

Final Draft

East Niles Community Services District Cost of Water Service Analysis



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AECOM



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EAST NILES COMMUNITY SERVICES DISTRICT
COST OF WATER SERVICE ANALYSIS

The purpose of this report is to review the existing water service charges for the East Niles Community Services District (ENCSD or District) and to propose new rates based upon the anticipated budget expenditures over the next five fiscal years. Revised water service charges have been recommended based on these projections.

Existing Water Service Rates

As of December 2015, the District has approximately 7,600 active water service connections. Existing water service charges are based on the installed meter size and include a ready-to-serve component of the charge as well as a quantity rate component.

Existing Rates (as of January 2016)

Meter Size	Readiness-to-Serve Charge (per Month)	Quantity Charge (per 100 CCF)
5/8x3/4-inch meter	\$31.10	\$1.02
1-inch meter	\$83.30	\$1.02
1 1/2-inch meter	\$103.40	\$1.02
2-inch meter	\$207.70	\$1.02
3-inch meter	\$311.00	\$1.02
4-inch meter	\$414.40	\$1.02
6-inch meter	\$1,036.40	\$1.02
8-inch meter	\$3,110.00	\$1.02
12-inch meter	\$6,482.00	\$1.02

The District also charges a monthly private fire protection service charge based on the installed meter size as shown below.

Monthly Private Fire Protection Service Charge (as of January 2016)

Meter Size	Fire Protection Charge (per Month)
1 1/2-inch meter	\$10.25
2-inch meter	\$13.75
3-inch meter	\$20.50
4-inch meter	\$27.50
6-inch meter	\$41.00
8-inch meter	\$54.75
10-inch meter	\$68.50
12-inch meter	\$82.00

Need for Water Rate Adjustment

A number of factors have resulted in the need for a water rate adjustment, including the following:

- Additional water treatment costs due to changes in water quality regulations,
- Reductions in revenue due to State mandated water usage restrictions,
- New costs associated with the implementation of the Sustainable Groundwater Management Act,
- Increasing operations, maintenance, and replacement costs,
- Increasing costs for State Water Project water purchases and pumping energy, and
- Inflation that has occurred since the last rate adjustment.

Figure 1 illustrates the need for the water rate adjustment by showing the projected revenues and expenses from the District's 2008 Water Rate Study, actual revenues and expenses for fiscal years 2012-13 through 2014-15, estimated revenues and expenses for fiscal year 2015-16, and projected revenues and expenses for fiscal years 2016-17 through 2020-21 with and without the proposed rate increase recommended in this analysis. Although the District did reduce expenses over the past three fiscal years, revenues generated by the District's current rates have not been adequate to cover the District's expenses. Additionally, the District has delayed needed capital improvement projects and dipped into its reserves as a result of the reduction in revenues. This Cost of Water Service Analysis recommends changes to the District's existing water service charges in order to provide the needed revenues to cover the District's projected expenses as shown in Figure 1.

Water System Expenditures

Each year the District prepares an annual budget that includes anticipated expenses and revenue associated with the ongoing operation of the ENCSD water and sewer systems. Budget items are generally categorized as applicable to water, sewer, or General and Administrative (G&A) expenses. **Table 1** summarizes both the anticipated expenses associated with the following four categories: 1) G&A, 2) system operation, 3) debt repayment, and 4) capital outlay, for the ENCSD water system as identified in the Amended Budget for fiscal year 2015-16. Future anticipated expenditures were included as identified by ENCSD staff.

G&A Expenses

The District's water system expenses have been found to make up approximately 75% of the District's total operating expenses. Therefore, **Table 1** includes 75% of the total G&A expenses listed in the District's 2015-16 Budget. Engineering and Legal costs for the water system have been increased starting in 2016-17 in anticipation of costs associated with the District's compliance with the Sustainable Groundwater Management Act. For future year projections, G&A expenses were inflated using a 3.5% per year inflation factor. It should be noted that election expenses are incurred only every other year to be consistent with the District's election cycle.

Operating Expenses

The operating expenses for the District's water system consist mainly of water purchases, water production, water treatment, power (i.e., well and booster pumping costs), personnel expenses, and other miscellaneous operation and maintenance (O&M).

At present, the District obtains its water from two sources:

- Purchase of surface water from the Kern County Water Agency (KCWA) Garnett Treatment Plant, and
- Groundwater from District wells (some of which are located within KCWA's Improvement District No. 4).

However, the District has been looking for alternative surface water supplies since 2003 when its Arvin-Edison Water Storage District (AEWSD) supply became unavailable. The District is discussing the potential purchase of surface water from Kern Delta Water District which is an agricultural water district that overlaps with portions of ENCSD. For the purposes of this study, it has been assumed that surface water from Kern Delta Water District will not be available to the District during the study period.

Water purchase, production, and power costs are summarized in **Table 1**, with more detailed calculations shown in **Tables 3, 4 and 5**. **Tables 3 through 5** show estimates of water production, estimated water unit cost, and total estimated cost of water by source for each fiscal year in the analysis period. Cost values are taken from the ENCSD 2015-16 Amended Budget and the latest projections by KCWA as noted on the tables.

Future operating costs for the items shown in **Table 1** have been projected using a 3.5% per year inflation factor unless otherwise noted.

Debt Repayment

The District is legally required to collect sufficient funds to make debt repayments on several outstanding debts. The largest debt repayment is for the District's portion of the debt service on the KCWA Garnett Water Treatment Plant Expansion Project. The District is funding a portion of the expansion in order to obtain an increased surface water allocation from KCWA (a total of 11,000 AF per year) as well as to have capacity for additional treatment should other surface water sources become available in the future (for example, supplies from KDWD). The increase in water allocation will allow ENCSD to have a larger percentage of the supply (for District service areas within ID-4) during years when the State Water Project allocation to KCWA is reduced. It should be noted that the debt service not only includes the plant expansion, but also includes items such as the ID-4 Photovoltaic Project, the new ID-4 Electrical Service Entrance Project, the East Pipeline Expansion Project, and the Corner Tank Improvements. These projects are being funded with the plant expansion but are being constructed for various reasons, including but not limited to offsetting power costs, improving the electrical service to the plant, and increasing peaking capacity in the East Pipeline, respectively.

Other outstanding debts include assessment district funding and loans from the City of Bakersfield. Future debt repayment amounts have been included for the land acquisition and construction of the District's new office building.

Capital Outlay

Water distribution systems require capital investment to replace or repair existing facilities on an ongoing basis. According to District staff, a large portion of the District's water production, transmission, and distribution facilities are reaching or have already reached the end of their anticipated service life. Therefore, the District has determined that there is a need to set aside funds annually to allow the District to construct various repairs and replacements for the aging facilities. Having capital

improvement funds available will allow the District to replace the aging infrastructure on an ongoing basis (e.g., through meter replacement programs, pipeline replacement programs, etc.) rather than allowing facilities to age to a point where a catastrophic failure occurs which could seriously impact the District's ability to provide water service.

Based on the District's initial review of the service life of its pipelines, pump stations, storage facilities, wells, water treatment facilities, etc., it has determined that it needs on average a capital outlay budget for structures and equipment of about \$2,000,000 per year. An initial capital outlay amount of \$1,870,000 has been included starting in 2016-17, as shown in **Table 1**.

Expenditure Categories

The various line items in **Table 1** have all been assigned a category description as to whether they are fixed or variable expenses. The purpose of assigning the expenses to these categories was to determine whether each item would be funded by way of the base Ready-to-Serve charge (fixed costs) or by the Quantity charge (variable costs).

Items identified as fixed costs are those costs that are generally not connected to how much water is delivered by the District. Examples of fixed costs include the ID4 baseline contract water payment, debt service, maintenance, insurance, and other general and administrative costs. Items identified as variable costs are those that are directly related to the quantity of water delivered by the District, such as pumping and treatment costs. Also included as variable cost items are the funding of capital improvements and reserves that could be postponed during times of reduced water deliveries.

The Total Water Operating Expenses shown in **Table 1** must be offset by miscellaneous non-operating revenues, ready-to-serve revenues, and quantity rate revenues.

Miscellaneous Non-Operating Water System Revenues

Table 2 summarizes the budgeted miscellaneous non-operating water system revenues for 2015-16 and the projected miscellaneous non-operating revenues for next four fiscal years. These revenues do not include the revenues raised through monthly service charges and quantity rate charges.

The difference between the projected expenses (**Table 1**) and the miscellaneous non-operating revenues (**Table 2**) is the amount that must be collected by both the ready-to-serve charges and the quantity rate charges per unit of water delivered.

Meter Equivalent Calculations

Currently, ENCSD has approximately 7,600 active meters in service. **Table 6** shows the approximate breakdown of meters by size from billing data provided by the District. The vast majority of meters within the District are for single family residential customers. The typical meter for single family residential customers in the District is 5/8x3/4 inches. Larger size meters were converted to single family residential meter equivalents based on the ratio of the flow capacities of the larger meter sizes to that of the 5/8x3/4 inch meter.

The District has standardized to the use of Neptune Meters. Therefore, performance data charts prepared by Neptune Meters for the various meter sizes were used to determine the flow capacity of the meters

(instead of generic data from AWWA M6, Table 5-3 as used in the 2008 Water Rate Study). The charts used to calculate the meter capacity ratios are included in Appendix A.

The meter flow capacities were used to weight the value of each larger meter size as compared to the standard 5/8x3/4 meter, resulting in the total number of “meter equivalents” as shown in **Table 7**. **Table 8** shows the projected increase in meter equivalents based on the annual growth rate of 1% as projected for the unincorporated areas of Kern County in the 2014 Regional Transportation Plan published by the Kern Council of Governments (Kern COG) in June 2014.

Proposed Ready-to-Serve Charges

Table 9 summarizes calculated and proposed ready-to-serve charges per meter equivalents. For the calculated ready-to-serve charge, the ready-to-serve revenue needs (total fixed operating expenses from **Table 1** less the total miscellaneous non-operating revenue from **Table 2**) are divided by the number of meter equivalents from **Table 9**. The proposed monthly ready-to-serve charges have been set to increase annually at a rate of 2.5%.

Proposed Quantity Rates

In order to determine the appropriate quantity rate, it is necessary to calculate the total volume of water that is anticipated to be produced and delivered in each year of the analysis. Actual water deliveries for 2015 totaled 6,752 acre-feet (2,941,272 hundred cubic feet). Future water deliveries are assumed to increase by 1% per year to account for water use increases due to population growth. This conservative approach was assumed since it is unknown how long the current water usage restrictions will be in effect or what impact the current water usage restrictions will have on future water usage. For example, some customers may have replaced turf with low water landscaping that will result in permanent reductions in water use while others may return to their prior water usage patterns once water usage restrictions are removed.

The Quantity Rate Revenues Required are calculated in **Table 10** by subtracting the total miscellaneous non-operating revenue (from **Table 2**) and the amount to be raised from proposed ready-to-serve charges (from **Table 9**) from the total operating expenses (from **Table 1**).

In **Table 11**, the Quantity Rate Revenues Required is divided by the estimated volume of water to be distributed for each year in order to calculate the proposed quantity rates (the rate per 100 cubic feet of water delivered).

Proposed Water Rates and Charges

The proposed water rates and charges are summarized in **Table 12**. The proposed Readiness to Serve Charge for each meter size is calculated by multiplying the monthly Proposed Ready to Serve Charge Per Meter Equivalent values from **Table 9** by the 5/8x3/4 inch Meter Equivalent factors from **Table 7**. In response to recent regulations that require new construction of single family residences to include fire sprinkler systems, an additional category has been added for 1-inch meter with fire sprinkler. This rate would only be available to single family residences with fire sprinkler systems that meet the policy set forth by the District’s Board of Directors. This rate has been set at 5% above the 5/8x3/4 inch meter rate.

Proposed Quantity Rates are from **Table 11**. The quantity rates for construction water and water from a fire hydrant meter has been increased from the 2015-16 rate of \$2.50 per unit at the same percentage rates as the proposed increases in quantity rates.

Monthly Fire Protection Service charges (by meter size) and charges for Reconnection, Non-Sufficient Funds, and 48-Hour Shutoff Notice are also included in **Table 12**. The Monthly Fire Protection Service charge is for customers with separate fire protection systems. Charges are based on the labor required by the District in checking the fire services on a regular basis. The recommended monthly Fire Protection Service charges in Table 12 have been increased at a rate of approximately 2.5% annually to account for inflation. Charges for Reconnection, Non-Sufficient Funds, and 48-Hour Shutoff Notice are based on the estimated cost of the District to provide these services. Property owner requests for meter change will continue to be charged for the actual cost of the meter change.

Projected Water System Expenses and Revenues

The projected water system expenses and revenues for the five fiscal years in the study period are shown on **Figure 1**.

Recommendations

It is recommended that the District adopt the proposed water rates as summarized in **Table 12**. The proposed rates increase the monthly ready-to-serve charge and the quantity rate during each of the next five fiscal years in order to provide the required revenues.

It is further recommended that the District Board review its rates periodically, preferably annually but at least within four years of the date of this study, so that rates may be adjusted as necessary based on the expected expenses and revenues at that time.

**TABLE 1
SUMMARY OF PROJECTED OPERATION AND ADMINISTRATIVE COSTS**

Category ⁶	2015-16 Budget	2016-17 Estimated	2017-18 Estimated	2018-19 Estimated	2019-20 Estimated	2020-21 Estimated	
General & Administrative Expenses (Water)^{1,2}							
Office Maintenance	Fixed	\$5,625	\$5,822	\$6,026	\$6,237	\$6,455	\$6,681
Telephone/Communications/Utilities	Fixed	\$24,750	\$25,616	\$26,513	\$27,441	\$28,401	\$29,395
Workmans Compensation	Fixed	\$21,750	\$22,511	\$23,299	\$24,115	\$24,959	\$25,832
Liability Insurance	Fixed	\$49,500	\$51,233	\$53,026	\$54,882	\$56,802	\$58,790
Dues, Memberships, Licenses, Fees	Fixed	\$12,000	\$23,500	\$24,323	\$25,174	\$26,055	\$26,967
Office Expenses	Fixed	\$22,500	\$23,288	\$24,103	\$24,946	\$25,819	\$26,723
Postage	Fixed	\$42,750	\$44,246	\$45,795	\$47,398	\$49,057	\$50,774
Engineering	Fixed	\$37,500	\$50,000	\$51,750	\$53,561	\$55,436	\$57,376
Legal	Fixed	\$56,250	\$75,000	\$77,625	\$80,342	\$83,154	\$86,064
Professional Services	Fixed	\$11,250	\$11,644	\$12,051	\$12,473	\$12,910	\$13,361
Auditing	Fixed	\$15,000	\$15,525	\$16,068	\$16,631	\$17,213	\$17,815
Other Outside Services	Fixed	\$34,500	\$35,708	\$36,957	\$38,251	\$39,590	\$40,975
District Pension Contribution	Fixed	\$78,750	\$81,506	\$84,359	\$87,312	\$90,367	\$93,530
Medical Insurance	Fixed	\$207,000	\$214,245	\$221,744	\$229,505	\$237,537	\$245,851
Directors Fees	Fixed	\$22,500	\$23,288	\$24,103	\$24,946	\$25,819	\$26,723
District Portion FICA/MEDI	Fixed	\$70,125	\$72,579	\$75,120	\$77,749	\$80,470	\$83,287
Employee Travel Expenses / Seminars & Training	Fixed	\$11,250	\$11,644	\$12,051	\$12,473	\$12,910	\$13,361
Miscellaneous	Fixed	\$375	\$388	\$402	\$416	\$430	\$445
Uniform Service	Fixed	\$9,000	\$9,315	\$9,641	\$9,978	\$10,328	\$10,689
Vision Care Insurance	Fixed	\$1,800	\$1,863	\$1,928	\$1,996	\$2,066	\$2,138
Bank Charges	Fixed	\$31,500	\$32,603	\$33,744	\$34,925	\$36,147	\$37,412
Dental Care Insurance	Fixed	\$14,625	\$15,137	\$15,667	\$16,215	\$16,783	\$17,370
Safety Supplies	Fixed	\$3,000	\$3,105	\$3,214	\$3,326	\$3,443	\$3,563
Maintenance Agreements	Fixed	\$41,250	\$42,694	\$44,188	\$45,735	\$47,335	\$48,992
Directors Travel Expenses / Seminars & Training	Fixed	\$6,000	\$6,210	\$6,427	\$6,652	\$6,885	\$7,126
Election Expenses ³	Fixed	\$375	\$6,210	\$402	\$6,652	\$430	\$7,376
Pre-employment Exams	Fixed	\$375	\$388	\$402	\$416	\$430	\$445
Claims/Damage Payable	Fixed	\$375	\$388	\$402	\$416	\$430	\$445
Group LTD, Group Life & AD&D Insurance	Fixed	\$5,250	\$5,434	\$5,624	\$5,821	\$6,024	\$6,235
SUBTOTAL:		\$836,925	\$911,088	\$936,950	\$975,980	\$1,003,685	\$1,045,744
Operating Expenses (Water)							
Water Purchases - KDWD (see Tables 3, 4, & 5)	Variable	\$0	\$0	\$0	\$0	\$0	\$0
Entitlement Cost - KCWA (see Tables 3, 4, & 5)	Fixed	\$1,573,000	\$1,815,000	\$1,826,000	\$1,870,000	\$1,925,000	\$1,980,000
Power Cost - KCWA (see Tables 3, 4, & 5)	Variable	\$471,835	\$524,209	\$582,396	\$647,042	\$718,863	\$798,657
O&M Cost - KCWA (see Tables 3, 4, & 5)	Variable	\$145,000	\$150,100	\$155,400	\$160,800	\$166,400	\$172,200
Pumping Power (see Tables 3, 4, & 5)	Variable	\$541,981	\$594,317	\$652,384	\$716,817	\$790,502	\$869,886
Treatment	Variable	\$360,000	\$372,600	\$385,641	\$399,138	\$413,108	\$427,567
Salaries	Fixed	\$815,000	\$843,525	\$873,048	\$903,605	\$935,231	\$967,964
Maintenance	Fixed	\$30,000	\$31,050	\$32,137	\$33,262	\$34,426	\$35,631
Vehicle Maintenance	Fixed	\$14,000	\$14,490	\$14,997	\$15,522	\$16,065	\$16,628
Vehicle Fuel	Fixed	\$35,000	\$36,225	\$37,493	\$38,805	\$40,163	\$41,569
Water System Materials and Supplies	Fixed	\$135,000	\$139,725	\$144,615	\$149,677	\$154,916	\$160,338
Repairs	Fixed	\$395,000	\$408,825	\$423,134	\$437,944	\$453,272	\$469,136
Outside Services	Fixed	\$35,000	\$36,225	\$37,493	\$38,805	\$40,163	\$41,569
Cross Connection Inspection	Fixed	\$14,000	\$14,490	\$14,997	\$15,522	\$16,065	\$16,628
State Health Annual Fee	Fixed	\$21,000	\$21,735	\$22,496	\$23,283	\$24,098	\$24,941
SUBTOTAL:		\$4,585,816	\$5,002,515	\$5,202,231	\$5,450,222	\$5,728,273	\$6,022,714
Debt Repayment (Water)							
KCWA - Expansion Project (Debt Service)	Fixed	\$1,667,000	\$1,572,800	\$1,569,600	\$1,524,000	\$1,525,800	\$1,524,800
KCWA - Oswell Bypass Project (Debt Service)	Fixed	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Assessment Districts	Fixed	\$30,500	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
City of Bakersfield 20-inch Pipeline Reimbursement	Fixed	\$10,000	\$0	\$0	\$0	\$0	\$0
Rio Bravo Water Facilities	Fixed	\$150,000	\$0	\$0	\$0	\$0	\$0
Municipal Finance Corporation (Property Acquisition)	Fixed	\$46,200	\$46,200	\$46,200	\$46,200	\$46,200	\$0
New Office Building (Estimated)	Fixed	\$0	\$187,500	\$187,500	\$187,500	\$187,500	\$187,500
SUBTOTAL:		\$2,003,700	\$1,936,500	\$1,933,300	\$1,887,700	\$1,889,500	\$1,842,300
Capital Outlay (Water)							
Structure & Equipment ⁴	Variable	\$739,500	\$1,870,000	\$1,935,450	\$2,003,191	\$2,073,302	\$2,145,868
General & Administrative	Variable	\$146,625	\$151,757	\$157,068	\$162,566	\$168,256	\$174,145
Reserve Account ⁵	Variable		\$300,000	\$310,500	\$321,368	\$332,615	\$344,257
SUBTOTAL:		\$886,125	\$2,321,757	\$2,403,018	\$2,487,124	\$2,574,173	\$2,664,269
Total Fixed Operating Expenses (Water)		\$5,907,625	\$6,208,878	\$6,296,661	\$6,390,105	\$6,532,584	\$6,642,447
Total Variable Operating Expenses (Water)		\$2,404,941	\$3,962,982	\$4,178,839	\$4,410,922	\$4,663,047	\$4,932,580
Total Operating Expenses (Water)		\$8,312,566	\$10,171,860	\$10,475,500	\$10,801,026	\$11,195,631	\$11,575,027

Notes:

- G&A Expenses for Water portion of budget considered to be: **75.00%** of the total G&A Expenses listed in the budget based on ratio of water to sewer operating expenses.
- G&A & Oper. Expenses & Cap. Outlay are inflated at a rate of: **3.50%** per year unless otherwise noted.
- Election expenses are incurred by the District every other year as shown.
- Water System Structure and Equipment outlay estimated to be \$1,870,000 per year starting in 2016-17.
- Reserve Account for the water system has been set at \$300,000 for 2016-17 and inflated at the same rate as other expenses.
- Budget items have been identified as either fixed or variable. These terms indicate whether the revenue to cover the item will be from Ready-to-Serve charges (fixed items) or by Quantity Rate charges (variable). It is recognized that some costs are not strictly fixed or variable.

**TABLE 2
SUMMARY OF PROJECTED MISCELLANEOUS NON-OPERATING WATER SYSTEM REVENUES³**

	Category	2015-16 Budget	2016-17 Estimated	2017-18 Estimated	2018-19 Estimated	2019-20 Estimated	2020-21 Estimated
Other Revenue							
Annexation Fees ⁴	Misc.	\$750	\$773	\$796	\$820	\$844	\$869
Water Plan Check & Inspection Fees	Misc.	\$2,000	\$2,060	\$2,122	\$2,185	\$2,251	\$2,319
Water Installation Charges	Misc.	\$1,000	\$1,030	\$1,061	\$1,093	\$1,126	\$1,159
Water Service Shut-off Fees	Misc.	\$160,000	\$164,800	\$169,744	\$174,836	\$180,081	\$185,484
	SUBTOTAL:	\$163,750	\$168,663	\$173,722	\$178,934	\$184,302	\$189,831
Non-Operating Revenue							
Tax Revenue ⁴	Misc.	\$247,500	\$254,925	\$262,573	\$270,450	\$278,563	\$286,920
Special Assessments	Misc.	\$30,500	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
Tax Collection Charges ⁴	Misc.	(\$38)	(\$39)	(\$40)	(\$41)	(\$42)	(\$43)
Disposal of Fixed Assets ⁴	Misc.	\$750	\$773	\$796	\$820	\$844	\$869
Interest Income (Water)	Misc.	\$4,000	\$4,120	\$4,244	\$4,371	\$4,502	\$4,637
Proposition 84 Grant Revenue ⁵	Misc.	\$382,000					
	SUBTOTAL:	\$664,713	\$289,779	\$297,572	\$305,599	\$313,867	\$322,383
Total Miscellaneous Non-Operating Revenue¹:		\$828,463	\$458,441	\$471,295	\$484,533	\$498,169	\$512,215
Total Expenses Less Total Revenues²:		\$7,484,103	\$9,713,419	\$10,004,205	\$10,316,493	\$10,697,462	\$11,062,813

Notes:

- 1) Projected Revenues as shown excludes revenue to be collected through ready-to-serve and quantity charges.
- 2) Total amount to be collected through ready-to-serve and quantity charges.
- 3) Revenues in Table 2 are projected to increase annually at a rate of: 3.00% unless otherwise noted.
- 4) Revenue items for which the Water portion of the revenue is assumed to be: 75.00% of the total listed in the budget based on the ratio of water to sewer operating expenses.
- 5) Grant revenue is included in the total miscellaneous non-operating revenue for 2015-16 since it offsets costs included in the Capital Outlay budget for 2015-16.

**TABLE 3
ESTIMATED PURCHASED / PRODUCED WATER VOLUMES (AF)**

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Kern Delta Water District ¹	0	0	0	0	0	0
KCWA Delivery ²	5185	5237	5289	5342	5396	5449
Wells ³	2617	2643	2670	2696	2723	2750
- Wells within KCWA ID4 ⁴	2094	2115	2136	2157	2179	2200
Booster Pumps ⁵	2041	2062	2082	2103	2124	2145
TOTALS⁶:	7802	7880	7959	8038	8119	8200

Notes:

- 1) KDWD supply is assumed to be unavailable during the study period.
- 2) KCWA deliveries assumed to increase at a rate of 1.00% per year.
- 3) It is assumed surface water sources will be used first and then supplemented with groundwater.
- 4) Production of the wells within ID4 estimated to be approximately 80% of total well production.
- 5) Assumes booster pumps lift on average approximately 78% of total well production
- 6) Overall Produced water for 2015-16 estimated from Calendar Year 2015. Produced water volume is proposed to increase at a rate of 1.00% per year with pop. growth.

**TABLE 4
ESTIMATED WATER UNIT PRICE BY SOURCE/FACILITY (\$/AF)**

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Kern Delta Water District ¹	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
KCWA Water Costs						
Baseline - Treated Water Cost ²	\$143.00	\$165.00	\$166.00	\$170.00	\$175.00	\$180.00
Power Cost ³	\$91.00	\$100.10	\$110.11	\$121.12	\$133.23	\$146.56
O&M Cost ⁴	\$23.77	\$24.60	\$25.46	\$26.35	\$27.28	\$28.23
ENCSD Well Pumping ⁵	\$119	\$131	\$144	\$158	\$174	\$192
KCWA Pump Charge (Wells w/in ID4) ⁶	\$37	\$37	\$37	\$37	\$38	\$38
ENCSD Booster Pumps ⁷	\$75	\$83	\$91	\$100	\$110	\$121

Notes:

- 1) KDWD unit price is unknown at this time.
- 2) KCWA Baseline Treated Water Costs from KCWA ID#4 projections. Charged for full 11,000 AF entitlement.
- 3) KCWA Power Cost from ENCSD budget for 2015-16, assumed to inflate at a rate of 10.00% per year
- 4) KCWA O&M Cost from ENCSD budget for 2015-16, assumed to inflate at a rate of 3.50% per year
- 5) Well Pumping Cost from ENCSD budget for 2015-16, assumed to inflate at a rate of 10.00% per year
- 6) KCWA imposes a pump charge on each acre-foot of water pumped from wells within ID4. Taken from ID4 Projections
- 7) Booster Pump Cost from ENCSD budget for 2015-16, assumed to inflate at a rate of 10.00% per year

**TABLE 5
ESTIMATED WATER COST BY SOURCE (\$)**

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Kern Delta Water District	\$0	\$0	\$0	\$0	\$0	\$0
KCWA Entitlement Cost	\$1,573,000	\$1,815,000	\$1,826,000	\$1,870,000	\$1,925,000	\$1,980,000
KCWA Water Delivery Cost	\$471,835	\$524,209	\$582,396	\$647,042	\$718,863	\$798,657
KCWA O&M Cost	\$145,000	\$150,100	\$155,400	\$160,800	\$166,400	\$172,200
ENCSD Wells & Booster Pumps ¹	\$541,981	\$594,317	\$652,384	\$716,817	\$790,502	\$869,886

Notes:

- 1) Wells & Booster Pumps includes ENCSD power, and KCWA pumping charges.

**TABLE 6
WATER METERS BY SIZE**

Meter Size (inches)	Total
5/8x3/4	7124
1.00	247
1.50	120
2.00	77
3.00	4
4.00	13
6.00	17
8.00	0
Total	7602

Note: Meter breakdown as of December 2015. Total is approximate as number of active meters changes throughout the year.

**TABLE 7
CALCULATION OF METER EQUIVALENTS (December 2015)**

Meter Size (inches)	Number of Meters by Size	Meter Flow Capacity ¹ (gpm)	5/8x3/4-inch Meter Equivalent ²	Number of Equivalent Meters ³
5/8x3/4	7124	20	1.0	7124
1.00	247	50	2.5	618
1.50	120	100	5.0	600
2.00	77	160	8.0	616
3.00	4	450	22.5	90
4.00	13	900	45.0	585
6.00	17	2000	100.0	1700
8.00	0	4000	200.0	0
10.00	0	7000	350.0	0
Totals:	7602			11333

Notes:

- 1) Meter flow capacities taken from Neptune Meter performance data charts.
- 2) Meter equivalents calculated as ratio of meter flow capacity to meter flow capacity of 5/8-inch meter.
- 3) Number of equivalent meters is the number of meters per size times the meter equivalent.

**TABLE 8
METER EQUIVALENTS GROWTH PROJECTIONS**

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Totals:	11,333	11,447	11,561	11,678	11,795	11,914

Note: Number of meter equivalents assumed to grow at a rate of 1.00% per year.

**TABLE 9
PROJECTED READY-TO-SERVE FUNDS COLLECTED BY METER EQUIVALENTS**

Year	No. Meter Equiv.	Ready-to-Serve Revenue Needs ¹	Calculated Ready-to-Serve Per Meter Equivalent		Proposed Ready-to-Serve Per Meter Equivalent		Funds Collected	
			Annual	Monthly ²	Annual	Monthly	Annual	Monthly
2016-17	11447	\$5,750,437	\$502.35	\$41.90	\$466.80	\$38.90	\$5,343,460	\$445,288
2017-18	11561	\$5,825,366	\$503.88	\$42.00	\$478.80	\$39.90	\$5,535,407	\$461,284
2018-19	11678	\$5,905,571	\$505.70	\$42.20	\$490.80	\$40.90	\$5,731,562	\$477,630
2019-20	11795	\$6,034,415	\$511.61	\$42.70	\$502.80	\$41.90	\$5,930,526	\$494,211
2020-21	11914	\$6,130,233	\$514.54	\$42.90	\$514.80	\$42.90	\$6,133,327	\$511,111

Notes:

- 1) Ready-to-Serve Revenue Needs are calculated based on Fixed Expenses (Table 1) minus Miscellaneous Non-Operating Revenue (Table 2).
 2) Monthly cost is the Ready-to-Serve revenue required divided by the number of meter equivalents which is then rounded to the nearest \$0.10.

**TABLE 10
PROJECTED QUANTITY REVENUES REQUIRED**

	2016-17	2017-18	2018-19	2019-20	2020-21
Total Operating Expenses (per Table 1)	\$10,171,860	\$10,475,500	\$10,801,026	\$11,195,631	\$11,575,027
Total Misc. Non-Operating Revenue (per Table 2)	\$458,441	\$471,295	\$484,533	\$498,169	\$512,215
Total Ready-to-Serve Revenues (per Table 9)	\$5,343,460	\$5,535,407	\$5,731,562	\$5,930,526	\$6,133,327
Quantity Rate Revenues Required	\$4,369,959	\$4,468,798	\$4,584,931	\$4,766,936	\$4,929,485

**TABLE 11
PROPOSED UNIT WATER COST**

	2016-17	2017-18	2018-19	2019-20	2020-21
Quantity Rate Revenues Required (see Table 10)	\$4,369,959	\$4,468,798	\$4,584,931	\$4,766,936	\$4,929,485
Estimated Volume of Water Distributed (100s ft ³) ¹	\$2,970,685	\$3,000,392	\$3,030,396	\$3,060,700	\$3,091,307
Rate Per Unit (Unit = 100 cubic feet)	\$1.48	\$1.49	\$1.52	\$1.56	\$1.60

Note 1: Volume of water distributed for 2015 increased by 1.00% per year for future years to account for population growth.

**TABLE 12
EAST NILES COMMUNITY SERVICES DISTRICT
PROPOSED WATER RATES AND CHARGES**

MONTHLY READINESS-TO-SERVE CHARGE¹:

Meter Size	2015-16 Existing Charge	2016-17 Charge	2017-18 Charge	2018-19 Charge	2019-20 Charge	2020-21 Charge
5/8 X 3/4 inch	\$ 31.10	\$ 38.90	\$ 39.90	\$ 40.90	\$ 41.90	\$ 42.90
1-inch w/Fire Sprinkler ²	---	\$ 40.80	\$ 41.90	\$ 42.90	\$ 44.00	\$ 45.00
1 inch	\$ 83.30	\$ 97.30	\$ 99.80	\$ 102.30	\$ 104.80	\$ 107.30
1 1/2 inch	\$ 103.40	\$ 194.50	\$ 199.50	\$ 204.50	\$ 209.50	\$ 214.50
2 inch	\$ 207.70	\$ 311.20	\$ 319.20	\$ 327.20	\$ 335.20	\$ 343.20
3 inch	\$ 311.00	\$ 875.30	\$ 897.80	\$ 920.30	\$ 942.80	\$ 965.30
4 inch	\$ 414.40	\$ 1,750.50	\$ 1,795.50	\$ 1,840.50	\$ 1,885.50	\$ 1,930.50
6 inch	\$ 1,036.40	\$ 3,890.00	\$ 3,990.00	\$ 4,090.00	\$ 4,190.00	\$ 4,290.00
8 inch	\$ 3,110.00	\$ 7,780.00	\$ 7,980.00	\$ 8,180.00	\$ 8,380.00	\$ 8,580.00
10-inch	\$ 6,482.00	\$ 13,615.00	\$ 13,965.00	\$ 14,315.00	\$ 14,665.00	\$ 15,015.00

Notes:

- 1) Monthly readiness-to-serve charges are applied to all services. Any quantity of water used is an additional charge computed at the quantity rate.
- 2) 1-inch with Fire Sprinkler rate is only available for single family residences with fire sprinkler systems per the policy established by the ENCSD Board of Directors.

QUANTITY RATES (PER HUNDRED CUBIC FEET):

	Existing 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Quantity Rate:	\$1.02	\$1.48	\$1.49	\$1.52	\$1.56	\$1.60
Quantity Rate: Constr/Hydrant Meter	\$2.50	\$3.60	\$3.60	\$3.70	\$3.80	\$3.90

MONTHLY PRIVATE FIRE PROTECTION SERVICE CHARGE:

	Existing 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
1 1/2 inch	\$10.25	\$10.50	\$10.75	\$11.00	\$11.25	\$11.50
2 inch	\$13.75	\$14.00	\$14.50	\$14.75	\$15.25	\$15.50
3 inch	\$20.50	\$21.00	\$21.50	\$22.00	\$22.50	\$23.00
4 inch	\$27.50	\$28.25	\$29.00	\$29.75	\$30.50	\$31.25
6 inch	\$41.00	\$42.00	\$43.00	\$44.25	\$45.25	\$45.50
8 inch	\$54.75	\$56.00	\$57.50	\$59.00	\$60.50	\$62.00
10 inch	\$68.50	\$70.25	\$72.00	\$73.75	\$75.75	\$77.50
12 inch	\$82.00	\$84.00	\$86.00	\$88.25	\$90.50	\$93.00

OTHER CHARGES:

	Existing 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Reconnection	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Non Sufficient Funds	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
48 Hour Shutoff Notice	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
After Hours Charge	--	\$75.00	\$75.00	\$75.00	\$75.00	\$75.00
Meter Change ¹	Actual	Actual	Actual	Actual	Actual	Actual

Notes:

- 1) Property Owner requested change of meter will be charged at actual cost of meter change.

ENCSD Water System Expenses and Revenues With and Without Rate Increase

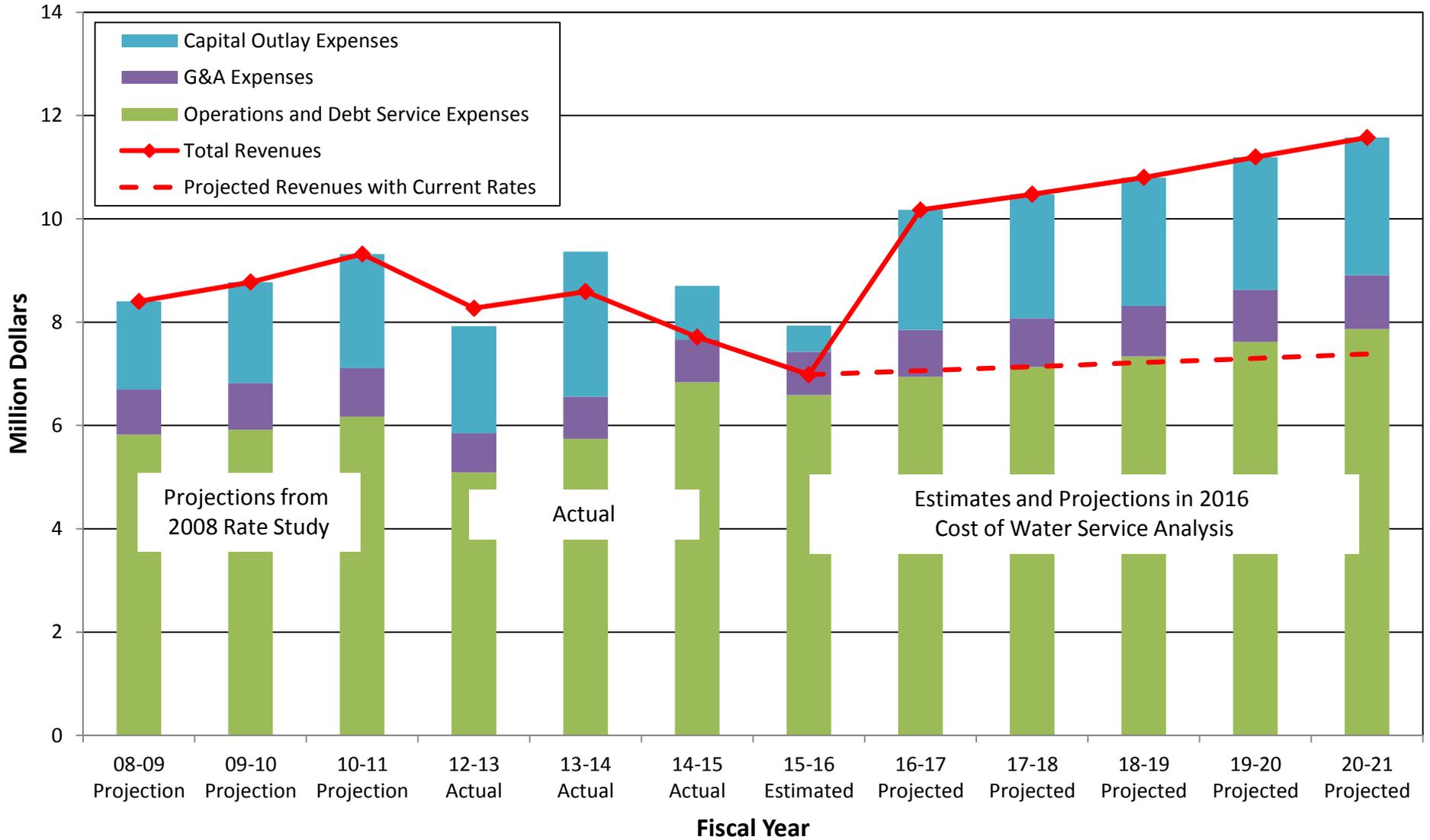


Figure 1

Appendix A

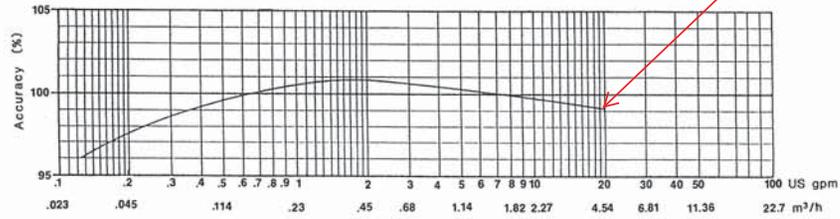
Neptune Meter Capacity Charts

T-10 Meter

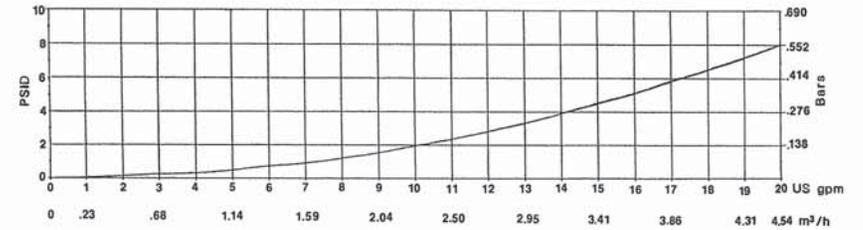
Sizes: 5/8", 3/4", and 1"

5/8" x 3/4" capacity = 20 gpm

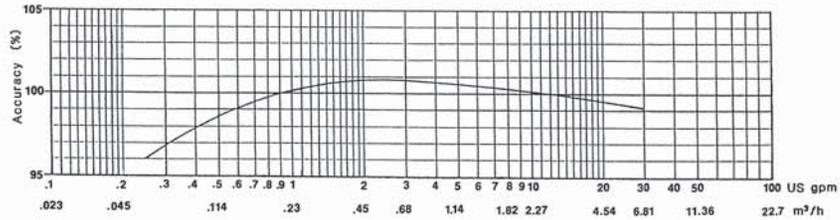
5/8" Accuracy



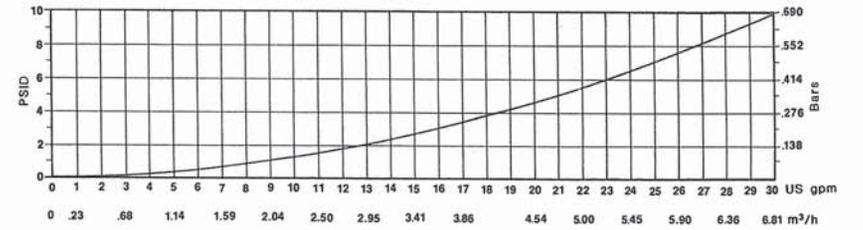
5/8" Pressure Loss



3/4" Accuracy

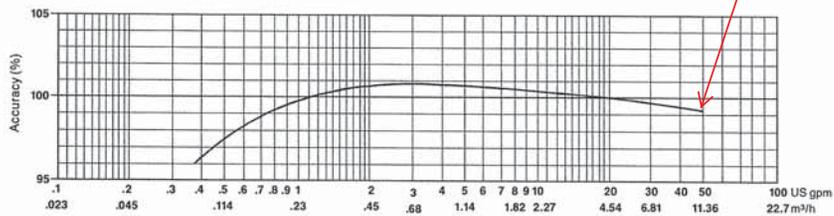


3/4" Pressure Loss

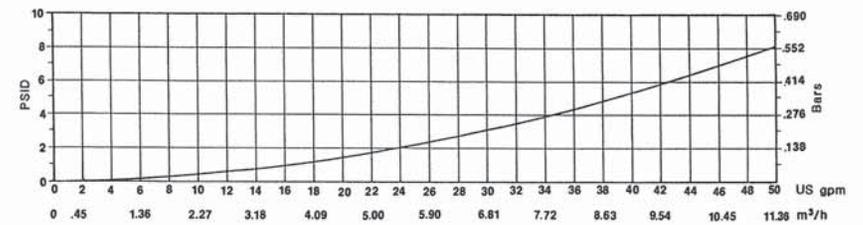


1" capacity = 50 gpm

1" Accuracy



1" Pressure Loss

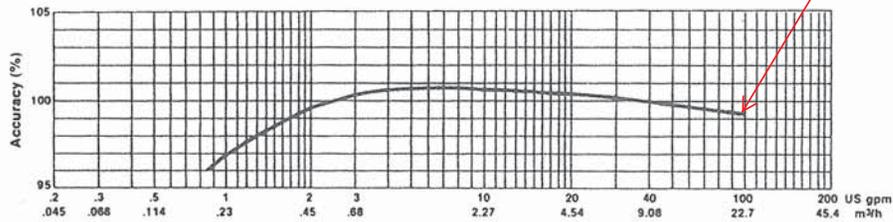


These charts show typical meter performance. Individual results may vary.

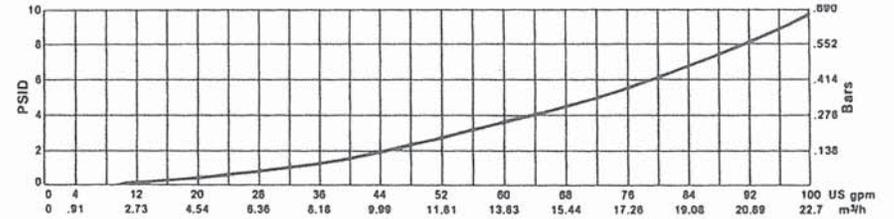
T-10 Meter

Sizes: 1 1/2" and 2"

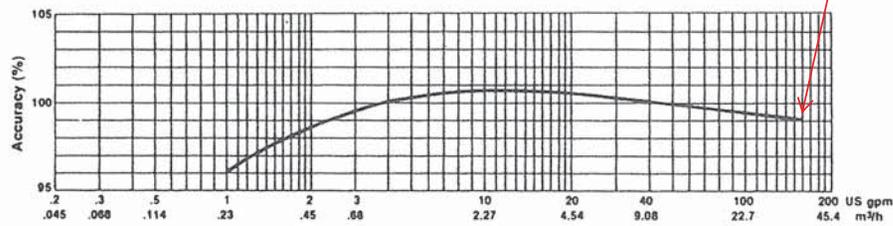
1 1/2" Accuracy



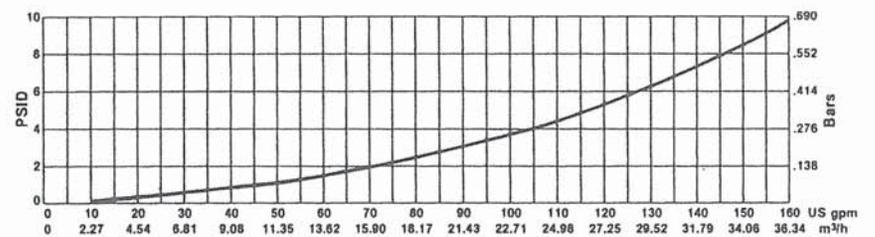
1 1/2" Pressure Loss



2" Accuracy



2" Pressure Loss



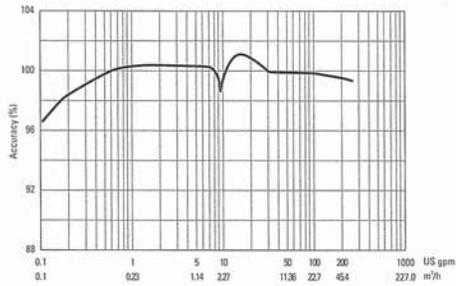
These charts show typical meter performance. Individual results may vary.

TRU/FLO[®] Compound Meter

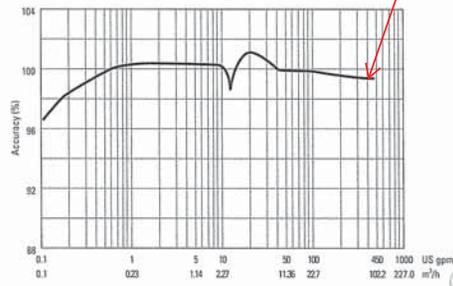
Sizes: 2"HP, 3", 4", 6", and 6"x8"

3" capacity = 450 gpm

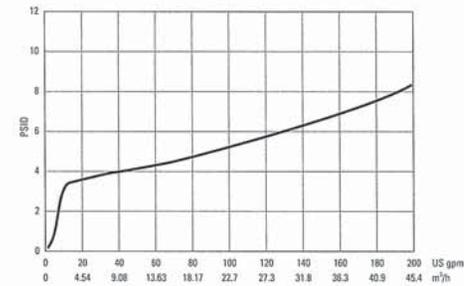
2" Accuracy



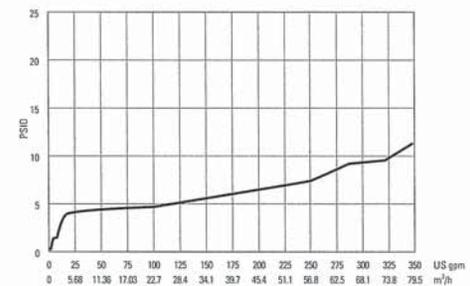
3" Accuracy



2" Pressure Loss



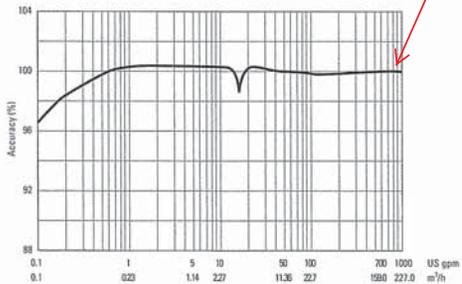
3" Pressure Loss



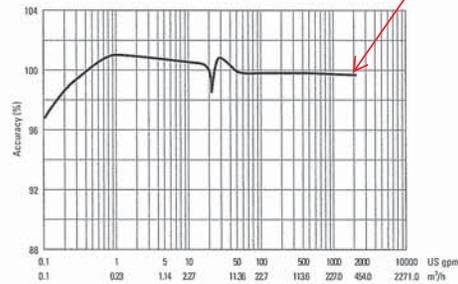
4" capacity = 900 gpm

6" capacity = 2,000 gpm

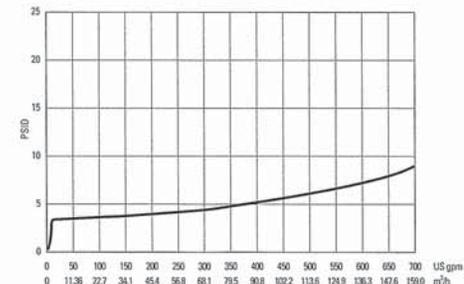
4" Accuracy



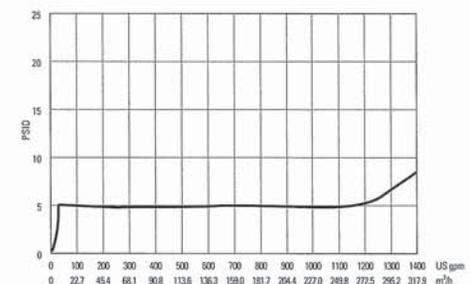
6" Accuracy



4" Pressure Loss



6" Pressure Loss

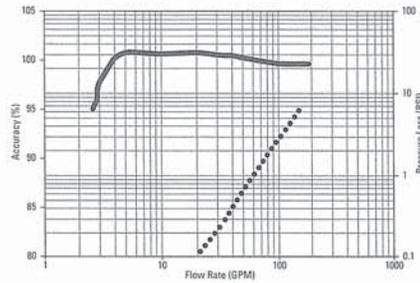


These charts show typical meter performance. Individual results may vary.

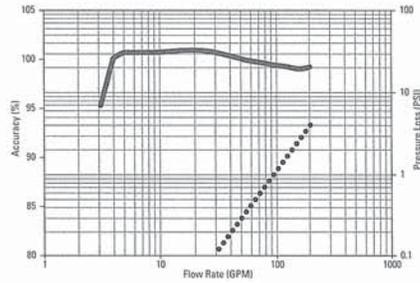
High Performance Turbine Meter

Sizes: 1 1/2", 2", 3", 4", 6", 8", and 10"

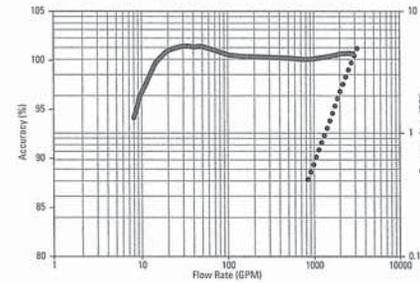
1 1/2" Accuracy



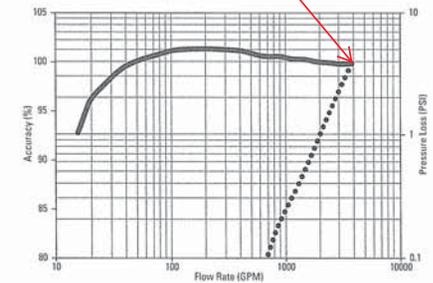
2" Accuracy



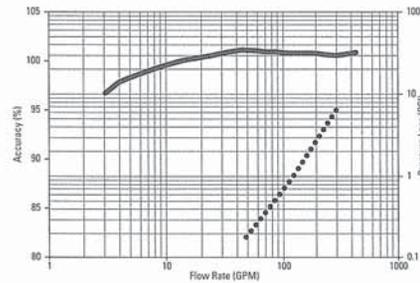
6" Accuracy



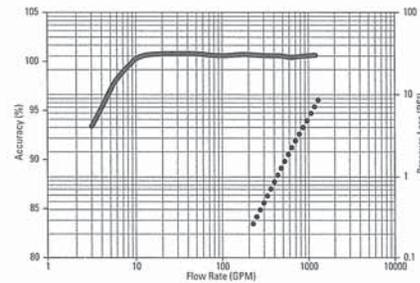
8" Accuracy



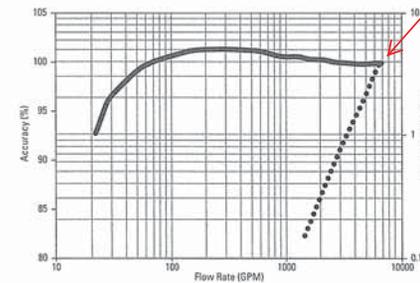
3" Accuracy



4" Accuracy



10" Accuracy



— Accuracy
 Head Loss

— Accuracy
 Head Loss

These charts show typical meter performance. Individual results may vary.