

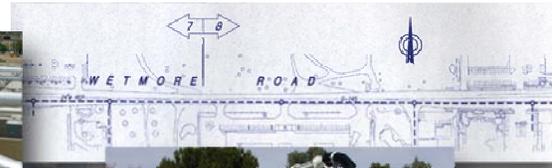
# ***SYSTEM-WIDE ODOR MANAGEMENT PROGRAM***

***Quarterly Report  
October-December 2008***

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## **Pima County Regional Wastewater Reclamation Department**

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January 2009

## Introduction

Pima County Regional Wastewater Reclamation Department's (PCRWRD) System-Wide Odor Control Team is charged with implementing the System Wide Odor Control Management Plan. Fourth Quarter 2008 System-Wide Odor Control Management activities included:

- Initiation of a web-base Odor Report Form.
- Specification and procurement of a solar-powered vapor treatment system for the siphon at the Silverbell Golf Course.
- Procurement of a Continuous Odor Monitoring System (OdoWatch) for Roger Road Wastewater Reclamation Facility (WRF) – now being installed.
- Continuation of System-Wide Odor Monitoring and Odor Control System Performance Testing.

## Web-Based Odor Report Form

Introduced on the Department's web page: <http://www.pima.gov/wwm>, the web-based odor report form provides a convenient and efficient means for the public to report system odors. This new reporting method complements the existing reporting system in which the public reports odors via phone calls to staff. Phone calls are particularly effective because residents frequently call as they are experiencing odors and this is helpful in tracking odors and their causes. The online odor reporting system allows the public to report odors at their convenience. To assure that web reports are received as soon as they are sent, six staff members receive emails whenever an odor report is transmitted through the on-line system. This assures that the appropriate staff will be available to respond.



### Odor Report

The Regional Wastewater Reclamation Department is committed to mitigating odors emitted from treatment facilities and the sanitary sewerage system. We are interested in hearing from Pima County's residents. If you are directly impacted by odors, please let us know by submitting this form or by calling the PCRWRD Conveyance Division at 326-4333.

First Name:  Middle Initial:

Last Name:

Your Address:

Address Line 2:

Country:  State/Province/Etc:

Zip+4:

Phone:  ex: 520-555-1111, 555-1111

Alternate Phone:  ex: 520-555-1111, 555-1111

Email:

Enter email again for validation:

Where have you experienced odors?  Home  School  Shopping  Other

Please include below the address - OR location (major intersection) where you have experienced odors:

Same as above

What were you doing?  Walking  Driving  Transit  Hiking  Other

If other, please describe:

### Quarterly Odor Complaint Report Summary

Because seasonal weather conditions, temperatures, and population-based flows affect metropolitan conveyance system odor generation, quarterly odor report frequencies are best year-to-year. The number of 4th quarter odor complaints in 2006, 2007, and 2008 were 104, 108, and 94, respectively. Compared with last year, this quarter had a 13% reduction.

### Reclamation Facility Issues

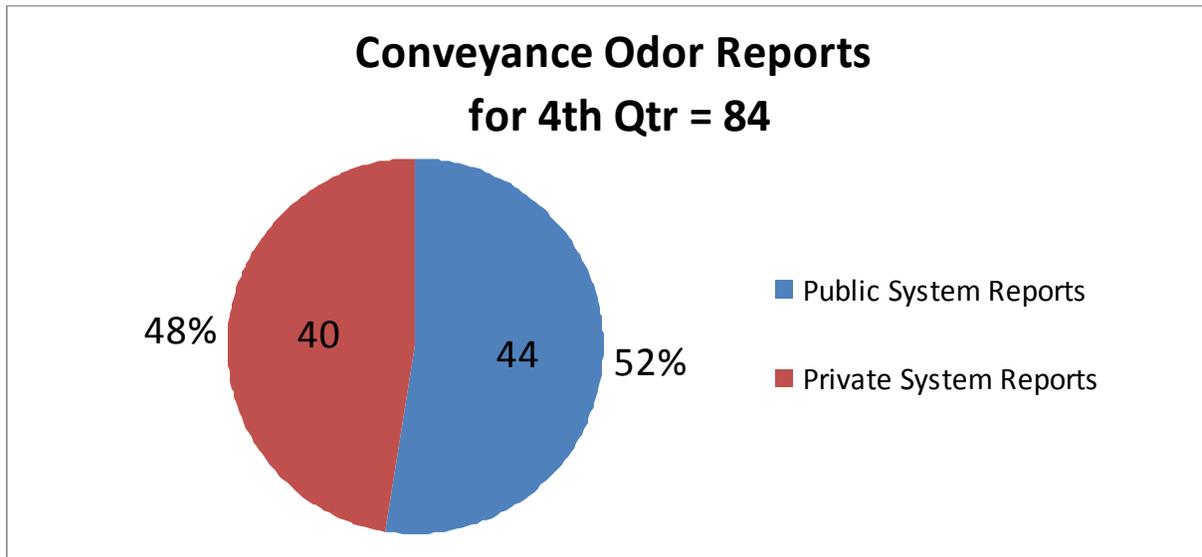
During October through December 2008, 10 (11%) of the complaints were directly attributable to Roger Road WRF. This particular problem has been resolved with the installation of a new chiller. The problem took several weeks to resolve, but the odors that were problematic during this failure will not be repeated.

### Conveyance System Issues

With the new odor team in place, responses to odor complaints have allowed staff to differentiate odors that are generated from private sewer lines/systems from odors generated in the public sewer lines.

Discounting the ten reclamation facility-related odor reports, the remaining 84 odor complaints were due to odors emitted from either public or private conveyance systems. The private system odor complaints result from either a private system requiring operational maintenance or a restaurant discharging through a grease interceptor. As indicated in Figure 1 below, 44 (52%) of the 84 reports were the result of public conveyance system odors and 40 (48%) were attributable to private sources, such as homes, businesses, or private sewer systems, not under the control of PCRWRD.

**Figure 1. Conveyance Odor Complaints for Fourth Quarter 2008**



The Metropolitan Service area is divided into quadrants divided by Speedway Boulevard and Alvernon Way. Although the map in Figure 2, below, does not depict the entire Metropolitan Service area, it clearly illustrates the spatial distribution of odor complaints for the fourth quarter of 2008.

- 46 (55%) of all the complaints originated west of Alvernon Way in the northwest and southwest quadrants
- 26 (54%) of these 46 complaints were the result of private system odors. Last quarter, the percentage was 53%.

Because RWRD’s Conveyance Division responds to every odor complaint in an effort to prevent potential sanitary sewer overflows, it is very beneficial to eliminate private system related odor complaints. To this end, the division provides guidance to private and commercial dischargers to help them understand the boundaries of their systems and how they should proceed with maintenance.

Odor complaints that occur in clusters are further investigated to determine whether mitigation requires structural, operational, or maintenance changes to achieve interim and permanent improvements.

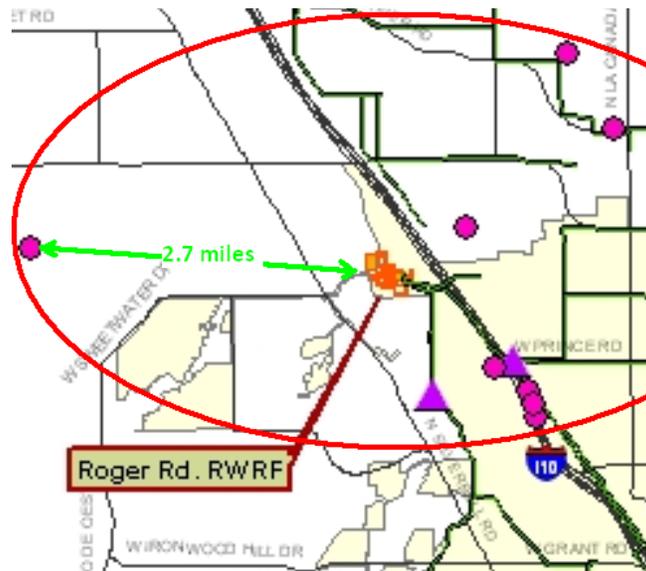
With only a few exceptions that cannot be mitigated with extra chemical addition, there is a general absence of complaints downstream of chemical dosing units (CDU) in the fourth quarter of 2008, indicating consistent control, and well-functioning CDUs.



The following observations are of note:

- 1) An area of several miles can be impacted by odors when the source the odor is digester biogas from the Roger Road WRF.

**Figure 3. Roger Road WRF Odor Complaint Report Map**



- 2) As illustrated below in Figure 4, five odor complaints along the South Rillito Interceptor on Roger Road in the immediate vicinity of Tyndall Rd are the result of stagnant flow. There are no scouring flows on this interceptor due to the diversion of the flow at the Tucson Flow Management structure to the Ina Road WRF. In response to these reports, this reach received intensive hydro-flushing and chemical treatment.

**Figure 4. Roger Road and River Road Odor Complaint Report Map**



- 3) As illustrated in Figure 4, the odors on River Road were emitted from manholes on the North Rillito Interceptor. These manholes are immediately upstream of the junction manhole of the North Rillito Interceptor (NRI) and the inverted siphon flow from the Tucson Blvd flow Management structure.

- 4) While the siphon flow is chemically treated at Tucson Blvd to eliminate siphon odors, the unusually high flows diverted through the siphon to the NRI result in backpressure upstream of the junction manhole and fugitive emissions being released from cracked manhole structures. These structures have since been repaired.
- 5) In Tucson Country Club Estates, on West Miramar Drive, an 8-inch sewer line services the neighborhood that until 1998 was served solely by septic systems. Homeowners are only required to connect to the sewer when a home is sold; unfortunately, this results in inadequate flows to convey solids. This neighborhood has received over 200 service calls since 2000. In response to these complaints, an intensive water flushing and chemical treatment was conducted. An improved flushing system and a vapor extraction system to mitigate this situation are being studied for a long-term resolution.

### **Silverbell Golf Course Siphon Structure Vapor Treatment System**

Installation of a vapor treatment system at the Silverbell Golf Course for the Northwest Outfall Siphon at the Santa Cruz River was completed and commissioned to service on January 22<sup>nd</sup>, 2009. The silent solar-powered odor control system is the first of its kind and confirms RWRD's System Wide Odor Control Management's commitment to defining and applying state of the art odor control and appropriate sustainable technology.



## Odowatch Odor Monitoring System for Roger Road WRF

The Odowatch odor monitoring system was procured and delivered in the 4<sup>th</sup> Quarter 2008.

The system is now installed and will be commissioned per the following schedule:

- Installation Completion 1/30/2009
- Sampling, Analysis and Calibration Completion 2/20/2009
- Start-Up and Training Completion 2/26/2009
- ETV validation 3/10/2009

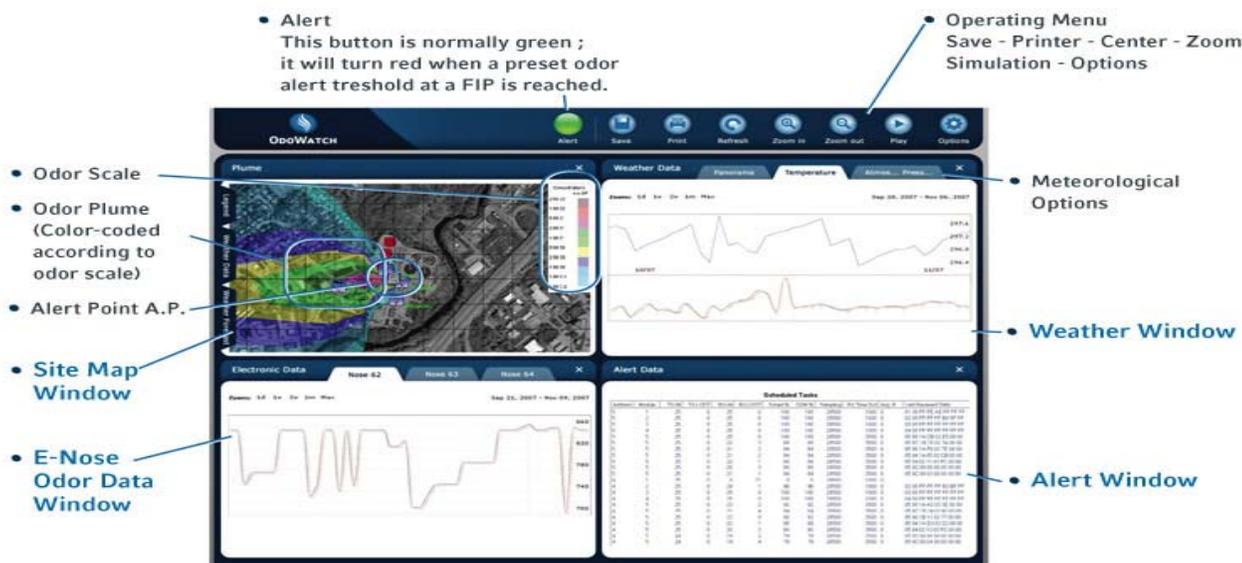


E-nose

As Roger Road WRF is the first Odowatch Monitoring System installation in the United States, our site is the Environmental Protection Agency's first Environmental Technology Verification Program (ETV) site for Odor Monitoring in ETV's Advanced Monitoring Systems Program.

This confirms RWRD's commitment to both defining and applying state of the art odor control technology in the System Wide Odor Control Management Program.

The e-noses are positioned near the odor sources of the site and measure the odor continuously.



The odor data from the e-noses and the weather data from the weather tower are sent to the OdoWatch® software, which models the atmospheric dispersion and displays the site's odor plume. OdoWatch® is calibrated to recognize and quantify combined odor strengths of all odor-causing gases, including Hydrogen Sulfide (H<sub>2</sub>S). The system alerts staff to fugitive emissions of odors, to the severity of emissions, and to the odor's sources. This information facilitates a rapid staff response.

## **Wastewater Reclamation Facilities Fence Line Monitoring**

An independent consultant performs monthly fence line monitoring. This entails collecting measurements at 50-foot intervals along the linear perimeter of the fence line at each facility. The measurements are recorded in parts per billion, (which is equivalent to one second of time in a 32-year span). The 30 parts-per-billion (ppb) hydrogen sulfide fence line goal is considered to result in offsite concentrations below the nuisance threshold. The graph in Figure 5 depicts the average fence line concentrations measured at each facility.

### **Roger Road WRF Fence Line Performance**

The fenceline consists of 6,000 linear feet requiring 150 separate sample measurements taken in series in one day. As such, the average fenceline hydrogen sulfide profile represents a single snapshot of the facility perimeter average hydrogen sulfide. As indicated in Figure 5, the average fenceline concentrations are well below the 30 ppb control limit.

### **Ina Road WRF Fence Line Performance**

Fence line monitoring indicates that the odor control systems in operation successfully controlled odors at the fence line during the fenceline monitoring.

### **Sub-Regional Facilities Fence Line Performance**

The sub-regional wastewater reclamation facilities include:

- Green Valley WRF
- Avra Valley WRF
- Marana WRF
- Corona de Tucson WRF
- Randolph Park WRF
- Continental Ranch Regional Pump Station

Sub regional facilities are scheduled for quarterly fence line monitoring. As indicated in Figure 5, fence line performance as measured by average fenceline is significantly below control limits at all facilities.

**Figure 5: Average Fenceline Hydrogen Sulfide By Facility**

