APPENDIX D

Regulatory Requirements

Regulatory objectives for effluent quality are currently established by each facility's AZPDES and APP permits. Limits in the AZPDES permits are driven by State Surface Water Quality Standards. Limits in the APP permits are driven by numeric State Aquifer Water Quality Standards and BADCT requirements.

Tabke D-1 and **Tabke D-2** presented here summarize the regulatory requirements for Roger Road WRF and Ina Road WRF respectively. There are no significant permitting issues at Randolph Park WRF. Regulatory requirements for each of outlying facilities are outlined in **Table D-3**

Table D-1

Roger Road WRF Regulatory Requirements

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
Aquifer Protection	5/26/05 - Until plant is expanded or modified	Compliance point: relocating monitoring well 12 (away from influence of landfill). Compliance schedule for locating replacement monitoring well. Compliance with 1000' setback limits. Permit re-openers for future expansions may trigger new compliance point at WWTP effluent. BADCT concurrence with ADEQ. Need to filter vs. Soil Aquifer Treatment (SAT). Use of Central Arizona Project (CAP) water by Tucson may change background characteristic of wastewater.	Compliance Schedule: Within 3 months of May 26, 2005 – supply map to Water Permits Section showing facility and location of replacement Point of Compliance (POC) well for W-12. Commence monthly monitoring at new well and continue for 8 months. No later than July 31, 2006 and within 30 days of collecting last sample: Submit an amendment application with monitoring data, a proposed acceptable quality level (AQL) for nitrates, and one round of sampling results from an upgradient well. Modify APP when upgrading plant to meet AZPDES schedule.	Current POCs are monitoring wells, using SAT. Plant expansion will be required to meet the 8 mg/L nitrate (Alert Level) at the WWTP effluent. (Level of safety factor to be determined). Interim Nitrate as Nitrogen (Nitrate-N) for well 12 set to “not established” until new POC approved and sampled. Current AQL for monitoring well SC-01 at 18.6 mg/L for Nitrate-N due to natural nitrates in the aquifer. Alert level “not established”. <u>Near to mid-term contaminant considerations:</u> ■ Non-detect microbial levels (fecal or Escherichia coli (E. coli)). ■ Total Organic Carbon (TOC) ■ Trihalomethanes (THMs) ■ Haloacetic acids (HAAs) ■ Bromate <u>Future contaminant considerations:</u> ■ Salinity ■ Endocrine Disruptors ■ Pharmaceuticals ■ N-nitrosodiumdimethylamine (NDMA)

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
AZPDES	3/2/06 - 3/2/11	Current ammonia levels are 20-30 mg/L. Ammonia toxicity. Copper variance. Chlorine monitoring method. Metal translator study. Minimum flow from Ina Road. Regulations do not require a minimum amount of water in the river or the removal of water from the river, but must be consistent with PAG's 208 Amendments, and satisfy public concerns over habitat.	Copper compliance by 1/30/11. Ammonia: Eng. Design Review by 1/30/07. Construction contract award by 1/30/11. Compliance by 1/30/15. Chlorine method investigation results by 9/30/06. Metal translators for future permit. (Water-effect ratio study on zinc and copper toxicity)	Interim copper level 25 micrograms per liter (µg/L). 2 mg/L ammonia standard expected. (Level of safety factor to be determined Current: Std. Range Chromium-Valence ;6 (Cr VI) 11 ppb* 6 - 10 ppb Copper (Cu) 12.7 ppb 6 - 15 ppb Sulfide 100 ppb <0.2 ppb Cyanide 9.7 ppb <1 ppb Oil&Gr Treat. Tech. <2 mg/L Bis-(2 ethylhexyl) phthalate 360 ppb <2 - 67 ppb *ppb = parts per billion Future: Phosphorus (costs for removal?) Endocrine disruptors, pharmaceuticals. Toxicity Tests: Results and follow-up actions
Reclaimed Water	4/29/04 - 4/20/09	Need to upgrade to higher class? Use Tucson Water facility to meet higher class.	Notice of Intent (NOI) by 1/20/09 to renew	Class B Future: Enhanced water quality standards not expected. Microbial fouling in distribution system Ultraviolet (UV) system efficiency Salinity (specific absorption rate (SAR)) CAP water importation

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
Air Quality	5-year permit expires 2010	Synthetic minor source permit for nitrogen oxide (NO_X) and carbon monoxide (CO) Minor source for other criteria pollutants Permitted Equipment: WWTP processes nine – internal combustion (IC) engines, 357 to 935 horsepower (hp) (digester and natural gas)		POTENTIAL TO EMIT (tons/year) NO_X 59 CO 84 Volatile organic carbons (VOCs) 32 Sulfur oxides (SO_X) Particulate matter less than nanometers (PM10) Hazardous (halogenated) air pollution (HAP) 7 Impacts of expanding/replacing plant: could potentially trigger major source - examine cost/benefits.

Table D-2
Ina Road WRF Regulatory Requirements

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
Aquifer Protection	2/26/02 – Until plant is expanded or modified	Archeological implications when breaking ground. Permit re-openers for future expansions may trigger new compliance point at WWTP effluent. BADCT concurrence with ADEQ.	Compliance Schedule: Monitoring for pesticides and polychlorinated biphenyls (PCBs): Four consecutive quarters of monitoring for pesticides and PCBs If non detects (NDs), monitoring to cease; otherwise, 4 more quarters of monitoring for any pesticide or PCB exceeding Practical Quantitation Level (PQL) and below AWQS. Modify APP when upgrading plant to meet AZPDES schedule.	Current POCs are monitoring wells, using SAT. Plant expansion will be required to meet the 8 mg/L nitrate (Alert Level) at the WWTP effluent. <u>Near to Mid-term contaminant considerations:</u> ■ Non-detect microbial levels (fecal or E. coli). ■ TOC ■ THMs ■ HAAs ■ Bromate <u>Future contaminant considerations:</u> ■ Salinity ■ Endocrine Disruptors ■ Pharmaceuticals ■ NDMA

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
AZPDES	1/2/06 - 1/2/10	Current ammonia levels are 20-30 mg/L. Fecal coli form violations. Total Residual Chlorine. Copper violations.	Compliance schedules for ammonia and copper toxicity and chlorine variances. Chlorine monitoring investigation–Results by 9/30/06 Ammonia Toxicity: Initial eng. study – 2/7/07 First phase upgrade (BNRAS) – 12/31/06 Second phase contract award by 12/31/10 Ammonia variance until 1/30/14. Copper variance until 12/31/10.	Current: Cu: Std. 11 ppb; Range 15 - 20 ppb Chlorine (Cl_2): Std. 5 ppb; Range <0.05 mg/L Cyanide: Std. 9.7 ppb; Range <1 ppb Lead (Pb): Std. 3.3 ppb Silver (Ag): Std. 5.3 ppb Bis-(2 ethylhexyl) phthalate: Std. 360 ppb; Range <2 - 5 ppb 2 mg/L ammonia standard expected. Toxicity Tests: ■ Results and follow-up actions Future: ■ Nutrients ■ Endocrine disruptors, pharmaceuticals

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
Reclaimed Water	1/6/04 - 1/6/09	Need to upgrade to higher class? Microbial fouling in distribution system. Future reuse customer base.	NOI by 10/26/08 to renew	Two treatment trains: (1) 25 mgd - Class B (2) 12.5 mgd - Class B+ Enhanced future standards not expected (e.g., point of use monitoring). Arizona Class A, A+ among the highest standards in the nation. Potential benefits of upgrading to Class A or A+: Expanded customer base and end uses to include irrigation of food crops, school ground and residential landscape irrigation, vehicle washing, comm. closed loop A/C systems, etc. Future: ■ Salinity Issues

Permit	Effective Dates	Key Issues	Schedule Considerations	Key Standards/Limits
Air Quality	5 year permit expires 2010	Major source permit for NO_X and CO Minor source for other criteria pollutants. Permitted Equipment: WWTP processes seven - 1000 hp IC engines (digester and natural gas) <u>Issues common to Ina Rd., Roger Rd., and Green Valley Plants:</u> Opacity testing and limits acceptable. Sulfur content acceptable. Hydrogen sulfide (H_2S) testing and limits acceptable.	Evaluate HAP emissions after future expansions Determine if additional controls are required to stay below 25 tons/year. <u>Common to Ina Rd., Roger Rd., and Green Valley Plants:</u> Permit may be reopened if new CAA requirements apply to this type of major source. Modifications: upgrades to facility may trigger permit modification. Additional emission controls and lean burn technologies likely required for new engines to comply within limits and Best Available Control Technology (BACT)/ Maximum Achievable Control Technology (MACT). More extensive emissions modeling required for WWTP processes in future -- consider during design phase?? Permit modification required if additional HAP standards promulgated by EPA.	POTENTIAL TO EMIT (tons/year) NO_X 581 CO 2405 VOCs 35 SO_X 112 PM10 3 HAPs 12 <u>Common to Ina Rd., Roger Rd., and Green Valley Plants:</u> Odor scrubbers H_2S limit 0.03 mg/L for >30 minutes at fence line [separate project initiated to address compliance] Costs and benefits of upgrading to meet new emission standards versus value of power (e.g., from Tucson Electric Power).

Table D-3
Non-Metro Facility Regulatory Requirements

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
AVRA VALLEY WWTF				
Aquifer Protection	Feb 2007 - Until plant is expanded or modified	Future disinfection considerations.	Report use of emergency overflow basin within 5 days.	Near to Mid-term contaminant considerations: ■ Non-detect microbial levels (fecal or E. coli) ■ TOC ■ THMs ■ HAAs ■ Bromate Future contaminant considerations: ■ Salinity ■ Endocrine Disruptors ■ Pharmaceuticals ■ NDMA
AZPDES	8/22/04 - 8/22/08	Future disinfection considerations. Emergency discharge to Black Wash.	After 10 quarters of trace substances monitoring - can request reduction or elimination of requirements (with no exceedance of alert levels (ALs))	Current: Std. Range Cl_2 5 ppb Cu 12.7 ppb Future: 2 mg/L ammonia standard expected Nutrients Toxicity Tests: Results and follow-up actions

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
Reclaimed Water	7/30/04 - 7/30/09	On-site only, minimal uses. 6.2-mgd planned expansion with UV and filtration - application submitted.	NOI by 3/30/09 to renew	Class A+ Reclaimed Water when expansion completed (upgrade from B+). <u>Future:</u> Enhanced water quality standards not expected. Microbial fouling in distribution system UV system efficiency Salinity (SAR)
ARIVACA JUNCTION WWTF				
Aquifer Protection	2/28/2003	Scheduled to close after completion of a gravity/pressure sewer line to Green Valley WWTF. 66,000 gallons per day (gpd) aerated lagoon	Sewer line to Green Valley	
Reclaimed Water	5-year permit expires June 17, 2008	Effluent used to irrigate nearby pastureland		Class C

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
CORONA DE TUCSON WWTF				
Aquifer Protection	6/1/05 - Until plant is expanded or modified	1st stage expansion: increase from 117,000 gpd (no discharge) to 300,000 gpd with addition of mechanical aeration and SAT disposal (current APP is amendment to these upgrades). SAT capability to meet nitrogen and coliforms is major issue. 2nd stage expansion: 500,000 gpd package plant oxidation ditch (Spring 2007)	Must meet the ALs for total nitrogen and coliforms (next column) starting seventh month following 1st stage (Dec 2005?)	SAT intended to treat bacteria, nutrients, total suspended solids (TSS) and biochemical oxygen demand (BOD). BADCT requires meeting levels of: - 10 mg/L total nitrogen - non-detect of coliforms at 31 ft deep Central Treatment Plant-03 (CTP-03) piezometer station or construct a dentrification plant to replace the existing 0.3-mgd facility. <u>Near to Mid-term contaminant considerations:</u> ■ Non-detect microbial levels (fecal or E. coli). ■ TOC ■ THMs ■ HAAs ■ Bromate <u>Future contaminant considerations:</u> ■ Salinity ■ NDMA

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
GREEN VALLEY WWTF				
Aquifer Protection	7/1/03 - Until plant is expanded or modified	Modifications to original WWTP may trigger permit reopeners for future expansions and may trigger new compliance point at WWTP effluent. BADCT concurrence with ADEQ -- future modifications. 2.1 mgd (old plant) 2.0 mgd (new Biological Nutrient Removal Oxidation Ditch (BNROD)) Operated as two separate facilities - likely to continue? SAT used for nitrate (NO_3) compliance.	No compliance schedule issues.	8 mg/L nitrate (Alert Level) at the POC. Change in POC anticipated? BNROD Class A+: Turbidity limits 5 nephelometric turbidity unit (NTU) (single), 2 (24 hr); Non-detect enteric virus; fecal coliform 23 colony forming units (CFU) (single) and non-detect (4 of last 7 samples) at discharge. <u>Near to Mid-term contaminant considerations:</u> ■ Non-detect microbial levels (fecal or E. coli). ■ TOC ■ THMs ■ HAAs ■ Bromate <u>Future contaminant considerations:</u> ■ Salinity ■ Endocrine Disruptors ■ Pharmaceuticals ■ NDMA

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
AZPDES	8/22/04 - 8/22/08	Future disinfection considerations. Emergency backup storage.	After 10 quarters of trace substances monitoring - can request reduction or elimination of requirements (with no exceedance of ALs)	Current: Std. Range Cl_2 5 ppb Cu 12.7 ppb Ag 5.3 ppb Cr VI 11 ppb Future: 2 mg/L ammonia standard expected Nutrients Toxicity Tests: Results and follow-up actions
Reclaimed Water	12/28/04 - 12/28/09		NOI by 9/28/09 to renew	WWTF (2.1 mgd): Class B BNROD (2.0 mgd): Class A+ (with filters) Class B+ (without filters) Future: Enhanced future standards not expected. Microbial fouling in distribution system. UV system efficiency. Salinity (SAR)

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
Air Quality	5-year permit originally expired 2005 and has been administratively continued.	Synthetic minor source permit for NO_X and CO Minor source for other criteria pollutants Permitted Equipment: WWTP processes on - IC engines, 378 hp emergency portable generator (500 hours/year restriction)		POTENTIAL TO EMIT (tons/year) NO_X 51 CO 11 VOCs 4 SO_X 3 PM10 4 HAPs NEGLIGIBLE
MARANA WWTF				
Aquifer Protection	11/22/06 - Until plant is expanded or modified	3 X 50,000 gpd packaged BNR extended aeration plants. 4th 50,000 gpd unit planned for 2005. Lagoons used for emergency storage. Groundwater monitoring not required unless discharges to emergency storage basin exceed limit. 0.5-mgd Biolac system constructed Spring 2007.	Modify APP when upgrading plant to meet AZPDES schedule Discharge to emergency storage basin limited to 90 days per year, otherwise monitoring well will be required.	<u>Near to Mid-term contaminant considerations:</u> Non-detect microbial levels (fecal or E. coli). TOC <u>Future contaminant considerations:</u> Salinity NDMA

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
AZPDES	5/25/06 – 5/25/11	New permit needed.		Future: 2 mg/L ammonia standard expected Nutrients (phosphorus). Toxicity Tests: Results and follow-up actions
Reclaimed Water	7/18/2005 - 7/14/2010		NOI by 4/14/10 to renew	Class B+ Future: Enhanced future standards not expected. Microbial fouling in distribution system. UV system efficiency. Salinity (SAR)

Permit	Effective Dates	Key Issues	Schedule	Key Standards/Limits
RILLITO VISTA WWTF; FAIRGROUNDS; MT. LEMMON WWTF				
Aquifer Protection	General Permits: Rillito Vista 9/16/1994 – LIFE Fairgrounds 4/4/1996 – LIFE Mt Lemmon 1/25/1999 – LIFE	Rillito Vista: no major issues. Fairgrounds: 3,000 gpd evaporation pond; no major issues. Mt. Lemmon: 12,500 gpd package plant oxidation ditch; experiences freezing temperatures in winter.		
AZPDES	2/10/06 - 12/31/10 (Mt. Lemmon only)	Variances for copper, zinc. Assessment monitoring for trace substances and WET. ALs for trace metals. Cultural resources survey may be needed if breaking ground.	Copper and zinc variances until 12/31/10.	Interim levels for copper (50 µg/L) and zinc (270 µg/L). Future: 2 mg/L ammonia standard expected Nutrients Toxicity Tests: Results and follow-up actions