Tucson Water's
Tucson Water Maintenance Division

Ray Wilson, Administrator

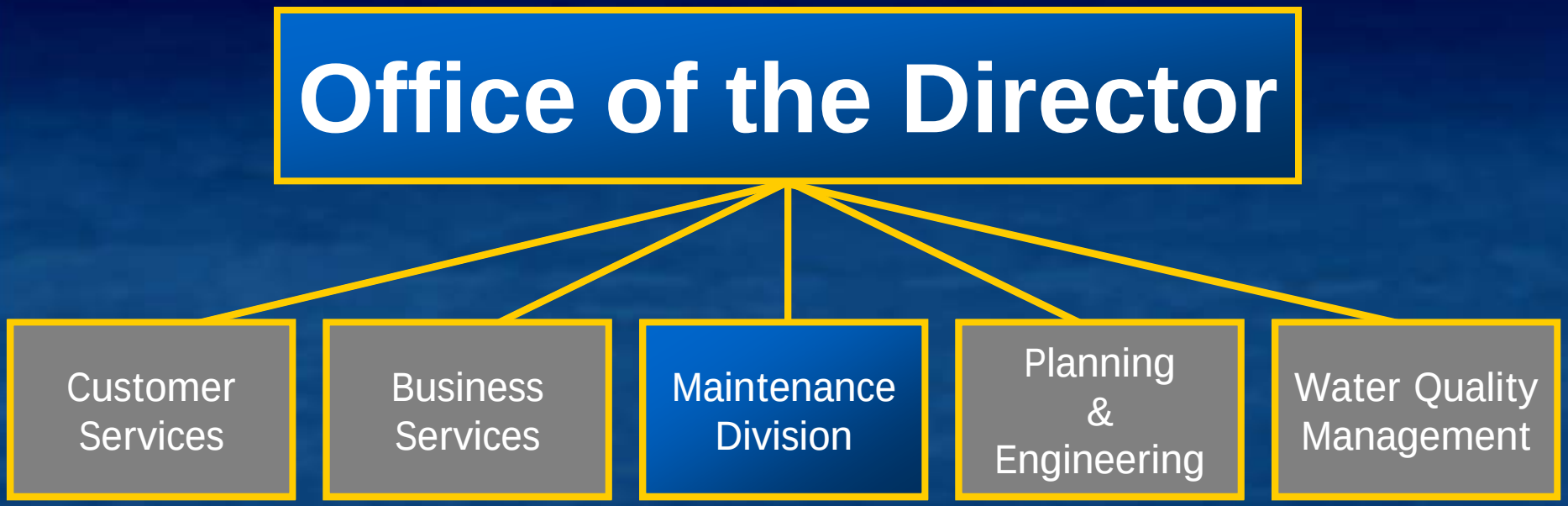
"Who we are and What we do"

Presented to:

Citizens' Water Advisory Committee

February 3, 2010

City of Tucson Water Department



Improving Efficiency

- The water system was expanding at a rate that we could not keep up with using the current work management program
- In 2001 the Water Department embarked on a mission to find more efficiencies to maintain the water system to keep our costs at a minimum.
- The Maintenance Management Program was started (MMP)

What is MMP?

“The key to substantial improvement is an application of a business-based approach to combine the most effective organization that facilitates the people in what they do, the most efficient practices that people use to perform their work, and appropriate technology that supports the practices and organization”.

Implementation

- Organization
  - Process-based
- Technology
  - Computerized MMS and GIS
  - Integrate with other key systems
- Practice
  - Multi-skilled worker
  - Leadership training
  - Program driven maintenance
  - Optimize Fleet

Why MMP?

Current level under Vacancy Management

	2002	2010
Number of water services (Billed)	189,000	235,000
Miles of pipeline	4,100	4,504
Assets	$1 Billion	$1.3 Billion
Maintenance Division Staff / 1000 services	1.13	0.82
Current level under Vacancy Management		**0.66**

City of Tucson Water Department
Maintenance

VACANCIES:
Water Operations Superintendent (2)

Ray Wilson
Water Administrator
Maintenance
(195 FTEs)

Sergio Cordova
Safety Specialist

Harold Maxwell
Superintendent
System Maintenance

7137 Equipment Maint
Albert Kin
Fleet Svcs Supv

Admin Asst (1)
Senior Heavy Equip Mech (7)
Welder (2)
VACANCIES:
Senior Heavy Equip Mech (2)
Sr Flt Svc Tech (1)

7157 Well Maint
Tony Perez
Wtr Ops Supv

Lead Well Maint Mech (3)
Well Maint Mechanic (4)
VACANCIES:
Cable Tool Driller (2)

7147 Property Maint
George Cruz
Wtr Ops Supv

Equip Oper Spec (8)
Env Insp (1)
Pest Contr Spec (2)
VACANT:
Equip Oper Spec (1)

7157 Well Maint
Phil Simon
Facil& Maint Equip Spec

Lead Well Maint Mech (1)
VACANT:
Lead Well Maint Mech (1)

Eric Bender
Water Control Sys Mgr
Control Systems Ops

7117 Control Systems Operations

James Carr
Michael Carr
Water Control System Engineers
Keith Eagar
Craig Schessler
Electronic Tech Supvs

Electrician (5)
Electr Tech (3)
VACANCIES:
Water Cntrl Sys Engr(1)
Electrician (1)
Electronic Tech(1)

Paul Acosta
Sr. Eng Assoc
Quality Control

7217 System Support Locators
Michael Moraga
Water Ops Supv

Wtr Svc Loc (10)
VACANT:
Wtr Svc Loc (1)

7227 Corrosion Control

Corr Contr Tech (3)

Britt Klein
Superintendent
North& West Maintenance

7177 North
Ricardo Lopez
Wayne Rossi
Water Ops Supervisors

Equip Op Spec (2)
Sr Ut Svc Wkr (1)
Ut Svc Wkr (1)
Utility Tech (8)
Utility Tech (3)
VACANCIES:
Utility Tech (2)

7301 West
Raul Cuestas
Arnold Pallanes
Water Ops Supvs

Equip Op Spec (2)
Ld Maint Mech (1)
Maint Mech (1)
Sr Ut Svc Wkr (3)
Utility Tech (7)
Utility Tech (2)
VACANCIES:
Ld Maint Mech (1)
Sr Ut Svc Wkr (1)
Utility Tech (3)

Hector Estrada
Superintendent
Central& East Maintenance

7227 Central
Ed Nagy
Woody Skinner
Water Ops Supvs

Utility Tech (8)
Utility Tech (7)
Equip Op Spec (2)
VACANCIES
Ld Maint Mech (1)
Ut Svc Wkr (1)
Utility Tech (4)

7237 East
Gary Pizzuto
Steve Trejo
Water Ops Supvs

Equip Op Spec (3)
Sr Ut Svc Wkr (1)
Ut Svc Wkr (1)
Utility Tech (10)
Utility Tech (2)
VACANCIES:
Sr Ut Svc Wkr (1)
Utility Tech (2)

7217
Ray Archuleta

Water Ops Supv
(2nd Shift)

Robert Boumis
Management Asst
System Support

7217
Mario Tapia
Wtr Svcs Supv

Ld Wtr Mtr Rpr (1)
Wtr Mtr Rpr (2)

7217
Susana Coleman
Office Supv

Cust Svc Rep (1)
Admin Asst (1)
Wtr Com Oper (4)
VACANT
Cust Svc Rep (1)

7217
Maint Mech (1)
Sr. Storekeeper (3)
VACANT:
Sr. Storekeeper (1)

Stephanie Pella
Management Asst
System Support

7217
Paula Quarrell
Account Clerk Supervisor

Secretary (1)
Sr Acct Clrk (2)

7217
Mgmt Analyst

7217
Andrew Vanover

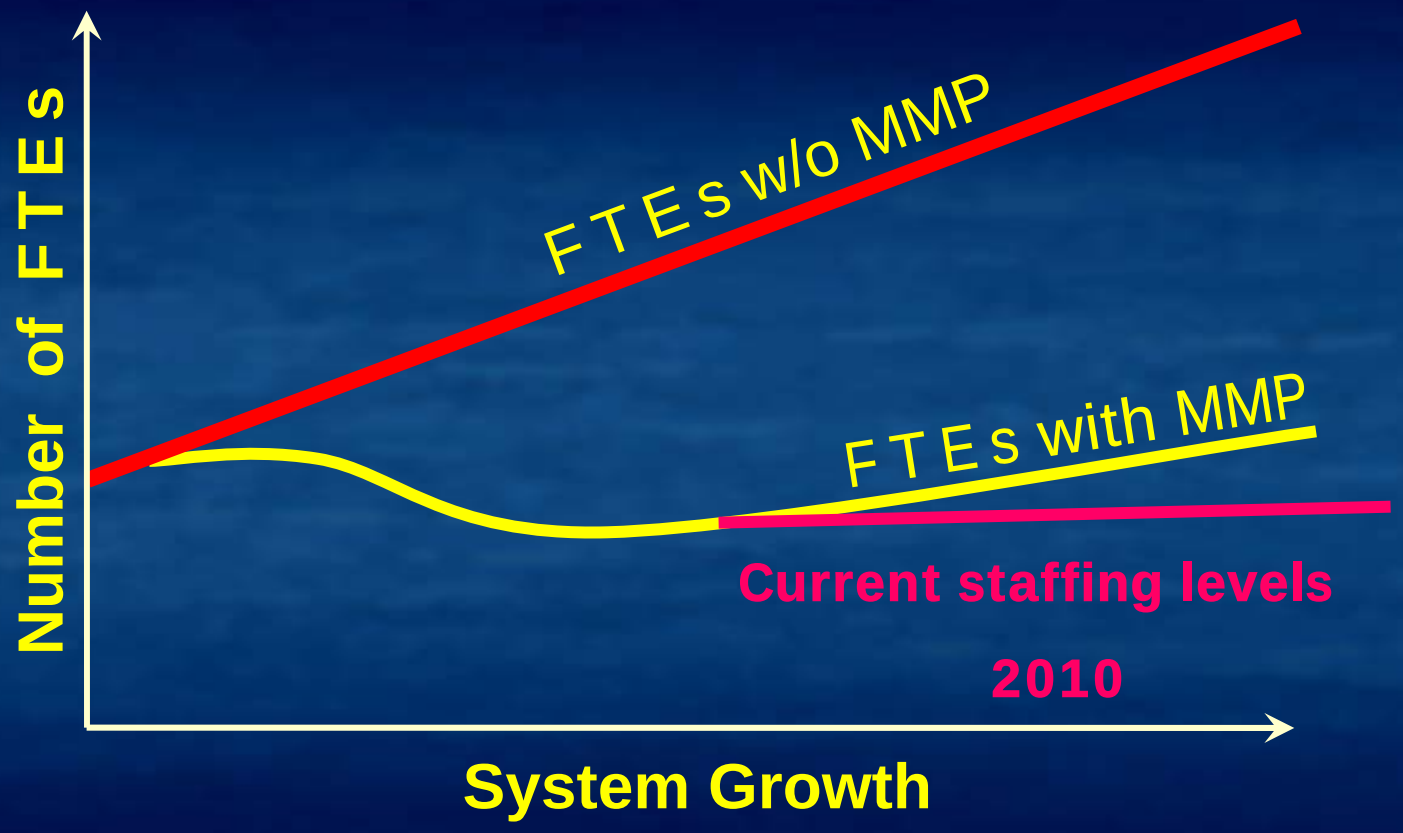
Water Ops Supv Trainer

195 – Budgeted Positions
29 - Vacancies

Utility Technicians hired > 3.5 years or longer
Utility Technicians hired < 3.5 years ago

1/5/2010

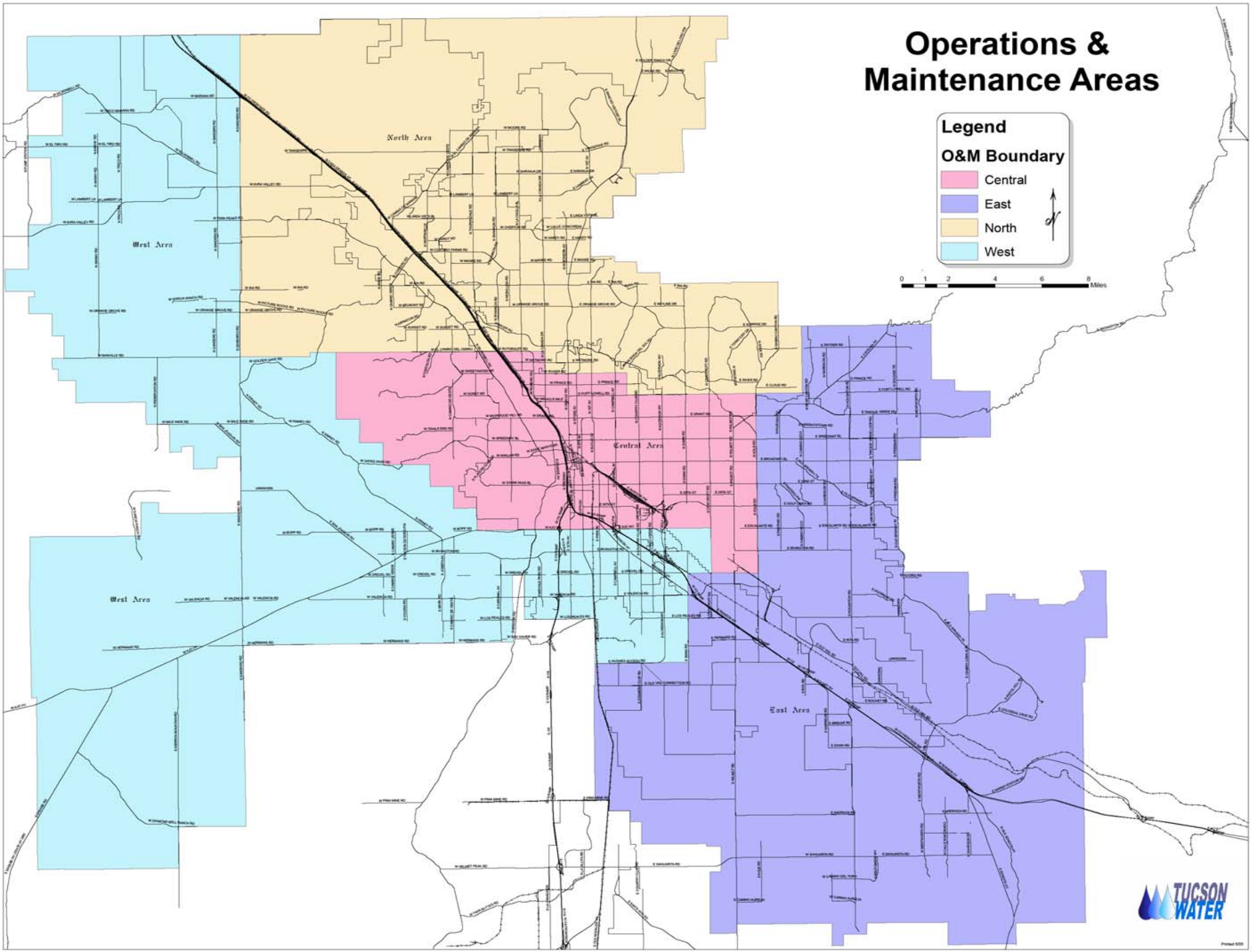
Projected FTEs



Tucson Water Maintenance Division

The Division is divided into functional areas:

- 4 Maintenance Areas
  - North, West, Central, East
- Quality Control
  - Pipeline Protection, Corrosion Control, Bluestake
- System Maintenance
  - Equipment Maintenance, Well Maintenance, Property Management
- System Support
  - Budget, Personnel, Procurement, Communication, Safety, Training

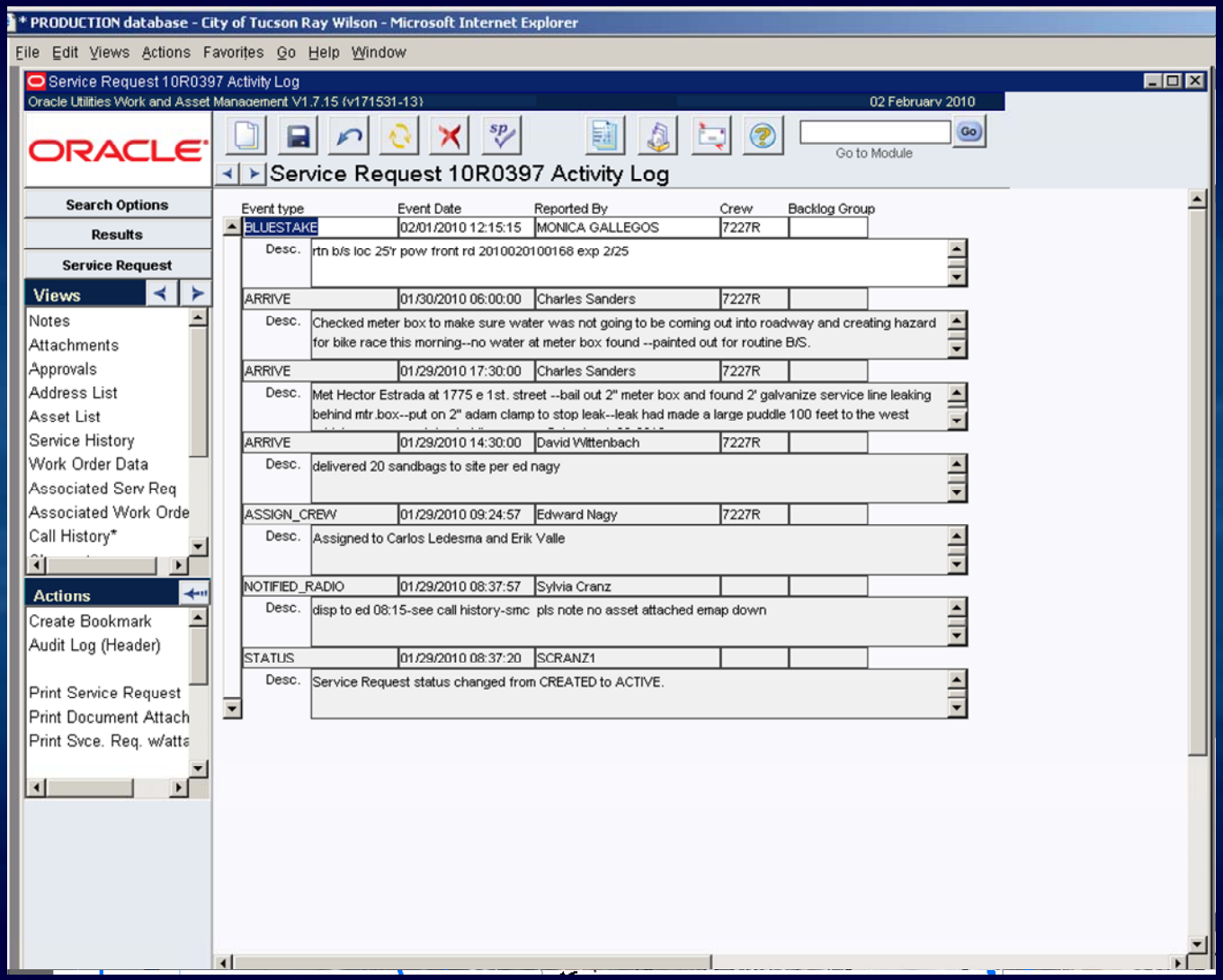

Operations & Maintenance Areas
Legend
O&M Boundary
Central
East
North
West
0 1 2 4 6 8 Miles
North Area
West Area
Central Area
West Area
East Area
TUCSON WATER

4 Maintenances Areas

- Repair broken Mains
- Repair/Replace main line Valves
- Repair/Replace leaking Services
- Install New Services
- Fire Hydrant installation and Repair

"Tucson Water's Distribution system is one of the largest and most complex in the nation"

The Technology we use to meet our Customers' needs!



The Work We Do

How many assets do we maintain?

- 82,187 Valves
- 20,820 Hydrants
- 249,000 Services
- 230 Wells
- 57 Reservoirs
- 4,394 Fire Services

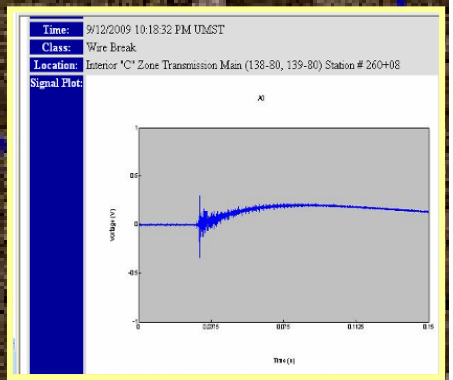
Do we remember this?

February 5,1999
96” Diameter PCCP Failure

Quality Control

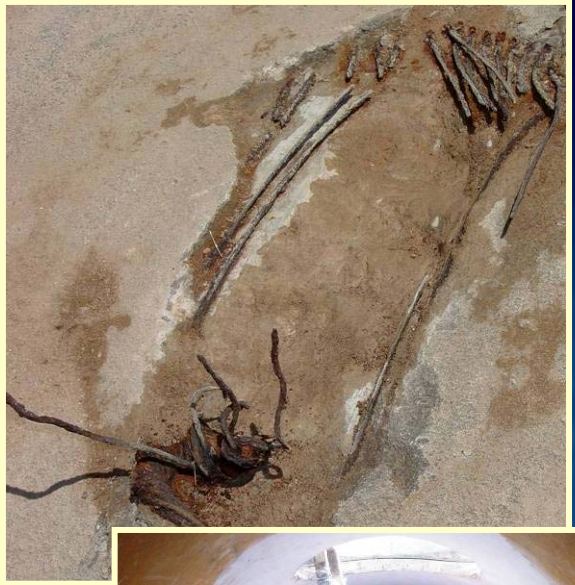
(Pipeline Protection)

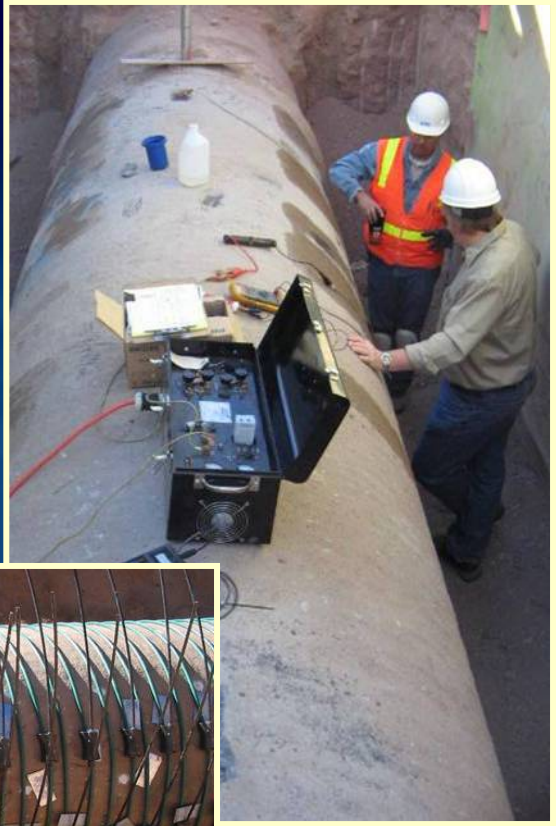
- Locating our assets for Bluestake
- Corrosion Control
- Real-time monitoring of largest pipe lines (24 Miles)
- Oversight of large contractor repairs on mains and valves for the Maintenance Division



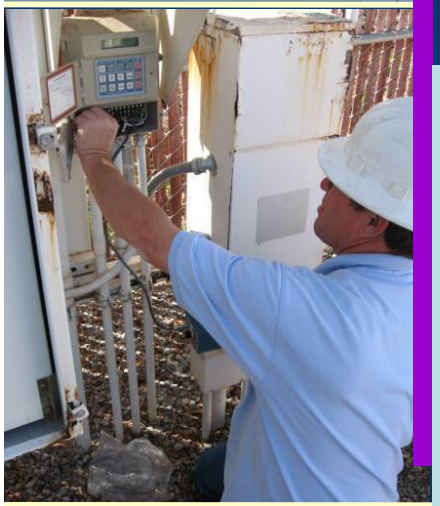
Quality Control

(Pipeline Protection)





Controls Systems Operation Section (CSOS)



- Water Control System Engineers
  - Maintain the computer systems for the Supervisory Control And Data Acquisition (SCADA)
- Electronic Technicians
  - Maintain the field Instrumentation and Control (I&C) (under 50 volts)
- Electricians
  - Maintain all electrical systems (over 50 volts)

System Maintenance

Equipment Maintenance

- All equipment (non-fleet) Maintenance and Repairs
- Natural Gas engines
- Build and Maintain truck attachments and system welding repairs (Certified welders)

System Maintenance

Property Management

- Property maintenance for 1500 + addresses, Treatment plants, Reservoirs and Tucson Water owned facilities
- Maintain security enclosures (fencing, gates)
- Recharge Basin maintenance
- Avra Valley property management

System Maintenance

Well Maintenance

- Repair/Replace well pumps, Well casing below ground for:
  - 228 Production Wells
  - 10 Reclaim Recovery Wells
  - 9 TARP Wells
- Monitor well maintenance

System Support

- Personnel functions
- Staff scheduling
- Budgeting / payroll
- Purchasing
- Cell phones
- Division files
- Uniforms / miscellaneous

System Support

- Radio Dispatch
- Emergency Customer Service call center
- Bluestake

System Support

Testing and repair of water meters

Meter Shop

System Support

Stores

Procure and maintain inventory for the Division to repair assets on Routine basis and Emergencies

Safety

- Monthly safety meetings
- Review Property loss (Damaged equipment)
- Facilitate Safety and Accident Review Boards
- Investigate Employee accidents, Contractor/Public “Hits” to our assets

Training

- Training employees for new skills
- Cross Training Division employees and with other Divisions
- Training Supervisors
- Training staff on emerging technology

What are we <u>not</u> doing with fewer staff?

- We are not proactively flushing our mains.
- We give the perception that we let water leaks go on to long.
- Our back log of work is under control, but to some, we don’t get to their projects soon enough
- Our valves and fire hydrant maintenance is not what it should be.

Our accomplishments

- We have reduced our overtime expenditures $500,000 over the last 2 years
  - Started a second shift (1:30 p.m. to 10:30 p.m.)
  - All overtime requirements are managed
- We have reduced our response time for emergencies to 30 minutes
- Stand-by vehicles no longer go home on a routine basis.

Continued -

Our accomplishments

- To accomplish more work with fewer staff.
  - We have used technology. The majority of our field staff had never used a computer, now it is a daily occurrence
  - Synergen (Work Orders, Service Request, Time Keeping)
  - E-Map (Distribution valve maps, Access to As-Built drawings, Red line)
- Skilled Based Pay – Utility Technician (UT)
  - Multi-skilled employees

Continued -

Our accomplishments

- We have better control of our Maintenance Division budget.
- In 2002 the Division was doing 95% reactive work and only 5% planned.
- We now plan ~70% of our work and have 30% reactive work.

Continued -

Our accomplishments

- We have begun our Program Driven Maintenance (PDM)
- We are meeting the City's mandated Furlough day requirements while keeping our customers in mind
- More staff have been trained and possesses Arizona Department of Environmental Quality (ADEQ) Distribution and Treatment Certifications

Summary

It is the Maintenance Division's goal is to combine emerging technology and training of Division employees to improve efficiency and worker safety, and minimize water outages and disruptions to our customers while we repair, install and maintain the water system.

Tucson Water's
Tucson Water Maintenance Division

Questions?

Thank you for your interest in how we maintain our Water System