

2006 Metropolitan Area Facility Plan

Presentation to the
Board of Supervisors
March 21, 2006



Michael Gritzuk, P.E., Director
Pima County Wastewater
Management Department



Facility Plan – Answers Major Questions

- **How will future regulatory requirements impact the effluent quality and operation/maintenance requirements of the system?**
- **How can the treatment and conveyance elements of the system be continuously rehabilitated?**
- **How will growth affect the system?**
- **How will the growth, regulatory and rehabilitation requirements of the system be funded?**
- **What are the long-term costs?**

The Metropolitan System

- **PLANNING AREA** – Defined by the sewer basins tributary to the Roger and Ina Road treatment plants
- **CHARACTERISTICS AND INFLUENCES** – Physical, geological, hydrological, climatological, environmental, archeological, cultural, and land use

“Drivers” for the Pima County Regional Sewerage System



Primary Drivers

- **REGULATORY:** Federal, state and local environmental regulations and permits
- **INSTITUTIONAL:** PCWMD operates within its Statutory Authority, Bond Covenants and Intergovernmental Agreements (IGAs)
- **ASSET MANAGEMENT:** Maintenance and preservation of system assets under GASB 34 and CMOM requirements
- **POPULATION:** Growth and location of future population within the system

Population Drivers

FACILITY PLAN MODEL

- **Projects the effects of population growth and distribution during the next twenty-five years**
- **Based upon PAG Traffic Analysis Zone (TAZ) forecasts in five-year intervals from 2005 to 2030**
- **TAZ populations converted to sewer basin populations**
- **Future conveyance and treatment capacity needs are forecast based on sewer basin populations**

Conveyance System



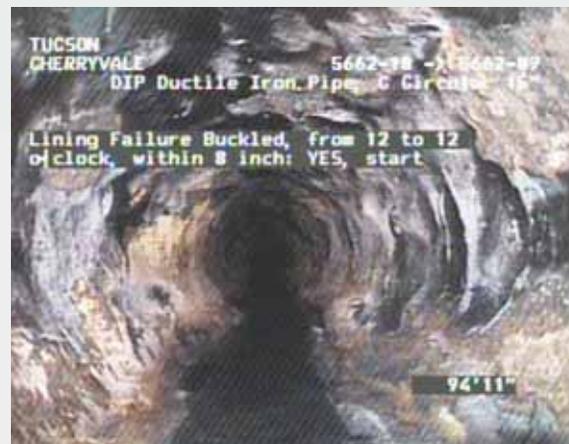
Conveyance System – Current Condition

INTERCEPTORS

- Evaluated and repaired based on age and material of pipe and interceptor condition assessment by Closed Circuit T.V. (CCTV)



Lining failure



Lining failure



Exposed rebar
from corrosion

Conveyance System – Current Condition

MANHOLES

- Visual inspection of 45,000 of 60,000 manholes to date indicates that over 1,500 manholes need significant rehabilitation

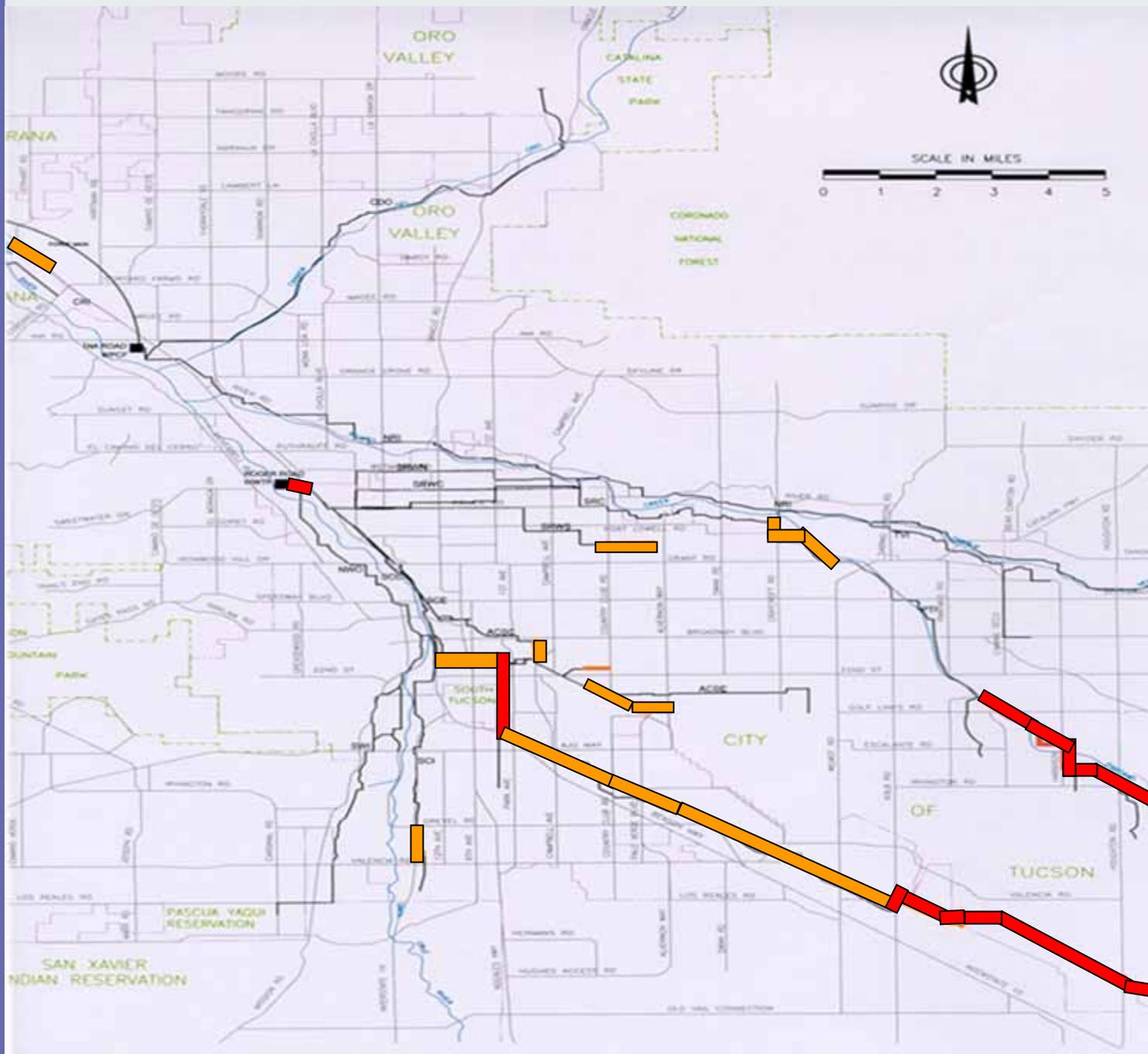


LIFT STATIONS

- Visual inspection of 29 active lift stations by PCWMD staff identified rehabilitation needs
- On-going installation of remote control and recording instrumentation

Conveyance System – Future Capacity Evaluation

- **Facility Plan Model generated for conveyance systems in five-year intervals from 2005 to 2030**
- **Projected forecast flows compared to current capacities to identify capacity issues**
- **Immediate (2005) capacity issues**
 - **To be funded by 2004 bond projects**
 - **Santa Cruz Interceptor, Prince to Franklin**
 - **Roger Road WWTP to Ina Road WPCF Plant Interconnect**



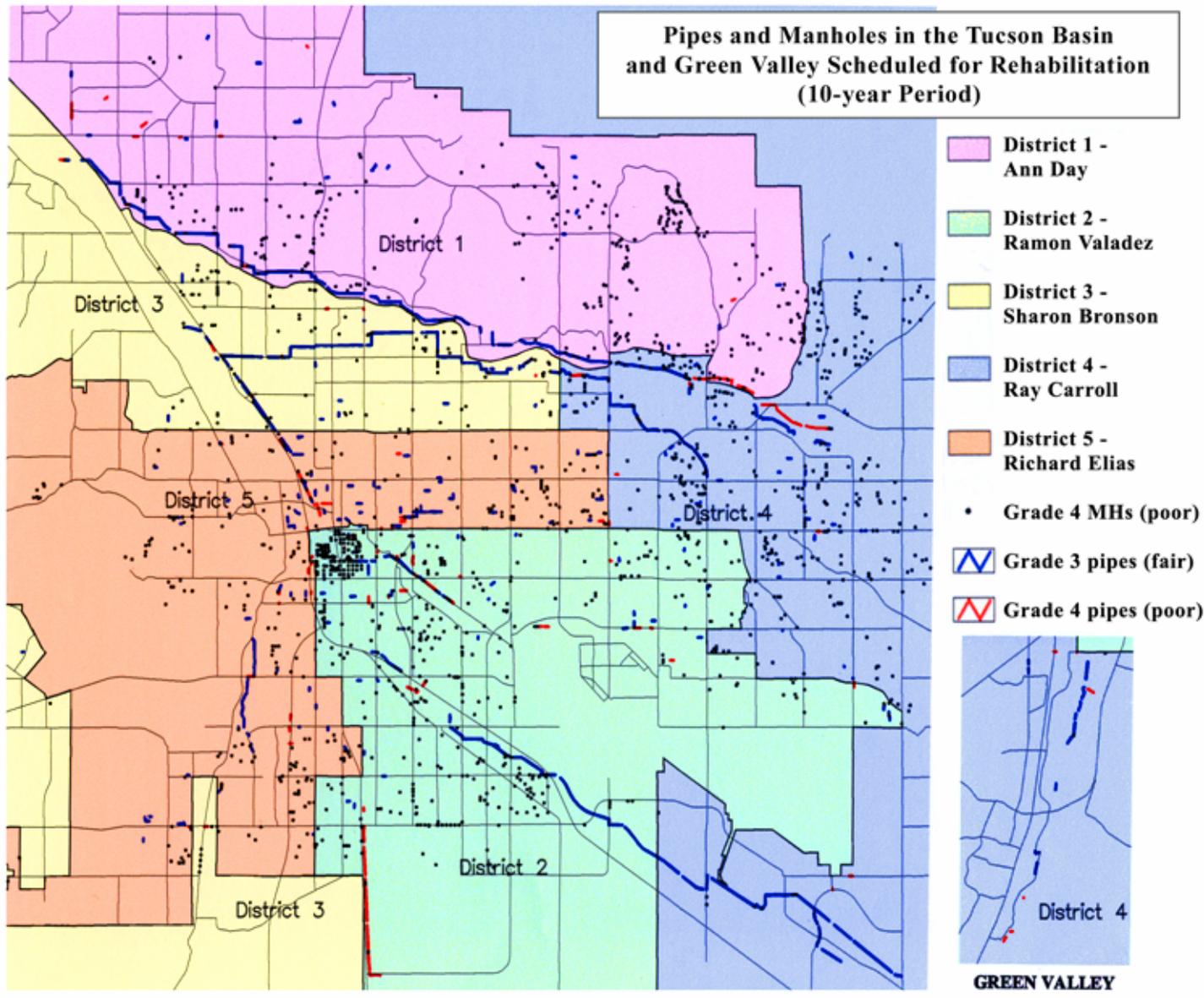
Conveyance System – Future Capacity Evaluation

2005 through 2030

 Will Require Augmentation

 May Require Augmentation. (Continue to Monitor)

**Pipes and Manholes in the Tucson Basin
and Green Valley Scheduled for Rehabilitation
(10-year Period)**



**Conveyance
System –
Current and
Future
Rehabilitation
Projects**

**2005
through
2015**

Treatment System



PCWMD 2006 Metropolitan
Area Facility Plan



Metropolitan Treatment Facilities – Baseline Conditions (March 2005)

ROGER ROAD WWTP

- 38.92 MGD flow, 41 MGD capacity
- \$32.4 million in rehabilitation needs
- \$50 million for effluent nitrogen/ammonia reduction

RANDOLPH PARK WRF

- 0 MGD flow, 3.0 MGD capacity

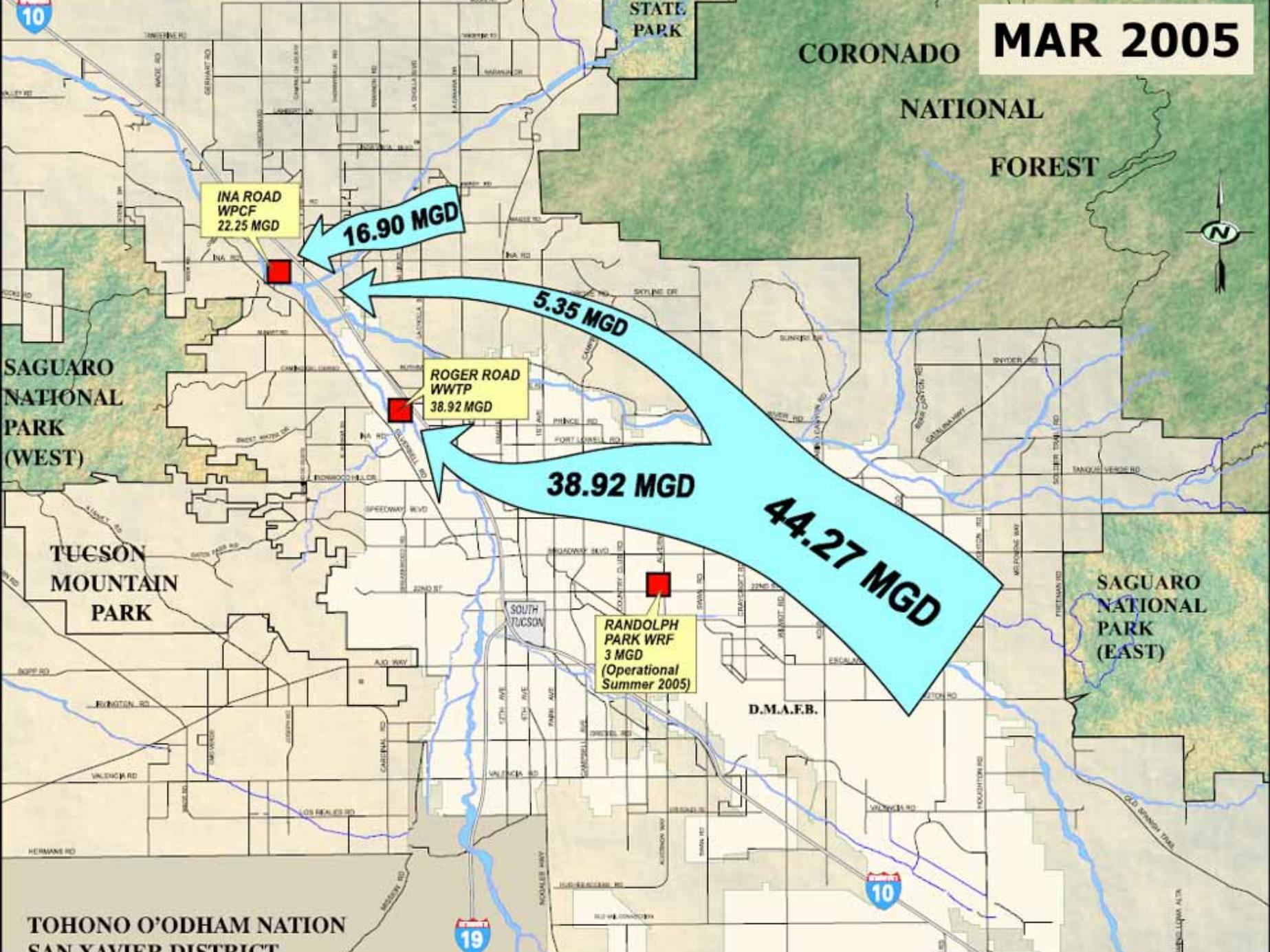
Metropolitan Treatment Facilities – Baseline Conditions (March 2005)

INA ROAD WPCF

- 22.25 MGD flow, 25 MGD capacity
- \$28.85 million in rehabilitation needs
- \$27 million for effluent nitrogen/ammonia reduction
- \$24.2 million for biosolids improvements/upgrades
- 12.5 MGD plant expansion under construction for completion in 2006

Total Flows: 63.99 MGD flow, 66 MGD capacity

MAR 2005



Metropolitan Treatment Facilities – Future Conditions (December 2030)

- **Roger to Ina Plant Interconnect in place**
- **Roger Road WWTP**
 - **32.05 MGD flow, 41 MGD capacity**
 - **Plant rehabilitation with biosolids being processed at Ina Road WPCF**
 - **Eastside water reclamation/treatment facility added as per HAMP Study**
- **Randolph Park WRF**
 - **3 MGD flow, 3 MGD capacity**

Metropolitan Treatment Facilities – Future Conditions (December 2030)

INA ROAD WPCF

- 50.0 MGD flow, 50.0 MGD capacity
- Plant Interconnect from Roger Road to Ina Road
- Plant rehabilitated
- 12.5 MGD added in 2006
- 12.5 MGD added in 2026

TOTAL METROPOLITAN AREA:

- 85.05 MGD flow
- 94.0 MGD capacity

10

STATE PARK

CORONADO DEC 2030

NATIONAL FOREST



SAGUARO NATIONAL PARK (WEST)

TUCSON MOUNTAIN PARK

SAGUARO NATIONAL PARK (EAST)

TOHONO O'ODHAM NATION SAN XAVIER DISTRICT

INA ROAD WPCF 50.00 MGD

22.33 MGD

BIO SOLIDS RELOCATION

27.67 MGD

ROGER RD WWTP 32.05 MGD

59.72 MGD

3.0 MGD

RANDOLPH PARK WRF 3 MGD

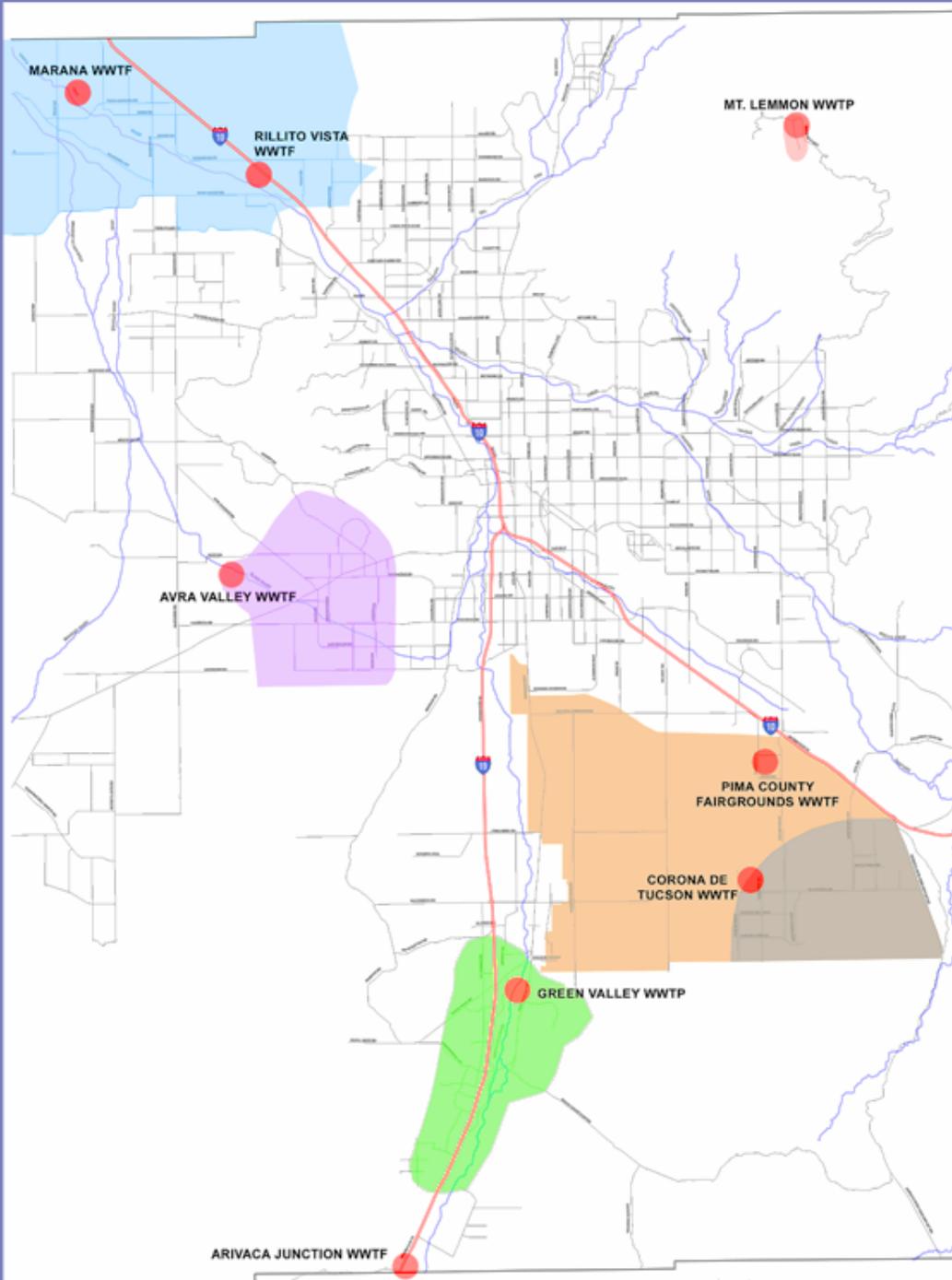
62.72 MGD

Potential WRF

19

10





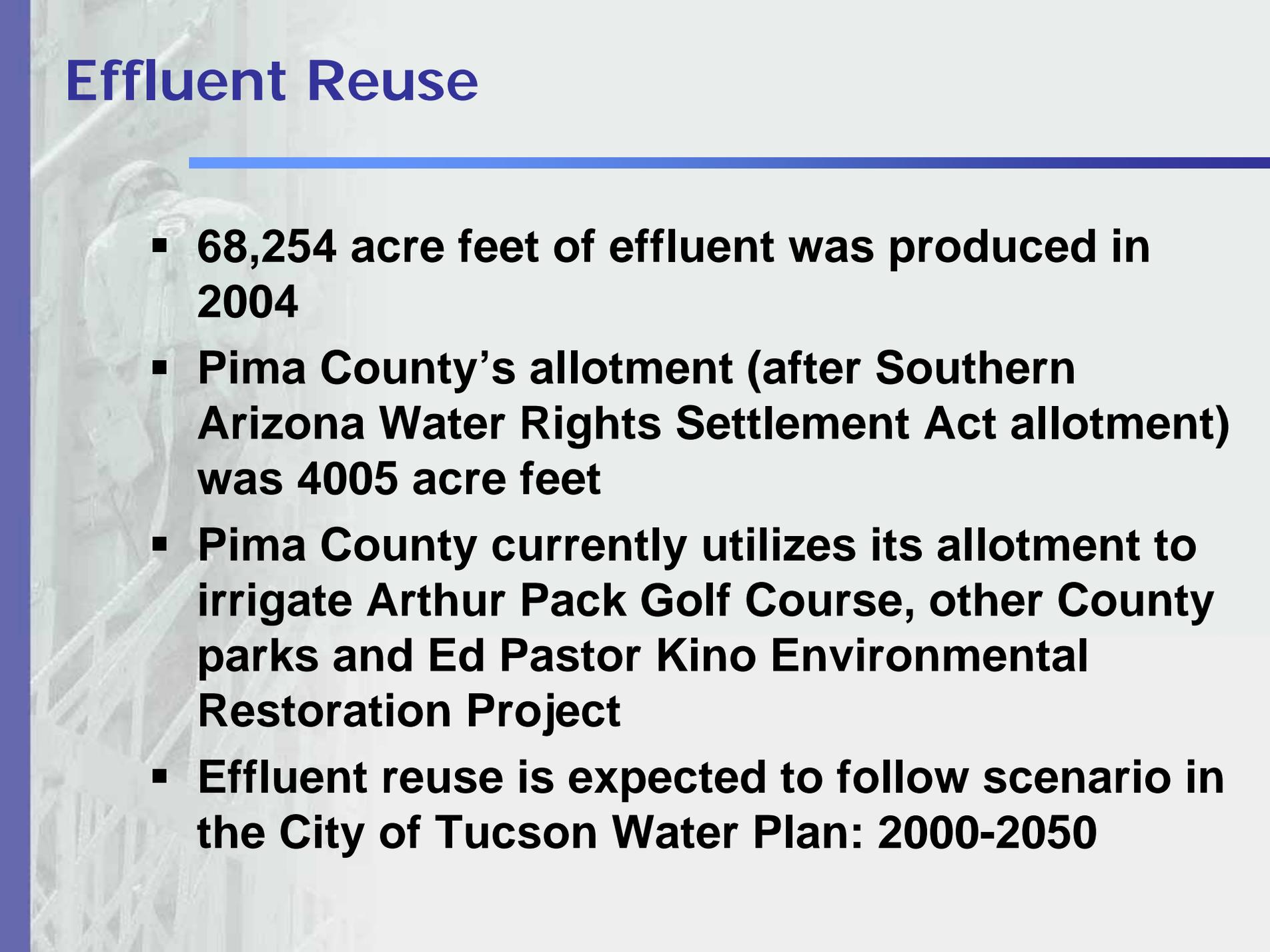
Outlying Facilities – Sewer Basins

-  Avra Valley
-  Marana
-  Green Valley
-  Mt. Lemmon
-  Corona de Tucson
-  Southlands

Outlying Treatment Facilities – Future Conditions

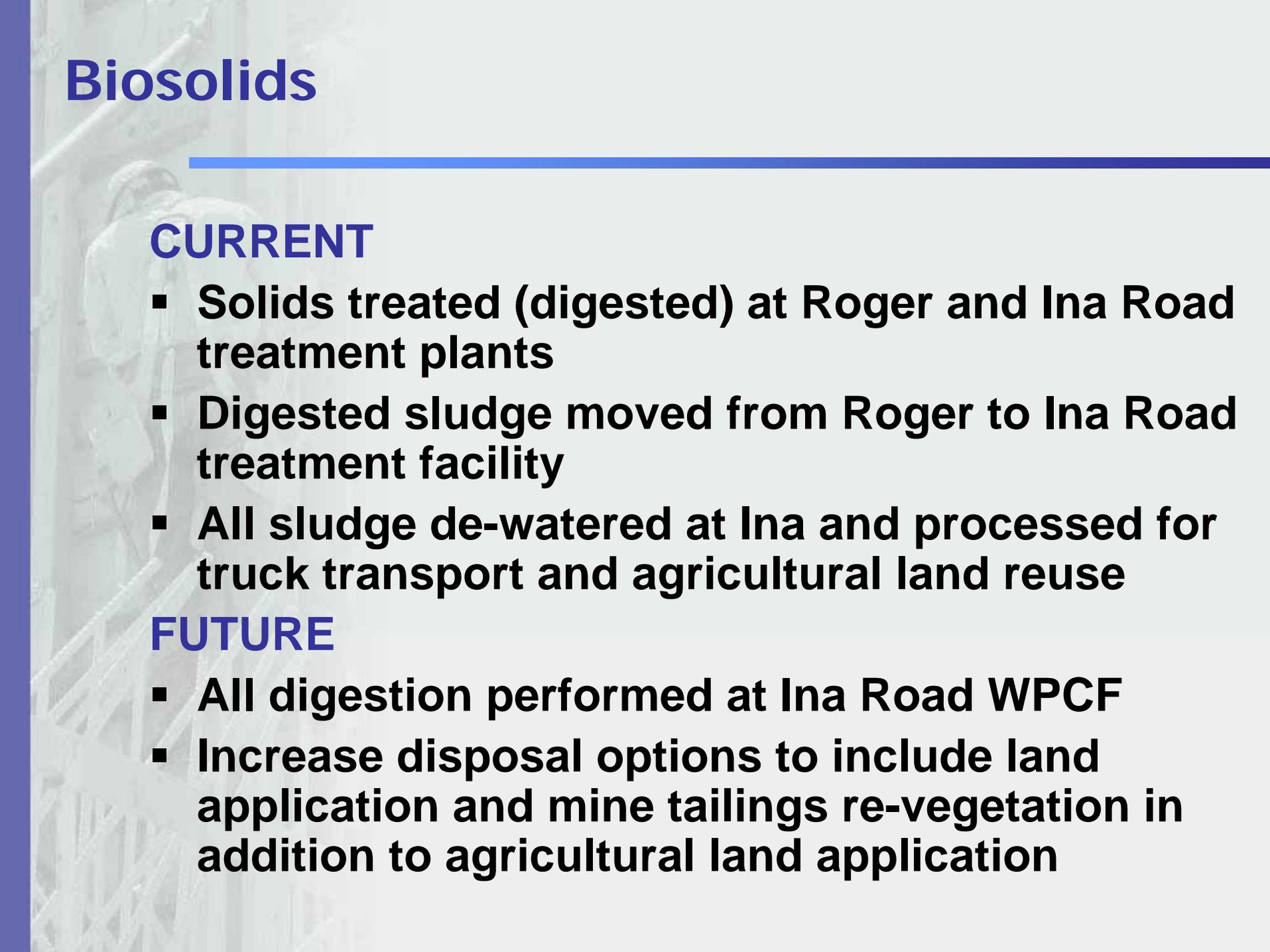
- **The population growth between 2005 and 2030 is expected to add approximately 18.3 MGD at the outlying facilities**
- **Flow growth forecast principally for Avra Valley, Marana, and Southlands areas**
- **Corona de Tucson is included in the Southlands area**
- **Financial implications**

Effluent Reuse



- **68,254 acre feet of effluent was produced in 2004**
- **Pima County's allotment (after Southern Arizona Water Rights Settlement Act allotment) was 4005 acre feet**
- **Pima County currently utilizes its allotment to irrigate Arthur Pack Golf Course, other County parks and Ed Pastor Kino Environmental Restoration Project**
- **Effluent reuse is expected to follow scenario in the City of Tucson Water Plan: 2000-2050**

Biosolids



CURRENT

- Solids treated (digested) at Roger and Ina Road treatment plants
- Digested sludge moved from Roger to Ina Road treatment facility
- All sludge de-watered at Ina and processed for truck transport and agricultural land reuse

FUTURE

- All digestion performed at Ina Road WPCF
- Increase disposal options to include land application and mine tailings re-vegetation in addition to agricultural land application

Capital Improvement Program



PCWMD 2006 Metropolitan
Area Facility Plan



Capital Improvement Program – Fiscal Overview

Twenty-year CIP: \$1.4 billion in 2005 dollars

2025 projected County population: 1.37 million

CIP program funding sources:

- **1997 Bond Authorization – \$105 million**
- **2004 Bond Authorization – \$150 million**
- **Future Bond Authorizations –
2008 (\$245 – \$355 million), 2012, 2016, 2020**
- **System Development Funds (connection fee/
user fee funds allocated to capital projects)**
- **Supporting rates**

Capital Improvement Program – Major Evaluations

- **Regionalization Study of Metropolitan Treatment Facilities**
 - **To determine the best configuration of facilities and allocation of resources for the Roger Road and Ina Road facilities:**
 - **Metropolitan treatment capacity**
 - **Rehabilitation needs**
 - **Effluent denitrification regulatory requirements**
 - **Flow management**
 - **Regional reuse needs**
 - **Biosolids handling/utilization issues**
 - **Consultant agreement being negotiated**

Capital Improvement Program – Major Evaluations

- **System-wide Odor Control Study**
 - Consultant selection process underway
- **Results of both studies will lead to a future amendment to the Facility Plan**

Capital Improvement Program – Major Considerations

- **Address major conveyance capacity needs**
- **Develop conveyance system rehabilitation program and institute a proactive CMOM program**
- **Rehabilitate or decommission Roger Road WWTP**
- **Implement effluent nutrient removal facilities at Ina Road and Roger Road**
- **Upgrade and expand Ina Road WPCF to a regional facility**
- **Add 12.5 MGD additional capacity to Ina Road WPCF in 2026**
- **Address capacity issues at the outlying facilities**
- **Implement a system-wide odor control program**
- **Financial considerations**

Facility Plan – A Living Document

- **Update regional and specific basin forecasts as PAG issues new population projections**
- **Review and upgrade long-range plan continuously and periodically publish formal updates**

Community Coordination

- Presentations Made
- Issues and Outcomes



Presentations Made

- **City of South Tucson**
- **City of Tucson, Department of Urban Planning and Design**
- **City of Tucson Rio Nuevo Project**
- **Coalition for Sonoran Desert Protection**
- **Cortaro Marana Irrigation District**
- **Flowing Wells Irrigation District**
- **Marana Water Utility**
- **Metropolitan Domestic Water Improvement District**
- **Oro Valley Water Utility**
- **PAG Environmental Planning Advisory Committee**
- **PAG Watershed Planning**
- **Southern Arizona Home Builders Association (SAHBA)**
- **Town of Marana**
- **Town of Sahuarita**
- **Tucson Audubon Society**
- **Tucson Regional Economic Organization (TREO)**
- **Tucson Water**

Issues/Outcomes – Regional Coordination of Population/Flow Data

- **Three-way reconciliation of population and flow data with Tucson Water and PAG**
- **All now use updated and modified TAZ data**
- **Established common basis for gallons per capita per day (GPCD) factor and effluent volume calculations**
- **Identified planning boundaries**
- **All water/wastewater planning (PAG 208 Plan Revision, Tucson Water 2050 Plan and Facility Plan Update) will share the same data and projections**

Issues/Outcomes – External

- **Initiated joint planning with Tucson Water and City Planning for water/wastewater infrastructure for HAMP area**
- **Created better understanding of water/wastewater planning processes and specific issues/constraints for each agency**
- **Arranged with PAG to coordinate final drafts, community outreach and institutional endorsements for Facility Plan Update and PAG 208 Plan Revisions**

Going Forward

Endorsing the Facility Plan



PCWMD 2006 Metropolitan
Area Facility Plan

