



**YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT**

1947 Galileo Court, Suite 103; Davis, CA 95618

Phone (530) 757-3650; Fax (530) 757-3670

**Stationary Agricultural Source (SAS) Screening Worksheet**

Calculate NOx Emissions From Internal Combustion Engines

Crop Type*	Water Use (acre-ft/acre)	Acreage (acres)	Water Depth (feet)**	NOx Emission Factor (g-bhp/hr)***	Conversion Factor	Annual NOx Emissions (lbs/year)
Forage Crop	3.71 X	X	X	X	0.00591	=
Grain Crop	1.78 X	X	X	X	0.00591	=
Field Crop	3.24 X	X	X	X	0.00591	=
Truck/Row	2.95 X	X	X	X	0.00591	=
Orchard	2.56 X	X	X	X	0.00591	=
Vineyard	1.94 X	X	X	X	0.00591	=
Rice	6.03 X	X	X	X	0.00591	=
<b>**LINE A**</b>	<b>Total Annual NOx Emissions from IC Engines (lbs/year)</b>					

\*See page 2 for crop type definitions.

\*\*If water depth is unknown, use 100 feet. See instructions for more information.

\*\*\*If Manufacturer=s emission factors are unknown, see NOx emission factor table (page 2) and instructions for more information.

**PERMIT APPLICATION REQUIREMENTS**

Total in box on <b>**LINE A**</b> (lbs/year)	Required Permit Application
Total is <i>LESS THAN</i> 25,000 lbs/year.	No Permit Required
Total is <i>EQUAL TO OR GREATER THAN</i> 25,000 lbs/year.	Complete AOP application. <sup>1</sup>
Total is <i>EQUAL TO OR GREATER THAN</i> 50,000 lbs/year.	Complete Title V application. <sup>2</sup>

<sup>1</sup>AOP = Agricultural Operating Permit; <sup>2</sup>Title V = Federal Operating Permit

## Crop Type Definitions

**Forage Crop** = Non-permanent crop that is machine harvested used for forage material such as alfalfa.

**Grain Crop** = Seed-bearing cereal grasses such as oat, hay, wheat, barley, etc.

**Field Crop** = Non-permanent crop that is typically machine-harvested such as beans, corn, sugar beets, cotton, safflower, sunflower, etc.

**Truck/Row Crop** = Non-permanent crop that is typically hand-harvested such as tomatoes, green beans, onions, strawberries, potatoes, etc.

**Orchard** = Fruit or nut bearing trees.

**Vineyard** = Ground planted with cultivated grapevines, which includes table grapes, raisins, juice grapes, etc.

**Rice** = Irrigated rice fields.

## NOx Emission Factors

PRE-1996 Model Year Engines Only		
Horsepower	Engine Model Year	NOx Emission Factor (g/bhp-hr)
50-120	Pre-1988	13
	1988-1995	8.75
121-175	Pre-1970	14
	1970-1971	13
	1972-1979	12
	1980-1987	11
	1988-1995	8.17
176-250	Pre-1970	14
	1970-1971	13
	1972-1979	12
	1980-1987	11
	1988-1995	8.17
251-750	Pre-1970	14
	1970-1971	13
	1972-1979	12
	1980-1987	11
	1988-1995	8.17
>750	Pre-1970	14
	1970-1971	13
	1972-1979	12
	1980-1987	11
	1988-1995	8.17

1996-2005 Model Year Engines Only		
Horsepower	Engine Model Year	NOx Emission Factor (g/bhp-hr)
50-100	1996-1997	8.75
	1997-2003	6.9
	2004-2005	5.6
100-175	1996	8.17
	1997-2002	6.9
	2003-2005	4.9
175-300	1996-2002	6.9
	2003-2005	4.9
300-600	1996-2000	6.9
	2001-2005	4.8
600-750	1996-2001	6.9
	2002-2005	4.8
>750	1996-1999	8.17
	2000-2005	6.9



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### Screening Worksheet Instructions

**IMPORTANT:** A separate screening worksheet must be completed for each **Stationary Agricultural Source (SAS)**. A SAS is generally considered to be agricultural equipment (non-mobile, stationary or portable emission units) under common ownership or control, located on contiguous property. Failure to adhere to the instructions may result in an incorrect and incomplete screening worksheet.

**NEED ASSISTANCE?:** Please contact the District engineering staff to receive assistance over the phone or to schedule an appointment for a free consultation to assist you in completing your screening worksheet. The engineering division can be reached at (530) 757-3650.

#### **INSTRUCTIONS:**

##### **PART 1: Calculate NOx emissions from Internal Combustion Engines**

- Step 1: Identify the crop types you irrigate.
- Step 2: Enter the **TOTAL** acres irrigated for each particular crop type.
- Step 3: Enter the **MAXIMUM** water pumping depth (in feet) for each crop type. If you operate more than one engine for a particular crop type, enter the deepest pumping depth (in feet) for that crop type. If your water depth is unknown, use 100 feet.
- Step 4: Enter the NOx emission factor of the engine operated for each crop type. If you operate more than one engine for a particular crop type, enter the highest NOx emission factor for that crop type. If the manufacturer's emission factors are unknown, use the data provided in the NOx emission factors table. If the model year of the engine is unknown, use 10 g/bhp-hr.
- Step 5: **MULTIPLY** the values across each row and enter their product into the last column labeled Annual NOx Emissions.
- Step 6: **ADD** the values in the last column labeled Annual NOx Emissions@ and enter the sum into the box on **\*\*LINE A\*\***.
- Step 7: **COMPARE** the value in the box on **\*\*LINE A\*\*** to the Permit Application Requirements Table.

#### **APPLICATION FORMS:**

If your SAS is required to submit either an AOP or Title V application form, you may either pick-up an application from the District office or request that an application be sent to you by mail.