AWWA Presentation

Large Meter Testing

INCREASE REVENUE NOT RATES

Presented by Dan Sleeth

Increased Operating Costs
Increase Revenue not Rates
Increase Meter Reading Efficiencies
Declining Government Funds
Reduce Unaccountable Water
Rising Water Demands
Decaying Facilities Infrastructure
Considerations for a meter change out

Size	Rule	2"	3"	4"	6"	8"	10"
AWWA	"A proper economic balance should be attained." From p.39 of AWWA M6 Manual, Fourth printing copyright 1999						
Washington	480-111-161 in 1971 from p53 AWWA M6	4	2	2	2	2	2
Oregon and Idaho	No regulations for periodic testing have been adopted						

WAC 246-290-496
Metering requirements

(3) Meters must be selected, installed, operated, calibrated, and maintained following generally accepted industry standards and information from the manufacturer.

Washington State Water Use Efficiency (WUE)

- from “WATER USE EFFICIENCY GUIDEBOOK” – Developing an effective water use efficiency (WUE) program can take a lot of time and effort… understanding the state’s new WUE requirements and will help municipal water suppliers and consultants implement the WUE rule [chapter 246-290 Washington Administrative Code (WAC)].

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

DOH PUB. #331-375

Washington State Water Use Efficiency Rule

DOH PUB. #331-375

How to Collect Data

- "We suggest reading all meters (source, intertie, and service) every one to two months. This will help you detect significant changes in water usage and manage any potential major problems or leaks."
- "It is important to collect data from source and service meters at the same time, otherwise leakage calculations may not be accurate."

Collecting Service Meter Data

- Service meters are required on all direct service connections (see Chapter 2). Within a water system plan [WAC 246-290-100 (4)(b)(ii)] or small water system management program [WAC 246-290-105 (4)(h)], you must report the following:
  - Water consumed.
  - Annual totals for each customer class (such as single-family residence or commercial use).
  - Customer class seasonal variations.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

WUE – Forecast

- Forecast future use

Historic Water Use Patterns

- "Historic water use patterns are an important component for accurate demand forecasting. This figure is the basis for future projections. For some systems, understanding the usage patterns for different categories of customers and seasonal variations may be useful."

WUE – Leakage

- "**Distribution Leakage Standard** – Municipal water suppliers are required to meet a distribution system leakage standard to minimize water loss from their distribution system."

WUE – Education

- Customer education

WUE – Evaluate

- In addition to the mandatory measures, there are also measures that you must evaluate. These are:
  - Evaluate rates that encourage water demand efficiency [WAC 246-290-100(4)(j)(iv) and 246-290-105(4)(l)].
  - For systems with 1,000 or more connections, evaluate reclamation opportunities [WAC 246-290-100(4)(f)(vii)].

WUE – MANDATORY

- The following WUE measures are mandatory:
  - Install production (source) meters – WAC 246-290-496(1).
  - Install consumption (service) meters – WAC 246-290-496(2).
  - Perform meter calibration – WAC 246-290-496(3).
  - Implement a water loss control action plan to control leakage – WAC 246-290-820(4).
  - Educate customers about water use efficiency practices – WAC 246-290-810(4)(f).

How Is This Revenue Lost?

- Meter Failures
- Meter Inaccuracies
- Misapplication
- Sizing
- Undetected Leaks
- Theft

Sensus Commercial/Industrial Water Meters

- ***LARGE METERS PROVIDE BIG OPPORTUNITIES FOR IMPOVEMENT***
  - *Utility Revenue Increase*
  - *Utility Maintenance Reduction*
  - *Immediate Positive Cash Flow*
  - *Increased Accountability*
  - *Quick Pay Back*

Sensus Commercial/Industrial Water Meters

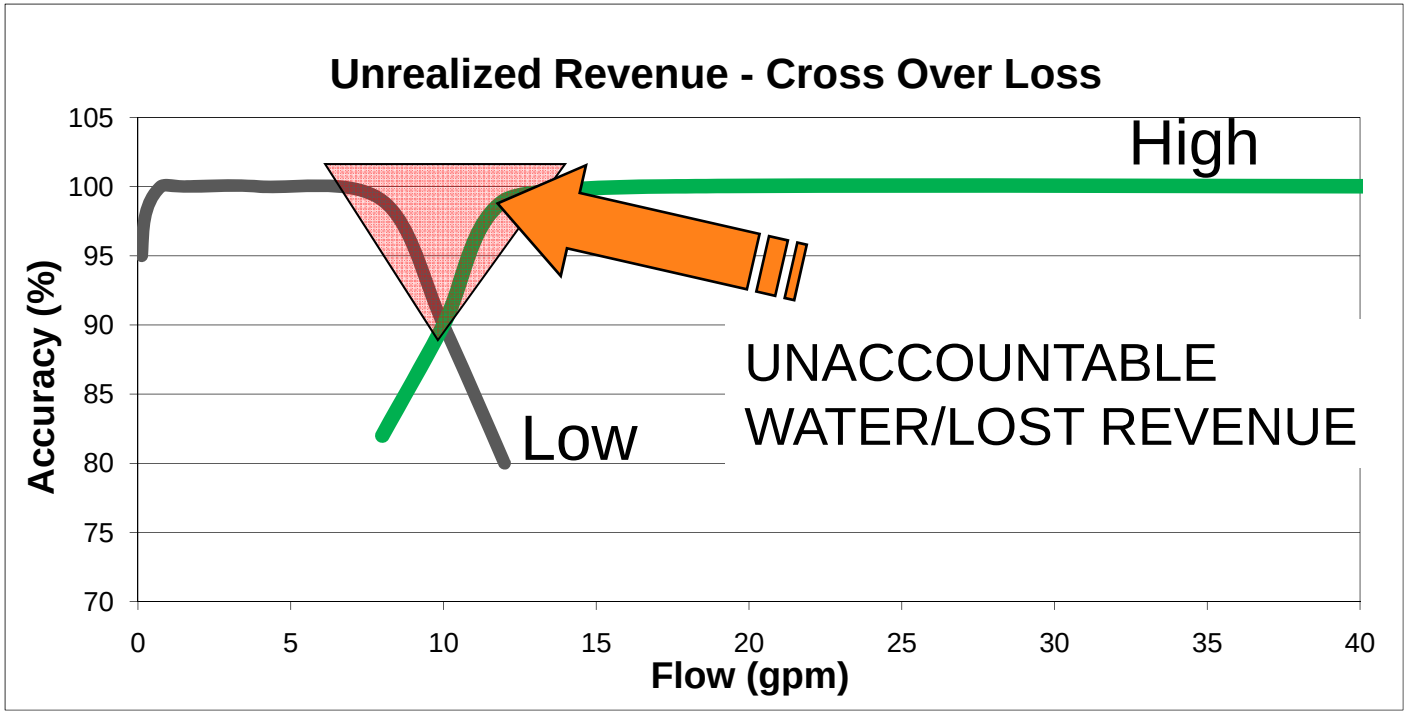
- *60% of UTILITY Revenue Is Generated By Only 10% of Total Meters*
- *Commercial/Industrial Large Meters!*

The Issue

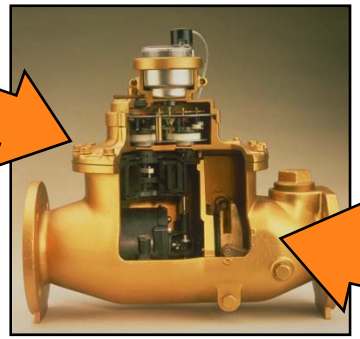
- Complying with WUE (Washington State)
- Focusing on increasing revenue
- Began testing

Committed to testing

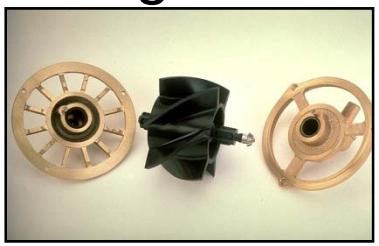
All Compound meters have Cross over



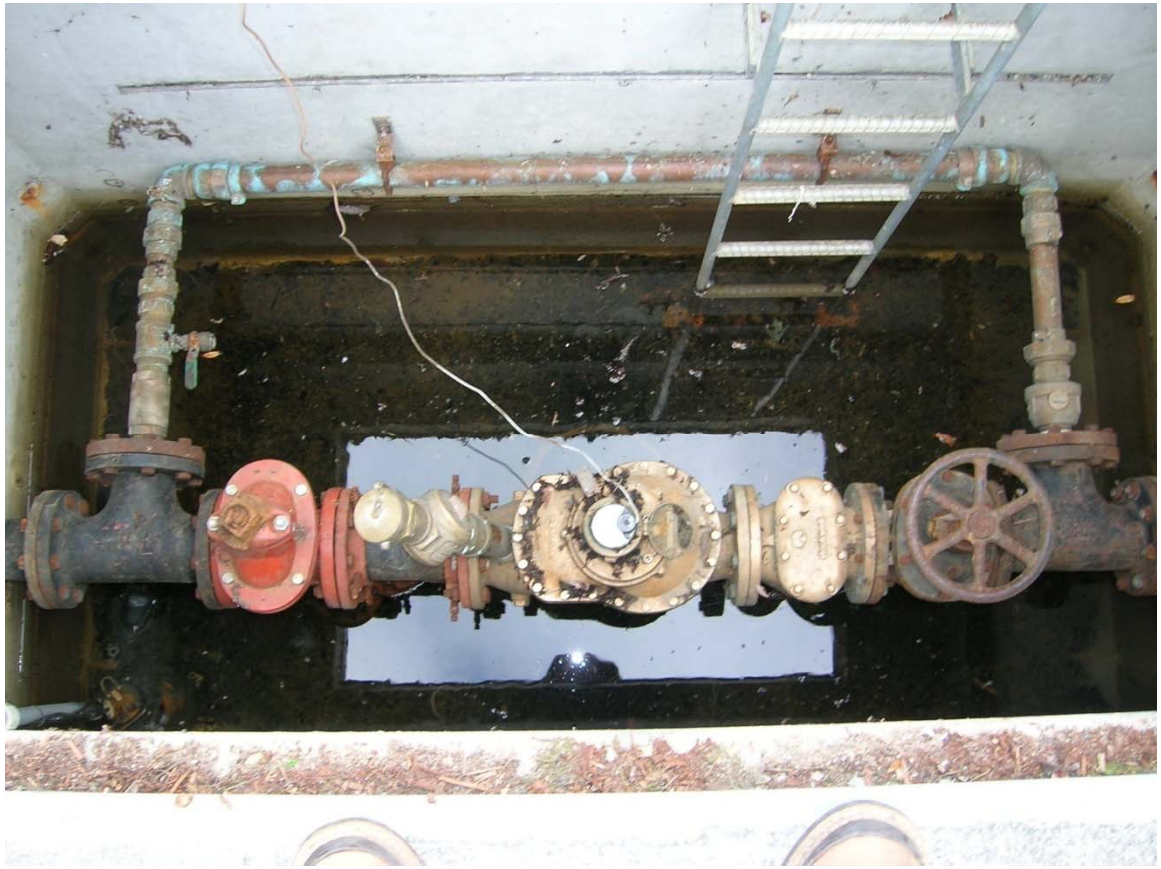
Low



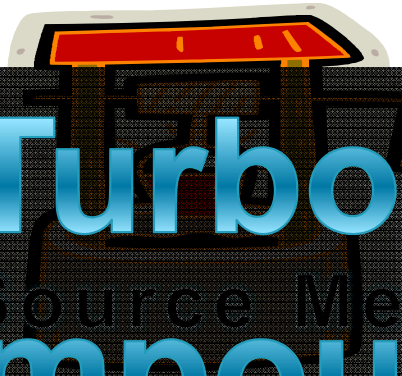
High



Picture of a meter with a riser, ready for testing



What meter do you use for



Turbos

Compounds

Multi-jets

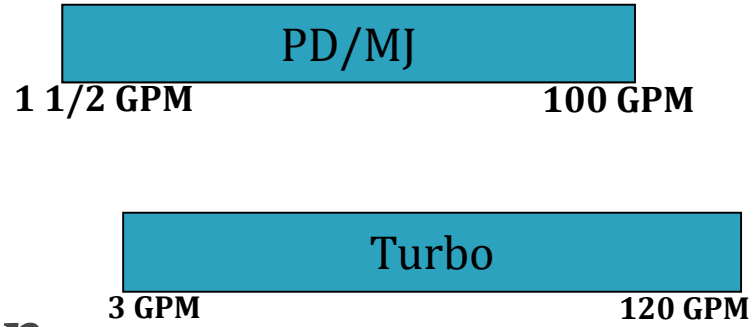
Positive Displacement

Quickly focused on 1 ½ and 2"

1 ½ Flow Comparison

Positive Displacement or Multijet
1 ½ to 100 gpm (Continuous 50)

Turbo
3 to 120 gpm at 150 psi



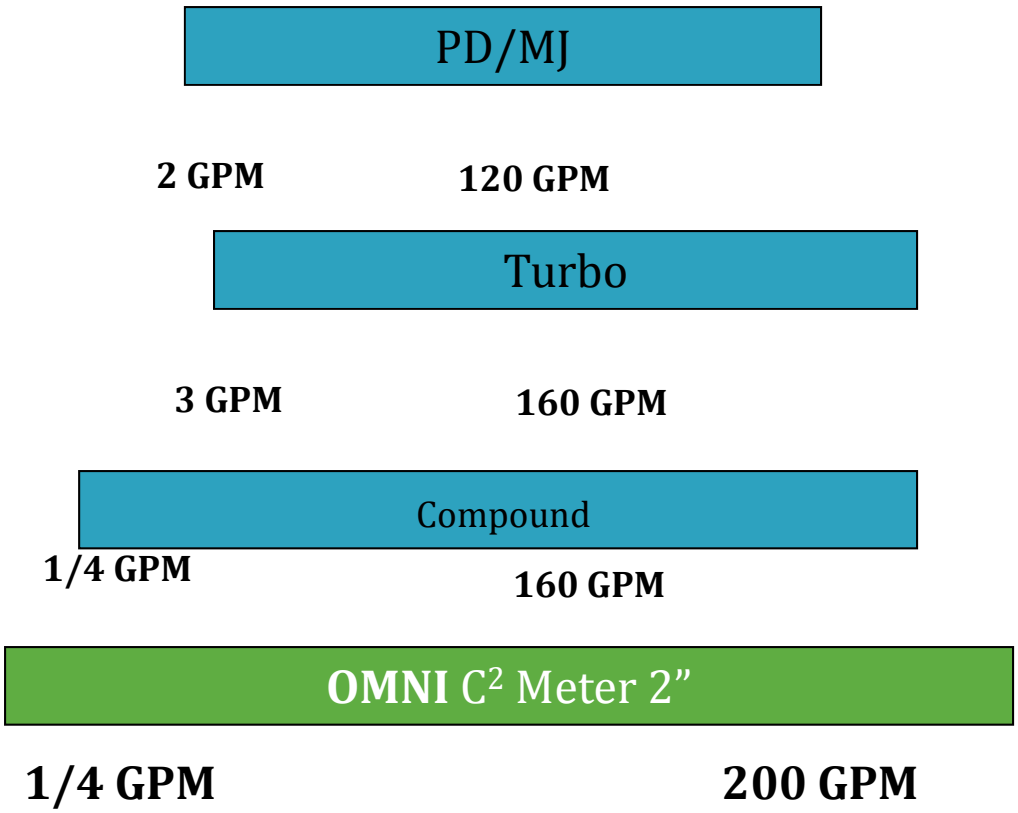
2" Flow Comparison

Positive Displacement or Multijet
2 to 120 gpm (continuous 60)

Turbo
3 to 160 gpm

Compound
1/4 to 160 gpm

C^2 OMNI for 1 ½ and 2
1 ½ to 250 gpm at 200 psi
(continuous 160)



What do you use for 1 ½ and 2” services?

Positive Displacement or Multijet Meters

HOW DO YOU DECIDE WHAT TO USE?

Compound

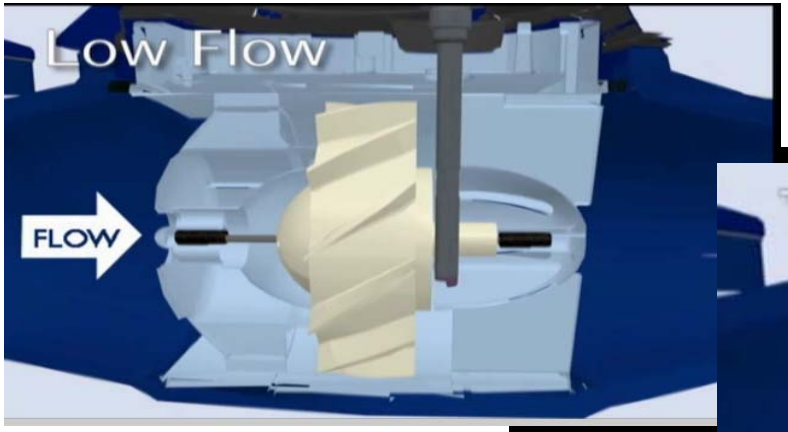
Went with OMNI

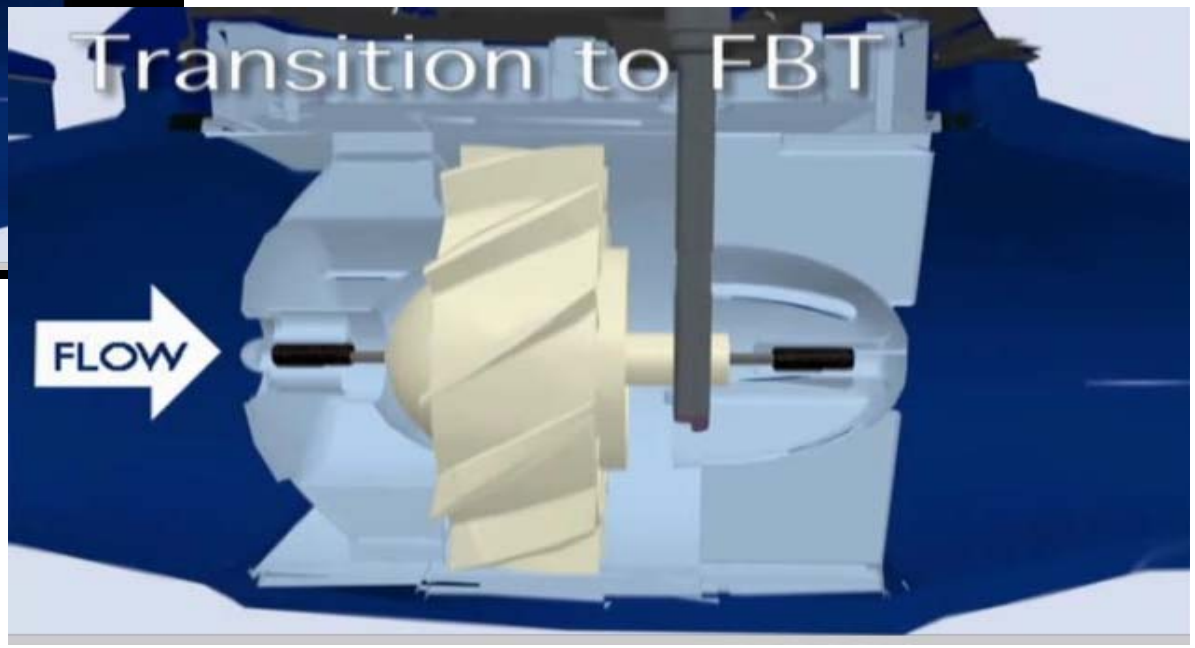
Reasons

- One moving part
- NO LEAD Ductile Iron body
- Extended flow ranges
- Data logging
- Electronic recalibration
- Interchangeable parts
- AMR/SCADA outputs standard
- Simpler than traditional compound meters
  - No cross over loss
  - Less moving parts, no coordinator
  - No valves

Simple Design

- *Floating Ball Technology. Only one moving part in the water system*



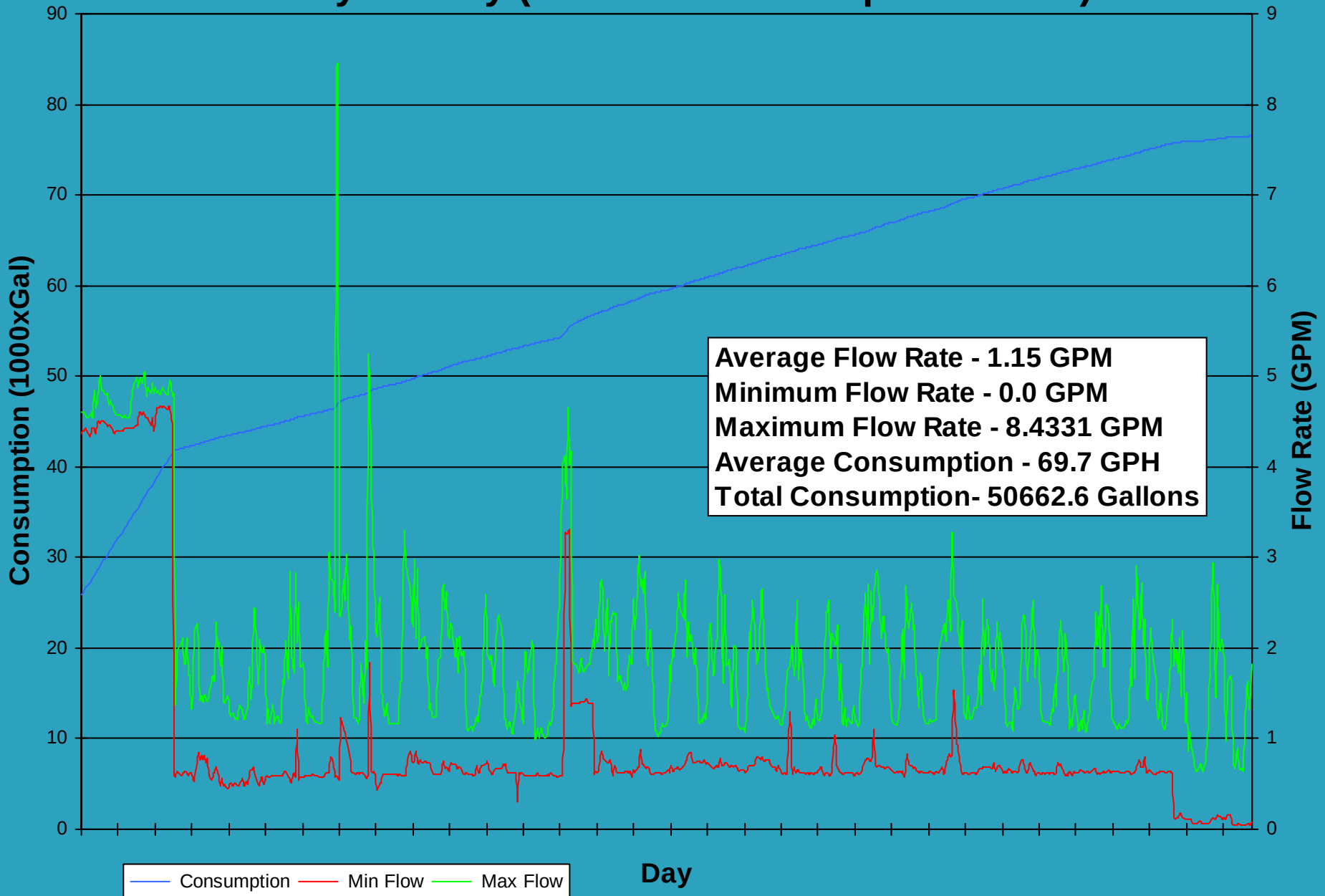


LOCATION ONE

Double Tree Hotel 18800 Pac. Hwy
Test Results
Across 3 flow ranges 82% registration
Replacement
4” Omni @ approx. $3300 plus Labor
Highline Water District 3 man Crew 2 hours labor

2" OMNI T^2

31 Day History (March 26 2008 - April 26 2008)



RESULTS LOCATION ONE

Results
$15,000 per month billed before
Change out with 18% loss=$2,700
Per month.
Expected ROI
Less than 2 months

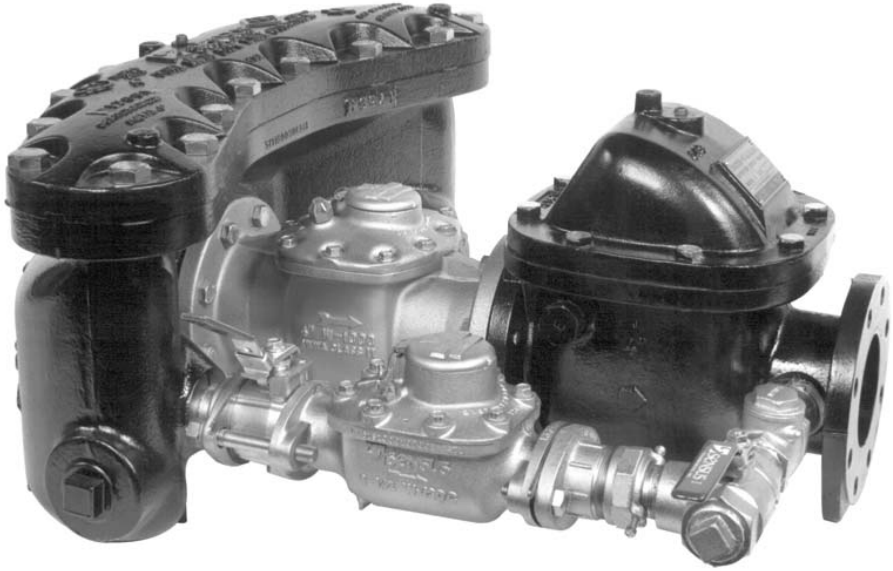
LOCATION TWO

Bow Lake Trailer Town
3240 S. 182nd St.

Test Results
Across 3 flow ranges total of 84% registration

Replacement
6” F2 Omni @ Approx $10,000 plus labor
Highline Water District 3 man Crew and Service Truck @ 4 Hours labor.

F2 Omni



- UL/FM approval

2" OMNI T^2

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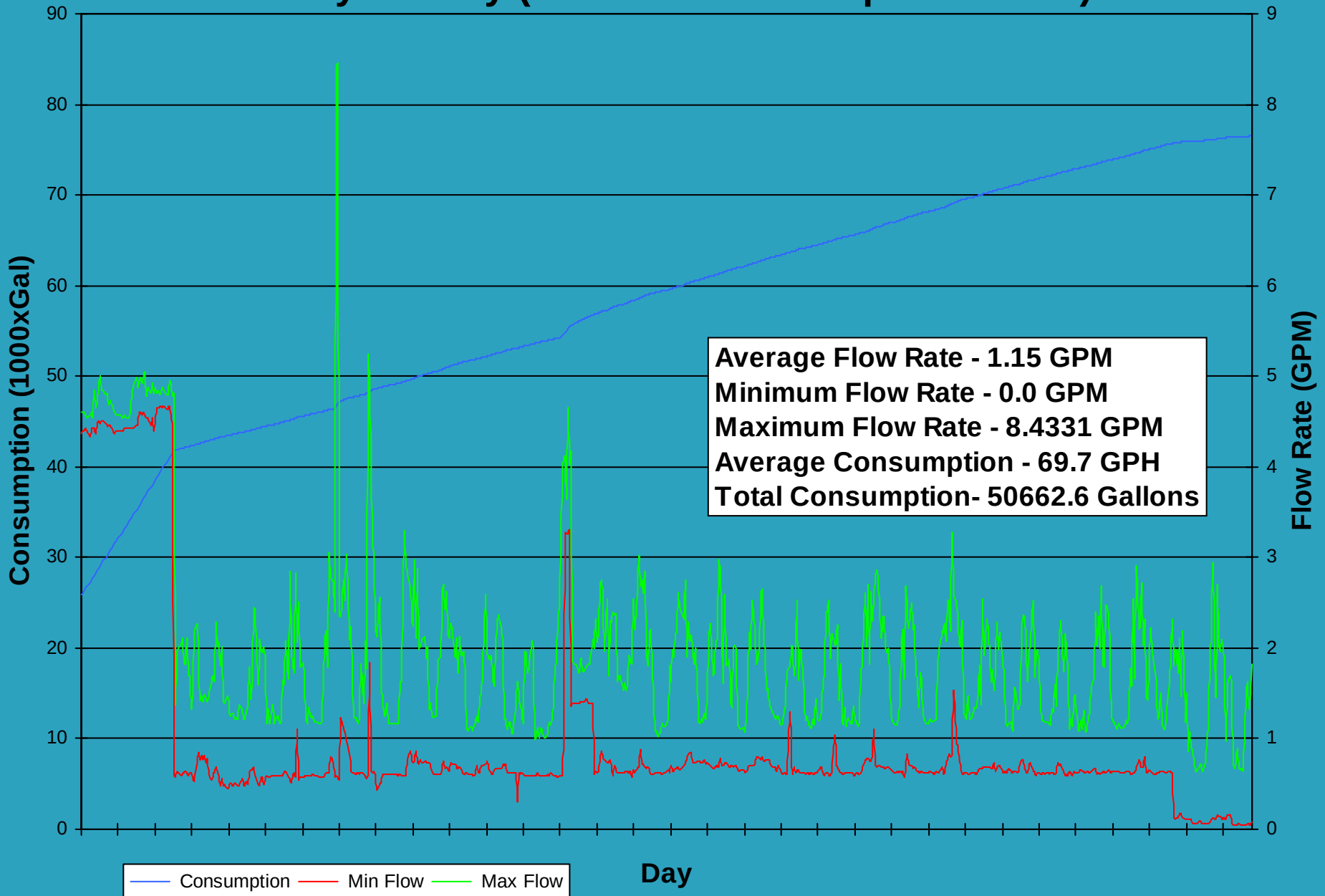
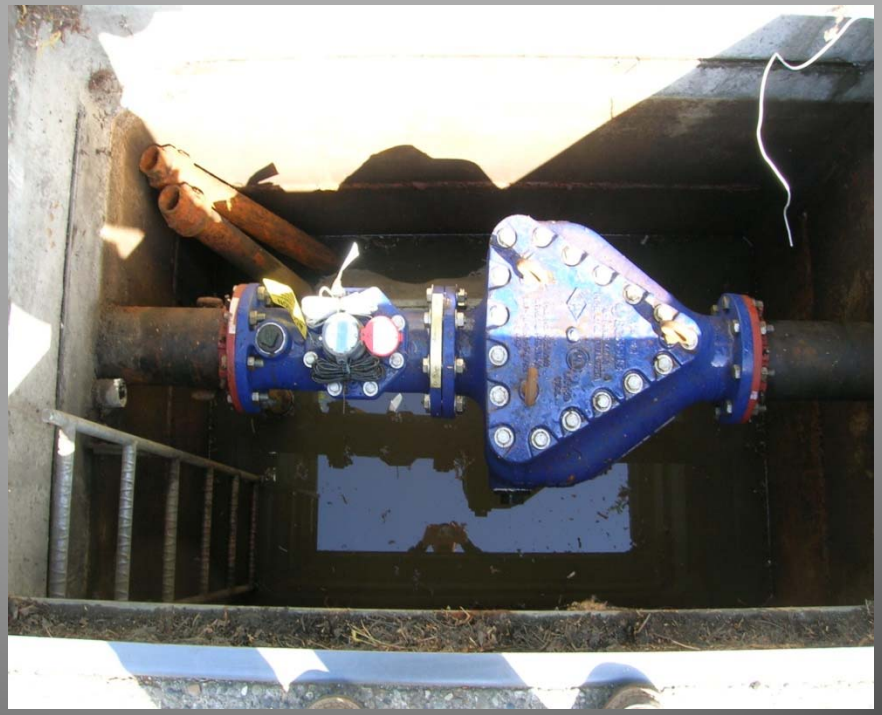
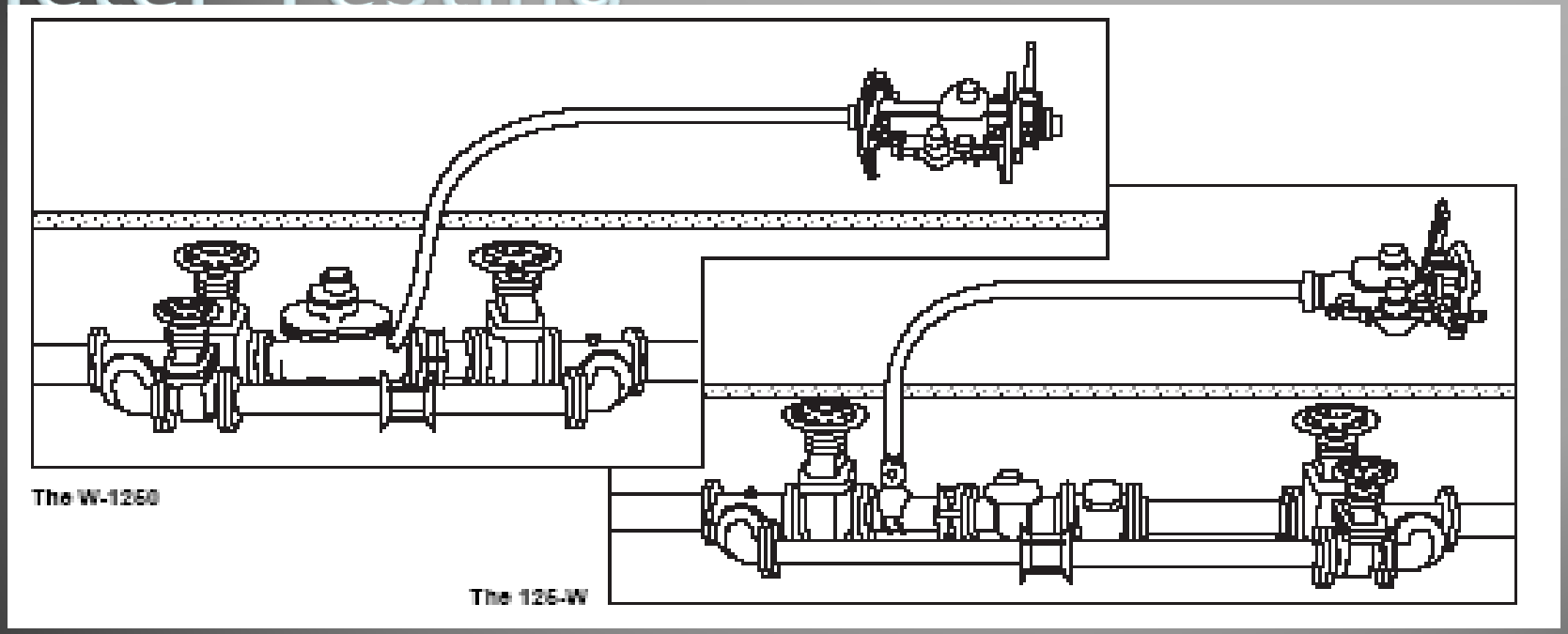


RESULTS LOCATION TWO

Results
Monthly Billable of $8,200 with a Loss of 16% for a total of $1,312 Per month.
Expected ROI
A little over 9 months!



Meter Testing



LARGE METERS PROVIDE LARGE REVENUE AND SHOULD BE TESTED!

METER TESTING

Panther

Program | Config | Log | Test | Error | Help

- ○ Manual Mode 1:F/Meter with One Register
- ○ Manual Mode 2:F/Meter with Two Registers
- ○ Manual Mode 3:F/Meter with Three Registers
- ○ Auto Assist Mode 4:
  F/Sensus Fully Electronic Meters

Exit

Manual Mode 1 Meter Under Test Step 2 of 15

Serial Number: * 12345678

Meter Size: * 4"

Type and Brand: * Sensus

Customer: Customer Name

Meter Location: * School Vault

Meter Registration: * Cubic Feet

Back OK

Manual Mode 1 Tester Meter Step 3 of 15

Tester Meter Registration: Cubic Feet

Tester Meter Flow Rate Units: GPM

Testing Performed By: United Pipe & Supply

Testing Date: 2/27/2008

Back OK Cancel

Manual Mode 1 Ready to Start Step 4 of 15

Properly set up test site
and meter to be tested.

Test Program will put meter in "TEST MODE" and RE-SET "TEST TOTALIZER"

Press OK to continue.

Back OK Cancel

Manual Mode 1 Start Meter Step 5 of 15

Enter start meter reading below.

0 Cubic Feet

Press OK to continue.

OK

Manual Mode 1 Begin Test Step 6 of 15

Reset your tester register to zero.

Begin test flow rate.

Record the test flow rate.

Run ample water for your resolution and repeatability.

When test flow is complete, press OK to continue.

Back OK Cancel

Manual Mode 1 Tester Flow Rate Step 7 of 15

Enter test flow rate.

30 GPM

Press OK to continue.

Back OK

Manual Mode 1 Stop Meter Step 8 of 15

Enter stop reading.

300.1 Cubic Feet

Press OK to continue.

Back OK Cancel

Manual Mode 1 Tester Volume Step 9 of 15

Enter tester volume below.

300.15 Cubic Feet

Press OK to continue.

Back OK

Manual Mode 1 Enter Accuracy Step 10 of 15

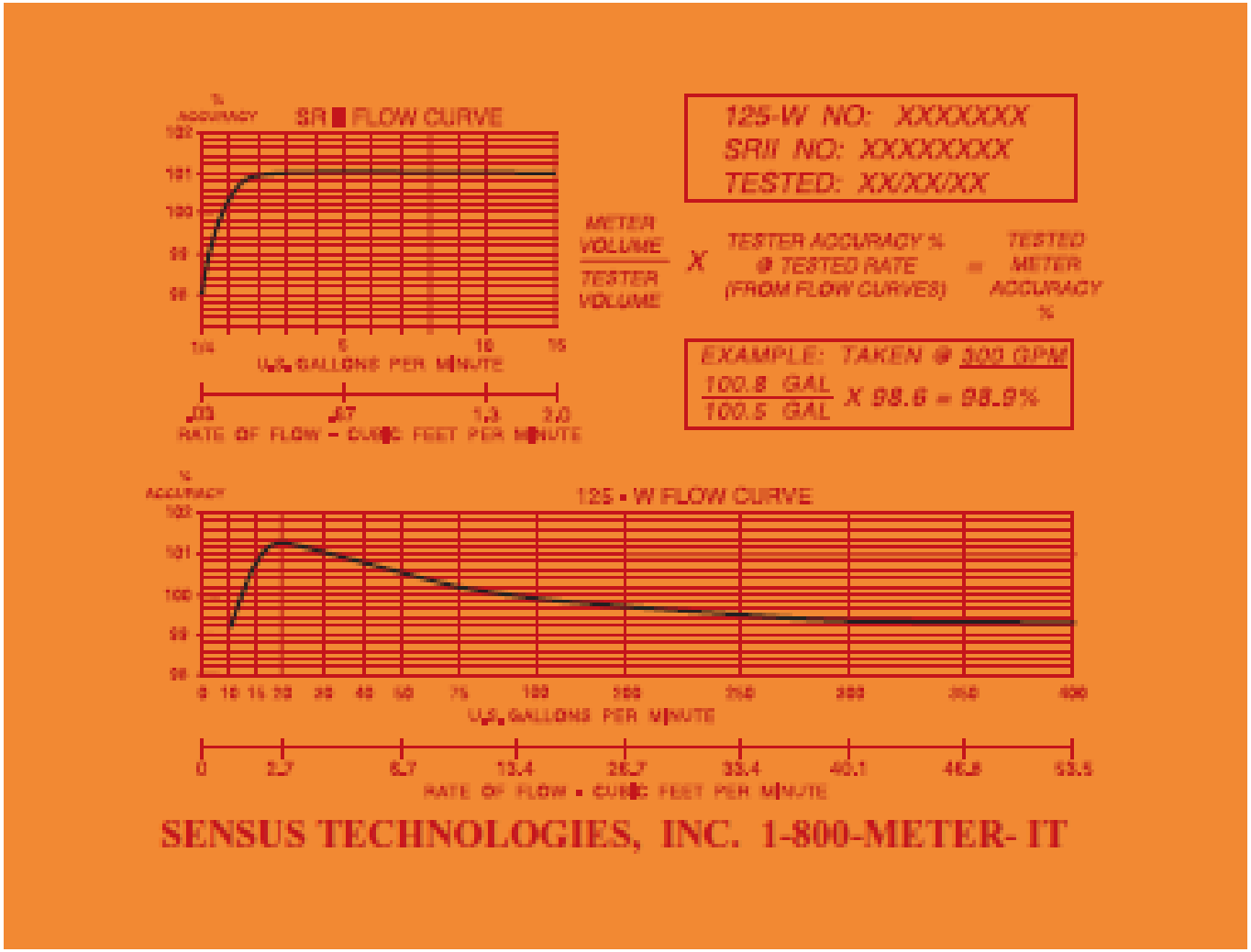
Enter tester accuracy from test tag at this test flow rate.

100.3

Press OK to continue.

Back OK Cancel

Accuracy Curve



Manual Mode 1 Accuracy Result Step 11 of 15

Meter Under Test

30 **GPM**

Stop Reading	Start Reading	Volume (CF)
300.1	0	**300.1**

Converted Volume (CF) **300.1**

Tester Volume (CF) **300.15**

Run 1 of 1 Run another test?

Back Yes No

Manual Mode 1 Back In Service Step 15 of 15

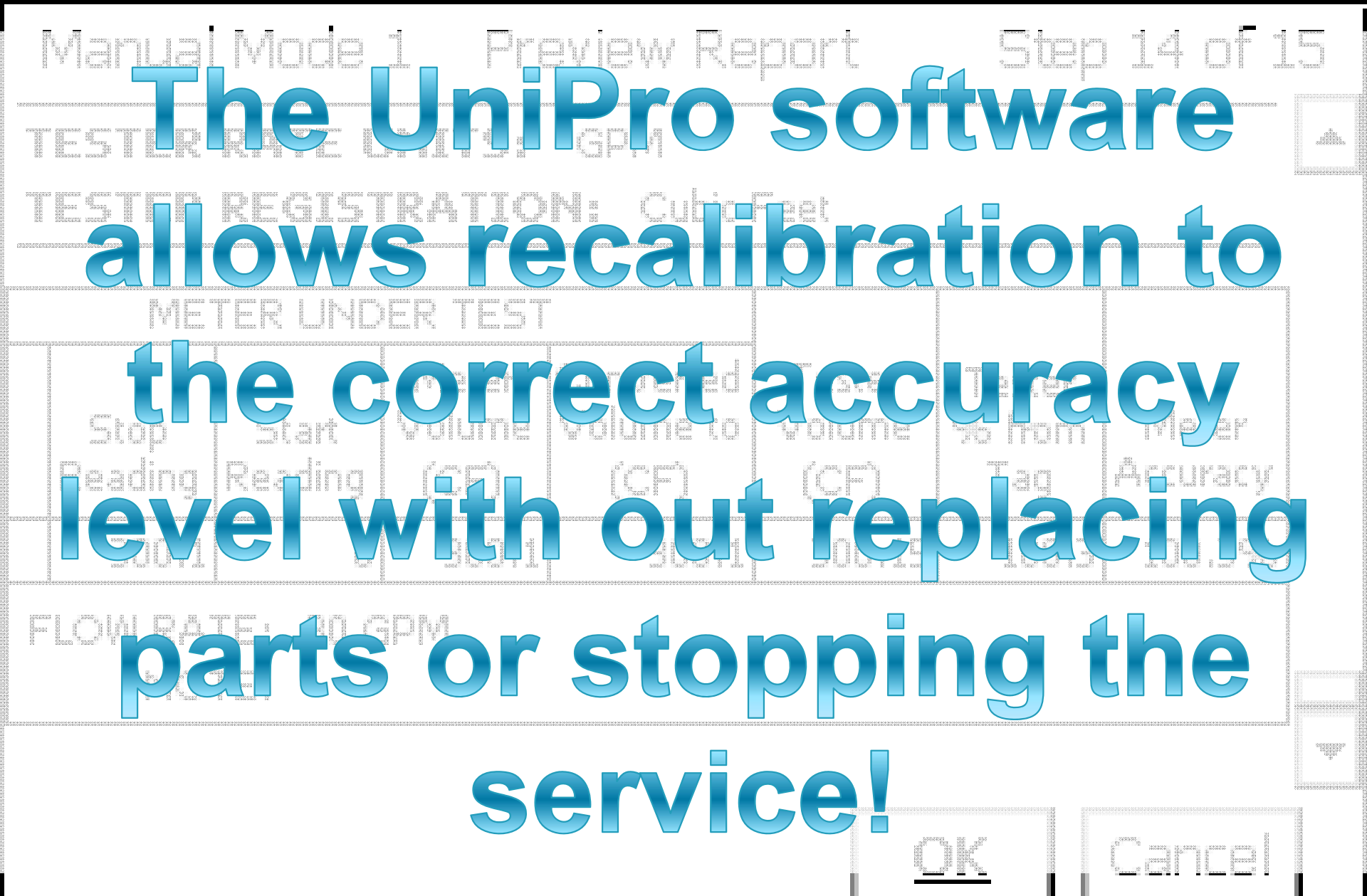
Enter back-in-service reading below.

2610 Cubic Feet

A test report will be saved in the following location:

\C_Drive\C_Program Files\Panther\Reports\Tes

OK



The UniPro software allows recalibration to the correct accuracy level with out replacing parts or stopping the service!

Summary

- Have begun a three year upgrade of commercial meters.
- Primary focus 1 ½ thru 6” meters
- Good Initial Results
- Quick Return on Investment
- Excellent Reporting Capabilities
- Leads to Improved Customer Service

THANK YOU

Questions ?

- Thank you!
- Dan Sleeth
- Operations Lead
- Highline Water District
- dsleeth@highlinewater.org