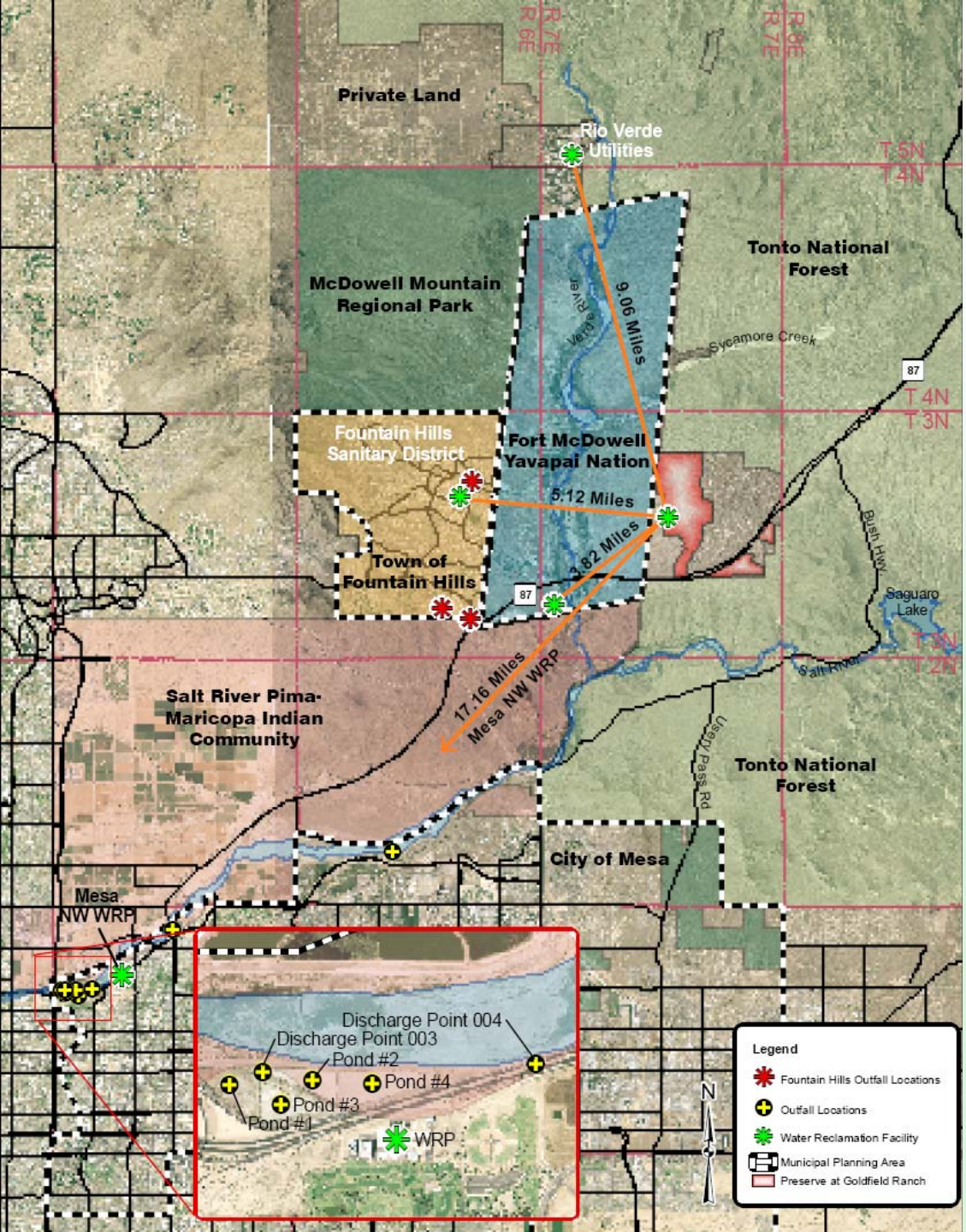
MAG 208 Water Quality Management Plan
Small Plant Review and Approval
for

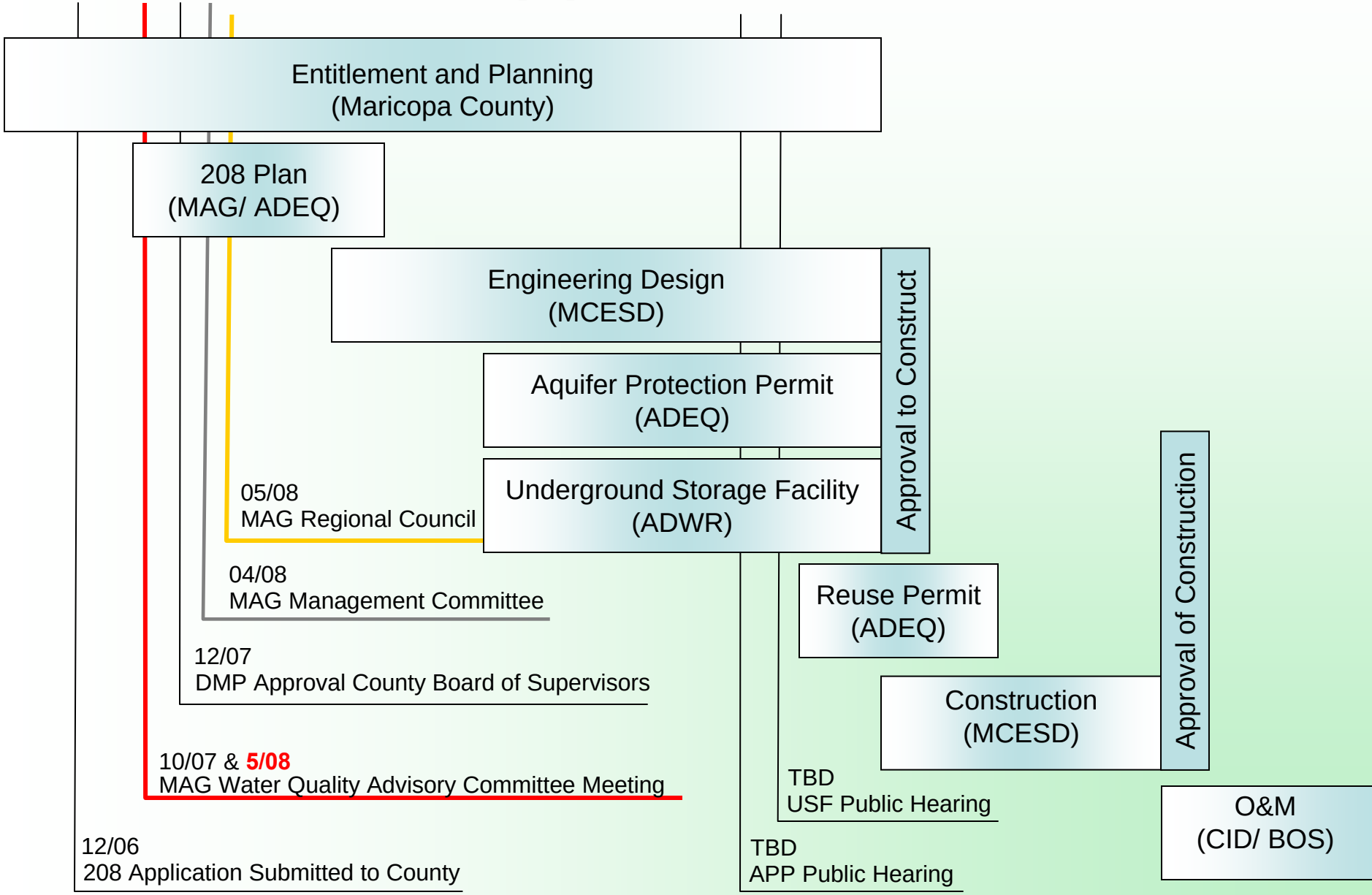
The Preserve at Goldfield Ranch Water Reclamation Facility

May 28, 2008



Expanded Proximity Map

WRF Approval Process



Summary of Modifications in Response to FMYN Comments

- ✓ Provided Site Plan;
- ✓ Increased O&M Costs;
- ✓ Expanded Service Area to include Parcel B and offsite parcels;
- ✓ Modified application to allow for reuse to the maximum extent feasible; and
- ✓ Demonstrated that other concerns would be addressed through the APP and USF processes, as is customary.

Summary of Modifications in Response to SRP-MIC Comments

- ✓ Committed to meet surface water quality standards;
- ✓ Included provisions of redundancy for power and holding capacity in the event of an emergency;
- ✓ Expanded Service Area to include Parcels C and D;
- ✓ Clarified the limited ability for commercial development and specific uses identified within the approved Amendment to the DMP;
- ✓ Modified application to clarify financial assurances that would be required by the CID;
- ✓ Included additional provisions for qualifications of ultimate operator;
- ✓ Committed to increase sizing of basic infrastructure of lift stations, force mains and gravity sewer to allow for Regional Planning; and
- ✓ Confirmed responsibilities of CID.

Goldfield Preserve Improvement District (CID)

"...that said district is intended for the… **purpose of acquiring, operating and maintaining** domestic water and wastewater facilities…..further declares that said district is now established under the name of **GOLDFIELD PRESERVE IMPROVEMENT DISTRICT**, by which name it shall be known in all proceedings hereafter."

Order Establishing Goldfield Preserve Improvement District - C-64-08-018-0-00 ADM 4302 - August 8, 2007 - Maricopa County Recorders Office Document No. 20070935579

208 Small Plant Criteria for Technical Sufficiency

Section 4.5.2(2) – Outside of Municipal Planning Area:

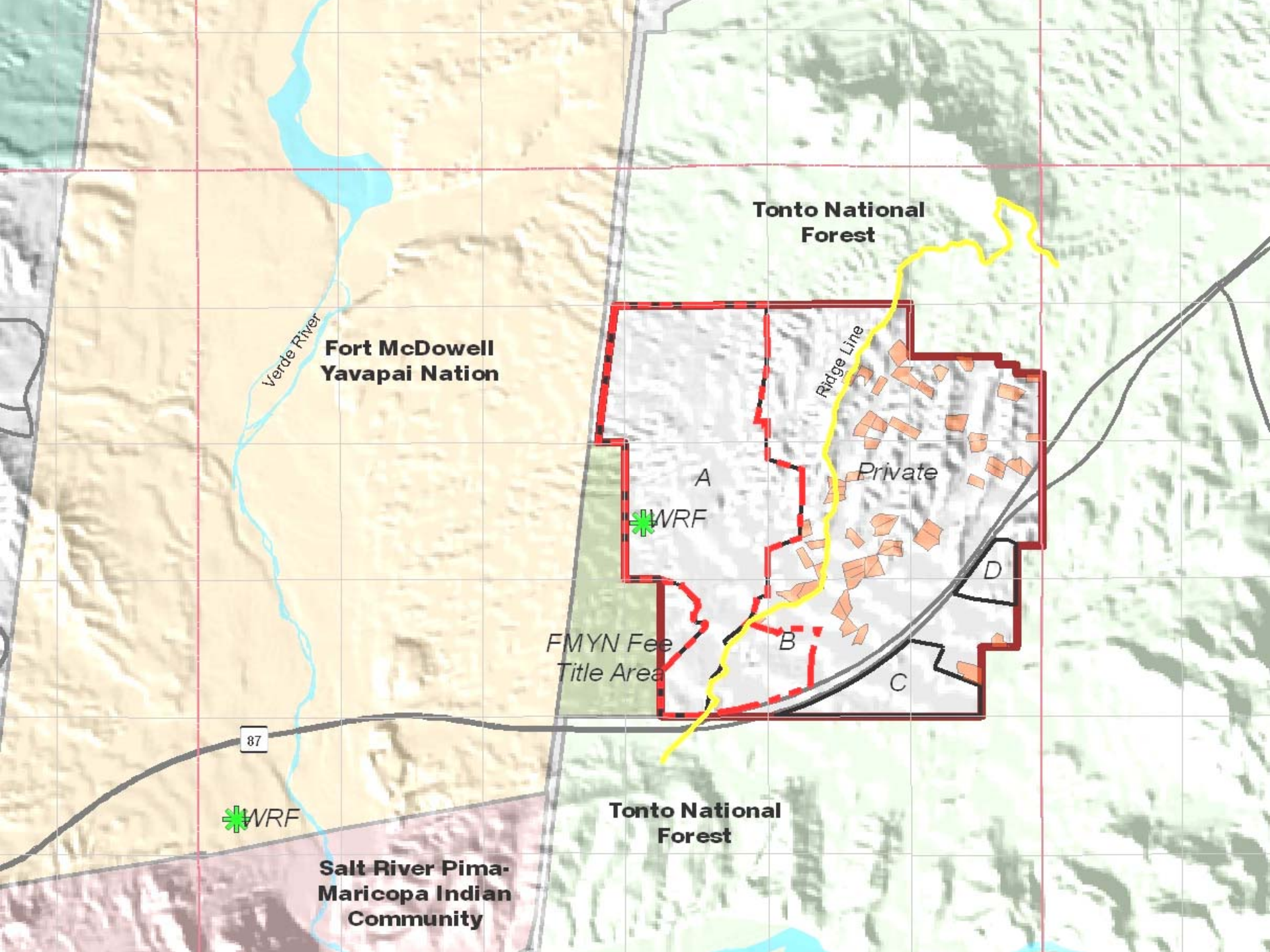
To be approved for construction, a small wastewater treatment plant (2.0 MGD ultimate capacity or less) not otherwise mentioned in the MAG 208 Plan and located outside a Municipal Small Plant Planning Area must:

1. *Have the review and comment of any municipality whose Small Plant Planning Area is within three miles of the proposed plant location or service area;*
2. *Not adversely affect the operation or financial structure of existing or proposed wastewater treatment plants;*
3. *Be consistent with State and County regulations and other requirements;*
4. *Be otherwise consistent with the MAG 208 Plan; and,*
5. *Be evaluated and approved, or modified by Maricopa County Environmental Services Department (MCESD).*

The Preserve at Goldfield Ranch

CMX

Southwest Ground-water Consultants, Inc.


Tonto National Forest
Verde River
Fort McDowell Yavapai Nation
Ridge Line
A
Private
WRF
D
FMYN Fee Title Area
B
C
87
WRF
Tonto National Forest
Salt River Pima-Maricopa Indian Community

HYDROSYSTEMS (HSI) REPORT

- Author is Steven Skotnicki R.G. – Also author of “Subsurface Geologic Investigation of Fountain Hills and the Lower Verde River Valley, Maricopa County, Arizona” AGS CR-030B
- Four basin-fill units (deepest to shallowest) – pgs 2 & 3
  - Needle Rock Formation (lower aquifer)
  - Pemberton Ranch Formation (aquiclude/confining layer)
  - Younger basin-fill sedimentary deposits (upper aquifer)
  - Quaternary stream/piedmont alluvium (upper aquifer)
- Units are comparable to the UAU, MAU and LAU in the East Salt River Valley basin and other southern AZ basins – pg 3

HYDROSYSTEMS (HSI) REPORT

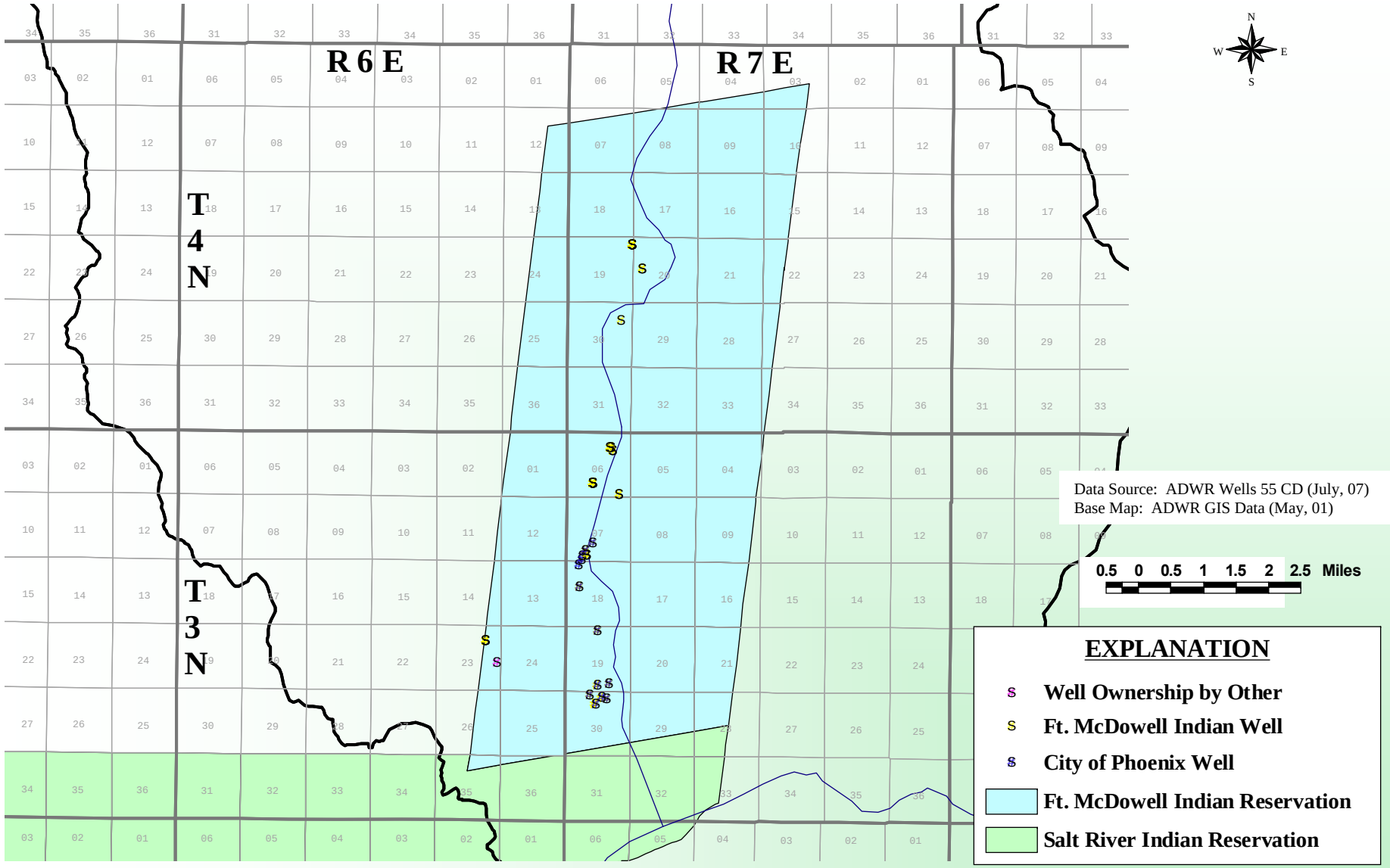
- Pemberton Ranch Formation behaves as an aquiclude and separates the lower and upper aquifer system throughout a large part of the basin, may be absent in the mountain front edges – pgs 2 & 6
- Pumping tests in Fountain Hills and at Goldfield Ranch indicate that the Needle Rock Formation (lower aquifer) is confined – pg 6
- Insufficient good-quality data to map Pemberton Ranch Formation within the study area (Goldfield Ranch) – only 3 wells – pg 7
  - There are now five wells with good-quality logs – all show the presence of the Pemberton Ranch Formation

HYDROSYSTEMS (HSI) REPORT

- Recommend more drilling, pump testing and geophysical surveys on Goldfield Ranch to better define extent of Pemberton Ranch Formation – pg 8
  - Drilling and testing will be done for APP and USF
- Will storm water and irrigation (reuse) water contaminate the upper aquifer? – *Probably not, fine grained sediments will provide SAT* – pg 9
- Is the Fountain Hills subbasin in hydraulic connection with the East Salt River Valley subbasin (where the SRPMIC water wells are located)? – *No, it is not* – pg 9

HSI REPORT SUMMARY

- Clay layer (Pemberton Ranch Formation) exists and is widespread, except perhaps near the mountain fronts
- Upper aquifer not likely to be contaminated by runoff or reuse water
- No hydrologic connection between Goldfield Preserve aquifer and SRPMIC water wells



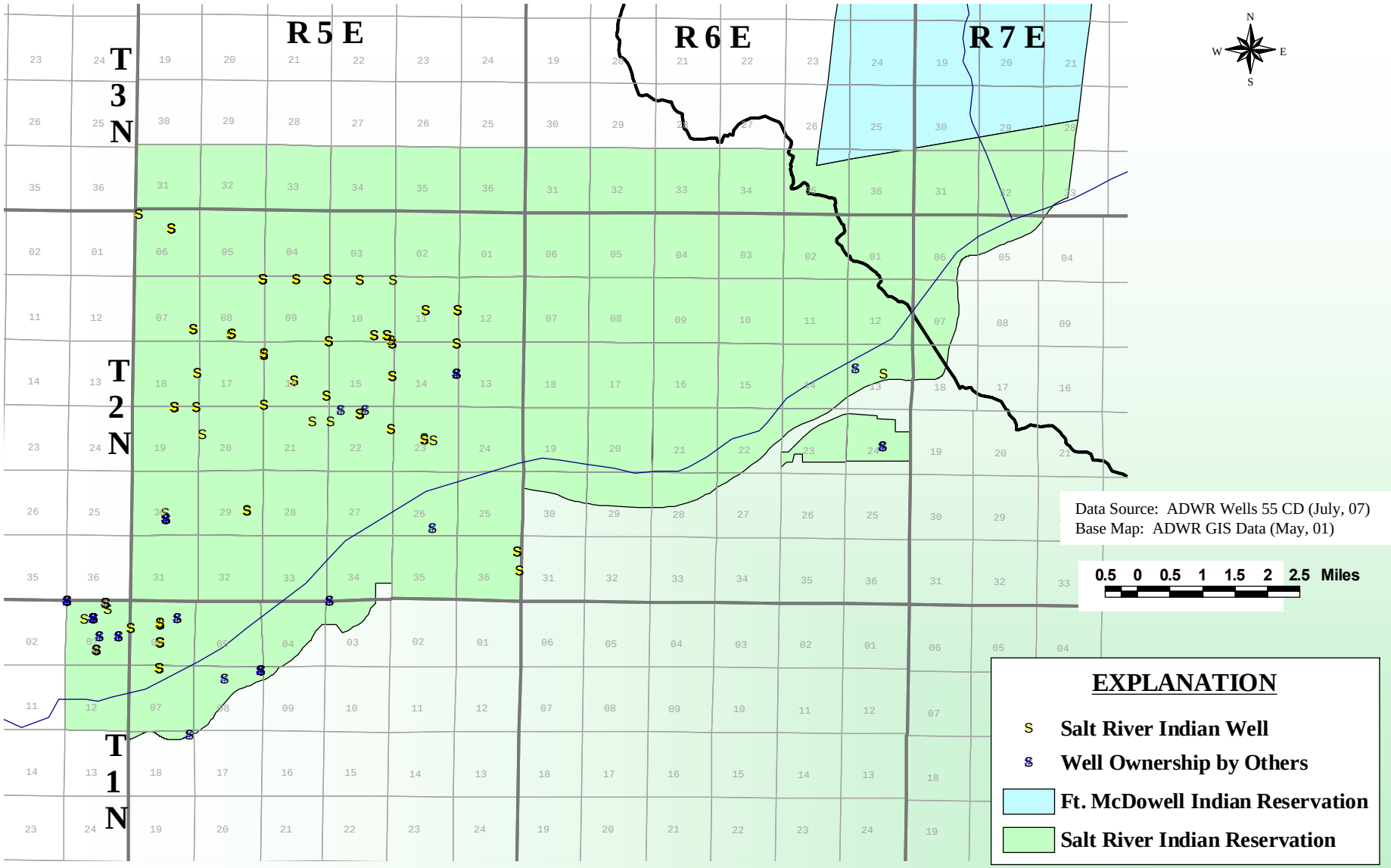
Southwest Ground-water Consultants, Inc.

April 29, 2008 Project B.1193

WELL LOCATION MAP

Ft. McDowell Indian Reservation, Maricopa County, Arizona

Figure 14



Southwest Ground-water Consultants, Inc.

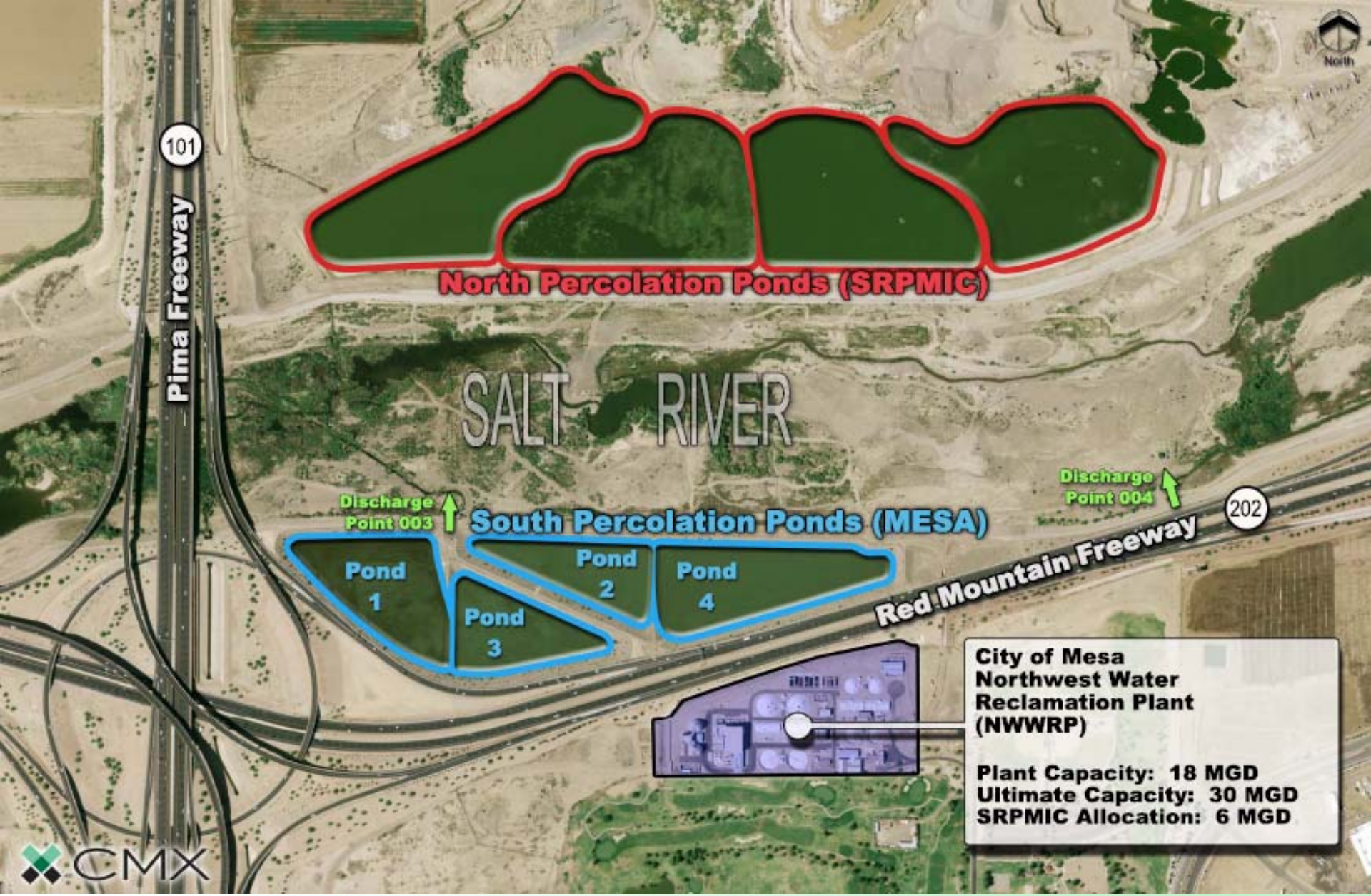
April 29, 2008 Project B.1193

WELL LOCATION MAP

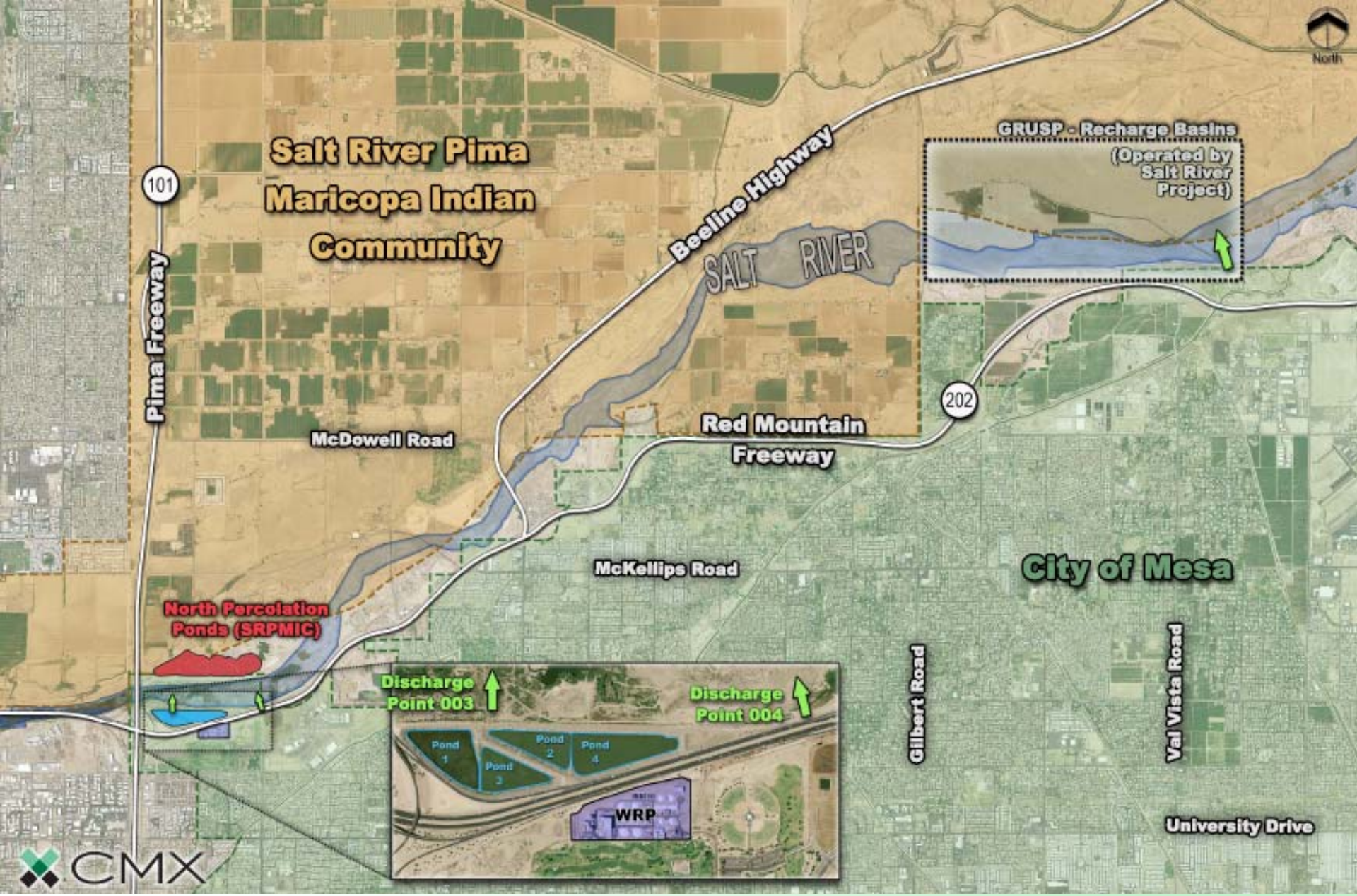
Salt River Indian Reservation, Maricopa County, Arizona

Figure 15

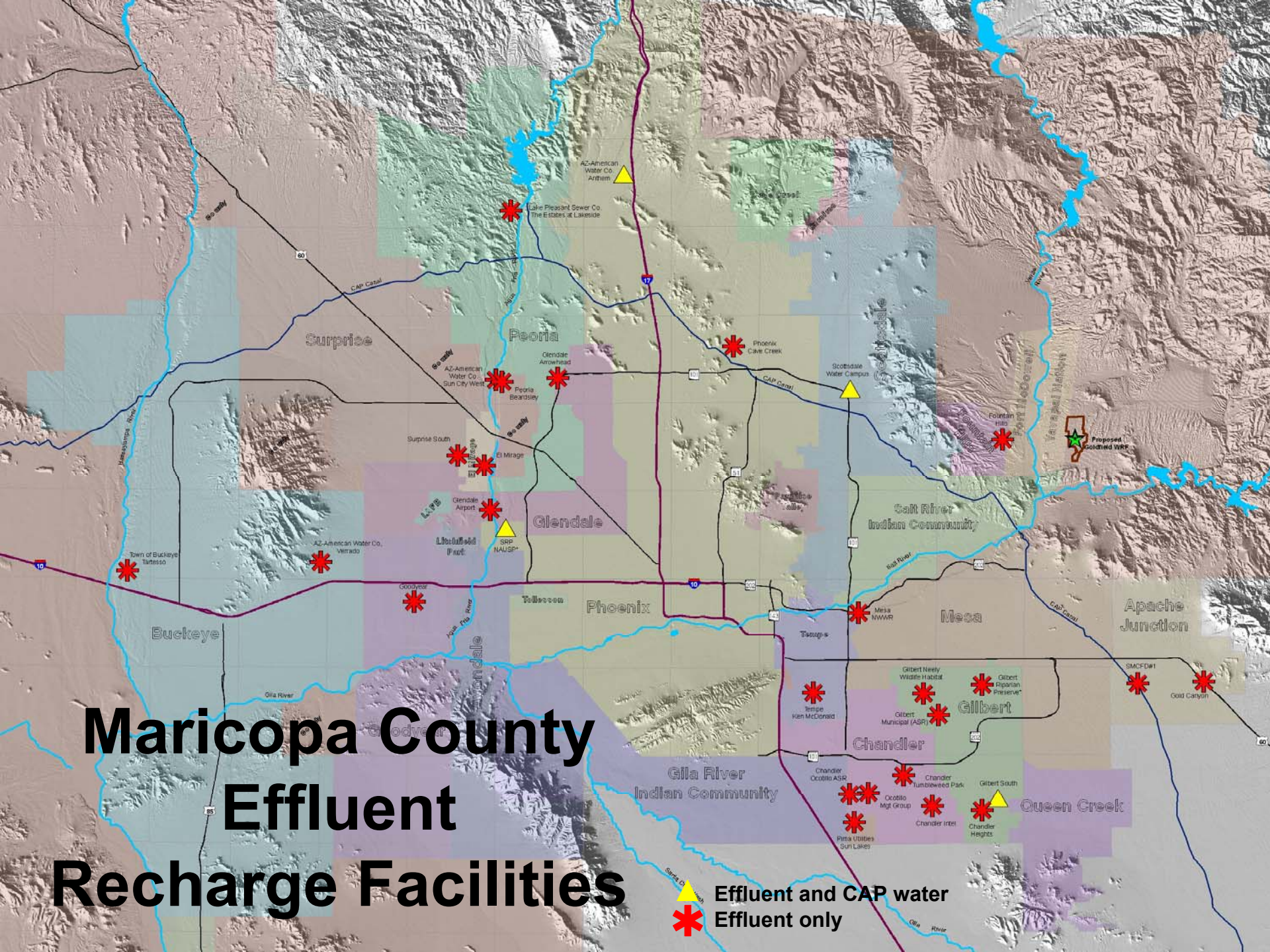
Mesa & SRPMIC Percolation Ponds



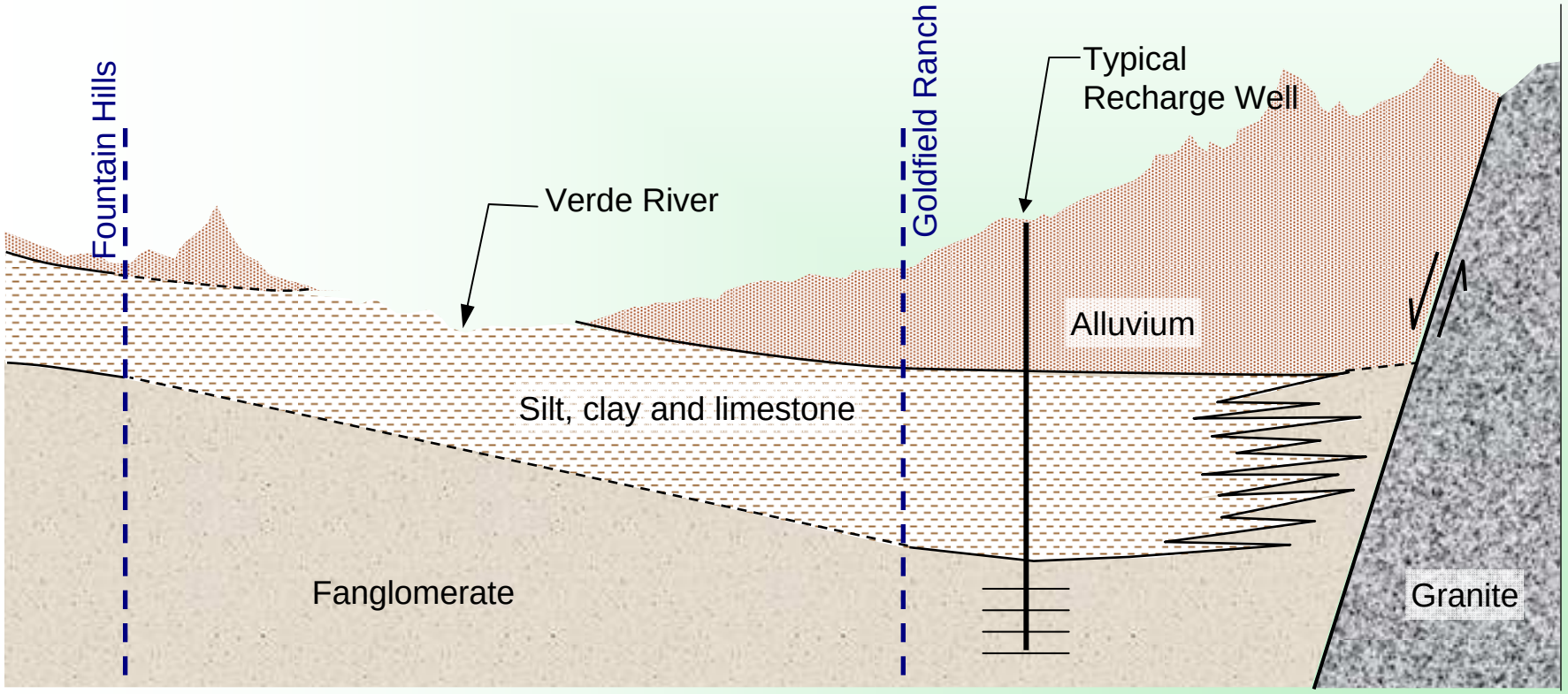
NWWRP Plant & Percolation Ponds



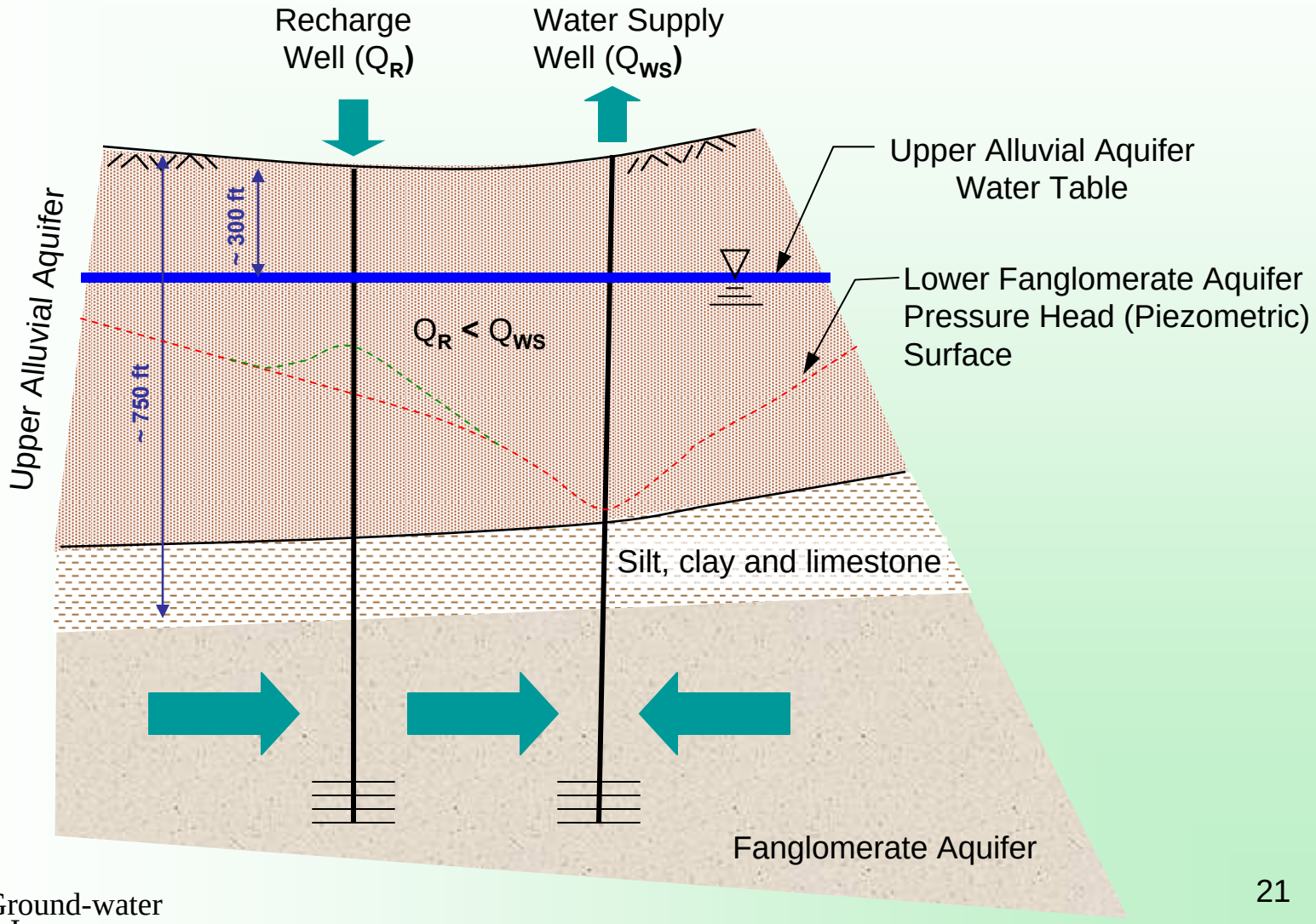
GRUSP Recharge Basins


Maricopa County
Effluent
Recharge Facilities
Effluent and CAP water
Effluent only
AZ-American Water Co. Anthem
Lake Pleasant Sewer Co. The Estates at Lakeside
Surprise
Peoria
Glendale Arrowhead
AZ-American Water Co. Sun City West
Peoria Beardsley
Phoenix Cave Creek
Scottsdale Water Campus
Fountain Hills
Proposed Goldfield WRF
Surprise South
El Mirage
Glendale Airport
SRP NAUSP*
Glendale
Litchfield Park
AZ-American Water Co. Verrado
Town of Buckeye Tartesso
Goodyear
Tolleson
Phoenix
Salt River Indian Community
Mesa NWWR
Mesa
Apache Junction
Buckeye
Tempe
Tempe Ken McDonald
Gilbert Neely Wildlife Habitat
Gilbert Riparian Preserve*
Gilbert Municipal (ASR)
Gilbert
SMCFD#1
Gold Canyon
Chandler
Chandler Ocotillo ASR
Chandler Tumbleweed Park
Ocotillo Mgt Group
Chandler Intel
Gilbert South
Chandler Heights
Pima Utilities Sun Lakes
Gila River Indian Community
Queen Creek
CAP Canal
Gila River

Hyrdogeologic Cross-Section

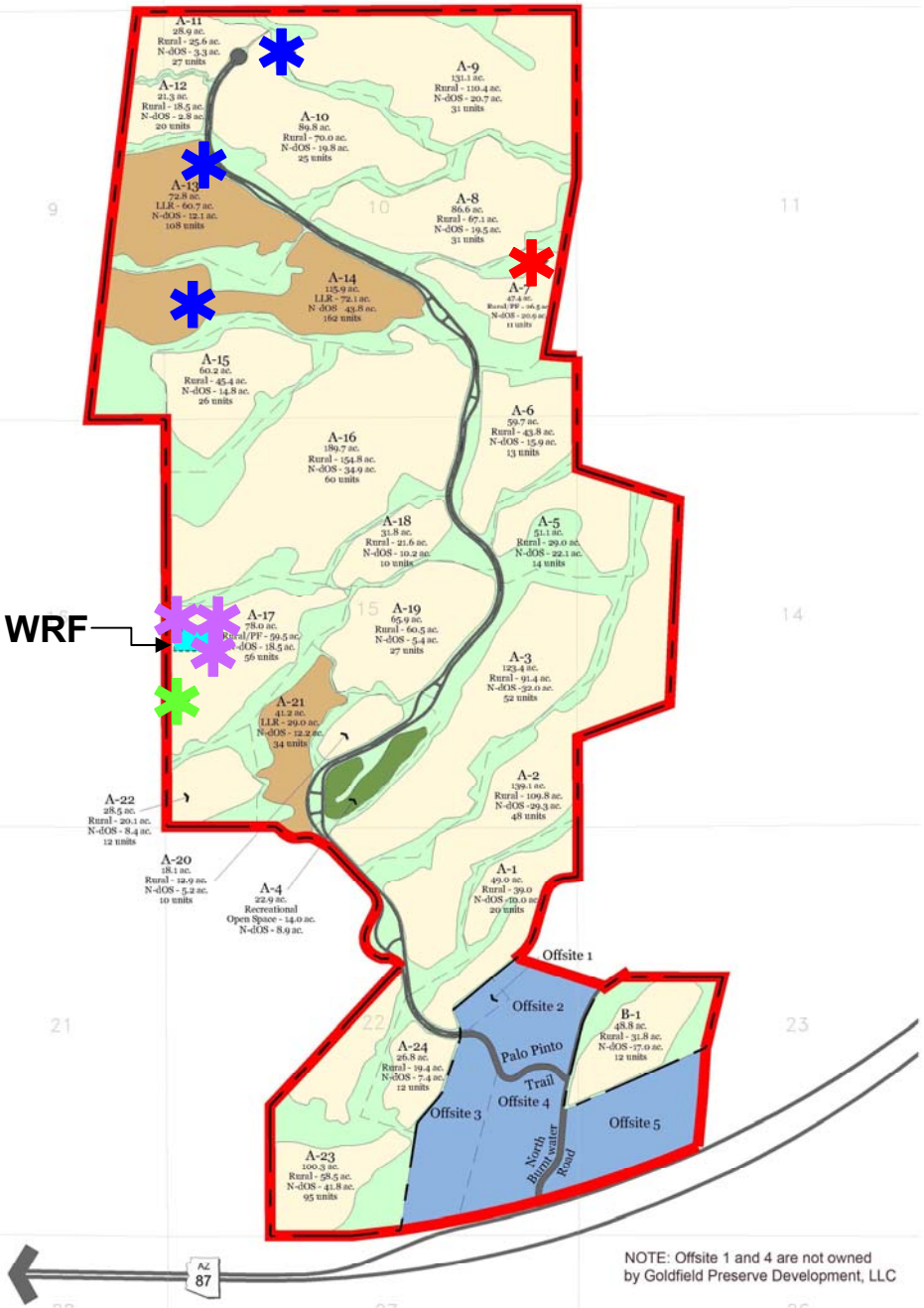


Recharge and Production Aquifer Cross-Section



Well Locations

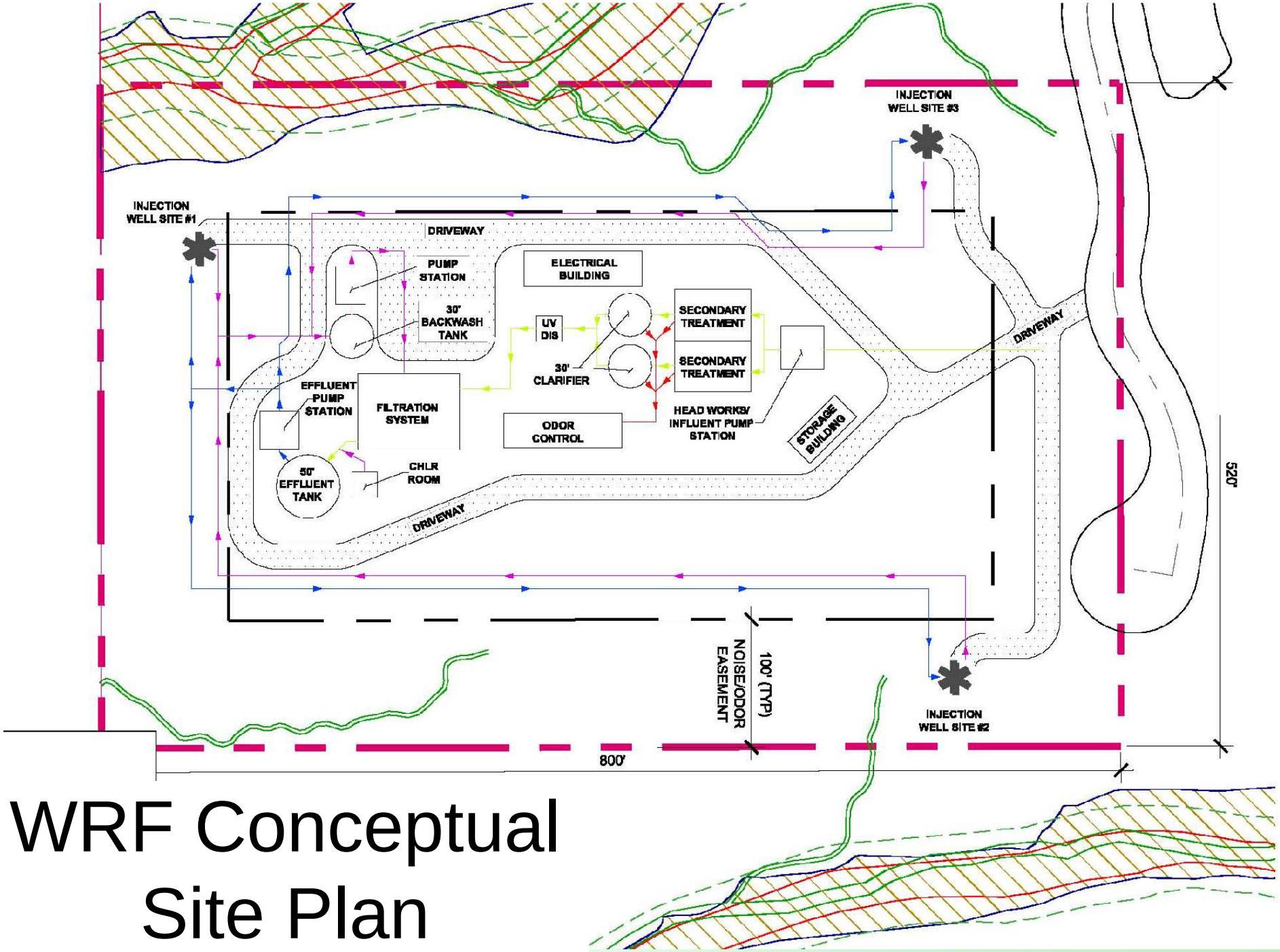
- Separation between recharge wells and water supply wells is approximately 1 mile
- A monitoring well will be installed down-gradient of the recharge wells



Groundwater Management Act
Safe Yield by 2025

[A] groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area. ARS §45-561(12).

Responsible development dictates recharge



WRF Conceptual Site Plan

Sludge Treatment

- Alternatives for sludge treatment include:
  - Haul undigested sludge
  - Sludge digesting (equipped with aeration)
  - Sludge thickening (belt press)
  - Regulated by ADEQ under the Aquifer Protection Permit (AAC R18-9-1001 *et seq.*)

Anticipated Commercial Wastewater

- Wastewater flow from potential restaurant less than 1 or 2 percent of total flow to WRF
- Grease trap anticipated as part of WRF design
- Grease trap anticipated at restaurant
- Wastewater flow from potential resort/spa including restaurant less than 13 percent of total flow to WRF
- Removal of detergents part of facility design
- Anticipated influent water quality consistent with MCESD comments due to low flow fixtures

Comparison of Financial Documentation in Approved 208 Plan Amendments

		Financial Statement Provided	Financial Backing by Municipality	WWTP Construction Funding	WWTP Operation Funding
2002	**Quintero Golf and Country Club**	No – Text statement indicating developer funding construction	Yes	Developer	City of Peoria (user fees)
2003	**Desert Oasis**	Yes, but not for entity funding WWTP – Equity Assets $20,594,000	No	Developer	Arizona-American Water Company (user fees collected by City of Surprise)
2004	**Ruth Fisher School WWTP**	No – Letter from school indicating sufficient capital	No	Developer	Contracted Certified Operator
2006	**Estates at Lakeside**	Yes – Equity Assets $100,000	Yes	Developer	City of Peoria (user fees)
2007	**Scorpion Bay WWTP**	Yes – Letter from M&I Bank funding 80% of construction	No	Developer	Owner (user fees)
2008	**Preserve at Goldfield Ranch WRF**	Yes – Equity Assets $ 4,862,255	No	Developer	Contracted Certified Operator (user fees)

Comparison of Operation & Maintenance Costs in Approved 208 Plan Amendments

	MAG 208 Plan	WRF Capacity (MGD)	Annual Operation & Maintenance Cost	Cost per gallon
2002	**Quintero Golf and Country Club**	0.15	$210 (cited in report as $1.40/1,000 gallons)	$0.0014
2003	**Desert Oasis**	0.35	Not Provided	Unknown
2004	**Ruth Fisher School WWTP**	0.042	$93,260	$0.0061
2006	**Estates at Lakeside**	0.12	Not Provided	Unknown
2007	**Scorpion Bay WWTP**	0.035	$121,500 at Year 5 (buildout)	$0.0095
2008	**Preserve at Goldfield Ranch WRF**	0.40	$250,000-$300,000	$0.0017-$0.0021

Note: The impact of different treatment technologies, location, terrain and presence of existing facilities are not factored into this comparison.

HDR Report Issue & Response

1.3.4 Potential Water Quality Impacts from Injection

Issue: The SRP-MIC Report suggests that a hydrological connection may exist between two aquifers in the region. And, if such a connection exists, the production of Class A+ effluent water would not be sufficient to satisfy SRP-MIC concerns related to artificial recharge.

Response:

- Although not required to do so, we commit to meet water quality standards for discharge to this segment of the Verde River (AAC R18-11-123).

HDR Report Issue & Response

1.3.1 Plant Location and Local Features

Issue: Unimpeded wastewater overflows from the proposed plant could reach the river within 6 to 18 hours of plant failure and potential failure of the power source to the proposed lift stations.

Response:

- As a part of the APP process, we are committed to provide appropriate provisions of:

  (i) redundant power and retention for the treatment facility and the sewage lifts stations throughout the community.

  (ii) total plant holding capacity adequate to handle emergency loads equal to two times the average daily operating level of the plant.

- Maricopa County Subdivision Ordinance requires review of all lift station designs and requires a redundant power supply to convey flows.

Emergency Plan & Redundancy

- Contingency plan required under Aquifer Protection Permit (AAC R18-9-A204)
  - Stormwater management (SWPPP) and Best Management Practices, such as erosion control, dust control, sediment control and good housekeeping/ materials management
  - Monitoring and sampling plan
  - Reporting requirements
  - Catastrophic failure contained onsite
- Redundancy factored into engineering design
  - Design operating capacity will be two times the average day flow
  - Redundant recharge wells
  - Standby generator

HDR Report Issue & Response

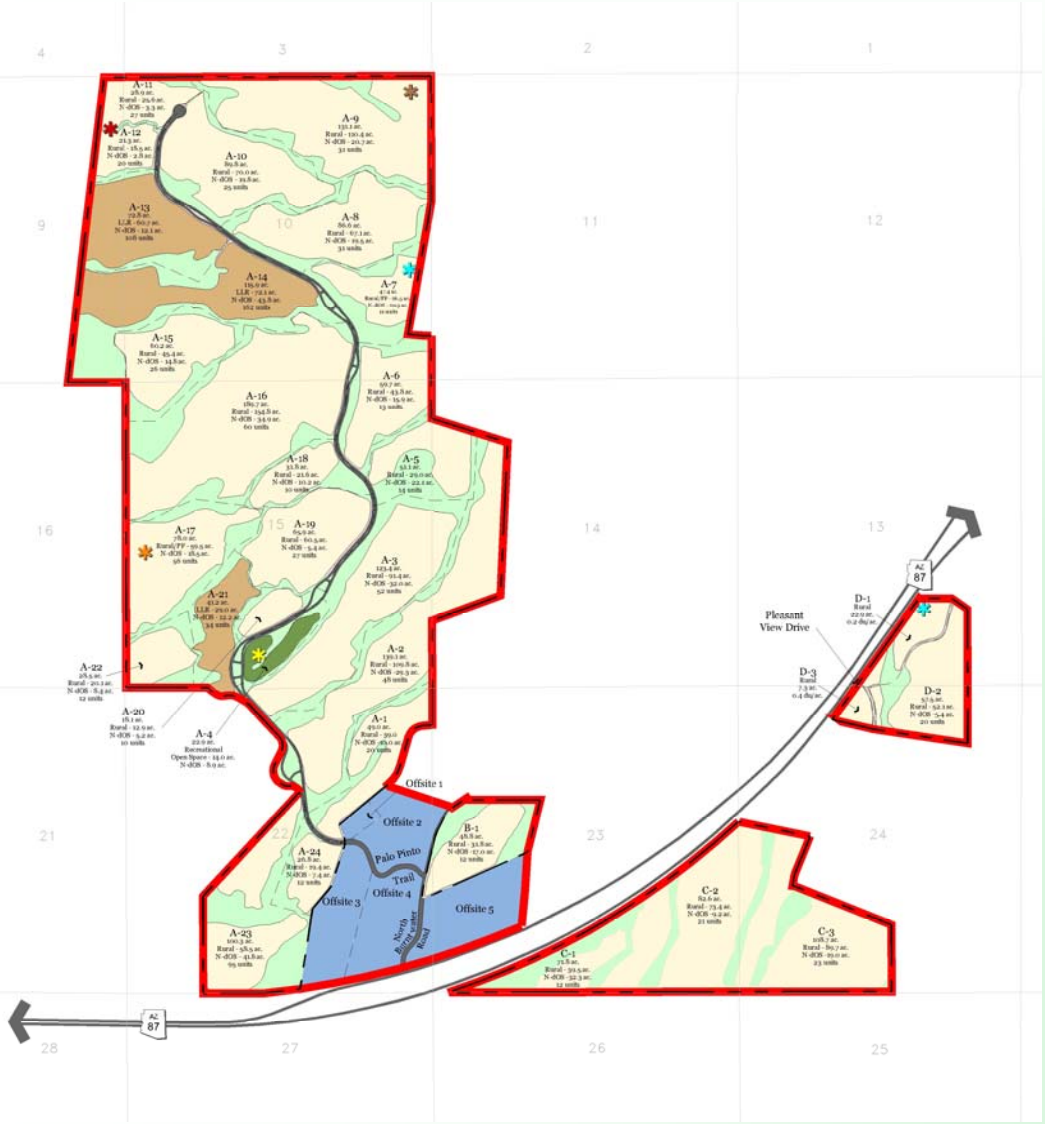
1.3.2. Service Area

Issue: The SRP-MIC Report suggests the 208 Amendment Service Area may be eligible for expansion to serve the regional wastewater treatment needs of additional development within the entire area.

Response:

- The Service Area of the 208 Amendment will be expanded to include Parcels C and D.
- There is sufficient property both within and surrounding the plant site to accommodate an expansion.

Responsive Modifications



- Increase in service area from 1,680 acres to 2,253 acres
- Population served of 3,392 persons
- Maximum WRF capacity of 0.4 MGD sufficient
- Effluent recharge and reuse to the maximum extent feasible

Responsive Modifications

Document	Gross Area (acres)	Dwelling Units	Population	Average Day Flow (MGD)
MAG 208 Plan Amendment (October 2007)	1,679.6 (Parcel A only)	983 (with potential spa/resort)	3,146	0.392 (based on 100 gpcd* and gross acreage)
MAG 208 Plan Amendment (March 2008)	1,902.1 (Parcels A & B and offsite areas)	1,026 (with potential spa/resort)	3,283	0.367 (based on 100 gpcd* and net acreage)
MAG 208 Plan Amendment (May 2008)	2,252.9 (Parcels A, B, C & D and offsite areas)	1,060 (with potential spa/resort)	3,392	0.377 (based on 100 gpcd* and net acreage)

* 80 gallons per capita per day (gpcd) used for pipeline design per AAC
* 100 gpcd used for treatment plant design per County requirements

HDR Report Issue & Response

1.3.3 On-Site Treatment

Issue: The SRP-MIC Report suggests that there is a high likelihood of the development of commercial property along Hwy 87 within the Parcels C and D and there is concern that such commercial property would be served by septic systems.

Response:

- As referenced in the response to Issue 1.3.2, we have committed to include Parcels C and D within the 208 Amendment Service Area.
- Commercial uses are limited by the approved Amendment to the Development Master Plan.
- Maricopa County does not allow for the development of any commercial property on septic systems.

HDR Report Issue & Response

1.3.5 Owner/Operator Financial Capability

Issue: The SRP-MIC Report suggests that the on-going operation and maintenance of the plant and related infrastructure will be “relatively expensive for a CID”. The SRP-MIC Report further acknowledges that while the Developer is responsible to supplement the financial security of the CID, the length of time for such an obligation has not been provided.

Response:

- The Maricopa County Board of Supervisors, serving as the Board of Directors for the CID, will require financial assurances and supplements necessary to sustain operation and maintenance on an on-going basis.

- An operator will be hired who has proven experience associated with our treatment and injection recharge systems and will live within 3 hours of the plant site per the Maricopa County Health Code.

Mounding & Biological Clogging

- Mounding
  - Premise of USF permit is demonstration of no unreasonable harm
  - USF permit application requires mounding analysis to estimate area of potential impact
  - Quarterly measurement and reporting of water levels including alert levels
  - Mounding is an issue when water levels approach within 10 to 20 feet of the ground surface
  - Depth to groundwater is approximately 300 feet
  - Recharge will be to lower, confined aquifer
- Biological clogging
  - Minimized through filtration, disinfection and proper operation and maintenance (including backwash)
  - Common practice – Fountain Hills, Scottsdale, Chandler, et al. recharge

Target Effluent Concentrations

	Required Effluent Concentration (AAC Title 18, Chapters 9 and 11)	Design Goal Effluent Concentration
Total suspended solids (TSS), mg/L	30	10
Biological oxygen demand (BOD), mg/L	30	10
Total nitrogen, mg/L as N	10	5
Total phosphorus, mg/L as P	NA	1 (85% efficiency)

Requirements for Individual Aquifer Protection Permit

- Technical engineering design documents (AAC R18-9-A202)
- Financial capacity demonstration (AAC R18-9-A203)
- Contingency plan (AAC R18-9-A204)
- Alert levels, discharge limitations and acceptable quality levels (AAC R18-9-A205)
- Monitoring requirements (AAC R18-9-A206)
- Reporting requirements (AAC R18-9-A207)
- Compliance schedule (AAC R18-9-A208)
- Temporary cessation, closure and post-closure (AAC R18-9-A209)

Requirements for Underground Storage Facility Permit

- Technical capability to construct and operate the USF
- Financial capability demonstration
- Hydrological feasibility
- Project will not cause unreasonable harm
- Requires Aquifer Protection Permit
- A.R.S. § 45-811.01(C)

Requirements of Aquifer Protection Permit – Individual Permits

- Technical engineering design documents (AAC R18-9-A202)
- Financial capacity demonstration (AAC R18-9-A203)
- Contingency plan (AAC R18-9-A204)
- Alert levels, discharge limitations and acceptable quality levels (AAC R18-9-A205)
- Monitoring requirements (AAC R18-9-A206)
- Reporting requirements (AAC R18-9-A207)
- Compliance schedule (AAC R18-9-A208)
- Temporary cessation, closure and post-closure (AAC R18-9-A209)

APP Technical Requirements

(AAC R18-9-A202)

- Topographic map
- Facility site plan
- Facility design documents
- Proposed facility discharge activities
- Best Available Demonstrated Control Technology (BADCT)
- Contingency plan
- Hydrogeologic study – define discharge impact area
- Alert levels, discharge limitations, monitoring requirements, compliance schedules and temporary cessation
- Closure and post-closure plans
- Additional information as required by ADEQ

APP Financial Requirements

(AAC R18-9-A203)

- Financial capability for:
  - Construction
  - Operation and maintenance
  - Closure
  - Post-closure care
- Proof of financial assurance mechanism
- Permit amendment required if financial assurance changes
- Maintain recordkeeping

APP Contingency Plan Requirements

(AAC R18-9-A204)

- Contingency plan includes:
  - Actions to be taken if a discharge violation occurs
  - 24-hour emergency response measures
  - Name of emergency response coordinator
  - Contact persons
  - Procedures, personnel and equipment to mitigate unauthorized discharges

APP Alert Levels, Discharge Limitations and Acceptable Quality Levels

(AAC R18-9-A205)

- ADEQ prescribes:
  - Aquifer Water Quality Standards
  - Acceptable Quality Levels
  - Discharge limitations
  - Permit conditions
  - Alert levels
  - No endangerment to the public health or environment

APP Monitoring Requirements

(AAC R18-9-A206)

- Monitoring requirements to be determined by ADEQ
- In depth recordkeeping of each sample
- Monitoring record for each measurement made
- Maintain monitoring records for a minimum of 10 years

APP Reporting Requirements

(AAC R18-9-A207)

- Notification – within 5 days of any permit violation
- Written report to ADEQ – within 30 days
- Notification – within 5 days of bankruptcy or other federal or state environmental violations

APP Compliance Schedule Requirements

(AAC R18-9-A208)

- Compliance schedule considers:
  - Character and impact of discharge
  - Nature of construction
  - Number of persons potentially affected by discharge
  - Current state of treatment facility
  - Age of the facility

APP Temporary Cessation, Closure and Post-closure Requirements

(AAC R18-9-A209)

- Temporary Cessation
  - Notify ADEQ before cessation of 60 days or more
  - Conditions specified
- Closure
  - Notify ADEQ of intent to cease operations
  - Extensive closure plan
- Post-Closure
  - Detailed post-closure monitoring and maintenance plan

Requirements of Underground Storage Facility Permit

Slide 1 of 8

- USF Site and Facility Characteristics (Section III-B)
- Unreasonable Harm and Hydrologic Feasibility Analysis (Section III-C)
- Technical Capability (Section III-D)
- Financial Capability (Section III-E)
- Legal Access (Section III-F)

USF Site and Facility Characteristics

(Section III-B)

- USF site characteristics
  - Narrative description
  - Regional map
  - Location site map
- Facility characteristics
  - Description of wells
  - Description of recharge basins
  - Description of trenches
  - Description of managed and constructed in-channel recharge
  - Define multiple use project, if necessary
  - Description of source water and delivery system
  - Facility map
  - Description of design contingencies

USF Site and Facility Characteristics

(Section III-B) continued

- Geology
  - Geologic characteristics
  - Subsurface geology
  - Available geologic and well driller logs within 1 mile of the site
  - Geophysical logs and boring logs
- Hydrogeology
  - Demonstrate aquifer underlying the recharge site
  - Vertical and horizontal extent, thickness and lithology
  - Vadose zone vertical and horizontal extent, thickness, lithology and potential perching units
  - Current water levels
  - Water level changes – current and historic

USF Unreasonable Harm and Hydrologic Feasibility Analysis

(Section III-C)

- Maximum area of impact and mounding analysis
  - Calculate the maximum area of impact of a one-foot water level rise
  - Perform mounding analysis of the maximum water storage volume
  - Graph anticipated rate of groundwater rise
  - Map one-foot water level rise
  - Narrative supporting maximum area of impact and mounding analysis
- Land and water use inventory
  - Inventory wells within one mile
  - Inventory of structures, land uses, conditions and facilities within the maximum area of impact
- Water quality
  - Project required to comply with APP permit

USF Unreasonable Harm and Hydrologic Feasibility Analysis

(Section III-C) continued

- Unreasonable harm analysis
  - USF design, construction and operation
  - Demonstrate that the maximum amount of water that could be in storage at any one time will not cause unreasonable harm to the land or other water users
  - Water storage at the USF governed by an APP and will not cause or contribute to a violation of state aquifer water quality standards
- Hydrologic feasibility
  - Facility designed, maintained, monitored and operated for optimal recharge efficiency
  - No insurmountable barriers to recharge
  - Storage of the maximum amount of water that could be in storage at anyone time is hydraulically feasible

USF Unreasonable Harm and Hydrologic Feasibility Analysis

(Section III-C) continued

- Monitoring plan
  - Monitor wells
  - Measure water levels and water quality (both source water and groundwater)
  - Alert levels indicate need for a quick response to avoid the potential for unreasonable harm
  - Operational prohibition limit above alert level indicates that recharge activity must stop
  - Action plan for alert levels and operational prohibition limits for both water levels and water quality
  - Water quality monitoring plan
- Operation and maintenance plan

USF Technical Capability

(Section III-D)

Slide 7 of 8

- Demonstration of technical expertise:
  - Licenses, certifications and resumes for persons principally responsible for USF construction and operation

USF Financial Capability

(Section III-E)

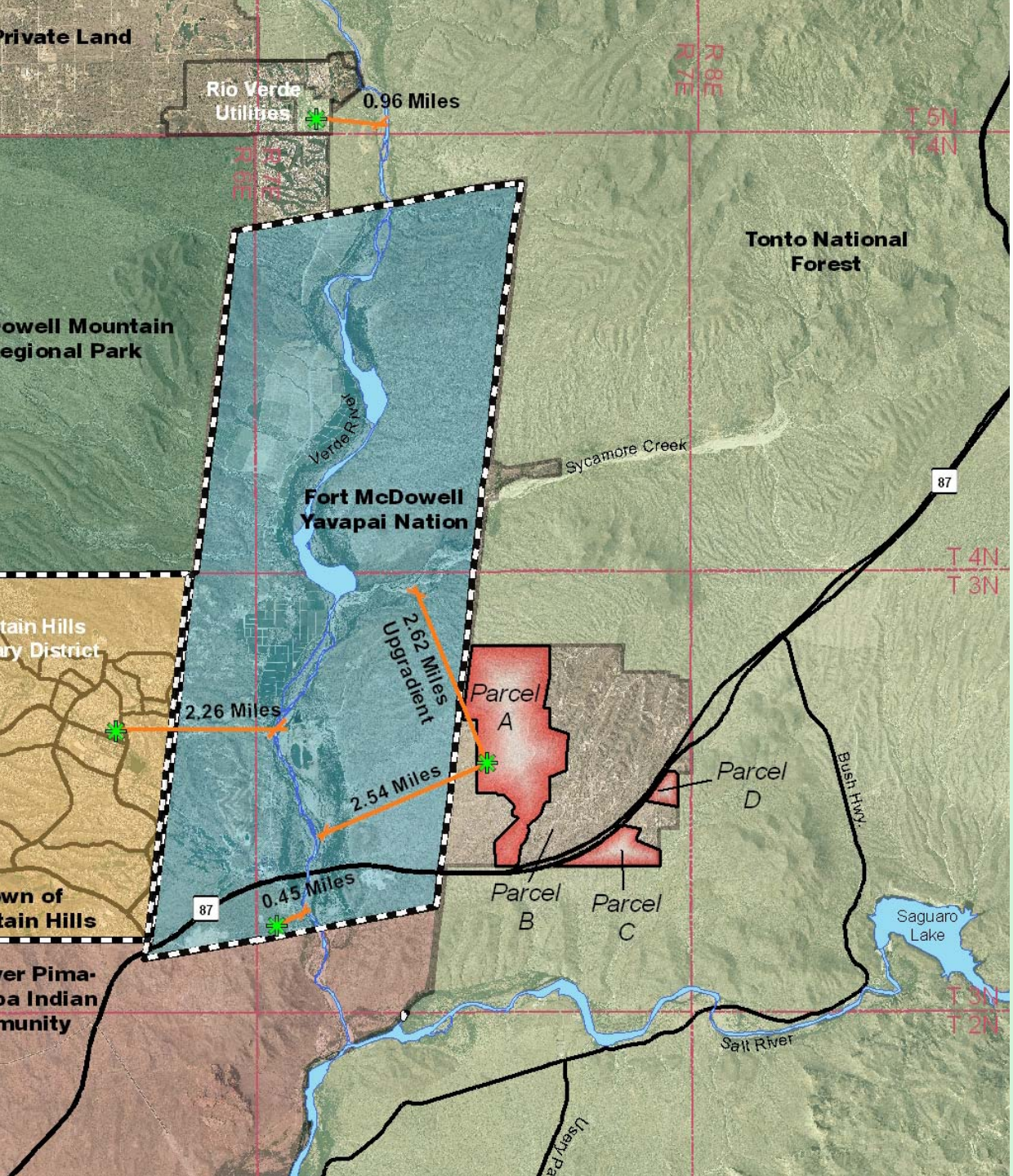
Slide 8 of 8

- Construction, operation, regulatory compliance and maintenance costs
- Certify adequate existing financial resources for construction and operation

USF Legal Access

(Section III-F)

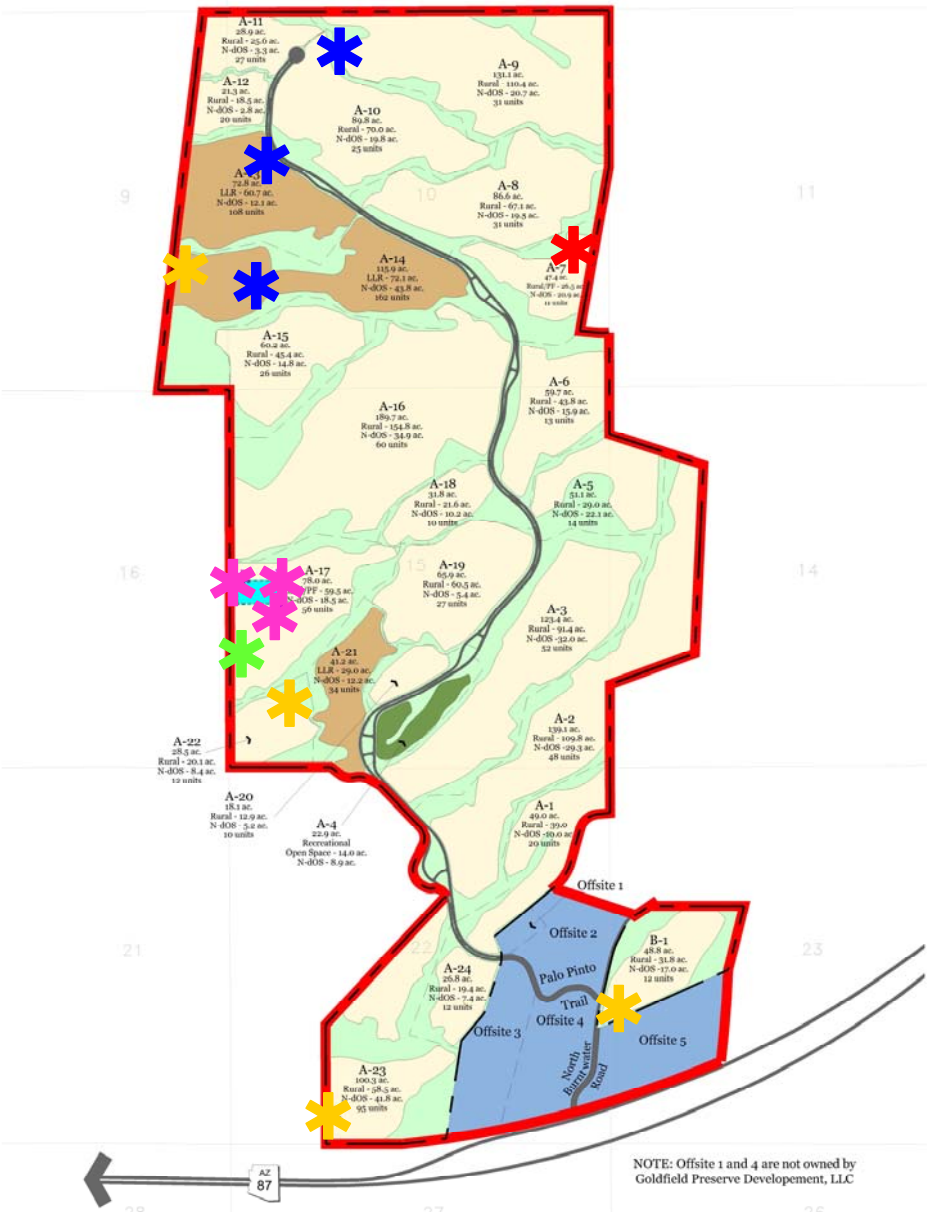
- Legal access to the proposed site for construction and operation



Proximity to Waterways

Site Facilities

- Groundwater Well Site
- Monitoring Well Site
- Recharge Well Site
- Water Campus
- Lift Station



Tribal Comment and Response

- Comment: Provide details of proposed treatment and effluent disposal
- Response:
  - Effluent quality and design requirements are the same for every wastewater treatment plant across the state
  - Regulated by ADEQ, ADWR and MCESD
  - Public process for APP and USF permitting

Tribal Comment and Response

- Comment: The following are missing…
  - Plant layout
  - Unit processes
  - Capital and O&M costs
  - Design criteria
  - Estimated impacts on adjacent properties
  - Demonstrate ability to satisfy permit requirements
- Response:
  - Conceptual site plan provided depicts unit processes
  - Costs provided
  - Design criteria regulated by ADEQ
  - No impact on adjacent properties (closed facility)
  - If cannot satisfy permit requirements, development cannot proceed

Tribal Comment and Response

- Comment: Commit to specific treatment plan to identify noise, odor potential
- Response:
  - Conceptual site plan shows 100’ setbacks
  - Nearest adjacent neighbors are within The Preserve development
  - Full noise, odor and aesthetic controls means:
    - Noise does not exceed 50 decibels at property boundary
      - Normal conversation = 60 decibels
    - All odor-producing components of the facility are fully enclosed (CLOSED SYSTEM)
    - Odor control devices are installed on all vents
    - Fencing aesthetically matched to surrounding area (AAC R18-9-B201)

Tribal Comment and Response

- Comment: Identify plan for sludge processing
- Response:
  - Alternatives for sludge treatment include:
    - Haul undigested sludge
    - Sludge digesting (equipped with aeration)
    - Sludge thickening (belt press)
    - Regulated by ADEQ under the Aquifer Protection Permit (AAC R18-9-1001 *et seq.*)

Tribal Comment and Response

- Comment: Avoid impacts to surface (Verde River) and groundwater
- Response:
  - ADEQ requires:
    - Effluent treated to A+ standards
      (AAC R18-11-303)
    - Water quality meets drinking water standards
      (Aquifer water quality standards, AAC R18-11-405)
    - Best available demonstrated control technology
      (AAC R18-9-B204)
  - Effluent quality and design requirements are the same for every wastewater treatment plant across the state

No discharge to Verde River

Tribal Comment and Response

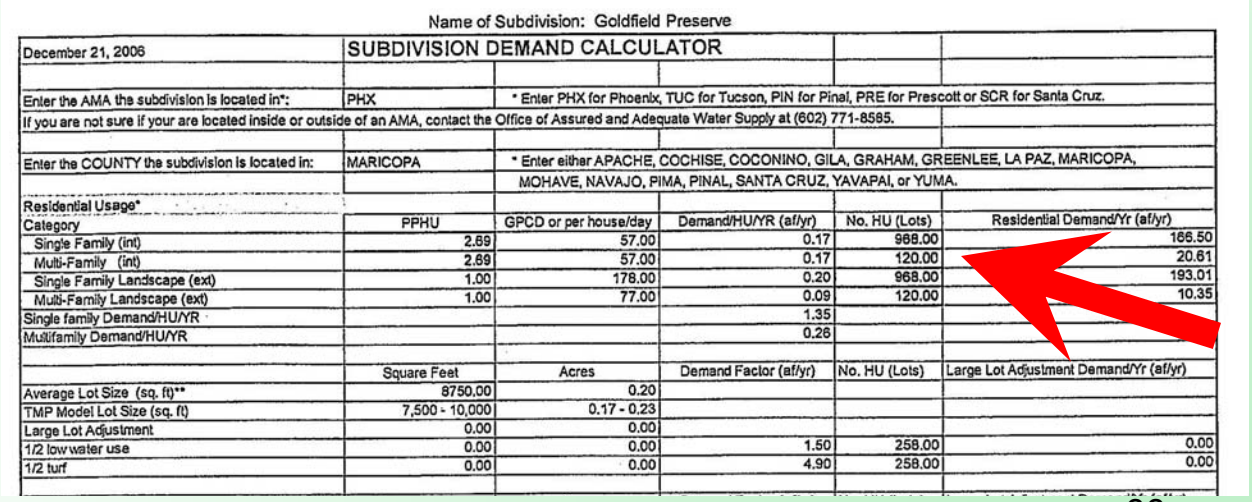
- Comment: Groundwater level decline will affect Community's water resources
- Response:
  - Issue does not pertain to the 208 Application
  - Regulated by ADWR under the Groundwater Management Act which precludes impacts to adjacent wells or users

Key Concern:
Water Quantity

Tribal Comment and Response

- Comment: Clarify resort/spa accounted for in Analysis of Assured Water Supply application
- Response:
  - Greatest potential water use included (with resort/spa indicated as 120 multi-family units)

Analysis of Assured Water Supply approved June 12, 2007



Name of Subdivision: Goldfield Preserve

December 21, 2006	SUBDIVISION DEMAND CALCULATOR				
Enter the AMA the subdivision is located in*:	PHX	* Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.			
If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8585.					
Enter the COUNTY the subdivision is located in:	MARICOPA	* Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.			
Residential Usage*					
Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.69	57.00	0.17	968.00	166.50
Multi-Family (int)	2.69	57.00	0.17	120.00	20.61
Single Family Landscape (ext)	1.00	178.00	0.20	968.00	193.01
Multi-Family Landscape (ext)	1.00	77.00	0.09	120.00	10.35
Single family Demand/HU/YR			1.35		
Multifamily Demand/HU/YR			0.26		
	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	8750.00	0.20			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	258.00	0.00
1/2 turf	0.00	0.00	4.90	258.00	0.00

Tribal Comment and Response

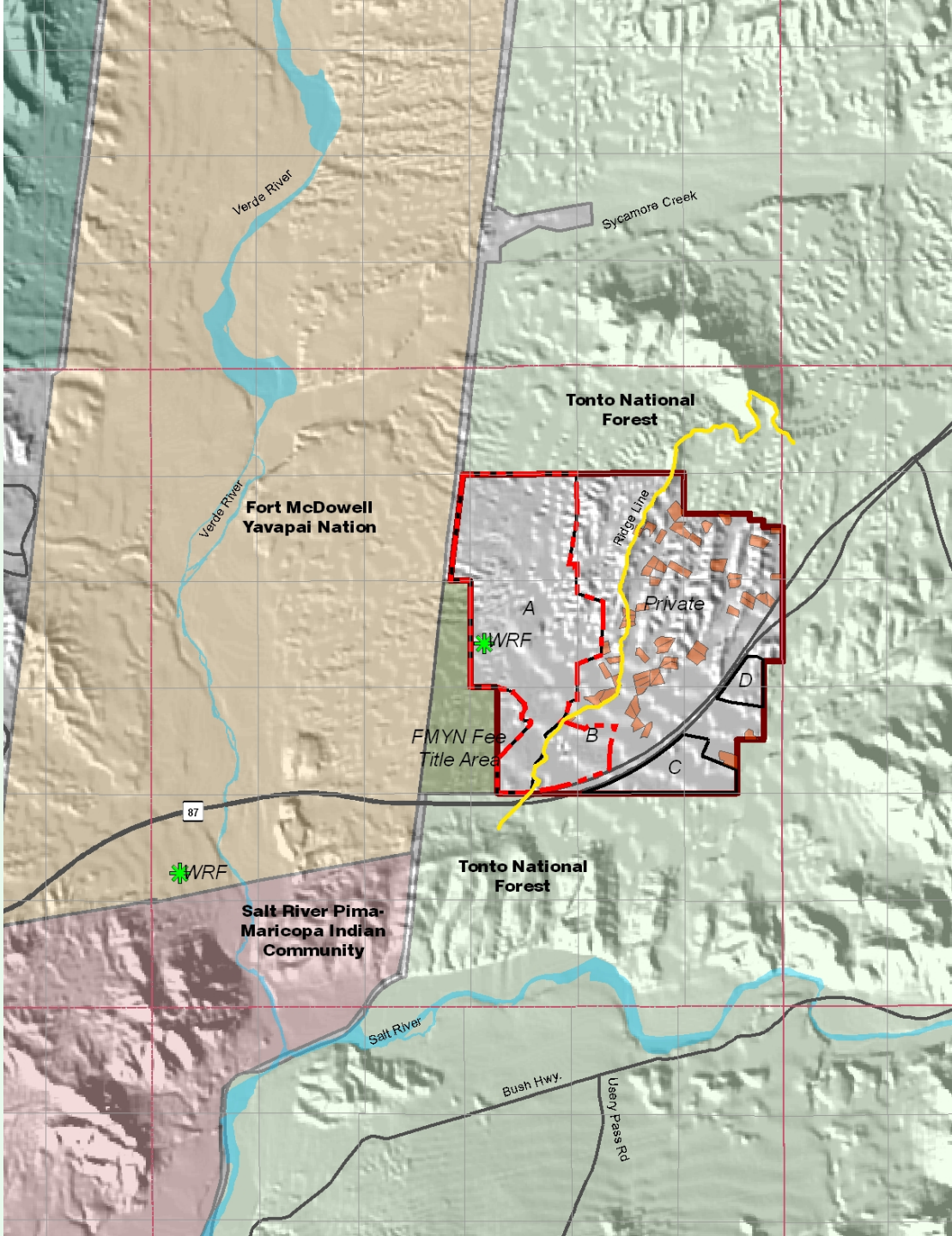
- Comment: Provide for proposed commercial customers
- Response:
  - Wastewater flow from potential restaurant less than 1 or 2 percent of total flow to WRF
  - Grease trap anticipated as part of WRF design
  - Grease trap anticipated at restaurant
  - Wastewater flow from potential resort/spa including restaurant 13 percent of total flow to WRF
  - Removal of detergents part of facility design
  - Anticipated influent water quality consistent with MCESD comments due to low flow fixtures

Tribal Comment and Response

- Comment: Provide emergency plan and redundancy
- Response:
  - Contingency plan required under Aquifer Protection Permit (AAC R18-9-A204)
    - Stormwater management (SWPPP) and Best Management Practices, such as erosion control, dust control, sediment control and good housekeeping/ materials management
    - Monitoring and sampling plan
    - Reporting requirements
    - Catastrophic failure contained onsite
  - Redundancy factored into engineering design
    - Design operating capacity will be two times the average day flow
    - Redundant recharge wells
    - Standby generator

Tribal Comment and Response

- Comment: Reduce need for septic
- Response:
  - Parcels C&D proposed for 1.5+ acre lots
  - Distance, topography, jurisdictional waters and State Route 87 constrain the feasibility of serving these parcels



Tribal Comment and Response

- Comment: Facility financing
- Response:
  - Construction by developer
    - Financial capacity demonstrated at $4.8M or ~$12/gallon
  - Operation & Maintenance by CID governed by the Maricopa County Board of Supervisors
  - Financial assurance letter, Consolidated Financial Report and independent auditor's assessment of report provided

Tribal Comment and Response

- Comment: No letter provided to FMYN to determine if we will adversely affect the operation or financial structure of their existing facility as a neighboring jurisdiction
- Response:
  - Letter and Application provided to FMYN on May 14, 2007
  - FMYN previously stated there was no desire to provide wastewater service to Goldfield
  - Connection to existing FMYN facility infeasible due to: distance, topography, land ownership, existing State Route 87 and Verde River

Tribal Comment and Response

- Comment: Groundwater mounding and biological clogging
- Response:
  - Mounding
    - Premise of USF permit is demonstration of no unreasonable harm
    - USF permit application requires mounding analysis to estimate area of potential impact
    - Quarterly measurement and reporting of water levels including alert levels
    - Mounding is an issue when water levels approach within 10 to 20 feet of the ground surface
    - Depth to groundwater is approximately 300 feet
    - Recharge will be to lower, confined aquifer
  - Biological clogging
    - Minimized through filtration, disinfection and proper operation and maintenance (including backwash)
    - Common practice – Fountain Hills, Scottsdale, Chandler, et al. recharge

Tribal Comment and Response

- Comment: Provide detailed site plan
- Response:
  - Conceptual site plan provided
  - Engineered site plan to be provided at time of Aquifer Protection Permit and Underground Storage Facility permit applications

Tribal Comment and Response

- Comment: Apply for Underground Storage Facility and Aquifer Protection Permits
- Response:
  - Pre-application meetings held with ADEQ on March 25, 2008
  - Pre-application meeting scheduled with ADWR

Tribal Comment and Response

- Comment: Arizona Corporation Commission reports A Quality Water Company to be dissolved
- Response:
  - Arizona Corporation Commission filings will be rectified
  - County Improvement District (Maricopa County Board of Supervisors) has oversight

Tribal Comment and Response

- Comment: Provide additional hydrogeologic information
- Response:
  - Additional information will be provided when available pursuant to the Aquifer Protection Permit and the Underground Storage Facility permit

Tribal Comment and Response

- Comment: Stormwater and irrigation water may percolate into the upper/middle aquifer units and impact the Verde River
- Response:
  - Issue does not pertain to the 208 Application
  - Drainage and irrigation system designs provide for retention of stormwater flows
  - Reviewed and approved through Maricopa County

Tribal Comment and Response

- Comment: Report fails to assess if connection exists between Fountain Hills subbasin and the adjacent subbasins within the Phoenix AMA which may impact water quality
  - SRPMIC correspondence acknowledges "research based on information in ADWR reports, indicates that there is no connection."
- Response:
  - Effluent to meet A+ water quality standards
  - Regulated under Aquifer Protection Permit
  - Required ongoing monitoring and reporting to safeguard down-gradient users

Tribal Comment and Response

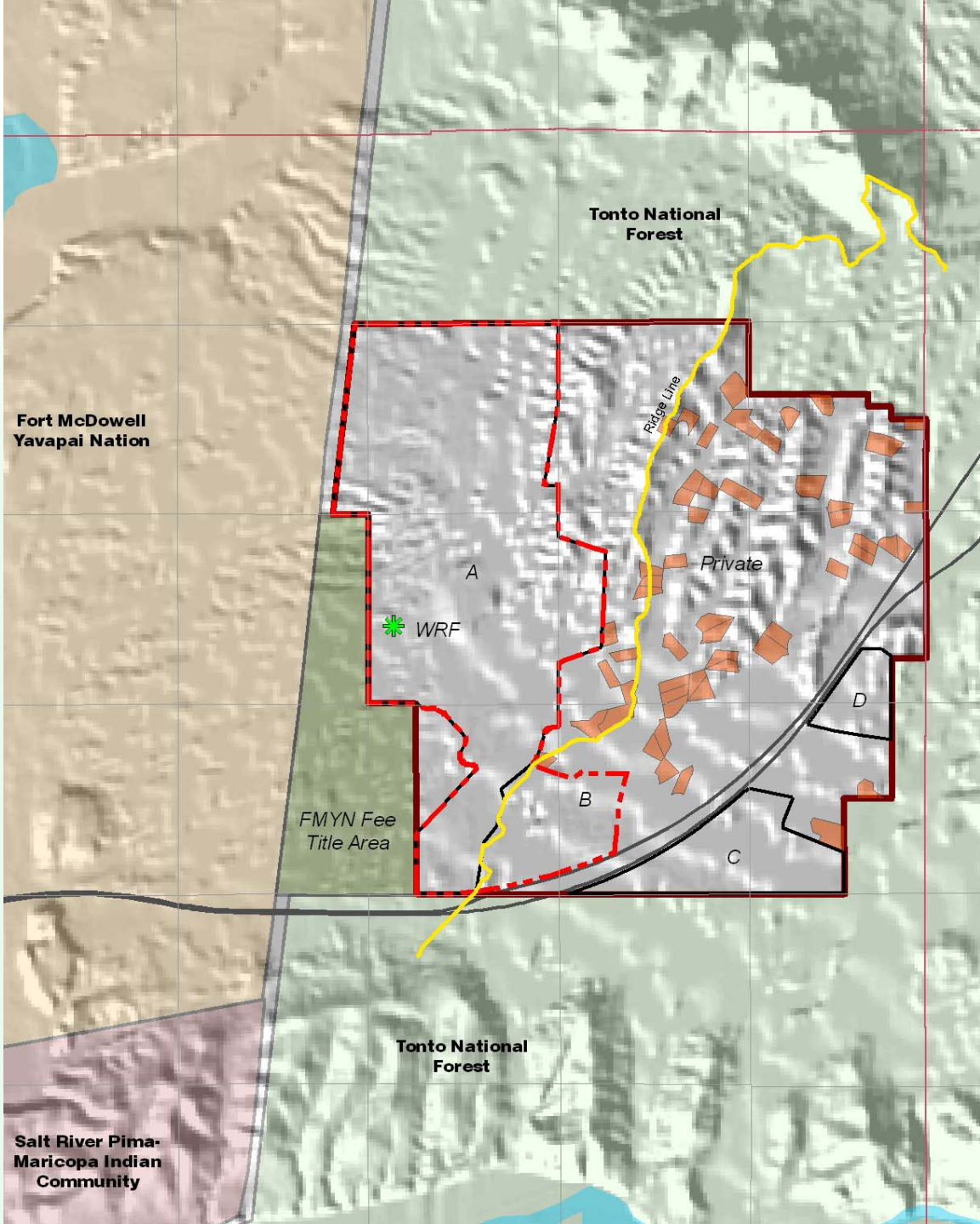
- Comment: Desert nesting bald eagle may be impacted by micro-pharmaceuticals and other by-products in the Verde River
- Response:
  - Issue does not pertain to the 208 Application
  - No discharge to the Verde River
  - WRF will comply with all applicable regulations and standards

Tribal Comment and Response

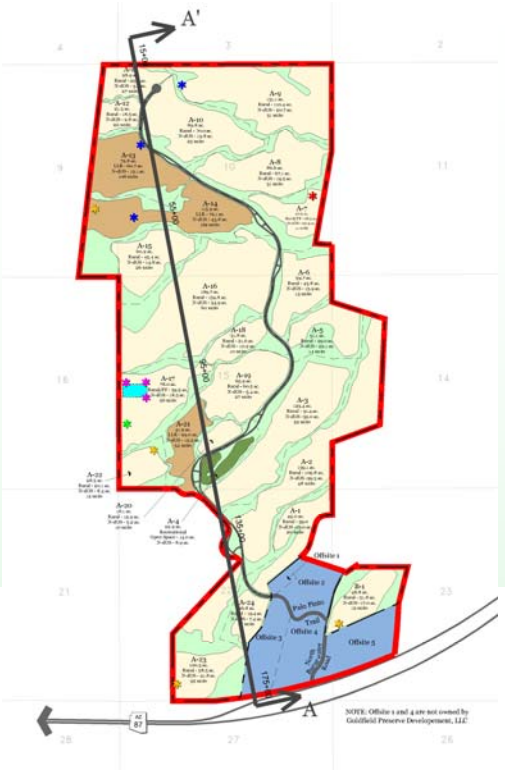
- Comment: Clay layer does not confine the upper and lower aquifer and thins out at the edges
- Response:
  - Water quality concerns addressed irrespective
  - Well tests performed on site show aquifer is confined
  - Additional investigation is ongoing
  - Reference materials supporting presence of confining clay layer (playa deposit)
    - Pope, Jr. C.W. 1974. *Geology of the Lower Verde River Valley, Maricopa County, Arizona*. M.S. thesis, Arizona State University (LD 179.151974P66)
    - Skotnicki, S.J., E. M. Young, T.C. Goode and G.L. Bushner 2003. *Subsurface Geologic Investigation of Fountain Hills and Lower Verde River Valley, Maricopa County, Arizona.* Arizona Geological Survey Contributed Report CR-03-B.
    - E.L. Montgomery & Associates, 2004. *Physical Availability Determination in Support of a Modification of Designation of Assured Water Supply for Chaparral City Water Company, Fountain Hills, Arizona.* Consultant's Report.

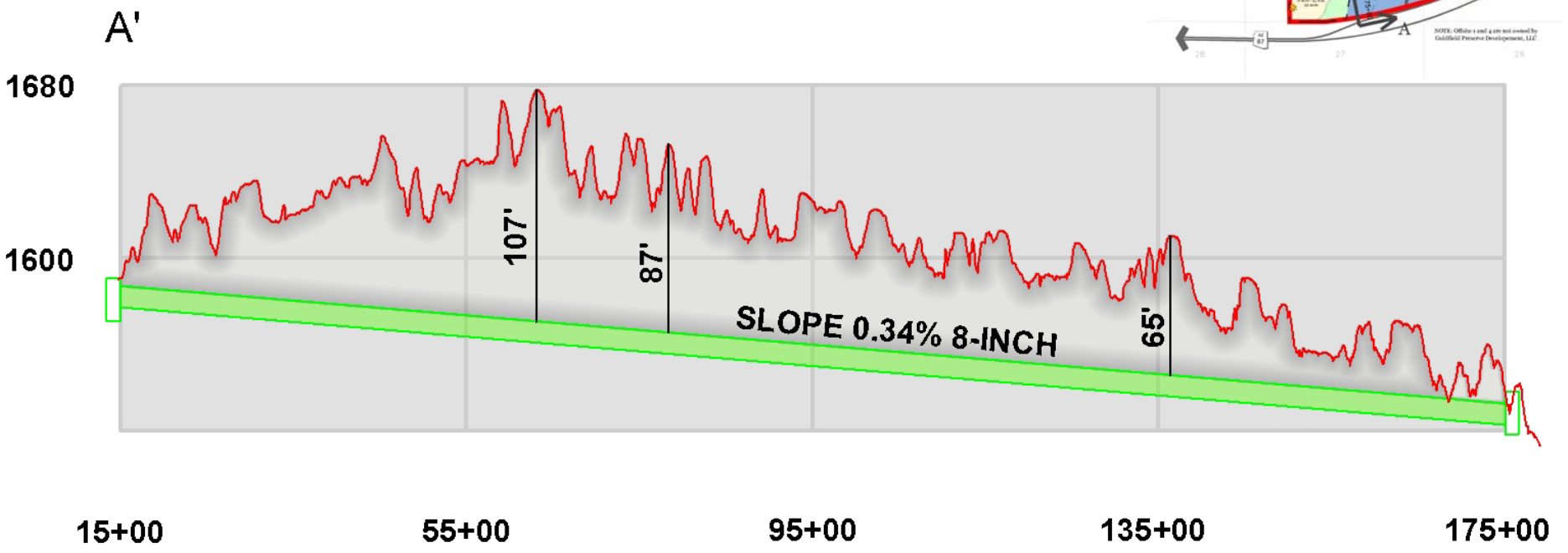
Wastewater Service to Goldfield Ranch

- Topographic/ hydrologic constraints
- Limited access to parcels does not coincide with natural fall of land
- Existing 5 acre or larger lots to east operate on septic systems
- Economically infeasible – separate property owners



Topographic Constraints





Target Effluent Concentrations

	Required Effluent Concentration (AAC Title 18, Chapters 9 and 11)	Design Goal Effluent Concentration
Total suspended solids (TSS), mg/L	30	10
Biological oxygen demand (BOD), mg/L	30	10
Total nitrogen, mg/L as N	10	5
Total phosphorus, mg/L as P	NA	1 (85% efficiency)