Rule 402 (Nuisance):

With proper operation, maintenance and control of equipment compliance is expected.

Regulation XIII:

Acid vapors will be venting through the sparger with control efficiency of 75% or better.
BACT/LAER compliance is expected.
No modeling is required as PM10 emission < 0.41 lbs/hr, Rule 1303 Table A-1.
Nor offset is required. Compliance is expected.

Rule 1401:

HCl is not carcinogenic, no cancer risk.
Tier 2 analysis indicated HIA/HIC value < 1, each. Compliance is expected.

Rule 1401.1:

Exempt as this is an existing facility.

REG. XXX:

Compliance is expected. Title V revision A/N 513687 is filed to include this permit and, other two acid storage tanks, A/Ns 512832 & 512833.

Recommendations:

A PC-PO is recommended with proposed conditions listed on Pgs. 1-2.

Upon approval this permit shall be included under TV Revision (02), A/N 513687, Section D.

P = true vapor pressure (psia)
= 150 mm Hg @ 20 deg F, **max. 37.14%** HCl (23^0 Be)
= 2.90 psia
M_V = molecular weight of vapor (lb/lb-mole) = 36.5

Breathing loss:

L_B = (V_O)(Delta T/Tavg)(1/ v) (P/14.7) (M_V)

L_B = breathing loss (lb/day)
V_O = volume of vapor above liquid surface (cf)
= 50% of max tank vol of 1337 cf = **670 cf**
Delta T= average daily temperature change (deg R or F) = **25 deg R**
Tavg = average daily temperature (deg R) = 65 + 460 = **525 deg R**
(V_O)(Delta T/Tavg) = Vol of vapor expelled from the tank due to avg. temp. change (cft)
P = true vapor pressure (Psia) = **2.90 psia**

V = 10.73(FT^3 Psia/ lbmole °R) T_{AV} (°R) (1/14.7 psia)
= (10.73) (525)/14.7
= 383.21
(1/v) = 1/383.21 = **0.0026**
M_V = molecular weight of vapor (lb/lb-mole) = **36.5**

L_B = (670) (25/525) (0.0026) (2.90/14.7) (36.5)
= **0.597 lbs/day**
= 0.59 x 30 days = 17.91lbs / mo

Total uncontrolled HCl emission = 25.4 + 17.9 = 43.3 lbs/mo = 1.44 lb/day = 0.06 lb/hr

Controlled emissions @ assumed 75% control efficiency = 10.83 lbs/mo = 0.36 lb/day = 0.02 lb/hr.

No offset required.

RULES EVALUATION:

Rule 212:

There are no schools within 1/4 mile of the emission source.
Daily maximum HCl (as PM10) emission is less than 30 lbs PM10 threshold limit.

HCl is non-carcinogenic- no risk. No public notice required. Compliance is expected.

Rule 401 (Visible Emissions):

With proper operation, maintenance and control of equipment compliance is expected.

7. THE SPARGER TANK SHALL BE FILLED WITH FRESH WATER PRIOR TO EACH ACID TANK FILLING EVENT.

8. RECORDS REQUIRED BY THIS PERMIT SHALL BE KEPT AND MAINTAINED FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST. [RULE 204]

BACKGROUND:

On 715/2010, Orange County Sanitation District (OCSD) submitted this A/N 512604 for the construction of a fume scrubber for the existing HCl storage tank (tank is included under the equipment description for the headworks control permit, however, the tank should have a separate permit that is now covered under this application). This application is evaluated as a PC-PO.

This is a Title V facility. A/N 513687 is also filed for the TV Revision. Most recent TV revision (01) was issued May 28, 2009 (A/N 496824).

PROCESS DESCRIPTION:

Hydrochloric acid tank is located at the headworks control facility and HCl is used for periodic cleaning of the chemical scrubbers. The proposed fume scrubber consists of a 370 gallon capacity sparger tank, with a vacuum relief valve. The sprgaer tank will be filled with water before each acid filling event to neutralize any acid vapors sparged through the sparger, submerged at least 10" below the liquid surface.

EMISSIONS:

The emissions can be assessed using the following equations;

Working loss: (HCl vapors as PM10)

Acid filling rate: 5000 gallon truck delivery @ 250 gpm, once a month (20 minute/event)
Assume maximum of 2 tank-filling events per month.
Annual throughput = 72,000 gal per OCSD 10/14/2010 E-mail.

L_W = (F)(1 cft/7.48 gal)(1 lb-mole/380 cf)(M_V)(P/14.7 psia)
= $2.4 \times 10^{-5} \times F \times P \times M_V$
= 2.4 E-05 x 5000 x 2.90 x 36.5
L_W = 12.7 lbs HCl /day (with no vapor return line to truck and vapor venting to sparger tank)
= 12.7 x 2 events/mo = 25.4 lbs/mo.

L_W = working loss (lb/day)
F = filling rate (gal/day), 5000 gal/mo = 5000 gal/day (20 min filling time once/month)

PERMIT TO CONSTRUCT / OPERATE EVALUATION

APPLICANT'S NAME: ORANGE COUNTY SANITATION DISTRICT (OCSD)

MAILING ADDRESS: 10844 ELLIS AVENUE
FOUNTAIN VALLEY, CA 92708-7018
ATTN.: TERRY AHN, REGULATORY SPECIALIST

EQUIPMENT ADDRESS: 22212 BROOKHURST STREET (PLANT NO. 2)
HUNTINGTON BEACH, CA 92646-8406

FACILITY ID. : **29110**

EQUIPMENT DESCRIPTION:

STORAGE TANK, VERTICAL FIXED ROOF, ID NO. 20GTNK500, HYDROCHLORIC ACID, 10' - 0" DIA. X 17' - 0" H., 10,000- GALLON CAPACITY, AND VENTING THROUGH A SPARGER TANK, 370 GALLON CAPACITY, CONTAINING WATER.

CONDITIONS:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]

3. THIS PERMIT SHALL EXPIRE IF CONSTRUCTION OF THIS EQUIPMENT IS NOT COMPLETED WITHIN ONE YEAR FROM THE DATE OF ISSUANCE OF THIS PERMIT UNLESS AN EXTENSION IS GRANTED BY THE EXECUTIVE OFFICER.
[RULE 205]

4. THIS EQUIPMENT SHALL STORE HYDROCHLORIC ACID WITH CONCENTRATION OF 38 WEIGHT PERCENT OR LESS ONLY.
[RULE 204]

5. THE MAXIMUM AMOUNT OF HYDROCHLORIC ACID FILLED INTO THIS STORAGE TANK SHALL NOT EXCEED 10,000 GALLONS PERMONTH .
[RULE 1303 (b) (1) - OFFSET]

6. THE OPERATOR SHALL NOT OPERATE THIS TANK UNLESS VENT GASES ARE SPARGED AT LEAST 10 INCHES BELOW THE LIQUID SURFACE OF A TRAP CONTAINING AT LEAST 190 GALLONS OF WATER.
[RULE 1303 (a) (1)-BACT]