Month	Current	30 days	60 days	90 days or greater	Total
January 2014	\$21,534.89	\$1,251.61	\$16.32	\$0.00	\$22,802.82
February 2014	\$45,508.72	\$1,631.05	\$216.50	\$16.32	\$47,372.59
March 2014	\$34,460.40	\$3,123.69	\$773.48	\$232.82	\$38,590.39
April 2014					
May 2014					
June 2014					
July 2014					
August 2014					
September 2014					
October 2014					
November 2014					
December 2014					

C. Internet Usage –

Month	Visitors	Page Views	Online Payments	Online Amount
January 2014	106	459	32	\$5,380.79
February 2014	117	403	29	\$4,356.27
March 2014	133	346	40	\$6,556.36
April 2014				
May 2014				
June 2014				
July 2014				
August 2014				
September 2014				
October 2014				
November 2014				
December 2014				
Year to Date	356	1208	101	\$16,293.42

II. General Manager's Projects and Activities

- A. Master Plan** – A revision of the ***Master Plan*** is being presented at this meeting for discussion and approval by the Board. This revision includes an update to the list of completed projects, future projects and estimated costs as well as minor changes to the narrative and explanatory sections to reflect current information and to correct errors that have been found in the original report and subsequent revisions. The main purpose of this plan is to emphasize projects that will improve our emergency preparedness for natural disasters and unexpected operational problems.
- B. Year-End Review and Audit** – The final draft of the 2013 audit is being presented at this meeting for discussion and approval for publication.
- C. Water Supply Issues and Plan of Action** – I prepared a report for discussion at this meeting.

III. System and Facility Activities and Incidents

- A. East-West Connector Pipeline** – Two meetings with SA Associates were held to discuss scope of the design project and to complete a job-walk to identify the suggested alignment of the pipeline.
- B. Valve and Hydrant Maintenance** – Fourteen fire hydrants that were identified in the recent testing project were repaired by installing new valve stem bushings to facilitate operation to the fully-open position. Additionally, five street valves were located and/or exercised to facilitate normal operation.
- C. Well and Booster Pump Testing** – Efficiency and flow accuracy tests were conducted at four sites.
- D. Generator Service** – Normal periodic maintenance was completed on our four generators.
- E. Asphalt Patches** – Permanent paving was done at several previous leak repair locations.
- F. West Tank** – Brush clearance was done at this facility.
- G. Brown Well** – The developer of the adjacent property has completed the concrete driveway to this facility as agreed. Landscaping of the site will now be possible after construction debris and rocks are removed.

**MINUTES OF THE REGULAR MEETING
OF THE BOARD OF DIRECTORS OF THE
KINNELOA IRRIGATION DISTRICT
MARCH 18, 2014**

MEMBERS PRESENT: Chair-President Kilburn
Directors-Frank Griffith, Steven Sorell, Tim Eldridge, Gordon Johnson

STAFF PRESENT: Melvin Matthews, General Manager
Chris Burt, Facilities Supervisor
Shirley Burt, Administrative Assistant

CALL TO ORDER:

The Meeting was called to order by the Chair, Gerrie Kilburn, at 1930 hours. She declared that there was a quorum present. The Agenda was accepted as presented

PUBLIC COMMENT: No persons wished to comment at this time.

GENERAL MANAGER'S REPORT:

The **General Manager** reviewed his report in the Board packet and the report was approved for filing as presented.

REVIEW OF MINUTES:

The minutes of February 18, 2014, were reviewed and approved for filing as presented.

REVIEW OF FINANCIAL REPORTS:

The reports for February 28, 2014, were reviewed and accepted for filing as presented.

POSSIBLE ITEMS FOR NEXT AGENDA:

Review of General Manager's Performance
Review of Master Plan
Report Pasadena Glen Fire Safe Council
Report Metropolitan Water District
Review Water Supply Alternates
Review of 2013 Audit

ADJOURNMENT:

The meeting was adjourned at 2003 hours. The next meeting will be on April 22, 2014.

Respectfully submitted,

Shirley Burt
Secretary to the Board



Memo

Date: April 17, 2014
 To: Board of Directors
 From: Mel Matthews
 Subject: Financial Review for March 2014

Total Revenues for the month were \$76,437.92 as compared to the budgeted amount of \$91,166.66 which reflects the lack of wholesale water sales in March budgeted for \$15,000.00. However, retail water sales were virtually the same as the budgeted amount of \$75,000.00. Total revenues for the three months year to date were \$297,401.13 as compared to the budgeted amount of \$252,499.98 which is a favorable variance of \$44,901.15. **Total Expenses** for the month were \$94,653.58 as compared to the budgeted amount of \$102,359.14 which is a favorable variance of \$7,705.56. Total expenses for the three months year to date were \$241,260.36 as compared to the budgeted amount of \$279,277.42 which is a favorable variance of \$38,017.06. The General Ledger amounts that were significantly different than the budgeted amounts for the month are as follows:

GL Acct.	Description	Actual	Budgeted	Difference	Comments
4015	Wholesale Water Sales	0.00	15,000.00	-15,000.00	Discretionary sales when water is not needed for retail customers
5016	Operations Labor OT	2,396.13	1,166.67	1,229.46	Special projects/Contractor supervision
5030	Maintenance Contractors	20,763.32	10,416.67	10,346.65	Budgeted evenly over year - not a predictable expense
5034	Equipment Maintenance	5,157.42	833.33	4,324.09	Budgeted evenly over year - work invoiced when completed
5045	Insurance - Workers Com	1,495.84	3,000.00	-1,504.16	Refund received for prior years' estimated premium
5046	Insurance - Liability	-4,317.14	1,833.33	-6,150.47	Refund received for prior years' estimated premium
5048	Insurance - Property	-195.75	208.33	-404.08	Refund received for prior years' estimated premium
6045	Legal Services	-1,000.00	1,250.00	-2,250.00	We requested credit and received refund for new board member orientation

Net Loss was \$18,215.66 as compared to a budgeted loss of \$11,192.48. There were \$13,767.78 in **Other Expenditures** for approved projects. The total budgeted amount for 2014 projects is \$129,300.00. The actual projects performed and the scheduling of the projects continues to be contingent on the actual net income and the desired increase in the net surplus for future major projects.

Total cash in our checking and reserve accounts excluding Pasadena Glen Fire Safe Council funds is \$1,240,602.33 as of March 31, 2014. The net increase in cash for the month was \$9,946.03 and year to date increase is \$23,698.44.

Kinneloa Irrigation District
Income Statement for the Three Months Ending March 31, 2014

	Current Month Actual	Current Month Budget	Year to Date Actual	Year to Date Budget
Revenues				
4000 Water Sales	74,873.54	75,000.00	292,645.67	219,000.00
4015 Wholesale Water Sales	0.00	15,000.00	0.00	30,000.00
4020 Service/Installation Charges	831.96	833.33	2,506.31	2,499.99
4025 Asset Sale/Miscellaneous	0.00	0.00	350.00	0.00
4035 Interest-Reserve Fund	439.41	333.33	1,261.52	999.99
4070 Misc. Income	293.01	0.00	637.63	0.00
Total Revenues	76,437.92	91,166.66	297,401.13	252,499.98
Expenses				
5005 Electricity	7,779.93	8,500.00	25,041.89	24,500.00
5010 Maintenance Supplies	2,291.24	2,000.00	4,983.48	7,000.00
5011 Material and Labor for Install	1,518.59	833.33	1,518.59	2,499.99
5012 Safety Equipment	74.67	133.33	74.67	399.99
5015 Operations & Maintenance Labor	11,641.34	12,916.67	36,048.62	38,750.01
5016 Operations & Maintenance OT	2,396.13	1,166.67	4,672.38	3,500.01
5020 Stand-by Compensation	720.00	625.00	1,860.00	1,875.00
5022 Training/Certification	0.00	133.33	0.00	399.99
5025 Water Treatment/Analysis	1,008.67	1,833.33	5,599.80	5,499.99
5030 Maintenance Contractors	20,763.32	10,416.67	32,315.66	31,250.01
5034 Equipment Maintenance	5,157.42	833.33	5,157.42	2,499.99
5035 Vehicle Maintenance	0.00	500.00	104.08	1,500.00
5036 Fuel - All Equipment	898.95	1,000.00	5,355.45	6,000.00
5045 Insurance-Workers Compensation	1,495.84	3,000.00	1,495.84	3,000.00
5046 Insurance-Liability	(4,317.14)	1,833.33	(1,849.64)	5,499.99
5048 Insurance-Property	(195.75)	208.33	164.25	624.99
5049 Insurance-Medical	6,049.54	5,951.25	18,148.62	17,853.75
6000 Engineering Services	0.00	3,750.00	7,078.45	11,250.00
6005 Watermaster Services	879.33	1,000.00	2,637.99	3,000.00
6015 Administrative Salary	10,316.64	10,833.33	30,949.92	32,499.99
6017 Administrative Travel	0.00	250.00	472.02	750.00
6020 BofD Compensation	300.00	800.00	900.00	1,600.00
6021 Administrative & Board Expense	0.00	104.17	0.00	312.51
6022 BofD-Election	11,790.38	12,500.00	11,790.38	12,500.00
6024 Customer/Public Info. Prog.	0.00	125.00	0.00	375.00
6025 PERS - KID	1,521.60	1,833.33	4,603.90	5,499.99
6030 Social Security - KID	2,425.23	2,583.33	7,169.37	7,749.99
6035 Office/Computer Supplies	114.14	583.33	581.30	1,749.99
6036 Postage/Delivery	234.57	416.67	1,209.42	1,250.01
6040 Professional Dues	748.48	625.00	2,245.44	1,875.00
6045 Legal Services	(1,000.00)	1,250.00	1,904.50	3,750.00
6050 Telephone	339.81	333.33	1,020.94	999.99
6051 Mobile Telephone	86.39	125.00	240.23	375.00
6052 Pagers	19.16	20.00	57.48	60.00
6053 Internet Service	55.00	83.33	165.00	249.99
6059 Computer/Software Maintenance	276.65	750.00	829.95	2,250.00
6061 Office Equipment Maintenance	276.49	83.33	276.49	249.99
6065 Accounting Services	0.00	2,000.00	0.00	7,000.00
6070 Office & Accounting Labor	6,328.35	6,946.25	19,286.40	20,838.75
6075 Outside Services	1,375.24	1,666.67	2,969.84	5,000.01
6080 Administrative Fees	600.84	604.17	1,781.12	1,812.51
6081 Permits/Fees	290.00	833.33	1,075.00	2,499.99
6120 Bank Service Charges	392.53	375.00	1,324.11	1,125.00
Total Expenses	94,653.58	102,359.14	241,260.36	279,277.42
Net Income	(18,215.66)	(11,192.48)	56,140.77	(26,777.44)

Kinneloa Irrigation District
Income Statement for the Three Months Ending March 31, 2014

	Current Month Actual	Current Month Budget	Year to Date Actual	Year to Date Budget
Other Expenditures				
1504 Water Mains	0.00	0.00	0.00	25,000.00
1509 Wilcox Well/Wilcox Booster	0.00	0.00	0.00	10,300.00
1511 WaterTreatment Plant	0.00	0.00	0.00	6,000.00
1512 Water Meters	0.00	416.67	0.00	1,250.01
1513 Electrical/Electronic Equip.	1,525.91	2,083.33	1,525.91	6,249.99
1514 Computer/Office Equipment	0.00	416.67	0.00	1,250.01
1516 Water Company Facilities	0.00	1,000.00	5,672.00	3,000.00
1526 Vosburg Booster	8,140.00	0.00	8,140.00	25,000.00
1527 SCADA Equipment	4,101.87	1,083.33	7,687.07	3,249.99
1530 Tools	0.00	250.00	1,702.04	750.00
Total Other Expenditures	13,767.78	5,250.00	24,727.02	82,050.00
Total Increase or (Drawdown)	(31,983.44)	(16,442.48)	31,413.75	(108,827.44)

Kinneloa Irrigation District
Balance Sheet
March 31, 2014

ASSETS

Current Assets

1010	Checking-Wells Fargo Bank	\$ 156,852.86
1011	Checking-PGFSC	15,749.76
1012	Reserve Fund-LAIF	118,333.61
1014	Reserve Fund-CalTRUST	965,415.84
1015	Accr. Int./Price Adj.-CalTRUST	731.10
1016	Accrued Interest-LAIF	90.95
1100	Accts. Receivable-Water Sales	38,590.39
1190	Allowance for Bad Debts	(771.48)
1200	Inventory	20,000.00
1340	Accrued Water Sales	67,650.31
1350	Prepaid Insurance	7,958.99
1360	Prepaid Expenses	8,784.45

Total Current Assets 1,399,386.78

Property and Equipment

1501	Water Rights	52,060.41
1503	Land Sites	96,700.08
1504	Water Mains	2,423,817.02
1505	Water Tunnels	705,985.75
1506	K-3 Well	82,848.37
1507	Improvement District #1	602,778.12
1508	Mountain Property	6,620.00
1509	Wilcox Well/Wilcox Booster	94,030.98
1510	Interconnections	14,203.27
1511	WaterTreatment Plant	184,940.70
1512	Water Meters	78,368.69
1513	Electrical/Electronic Equip.	247,430.46
1514	Computer/Office Equipment	60,072.53
1515	Vehicles & Portable Equipment	222,084.16
1516	Water Company Facilities	65,751.20
1517	KID Office	54,202.92
1518	Shaw Ranch	280,789.92
1519	Dove Creek Project	487,383.87
1520	Glen Reservoir/Booster	24,190.86
1521	Kinneloa Ridge Project	690,492.58
1522	Eucalyptus Booster Station	532,342.43
1526	Vosburg Booster	37,534.00
1527	SCADA Equipment	234,271.98
1528	Tanks and Reservoirs	97,944.39
1529	Holly Tanks	181,113.76
1530	Tools	6,811.57
1600	Accum. Depreciation	(3,195,521.12)

Total Property and Equipment 4,369,248.90

Total Assets \$ 5,768,635.68

Kinneloa Irrigation District
Balance Sheet
March 31, 2014

LIABILITIES AND CAPITAL

Current Liabilities

2000	Accounts Payable	\$ 34,158.14
2011	Accounts Payable PGFSC	152.23
2272	Job Deposits	10,531.18
2274	PGFSC Grant	15,459.53
2290	Accrued Vacation	15,931.70
	Total Current Liabilities	76,232.78

Long-Term Liabilities

Total Long-Term Liabilities	0.00
Total Liabilities	76,232.78

Capital

3040	Fund Balance	5,635,109.82
3900	Prior Year Adjustments	5,765.00
	Net Income	51,528.08
	Total Capital	5,692,402.90
	Total Liabilities & Capital	\$ 5,768,635.68

**Kinneloa Irrigation District
Statement of Cash Flow
For the Three Months Ended March 31, 2014**

		Current Month	Year to Date
Cash Flows from Operating Activities			
Net Income		\$ (18,215.66)	\$ 56,140.77
<i>Adjustments to reconcile net income to net cash provided by operating activities</i>			
1100 Accts. Receivable-Water Sales		8,721.39	9,974.25
1101 Accts. Receiv.-Service Charges		450.00	268.77
1350 Prepaid Insurance		(756.25)	2,071.25
1360 Prepaid Expenses		1,684.47	6,053.41
2000 Accounts Payable		5,866.25	(51,500.99)
2011 Accounts Payable PGFSC		0.00	(268.77)
2260 Med./Dental-Withhold-Employee		0.00	78.57
2272 Job Deposits		10,531.18	10,531.18
2274 PGFSC Grant		15,432.43	15,077.02
Total Adjustments		<u>41,929.47</u>	<u>(7,715.31)</u>
Net Cash Provided by Operations		23,713.81	48,425.46
Cash Flows from Investing Activities			
<i>Used for</i>			
1513 Electrical/Electronic Equip.		(1,525.91)	(1,525.91)
1516 Water Company Facilities		0.00	(5,672.00)
1526 Vosburg Booster		(8,140.00)	(8,140.00)
1527 SCADA Equipment		(4,101.87)	(7,687.07)
1530 Tools		0.00	(1,702.04)
Net Cash Used in Investing		<u>(13,767.78)</u>	<u>(24,727.02)</u>
Cash Flows from Financing Activities			
<i>Proceeds from</i>			
<i>Used for</i>			
Net Cash Used in Financing		<u>0.00</u>	<u>0.00</u>
Net Increase (Decrease) in Cash		\$ 9,946.03	\$ 23,698.44
Summary			
Cash Balance at End of Period		\$ 1,324,824.43	\$ 1,324,824.43
Cash Balance at Beg. of Period		(1,314,878.40)	(1,301,125.99)
Net Increase (Decrease) in Cash		\$ 9,946.03	\$ 23,698.44

Kinneloa Irrigation District
Check Register
For the Period from March 1, 2014 to March 31, 2014

Date	Check #	Payee	Amount	Description
3/5/14	7538	ACWA/JPIA	7,136.32	April health insurance - KID/employee
3/5/14	7539	American Messaging Services	19.16	pagers
3/5/14	7540	AmeriPride Services	56.80	shop towel service
3/5/14	7541	Eurofins Eaton Analytical, Inc.	118.80	water sample analysis
3/5/14	7542	Goldak, Inc.	1,817.29	pipe/cable locator; valve locator; metal detector
3/5/14	7543	Perry Thomas Construction Co.	5,672.00	new pullbox cover @ 1909 SMV
3/5/14	7544	SA Associates	7,078.45	eng. svc. Windover/SMV; system maps upgrades
3/5/14	7545	USA Blue Book	182.51	cl2 tests
3/5/14	7546	Utility Service Co., Inc.	3,859.70	tank maintenance agreement
3/15/14	EFT2044	Bernadette C. Allen	813.10	salary
3/15/14	EFT2045	Christopher A. Burt	2,746.98	salary
3/15/14	EFT2046	Shirley L. Burt	1,338.03	salary
3/15/14	EFT2047	Melvin L. Matthews	3,282.97	salary
3/15/14	65654050	Brian L. Fry	1,522.09	salary
3/15/14	65654051	Felix Galindo	450.57	salary
3/15/14	65654052	Chris J. Mellinger	319.22	salary
3/15/14	EFT2048	Christopher A. Burt	150.00	salary
3/15/14	EFT2049	Automatic Data Processing, Inc.	65.89	payroll processing
3/15/14	EFT2050	Automatic Data Processing, Inc.	4,919.89	withholding and taxes
3/18/14	EFT2051	Century Business Solutions	98.40	banking service fee
3/18/14	EFT2052	Arco Gaspro Plus	898.95	truck gas
3/18/14	EFT2053	Athens Services	126.70	trash pick up
3/18/14	EFT2054	Bank of America Business Card	1,475.57	see attached schedule - January
3/18/14	EFT2055	Calif. Public Emp. Ret. System	2,974.37	CalPERS - February KID/employee
3/18/14	EFT2056	Century Business Solutions	15.00	monthly banking service fee
3/18/14	EFT2057	Pasadena Municipal Services	1,225.90	electricity
3/18/14	EFT2058	Southern California Edison Co.	7,748.04	electricity
3/18/14	EFT2059	Verizon Wireless	76.72	mobile phone
3/18/14	7547	AmeriPride Services	56.80	shop towel service
3/18/14	7548	Civiltec Engineering, Inc.	8,140.00	Vosburg pump station replacement
3/18/14	7549	Clinical Laboratory, SB	24.00	water sample analysis
3/18/14	7550	Eurofins Eaton Analytical, Inc.	132.00	water sample analysis
3/18/14	7551	Foothill Municipal Water District	600.84	administrative fee
3/18/14	7552	Registrar-Recorder/Co Clerk	117.50	Nov. 2013 election publication cost
3/18/14	7553	Registrar-Recorder/Co Clerk	11,672.88	Nov. 5, 2013 consolidated election costs
3/18/14	7554	Melvin L. Matthews	63.94	mileage reimbursement
3/18/14	7555	McMaster Carr	728.75	maintenance tools
3/18/14	7556	Monrovia Mailing Company	377.99	February statement mail handling and postage
3/18/14	7557	Perry Thomas Construction Co.	14,576.26	expose Delores Tunnel face; remove/replace shut off valve/2 hose leaks; Mesaloa leak repair
3/18/14	7558	Shirley Burt	56.00	mileage reimbursement
3/18/14	7559	Specialty Services	275.00	janitorial service

Kinneloa Irrigation District
Check Register
For the Period from March 1, 2014 to March 31, 2014

Date	Check #	Payee	Amount	Description
3/18/14	7560	Western Water Works	103.33	valve/hydrant maintenance parts
3/21/14	7561	N. Boulghourjian	60.81	overpayment refund on closed account
3/31/14	EFT2060	Bernadette C. Allen	874.13	salary
3/31/14	EFT2061	Christopher A. Burt	2,458.90	salary
3/31/14	EFT2062	Shirley L. Burt	1,443.01	salary
3/31/14	EFT2063	Francis J. Griffith	92.35	salary
3/31/14	EFT2064	Gerrie G. Kilburn	92.35	salary
3/31/14	EFT2065	Melvin L. Matthews	3,236.96	salary
3/31/14	EFT2066	Steven G. Sorell	57.35	salary
3/31/14	65659673	Brian L. Fry	1,545.48	salary
3/31/14	65659674	Felix Galindo	399.09	salary
3/31/14	65659675	Chris J. Mellinger	472.70	salary
3/31/14	EFT2067	Christopher A. Burt	150.00	salary
3/31/14	EFT2068	Automatic Data Processing, Inc.	81.72	payroll processing
3/31/14	EFT2069	Automatic Data Processing, Inc.	5,143.49	withholding and taxes
3/31/14	EFT2070	Charter Communications	316.81	internet and telephone
3/31/14	EFT2071	Investment Trust of California	<u>250,000.00</u>	wire transfer funds from Wells Fargo to CalTrust
Total			<u>359,539.86</u>	

Credit Card Detail

January 2014

(Expenses incurred in January, billed in February, due in March, and paid in March.)

Acct. No.	Account Description	Additional Description	Shirley	Mel	Brian	Chris B	Chris M	TOTAL
5010	Maintenance Supplies	generator batteries; tnsfr. valve parts, maint. supp., batteries			\$145.45	\$862.73		\$1,008.18
5012	Safety Equipment							\$0.00
5022	Training/Certification							\$0.00
5025	Water Treatment/Analysis							\$0.00
5035	Vehicle Maintenance							\$0.00
5036	Fuel							\$0.00
6017	Adm. Travel	roundtrip to Sacramento 3/6/2014 for CSDA mtg.		\$184.00				\$184.00
6021	Adm. & Bd. Exp							\$0.00
6035	Office/Computer Supplies	legal pads, digital voice recorder; 1099 forms; office supplies	\$50.13	\$16.34		\$121.76		\$188.23
6036	Postage/Delivery	postage	\$7.17					\$7.17
6040	Professional Dues							\$0.00
6050	Telephone	answering service December		\$78.00				\$78.00
6051	Mobile Phone							\$0.00
6053	Internet Service							\$0.00
6059	Computer/Software Maintenance	Microsoft monthly subscription		\$9.99				\$9.99
6061	Office Equipment Maintenance							\$0.00
6075	Outside Services							\$0.00
6081	Permits/Fees							\$0.00
TOTAL			\$57.30	\$288.33	\$145.45	\$984.49	\$0.00	\$1,475.57

Kinneloa Irrigation District - PGFSC Grant Account
Check Register
For the Period from March 1, 2014 to March 31, 2014

Date	Check #	Payee	Amount Description
3/18/14	001020	Tim Eldridge	111.84 reimb. donuts/coffee; food/drinks/supplies CCC lunch
3/18/14	001021	Kinneloa Irrigation District	303.50 Feb. admn., bookkeeping, reporting services
3/18/14	001022	Pasadena Glen Improvement Assoc.	1,000.00 reimb. funds deposited to cover until grant available
3/18/14	001023	United Site Services of CA, Inc.	<u>152.23</u> portable toilet rental costs
Total			<u>1,567.57</u>