PERMIT # 1903 TECHNICAL SUPPORT DOCUMENT

September 2005 version, Revised January 2010

I. GENERAL COMMENTS:

A. Company Information

Physical Address:

Ina Road Wastewater Reclamation Facility
7101 North Casa Grande Highway
Tucson, AZ 85743

Mailing Address:

Pima County Regional Wastewater Reclamation Facility
7101 N. Casa Grande Highway
Tucson, AZ 85743

B. Background

The Ina Road Wastewater Reclamation Facility (Ina Road) was built in 1975. Initial construction was completed in 1977 (prior to the PSD applicability date – see Section VII below), when the Natural Gas/Propane/Digester Gas fired engines were installed and first started up. The plant has no major violations or actions against it in the past. The most recent action was an excess emissions report filed in May 2005 that was due to a malfunction caused by a fire that damaged four generators on 04/17/2004. Other than that Ina Road has been in compliance since its inception. The facility currently has an increased capacity of 37.5 Million Gallons per Day (MGD) and is in the beginning stages of another increase in the treatment capacity to 50 MGD and to provide greater quality of effluent. This upgrade project will take a few years, the first of which is this minor revision

C. Attainment Classification

The plant is in an area that is in attainment for all pollutants.

II. SOURCE DESCRIPTION

The plant provides preliminary, primary and secondary treatment of wastewaters collected from the Tucson Metropolitan area. The facility consists of the headworks, primary sedimentation, aeration, secondary sedimentation, chlorination and dechlorination systems. The existing treatment process uses a High Purity Oxygen - Activated Sludge process (HPOAS) for secondary treatment. The new parallel line, when it becomes operational will also provide secondary treatment by activated sludge but will also include a nitrification - denitrification process. Each Treatment Train will have its own chlorination contact tank for the fluids, but the dechlorination process will combine the two streams. Fluids are sent either to the City of Tucson as gray water for irrigation, or to the Santa Cruz River. Solids are shipped offsite as fertilizer for local agriculture.

A. Process Description

Seven 1000 hp engines that utilize different fuels to generate electric power for the plant. The engines burn Natural Gas/ Propane when there is not sufficient Digester gas, although this is not preferred, due to the relative higher cost of Pipeline Natural Gas and propane. Normally, five engines are sufficient to meet the power demand, but it is possible to run all seven at the same time. There are several smaller engines that are standby and emergency power sources, less than 100 Hp each that can be classified as insignificant activities since they are less than 325 BHP. (See 17.12.140.B.2.b.iv). These use propane as the fuel but have been permitted using gasoline emission factors to be more conservative.

The power generators are the main source of regulated air pollutants. The main pollutants emitted are NOx, CO, VOC and HAPs. PM_{10} and SO_2 emissions are insignificant.

B. Air Pollution Control Equipment

The pollution control equipment at the site are scrubbers that limit odors during the treatment process, an activated carbon filter that traps HAPs when they volatize from the plant influent.

III. REGULATORY HISTORY

A. Testing & Inspections

The source is currently permitted under a 5- yr renewable permit issued on September 30, 2005. There have been regular inspections, and there has not been a history of any compliance problems. The source was last inspected in October 2008, and was in compliance with all air quality regulations. There has been one violation issued as a result of an inspection from September 2007 and one fugitive dust complaint investigation in June 2009 that PDEQ was unable to verify.

B. Excess Emissions

None submitted during this permit term.

IV. EMISSIONS ESTIMATES

The methodology currently used to calculate the potential to emit (PTE) for the seven 1,000 hp internal combustion engines fueled by digester gas were overly conservative and was revised during this minor permit revision. This new methodology is based on a comparison of the emission factors for digester gas and natural gas for each pollutant and an adjustment made for the maximum amount of digester gas produced by the facility. The previous methodology worked on the assumption that all the engines would run 8,760 hours per year on digester gas however as presented in the minor revision application it is not possible for the facility to produce sufficient digester gas to run the engines 8,760 hours per year. The configuration of the facility allows all seven engines to run on natural gas at the same time (61,320 hours per year). The maximum amount of digester gas generated at the facility restricts the operation of the engines using degester gas to a maximum of 33,288 hours per year. At normal operating conditions, five engines are operated concurrently to meet the power demands of the plant.

Currently, PTE for the engines are based on all seven engines burning digester gas 8,760 hours per year each (61,320 total) and emission factors developed from the August 2006 stack test for all pollutants except CO which is based on the Waukesha Gas Engine Exhaust Emission levels 2001 Model No. L7042. As stated previously, it is not possible for all seven engines to operate using digester gas 61,320 hours per year. Upon completion of the upgrade project and based on maximum design capacity report from March 2009, Ina Road will only be capable of producing enough digester gas for the seven engines to run a total of 33,288 hours per year.

The PTE will thus be calculated by another more realistic conservative approach based on using the higher emission factor when comparing digester gas and natural gas. When natural gas produces the higher emission factor for a pollutant, the PTE for the eniges shill be based on all seven engines running 8,760 hours per year (61,320 hours per year total) times the emission factor. See the August 2009 minor permit revision application for more details.

Based on the revised estimates in the minor permit revision, the source's permit class is still a **Major Source, Class I permit**. The plant is an area source for HAPs since the total is less than 25 TPY for any combination of HAPs and less than 10 TPY for any individual HAP. Estimates are based on 8,760 hours of operation per year. Refer to the minor permit revision dated August 2009 for calculations.

V. APPLICABLE REQUIREMENTS

NSPS. No NSPS rules apply to the source. The following NSPS rules could, but do not apply for the following reasons:

- 40 CFR Part 60 Subpart O (Standards for Performance of Sewage Treatment Plants) does not apply because it is only applicable to plants that combust or incinerate sewage sludge. Ina Road treatment plant does not combust or incinerate sewage sludge.

NESHAP. No NESHAP rules apply to the source. The following NESHAP rules could, but do not apply for the following reasons:

- 40 CFR Part 63 Subpart VVV (Publicly Owned Treatment Works) does not apply because the rule is only applicable to treatment works that are a major source for HAPs. This is an area source for HAPs, and therefore not subject to Subpart VVV.

- 40 CFR Part 63 Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines) does not apply because the rule is only applicable to RICE that are located at a major source for HAPs. This is an area source for HAPs, and therefore not subject to Subpart ZZZZ.

SIP The following SIP rules apply: SIP rules 321, 332, 343, 344.

PCC The following PCC rules apply: 17.16.010, 17.16.030, 17.16.050, 17.16.340, and 17.16.430.

VI. PERMIT CONTENTS

A. Emission Limits/ Standards:

Facility

17.16.030, 17.16.430.D & SIP Rule 344.A	Odor Rule
17.16.430.F	Materials Handling Rule
17.16.430.H	H_2S Standard

Stationary Rotating Equipment (Both Natural gas/ Propane & Digester Gas fired engines)

17.16.340.C, 17.16.340.B, 17.16.340.D & SIP Rule 332	Particulate Matter Standard
17.16.340.E	Opacity Standard
17.16.340.H	Fuel Limitation
17.16.340.F	SO_2 Limitation

General Particulate Standards

17.16.010.B, 17.16.050.B & SIP Rule 321.A	Opacity Standard
17.16.050.D	Visibility Limiting Standard

B. Monitoring and Recordkeeping Requirements:

Odor and Hydrogen Sulfide Control

17.12.180.A.3	Weekly checks of pollution control equipment

Stationary Rotating Equipment

17.12.180.A.3	Maintain an operation log for each engine
17.16.010.C & 17.12.180.A.3 and A.4	Opacity monitoring when engines are operating
17.16.010.C & 17.16.340.I	SO_2 & lower heating value not required unless the Control Officer requests.
17.12.180.A.3 and A.4	Record results of opacity monitoring

General Particulate Monitoring

17.12.180.A.3	Opacity Monitoring
17.12.180.A.3 and A.4	Record results of opacity monitoring
17.12.180.A.4	Retention of Records

Opacity may be monitored by using Test Method 9. The monitoring shall be conducted as follows. A person certified in Test Method 9 shall view the emission points at least once each day when the engines are operating. A certified Method 9 person shall have attended the ADEQ smoke school course. If there are visible emissions, the observer shall conduct a Test Method 9, and record the result. If the emissions are 20% or more for a fugitive source, or 40% or more for a point source, this shall be recorded and reported as an excess emission and a permit deviation.

C. Reporting Requirements:

Stationary Rotating Equipment

17.16.340.J	Sulfur content of fuel above 0.8%
17.12.250.A.6	Use of other fuels
17.16.340.I	LHV reporting for digester gas is not normally necessary as the heating value of the digester gas (heat input) on which the calculation for the particulate matter standard in II.B is dependent on yields emission estimates of particulate matter that are far less than the standard allowed by the referenced equation. There will subsequently be no testing or monitoring of the lower heating value required when using digester gas.

General

17.12.180.A.5.b & 17.12.180.E.3.d	Excess emissions and permit deviation reporting
17.12.210.A.2	Compliance certification reporting
17.12.320	Emissions inventory reporting
17.12.180.A.5.a	Quarterly summary reports of required monitoring

D. Testing Requirements:

17.20.010	EPA Test Method 9 or Test Method 22 to monitor opacity
17.20.010	PM testing upon request by the Control Officer Mass emission testing to determine compliance with the particulate matter standard in II.B is not normally necessary as standard emission factors yield emission estimates of particulate matter that are far less than the standard allowed by the referenced equation.
17.20.010	H_2S testing upon request by the Control Officer.

	Hydrogen sulfide testing to determine compliance with the applicable standard is not normally necessary because the use of good modern practices prevents the emission of hydrogen sulfide beyond the property boundary.
17.20.010 & 17.12.050	Performance testing for NOx, CO, VOC, SOx at least once per 5-yr permit term & Formaldehyde within 365 days of ***first*** 5-yr permit issuance.

E. Alternate Operating Scenarios: The applicant has not requested any alternate operating scenarios.

F. Miscellaneous Comments:

Previous comments under this section that addressed SOx, VOC, formaldehyde emissions etc have been removed since Ina Road developed emission factors for all pollutants except CO during the stack testing of August 2006.

Insignificant Activities

Ina road has a number of emergency generators onsite. The emissions will be reported in the annual emissions inventory but such equipment will be listed as insignificant activities.

The emergency flares have also been designated as insignificant activities. They are available to flare off any excess digester gas produced when the engines are not able to burn the digester gas produced during malfunctions or other scenarios that incapacitate the engine(s). The plant typically burns the flares for one hour each month for testing purposes only, to ensure that the system is in good working order.

Also, the flare burns only digester gas, with a small natural gas pilot. The digester gas is mostly Methane, a non-regulated emission gas. Digester gas from the Roger Road facility averages 59.71% Methane and 39.39% CO_2 with a small amount of N_2 and H_2S. If anything, the flare might be considered an odor control device for release of H_2S.But the small amounts involved, and the small number of hours the flare is fired argues against this as anything but an Insignificant Activity. The flare is fired mostly for periodic testing, 10 to 15 hours per year.

Acid Rain Provisions

The units at this facility are not subject to Acid Rain provisions because they are exempt under an Applicability determination as described in 40CFR70.6.(b)(3). Not affected units subject to the requirements of the Acid Rain Program: …(3) Any unit that, during 1985, did not serve a generator that produced electricity for sale and that did not, as of November 15, 1990, and does not currently, serve a generator that produces electricity for sale.

This unit does not, never has and does not plan to produce electricity for sale. All electric power generated by the plant is for use by the same facility, on site.

CAM Provisions

CAM provisions will not apply to this source. 40 CFR Part 64, §64.2(a) defines the applicability of CAM to emissions units. For CAM to apply, the unit must be subject to an emission limit or standard for the applicable regulated pollutant, the unit must use a control device to achieve compliance with that limitation or standard, and the unit must have a pre-control emission potential that would classify it as a major source. The source is not subject to emission limits under this permit. Since the unit is not subject to emission limits, it is not subject

to the CAM provisions, i.e. the treatment plant does not use any Control Technologies.

Other Notes

The first five-year renewal application for this facility was submitted in May 1995. A second updated application was submitted in 1997. This application included a description of an expansion program for the facility, from 25 million gallons per day to 37.5 million gallons per day.

A third application revision was received in 2001, for addition of cooling towers. This application was withdrawn however.

While the permit process proceeded, various different proposals for new engines were mentioned, and in the end, rejected. The engines included in the permit are the original engines that have been operated at the plant since construction.

VII. IMPACTS TO AMBIENT AIR QUALITY

A Grandfathered PSD source, thus no studies are required. The source was constructed prior to the PSD applicability date of August 7, 1977 (See 40 CFR 52.21). Upon a major modification however, Ina Road would need to conduct NSR.

VIII. CONTROL TECHNOLOGY DETERMINATION

No control technologies needed to be determined. This facility is in an area of attainment and is not a new source.

IX. PREVIOUS PERMIT CONDITIONS

The following changes were made to the previous permit conditions so as to enable the source to operate with the maximum flexibility.

Condition #1

This condition was removed because the treatment plant no longer operates an incinerator at the site as indicated by Ina Road in its April 1997 permit renewal application. During a 1991 inspection it was confirmed that the incinerator had been decommissioned.

Condition #s 2, 3 & 4

These conditions do not regulate any NAAQS and thus odor requirements have been treated as a generic requirement applying to the whole plant. This approach is outlined in the EPA white paper for Part 70 applications dated July 10, 1995, Sections 4 and 7 on pages 9 and 12 respectively. This resulted in the odor standards being written as shown in Part B.II.A. of the permit. With the standards written this way, they limit air pollution and prescribe the most effective pollution control methods.

Condition #5

This rule was regulating fluid emissions and not air emissions. There is also no underlying applicable requirement for the 3-mg/ l limit that was imposed on the chlorination facility. Ina road is permitted for the engines and not for the chlorination of the treatment.