

ORIGINAL



0000129139

BEFORE THE ARIZONA CORPORATION COMMISSION

RECEIVED

Arizona Corporation Commission

DOCKETED

2011 AUG 29 P 2:05

AUG 29 2011

AZ CORP COMMISSION  
DOCKET CONTROL

DOCKETED BY

COMMISSIONERS

GARY PIERCE, Chairman  
SANDRA D. KENNEDY  
PAUL NEWMAN  
BOB STUMP  
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF  
FAR WEST WATER & SEWER COMPANY FOR  
A DETERMINATION OF THE FAIR VALUE OF  
ITS SEWER UTILITY PLANT AND PROPERTY  
AND FOR INCREASES IN ITS RATES.

DOCKET NO. WS-03478A-08-0454

**STATUS REPORT**

1 Far West Water & Sewer Company ("Far West") hereby provides a status report  
2 concerning upgrades to its wastewater treatment facilities.

3 **SECTION 14 PLANT IS OPERATIONAL**

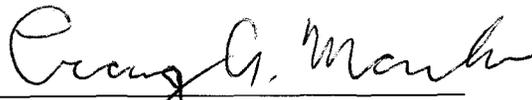
4 On Wednesday, August 24, 2011, Far West's new Section 14 membrane bioreactor  
5 treatment facility ("Section 14 MBR") began receiving and treating sewage flows. When fully  
6 operational, the Section 14 MBR will treat flows diverted from the existing Section 14 sequential  
7 batch reactor treatment facility ("Section 14 SBR") and the existing Palm Shadows sequential  
8 batch reactor treatment facility ("Palm Shadows SBR").

9 Far West will shortly complete construction of the Palm Shadows Lift Station and other  
10 facilities to allow flows to be transferred to the Section 14 MBR. Far West will also complete  
11 and test other Section 14 MBR components. Flows from the Palm Shadows SBR should be  
12 transferred to the Section 14 MBR by the second week of September.

13 The Section 14 SBR and Palm Shadows SBR will be decommissioned upon full  
14 operational status of the Section 14 MBR, which is expected by the end of September.

15 Exhibit A is a copy of the complete Section 14 MBR Startup Plan.

1 **Respectfully submitted** on August 29, 2011, by:  
2  
3

4 

5  
6 Craig A. Marks  
7 Craig A. Marks, PLC  
8 10645 N. Tatum Blvd.  
9 Suite 200-676  
10 Phoenix, AZ 85028  
11 (480) 367-1956  
12 [Craig.Marks@azbar.org](mailto:Craig.Marks@azbar.org)  
13 Attorney for Far West Water & Sewer Company

**Original** and 13 copies **filed**  
on August 29, 2011, with:

Docket Control  
Arizona Corporation Commission  
1200 West Washington  
Phoenix, Arizona 85007

**Copies** of the foregoing **e-mailed** on  
August 29, 2011, to:

Steve Olea, Director  
Utilities Division  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, AZ 85007  
[solea@acc.gov](mailto:solea@acc.gov)

Robin Mitchell, Attorney  
Legal Division  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, AZ 85007  
[rmitchell@azcc.gov](mailto:rmitchell@azcc.gov)

Ayesha Vohra, Attorney  
Legal Division  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, AZ 85007  
[avohra@azcc.gov](mailto:avohra@azcc.gov)

Michelle Wood, Attorney  
Residential Utility Consumer Office  
1110 West Washington, Suite 220  
Phoenix, AZ 85007  
[mwood@azruco.com](mailto:mwood@azruco.com)

Barbara and Robert Gilkey  
14784 E. 49th St.  
Yuma, AZ 85367  
[BOBnBARB325@aol.com](mailto:BOBnBARB325@aol.com)

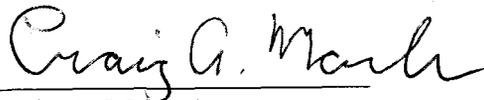
Robert Rist  
9593 E. 34th Place  
Yuma, AZ 85365  
[bobandjoanrist@gmail.com](mailto:bobandjoanrist@gmail.com)

**Copies** of the foregoing **mailed** on  
August 29, 2011, to:

Jane L. Rodda, Administrative Law Judge  
Hearing Division  
Arizona Corporation Commission  
400 West Congress  
Tucson, AZ 85701-1347

Carl Bailey  
9723 E. 36th Ln.  
Yuma, AZ 85365

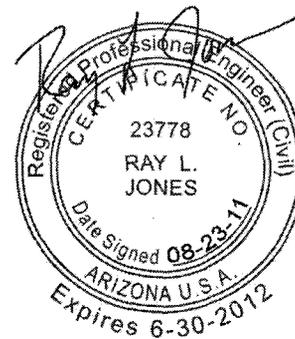
By:

  
Craig A. Marks

# Exhibit A

## Section 14 MBR – Startup Plan

August 23, 2011



### Background:

The new Section 14 membrane bioreactor treatment facility (Section 14 MBR) will receive flow diverted from the existing Section 14 sequential batch reactor treatment facility (Section 14 SBR) and the existing Palm Shadows sequential batch reactor treatment facility (Palm Shadows SBR). The Section 14 SBR and Palm Shadows SBR are to be decommissioned upon full operational status of the Section 14 MBR.

The Section 14 SBR and Palm Shadows SBR facilities are currently operating at relatively low summer flow rates. As shown below, flow rates are expected to remain low through September.

### Influent Data:

Expected Flow Section 14 –

0.03 to 0.04 mgd (August through mid-September)

0.04 to 0.05 mgd (mid-September through end September)

Expected Flow Palm Shadows –

0.15 to 0.20 mgd (August through September)

Based on recent grab samples of Section 14 and Palm Shadows influent, the Section 14 MBR will initially operate well below its design parameters.

### Section 14 MBR

#### Basis of Design:

BOD – 400 mg/L

TSS – 400 mg/L

TKN – 60 mg/L (actual 15 mg/L)

TP – 8 mg/L

Alkalinity – 250 mg/L

### Influent Grab Sample 6/30-7/5-7/19-7/26-8/2:

#### Sec. 14 -

BOD – 97/80/82/48/85 mg/L

TSS – 64/ 41/61/24/33 mg/L

TKN – 40/42/42/ND/53 mg/L

TP – 5/5/5.2/3.2/4.7 mg/L

Alkalinity – 390/380/410/350/450 mg/L

### Effluent Data Sec. 14:

Effluent Grab Sample 7/5-7/6-7/19-7/26-8/2:

BOD – ND/ND/ND/ND/ND

Nitrate – 7.4/9.0/14.0/17/17 mg/L

Nitrite – ND/ND/ND/ND/ND

TKN – 1.3/8.6/7.0/50/ND mg/L

### Influent Grab Sample 6/30-7/5-7/11:

#### Palm Shadows -

BOD – 320/130/200 mg/L

TSS – 460/79/180 mg/L

TKN – 62/43/46 mg/L

TP – 7/4.3/6.2 mg/L

Alkalinity – 310/300/320

### Section 14 SBR information

MLSS = 4200 mg/L

Plant appears to be nitrifying with effluent TKN ranging from ND to 8.6 (note outlier at 50 mg/L appears to be lab error).

### **Operational Responsibility and Control:**

Isaac Yocupicio, Far West Wastewater Superintendent, is the Operator-In-Charge for the startup of the Section 14 MBR.

The Operator-In-Charge will verify that all pre-startup requirements are complete prior to startup of any portion of the Section 14 MBR and startup shall not commence until authorized by the Operator-In-Charge. Startup activities shall progress as detailed and ordered in this startup plan unless the Operator-In-Charge specifically authorizes a variance from the requirements of this plan. All operational control and decision making will be the responsibility of the Operator-In-Charge.

All dates provided in this plan are to be considered target dates. Steps may be accelerated or delayed as ordered by the Operator-In-Charge to meet operational considerations.

### **Pre-Startup Activities:**

- Complete the clean water testing. At this point all of the membrane tanks will be filled with water.
  - It is estimated that 695 kg of glycerine was used to preserve the membrane and this is equivalent to 850 kg of COD and BOD if we assume glycerine is completely biodegradable. This mass of glycerine when diluted into 0.44 million gallons will be equivalent to a maximum of 500 mg/L COD or BOD.
- Build the MLSS up to the maximum possible concentration in the Section 14 SBR and the Del Oro membrane bioreactor treatment facility (Del Oro MBR).
- Lower the level in the pre-anoxic, aerobic and post-anoxic tanks of both the West and East Bioreactors to 96 inches (127,000 gallons per side) or below<sup>1</sup> by discharging through Section 14 SBR, if possible.
  - This will leave space to pump up to 100,000 gallons of mixed liquor and raw sewage into the tanks during seeding.
  - If not possible to lower all tanks to 96 inches by discharge through the Section 14 SBR, the West Bioreactor tanks may be lowered by transferring water to the East Bioreactor Tanks for later disposal.
- Isolate west (Tanks 1-4) and east (Tanks 5-8) bioreactor tank sets.
  - Close inlet valve to Pre-Anoxic Tank 5.
  - Verify sludge waste valves closed at both Recirculation Pump Stations .
- Adjust all other valves to allow the pre-anoxic, aerobic, post anoxic and membrane zones of each set of bioreactors to be put in service.
- Complete air piping to MBR Trains 1 & 2.
- Reroute head works drain to influent lift station.
- Complete Operator Training.
- Install call out alarm for key functions.
- Obtain Zenon approval to startup Zenon Facilities (Cathy Collett).
- Obtain support contractor approval for startup (Mike Crowe).
- Obtain Far West Operations approval for startup (Isaac Yocupicio).

---

<sup>1</sup> Membranes require approximately 91" to remain submerged.

**Startup Activities – West Bioreactor (Tanks 1 - 4 & MBR Trains 1 & 2):**

**Day 1 – Seed West Bioreactor – Wednesday August 24, 2011**

- Turn off influent lift station
- Haul 5,000 gallons mixed liquor from Del Oro MBR and introduce to transfer pump station to equalize levels between transfer pump station and Section 14 SBR.
- Shut down existing Section 14 SBR cycle, open valves between SBR and transfer pump station and transfer the mixed liquor from the Section 14 SBR and Del Oro into the biological tanks of the West Bioreactor (approximately 90,000 gallons) using the transfer pump station.
  - Transfer process should be done slowly to avoid flushing grit into biological tanks.
  - Old SBR tanks will now function as equalization basin for Section 14 MBR. Aeration remains on (when needed) with all other SBR functions off.
- Valve off transfer pump station from equalization basin.
- Startup West Bioreactor
  - Turn West anoxic mixers “ON”.
  - Turn the West Aerobic to Pre-anoxic RAS pumps and membrane RAS pumps “ON” to their maximum flow rates.
  - Turn the West aerobic blowers “ON”.
- Clean equalization tanks with vector truck to remove grit.
- Restart influent lift station.
  - Influent lift station will now pump to isolated equalization basins.
- Over 3 - 6 hours the MLSS will be distributed throughout the tanks. In addition to this, the remaining glycerine that is in the membrane tanks will be distributed throughout the tanks and the mixed liquor will start to degrade the glycerine.
- Over the course to the day, haul 10,000 additional gallons of mixed liquor from the Del Oro MBR and introduce into the biological tanks using the transfer pump station.
- Once the mixed liquor is distributed throughout the tanks, open valves between equalization basins and transfer pump station and begin to transfer raw sewage into the West Bioreactor at the typical Section 14 plant flows (ie 40000 gpd).
  - NOTE: The DO should be maintained at a  $\geq 1.5$  mg/L in the aerobic zone to encourage nitrification.
- At end of day 1 – turn off transfer pump station and allow raw sewage to accumulate in equalization basins overnight.

**Day 2 – Begin Discharge**

- Begin extended operations staff schedule – 5:00AM to 10:00PM.
- Turn on transfer pump station – early AM.
- Produce permeate with discharge to golf course.
  - Requires manual operation of UV disinfection.
- After the system has produced permeate for one hour the following should be measured.

Zone	In-house Testing	External Lab
Influent	NH <sub>3</sub> -N, pH, Alkalinity	BOD <sub>5</sub> , TSS, TKN
Aerobic tank MLSS	MLSS, D.O.	N/A
Permeate	NH <sub>3</sub> -N, NO <sub>3</sub> -N, pH, Alkalinity	BOD <sub>5</sub> , TSS

- At end of day (late PM), turn off transfer pump station and allow raw sewage to accumulate in equalization basins overnight.
- At end of day, discontinue permeate and associated discharge to golf course.

**Day 3+ – Interim Operation Protocol**

- Continue to process Section 14 raw sewage (40,000 – 50,000 gpd) during day with transfer pump station operation and permeate suspended during nighttime hours.
- Do not waste sludge in order to allow the MLSS to build up in the system (the SRT should be >15 days). The target SRT and MLSS will be chosen after the process data has been reviewed.
- The analytical schedule detailed in Table 1 is recommended for two weeks.

**Table 1**

Zone	In-house Testing		External Lab	
	Parameters	Frequency	Parameters	Frequency
Influent	NH <sub>3</sub> -N, pH, Alkalinity	3x's/week	BOD <sub>5</sub> , TSS, TKN	3X's/week
Aerobic tank MLSS	MLSS, D.O.	3x's/week	N/A	
Permeate	NH <sub>3</sub> -N, NO <sub>3</sub> -N, pH, Alkalinity	Daily	BOD <sub>5</sub> , TSS	Daily

- During this period of operation, provide additional MLSS and BOD as needed and tolerated by hauling effluent from Palm Shadows or hauling MLSS from Del Oro MBR or Marwood treatment facility.
- During this period of operation, dispose of excess water in East Bioreactor tanks as needed by discharge through West Bioreactor.
- Facility shall remain in manual operation with extended operations schedule until automatic operation possible plant integration and control testing complete.
- Once automatic operation possible, facility should be transitioned to automated 24-hr discharge with operations staffing reduced as appropriate.

**Activities Required to Allow for Automatic Operation and Startup of East Bioreactor:**

**Day 1-14 – Complete Construction and Integration**

Palm Shadows Construction

- Complete construction of Palm Shadows Lift Station
- Complete construction of Force Main
- Obtain ADEQ approval of Palm Shadows Lift Station and Force Main

Section 14 Construction

- Complete sheave change out on membrane blowers for MBR Trains 3 & 4
- Complete air piping to MBR Trains 3 & 4
- Complete programming of Kaiser blower to achieve automatic operation
- Remove temporary sludge piping at dewatering facility and connect permanent sludge piping
- Install floats and adjust VFD at transfer pump station
- Complete UV programming
- Complete and test plant integration programming

Section 14 Operational

- Successfully initiate 24-hour automatic operation of West Bioreactor and MBR Trains 1 & 2

- Allow West Bioreactor level to rise to maximum (172") in preparation of seeding East Bioreactor
- Reduce Level in East Bioreactor to 96 inches or below

**Startup Activities – East Bioreactor (Tanks 5 -8 & MBR Trains 3 & 4):**

**Day 15 – Seed East Bioreactor –**

- Verify East Bioreactor level at 96 inches or below.
- Turn off transfer pump station.
- Transfer mixed liquor from West Bioreactor to East Bioreactor by opening inlet valve to Pre-Anoxic Tank 5.
  - Mixed Liquor will flow by gravity from West Bioreactor Tanks to East Bioreactor Tanks until levels are equalized.
  - If West Bioreactor at maximum of 172 inches and East Bioreactor at 96 inches, approximately 50,000 gallons of MLSS will be transferred.
  - At this point the MLSS in the East Bioreactor tanks will be approximately 30% of the concentration in the West Bioreactor tanks.
- Startup East Bioreactor
  - Turn East anoxic mixers "ON".
  - Turn the East Aerobic to Pre-anoxic RAS pumps and membrane RAS pumps "ON" to their maximum flow rates.
  - Turn the East aerobic blowers "ON".
- In order to balance MLSS between East and West Bioreactors, pump mixed liquor from West Post-Anoxic tank to East Pre-Anoxic tank using temporarily installed trash pump.
- Over 3 – 6 hours the MLSS will be equally distributed throughout the East and West tanks. In addition to this, the remaining glycerine that is in the membrane tanks will be distributed throughout the tanks and the mixed liquor will start to degrade the glycerine.
- Once the mixed liquor is distributed throughout the tanks, turn on Transfer Pump Station to allow raw sewage into both Bioreactors.
- Begin automatic production of permeate with discharge to golf course from all trains.
- After the system has produced permeate for one hour the following should be measured. Separate measurements should be taken for MLLS and Permeate from each side of plant.

Zone	In-house Testing	External Lab
Influent	NH <sub>3</sub> -N, pH, Alkalinity	BOD <sub>5</sub> , TSS, TKN
Aerobic tank MLSS	MLSS, D.O.	N/A
Permeate	NH <sub>3</sub> -N, NO <sub>3</sub> -N, pH, Alkalinity	BOD <sub>5</sub> , TSS

**Day 16 – Begin Transfer Palm Shadows Flow**

- Divert 50% of the Palm Shadows SBR flow (approximately 80,000 gpd).
- Continue monitoring per Table 1.

**Day 20 – Fully Transfer Palm Shadows flow-**

- Provided effluent ammonia has remained low for several days (ie < 2 mg/L), increase flow from Palm Shadows to the full capacity (approximately 160,000 to 200,000 gpd).

Day 20-30 – Monitor and Stabilize Operations

- Reduce monitoring to permit and normal operations requirements as plant stabilizes.
- Begin sludge wasting once sludge age reaches desired level.
- As system stabilizes, begin disposing of mixed liquor and effluent from Palm Shadows to Section 14 MBR for treatment.
  - Mixed liquor and effluent may be transferred to Palm Shadows Lift Station and pumped through force main to Section 14 MBR for treatment.

Day 30 -60 – Obtain Regulatory Approval

- Submit ECC to ADEQ.
- Continue disposal of remaining Palm Shadows mixed liquor and effluent to Section 14 MBR for treatment.