INTEROFFICE MEMORANDUM
April 13, 2009

TO: **Brian Lusher**

Via: **Scott B. Lutz** SBL
Daphne Y. Chong DYC
Glen Long GEZ

FROM: **Irma Salinas** IS

SUBJECT: **Results of Health Risk Screening Analysis for Gateway Generating Station (Antioch, CA), Fire Pump Diesel Engine, Plant #18143 Application #20242**

Per your request, we have completed a health risk screening analysis for the above referenced permit application. The analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from operation of a fire pump diesel engine at this facility. Results from the health risk screening analysis indicate that the maximum cancer risk is estimated at 0.82 in a million. In accordance with the District's Regulation 2-5, this risk level is considered acceptable, as the engine does meet current TBACT requirements.

EMISSIONS: Diesel particulate matter (PM) was used as a surrogate for all emitted TACs. The particulate emission rate was calculated based on the following:

Source	PM Emission Factor (g/bhp-hr)	Horsepower	Annual Usage (hours/year)	Diesel PM Emissions (lb/year)
S-47	0.112	300	50	3.694

MODELING: The ISCST3 air dispersion computer model was used to estimate annual average ambient air concentrations. The model was run with Contra Costa Power (2001-2005) meteorological data, emission rate scalars to account for operations that occur only during normal working hours, and Brentwood, Antioch South, Jersey Island and Antioch North terrain data. Model runs were made with both urban and rural dispersion coefficients. The highest concentrations occur for the model run using the rural dispersion coefficients, therefore these values were used in the health risk calculations. Stack and building parameters for the analysis were based on information provided by the applicant.

HEALTH RISK: Estimates of residential risk assume potential exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimates for offsite workers assume potential exposure occurs 8 hours per day, 245 day per year, for 40 years. Risk estimates for students assume a higher breathing rate, and potential exposure is assumed to occur 10 hours per day, 36 weeks per year, for 9 years. The estimated health risks for this permit application are presented in the table below.

Receptor	Cancer Risk	Chronic Non-cancer Hazard Index
Resident	0.82 chances in a million	5.0E-4
Worker	0.68 chances in a million	4.9E-4
Student	N/A	N/A

Health Risk Screening Analysis Summary for Standby Generator Diesel Engine
Facility =Gateway Generating Station; (Antioch CA)

- **Plant #18143, Application #20242**
- **ISCST3 Air Dispersion Model Used**
- **Contra Costa Power Meteorological Data Used**
- **Brentwood, Antioch South, Jersey Island, Antioch North Terrain Data Used**
- **Daytime Scalars Used**
- **Rural Land Use**

Health Risk Estimates:

						Diesel PM			
Receptor	Max. Annual Emission Rate		Max. Annual Avg. Chi/Q	Annual Average Exposure Concentration[1]	Inhalation Dose[2]	Inhalation Cancer Potency Factor (CPF)	Inhalation Reference Exposure Level (REL)	***Max. Cancer Risk***[3]	***Max. Non-cancer Hazard Quotient***[4]
	(lb/yr)	(g/sec)	(ug/m^3 per g/sec)	(ug/m^3)	(mg/kg-day)	$(mg/kg\text{-}day)^{-1}$	(ug/m^3)		
Resident	3.694	5.3E-05	4.7E+01	2.5E-03	7.5E-07	1.1E+00	5.0E+00	***8.24E-07***	***5.0E-04***
Worker	3.694	5.3E-05	4.7E+01	2.5E-03	6.2E-07	1.1E+00	5.0E+00	***6.8E-07***	***4.9E-04***
Student	3.694	5.3E-05	0.0E+00	0.0E+00	0.0E+00	1.1E+00	5.0E+00	***0.0E+00***	***0.0E+00***

1. Annual Average Exposure Concentration (ug/m^3) = Max. Annual Emission Rate (g/sec) * Max. Annual Avg. Chi/Q (ug/m^3 per g/sec)
2. Inhalation Dose (mg/kg-day) = Ann. Avg. Exp. Conc. (ug/m^3) * BR (L/kg-day) * UCF ($mg\text{-}m^3$)/(ug/L) * $EAF_{(cancer\ risk)}$
3. Max. Cancer Risk = Inhalation Dose (mg/kg-day) * CPF $(mg/kg\text{-}day)^{-1}$
4. Max. Non-cancer Hazard Quotient = Ann. Avg. Exp. Conc. (ug/m^3) * $EAF_{(non\text{-}cancer)}$ / REL (ug/m^3)

Exposure Adjustment Factors (EAFs) for Sources that Operate Intermittently:

	Daily (hours/day)	Weekly (days/week)	Annually (weeks/year)	Lifetime (years per 70-yr lifetime)	Exposure Adjustment Factors (EAFs)[5]	
Resident is Present While Source is Operating	24	7	50	70		
Worker is Present While Source is Operating	8	5	49	40		
Student is Present While Source is Operating	10	5	36	9	(cancer risk)	(non-cancer hazard quotient)
Source is Operating	1	1	50	70		
Fraction of Time **Resident** is Present While the Source is Operating	1.00	1.00	1.00	1.00	1.00	1.00
Fraction of Time **Worker** is Present While the Source is Operating	1.00	1.00	0.98	0.57	0.56	0.98
Fraction of Time **Student** is Present While the Source is Operating	1.00	1.00	0.72	0.13	0.09	0.72

5. Note that the fraction of time that a receptor is present while a source is operating can not exceed one.

Thus, if a receptor is present 10 hours/day, but the source operates only 8 hours/day, the maximum that the receptor can be present while the source is operating is the number of hours the source is operating (e.g., 8 hours).

Exposure Parameters:

Receptor	Breathing Rate (BR)[6] (L/kg-day)	Exposure Time (ET) (hours/day)	Exposure Frequency (EF) (day/year)	Exposure Duration (ED) (years)	Units Conversion Factor (UCF) $(mg\text{-}m^3)/(ug\text{-}L)$	Averaging Time (AT - 70 years) (days)
Resident	302	24	350	70	1.0E-06	25,550
Worker	447	8	245	40	1.0E-06	25,550
Student	581	10	180	9	1.0E-06	25,550

6. Based on a 24-hour day. Worker breathing rate is 149 L/kg-day (for an 8-hour workday), and 447 L/kg-day (for a 24-hour day).

```
NO ECHO

 BEE-Line ISCST3 "BEEST" Version 9.00

 Input File - C:\IRMA\BEEST\DCModel\20242\20242raincap2_2001_DIESEL.DTA

Output File - C:\IRMA\BEEST\DCModel\20242\20242raincap2_2001_DIESEL.LST

   Met File - C:\metdata\ContraCostaPower\ccp01-05300A.asc


 *** Message Summary For ISC3 Model Setup ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of            0 Informational Message(s)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320    18 PPARM :Input Parameter May Be Out-of-Range for Parameter       DS
RE W282 29298 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in  MCB#9

***********************************
*** SETUP Finishes Successfully ***
***********************************


 *** ISCST3 - VERSION 02035 ***     *** Gateway Generation Station; A/N 20242; Plant # 18143                 ***         04/14/09
                                   ***                                                                     ***         09:11:20
**MODELOPTs:                                                                                                           PAGE   1
CONC                    RURAL ELEV                          NOSTD

                                        ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.
```

```
  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses RURAL Dispersion.

**Model Uses User-Specified Options:
          1. Final Plume Rise.
          2. Not Use Stack-tip Downwash.
          3. Buoyancy-induced Dispersion.
          4. Calms Processing Routine.
          5. Not Use Missing Data Processing Routine.
          6. Default Wind Profile Exponents.
          7. Default Vertical Potential Temperature Gradients.

**Model Accepts Receptors on ELEV Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates PERIOD Averages Only

**This Run Includes:     1 Source(s);      1 Source Group(s); and   29261 Receptor(s)

**The Model Assumes A Pollutant Type of:  DIESEL

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
        Model Outputs Tables of PERIOD Averages by Receptor
        Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Anem. Hgt. (m) =    20.00 ;    Decay Coef. =    0.000     ;    Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =     2.4 MB of RAM.

**Input Runstream File:          20242raincap2_2001_DIESEL.DTA
```

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BUILDING EXISTS	EMISSION RATE SCALAR VARY BY
47	0	0.53177E-04	609069.0	4208026.0	3.0	3.25	683.15	0.00	32.34	YES	HROFDY

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID	SOURCE IDs
ALL	47 ,

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: 47

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK
1	39.0,	89.8,	0	2	39.0,	100.8,	0	3	39.0,	108.8,	0	4	39.0,	113.5,	0	5	39.0,	114.7,	0	6	39.0,	112.5,	0
7	39.0,	106.8,	0	8	39.0,	97.9,	0	9	5.2,	15.0,	0	10	5.2,	14.8,	0	11	39.0,	106.8,	0	12	39.0,	112.5,	0
13	39.0,	114.7,	0	14	39.0,	113.5,	0	15	39.0,	108.8,	0	16	39.0,	100.8,	0	17	39.0,	89.8,	0	18	39.0,	76.0,	0

19	39.0,	89.8,	0	20	39.0,	100.8,	0	21	39.0,	108.8,	0	22	39.0,	113.5,	0	23	39.0,	114.7,	0	24	39.0,	112.5,	0
25	39.0,	106.8,	0	26	39.0,	97.9,	0	27	6.4,	9.0,	0	28	5.2,	14.8,	0	29	39.0,	106.8,	0	30	39.0,	112.5,	0
31	39.0,	114.7,	0	32	39.0,	113.5,	0	33	39.0,	108.8,	0	34	39.0,	100.8,	0	35	39.0,	89.8,	0	36	39.0,	76.0,	0

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
SOURCE ID = 47 ; SOURCE TYPE = POINT :											
1	.00000E+00	2	.00000E+00	3	.00000E+00	4	.00000E+00	5	.00000E+00	6	.00000E+00
7	.00000E+00	8	.30000E+01	9	.30000E+01	10	.30000E+01	11	.30000E+01	12	.30000E+01
13	.30000E+01	14	.30000E+01	15	.30000E+01	16	.00000E+00	17	.00000E+00	18	.00000E+00
19	.00000E+00	20	.00000E+00	21	.00000E+00	22	.00000E+00	23	.00000E+00	24	.00000E+00

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(599100.0,	4198200.0,	409.7,	0.0);	(599350.0,	4198200.0,	468.8,	0.0);
(599600.0,	4198200.0,	446.5,	0.0);	(599850.0,	4198200.0,	383.4,	0.0);
(600100.0,	4198200.0,	408.7,	0.0);	(600350.0,	4198200.0,	355.1,	0.0);
(600600.0,	4198200.0,	314.2,	0.0);	(600850.0,	4198200.0,	337.1,	0.0);
(601100.0,	4198200.0,	313.3,	0.0);	(601350.0,	4198200.0,	321.6,	0.0);
(601600.0,	4198200.0,	286.8,	0.0);	(601850.0,	4198200.0,	289.6,	0.0);
(602100.0,	4198200.0,	280.4,	0.0);	(602350.0,	4198200.0,	287.4,	0.0);
(602600.0,	4198200.0,	273.4,	0.0);	(602850.0,	4198200.0,	311.8,	0.0);
(603100.0,	4198200.0,	207.6,	0.0);	(603350.0,	4198200.0,	184.1,	0.0);
(603600.0,	4198200.0,	160.9,	0.0);	(603850.0,	4198200.0,	144.2,	0.0);
(604100.0,	4198200.0,	133.5,	0.0);	(604350.0,	4198200.0,	121.9,	0.0);
(604600.0,	4198200.0,	114.6,	0.0);	(604850.0,	4198200.0,	108.8,	0.0);

(605100.0,	4198200.0,	113.1,	0.0);	(605350.0,	4198200.0,	115.5,	0.0);
(605600.0,	4198200.0,	153.9,	0.0);	(605850.0,	4198200.0,	143.9,	0.0);
(606100.0,	4198200.0,	125.6,	0.0);	(606350.0,	4198200.0,	114.3,	0.0);
(606600.0,	4198200.0,	105.5,	0.0);	(606850.0,	4198200.0,	92.7,	0.0);
(607100.0,	4198200.0,	86.0,	0.0);	(607350.0,	4198200.0,	74.7,	0.0);
(607600.0,	4198200.0,	77.4,	0.0);	(607850.0,	4198200.0,	82.9,	0.0);
(608100.0,	4198200.0,	83.5,	0.0);	(608350.0,	4198200.0,	86.0,	0.0);
(608600.0,	4198200.0,	66.8,	0.0);	(608850.0,	4198200.0,	74.1,	0.0);
(609100.0,	4198200.0,	59.7,	0.0);	(609350.0,	4198200.0,	55.8,	0.0);
(609600.0,	4198200.0,	53.6,	0.0);	(609850.0,	4198200.0,	50.3,	0.0);
(610100.0,	4198200.0,	50.9,	0.0);	(610350.0,	4198200.0,	49.1,	0.0);
(610600.0,	4198200.0,	43.9,	0.0);	(610850.0,	4198200.0,	42.7,	0.0);
(611100.0,	4198200.0,	39.9,	0.0);	(611350.0,	4198200.0,	36.6,	0.0);
(611600.0,	4198200.0,	35.4,	0.0);	(611850.0,	4198200.0,	32.9,	0.0);
(612100.0,	4198200.0,	32.0,	0.0);	(612350.0,	4198200.0,	30.3,	0.0);
(612600.0,	4198200.0,	29.9,	0.0);	(612850.0,	4198200.0,	28.0,	0.0);
(613100.0,	4198200.0,	27.1,	0.0);	(613350.0,	4198200.0,	25.9,	0.0);
(613600.0,	4198200.0,	25.9,	0.0);	(613850.0,	4198200.0,	25.0,	0.0);
(614100.0,	4198200.0,	25.0,	0.0);	(614350.0,	4198200.0,	25.9,	0.0);
(614600.0,	4198200.0,	24.1,	0.0);	(614850.0,	4198200.0,	24.1,	0.0);
(615100.0,	4198200.0,	22.9,	0.0);	(615350.0,	4198200.0,	22.3,	0.0);
(615600.0,	4198200.0,	20.1,	0.0);	(615850.0,	4198200.0,	18.9,	0.0);
(616100.0,	4198200.0,	18.9,	0.0);	(616350.0,	4198200.0,	18.0,	0.0);
(616600.0,	4198200.0,	17.1,	0.0);	(616850.0,	4198200.0,	17.1,	0.0);
(617100.0,	4198200.0,	17.1,	0.0);	(617350.0,	4198200.0,	15.8,	0.0);
(617600.0,	4198200.0,	14.9,	0.0);	(617850.0,	4198200.0,	14.0,	0.0);
(618100.0,	4198200.0,	14.0,	0.0);	(618350.0,	4198200.0,	11.9,	0.0);
(618600.0,	4198200.0,	11.9,	0.0);	(618850.0,	4198200.0,	11.0,	0.0);
(619100.0,	4198200.0,	9.4,	0.0);	(599100.0,	4198450.0,	457.8,	0.0);
(599350.0,	4198450.0,	484.9,	0.0);	(599600.0,	4198450.0,	457.5,	0.0);
(599850.0,	4198450.0,	388.6,	0.0);	(600100.0,	4198450.0,	318.5,	0.0);
(600350.0,	4198450.0,	391.7,	0.0);	(600600.0,	4198450.0,	287.4,	0.0);
(600850.0,	4198450.0,	331.3,	0.0);	(601100.0,	4198450.0,	249.0,	0.0);

* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
LESS THAN 1.0 METER OR 3*ZLB IN DISTANCE, OR WITHIN OPEN PIT SOURCE

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)

47	609026.0	4207926.0	108.85
47	609051.0	4207926.0	101.61
47	609026.8	4207926.5	108.07
47	609025.0	4207925.0	110.17
47	609050.0	4207925.0	102.77
47	609026.0	4207926.0	108.85
47	609051.0	4207926.0	101.61
47	609026.8	4207926.5	108.07

**MODELOPTs:
CONC RURAL ELEV NOSTD

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00

F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: ccp01-05300A.asc
FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 2804 UPPER AIR STATION NO.: 2804
NAME: UNKNOWN NAME: UNKNOWN
YEAR: 2001 YEAR: 2001

YR	MN	DY	HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
01	01	01	01	263.5	1.52	276.0	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	02	258.7	2.10	276.4	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	03	230.0	1.39	276.0	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	04	50.8	1.00	275.3	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	05	315.0	1.00	275.3	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	06	264.2	1.12	275.4	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	07	294.2	1.39	275.7	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	08	301.9	1.79	274.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	09	355.5	1.00	274.5	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	10	101.3	1.21	275.8	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	11	205.5	1.00	278.0	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	12	258.1	2.68	279.3	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	13	256.1	3.31	279.8	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00

01 01 01 14	289.7	2.19	281.5	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 15	329.8	2.28	284.5	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 16	354.7	1.79	286.0	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 17	333.9	1.00	285.4	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 18	256.0	1.61	282.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 19	289.0	1.52	280.8	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 20	305.9	1.30	279.4	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 21	274.4	1.00	277.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 22	203.7	1.00	276.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 23	107.0	1.12	276.7	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 24	259.4	1.00	275.7	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

**MODELOPTs:
CONC RURAL ELEV NOSTD

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 47 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF DIESEL IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
608991.00	4208345.50	0.00008	608991.00	4208370.00	0.00006
608991.00	4208394.50	0.00006	608991.00	4208418.50	0.00005
609009.31	4208443.50	0.00004	609027.69	4208443.50	0.00003
609047.50	4208458.00	0.00003	609072.50	4208468.00	0.00002
609118.50	4208457.00	0.00002	609143.25	4208486.50	0.00002
609162.50	4208501.50	0.00002	609181.75	4208517.00	0.00002
609200.62	4208507.00	0.00002	609200.31	4208482.50	0.00002
609199.94	4208457.50	0.00002	609199.56	4208433.00	0.00002
609199.25	4208408.00	0.00002	609198.88	4208383.00	0.00003
609198.50	4208358.50	0.00003	609198.19	4208333.50	0.00003
609197.81	4208309.00	0.00004	609197.50	4208284.00	0.00004
609197.12	4208259.50	0.00004	609196.75	4208234.50	0.00005
609196.44	4208209.50	0.00006	609196.06	4208185.00	0.00007
609195.69	4208160.00	0.00008	609195.38	4208135.50	0.00010
609195.00	4208110.50	0.00013	609194.62	4208085.50	0.00017
609194.31	4208061.00	0.00032	609193.94	4208036.00	0.00113

609193.56	4208011.50	0.00248 MAX	609193.25	4207986.50	0.00221
609192.88	4207961.50	0.00173	609192.50	4207937.00	0.00170
609192.19	4207912.00	0.00155	609191.81	4207887.50	0.00132
609191.50	4207862.50	0.00107	609191.12	4207838.00	0.00087
609190.75	4207813.00	0.00071	609190.44	4207788.00	0.00059
609190.06	4207763.50	0.00050	609189.69	4207738.50	0.00042
609189.38	4207714.00	0.00037	609165.69	4207689.00	0.00031
609142.31	4207689.00	0.00029	609119.00	4207689.00	0.00026
609095.69	4207689.00	0.00022	609072.31	4207689.00	0.00019
609049.19	4207712.50	0.00019	609049.38	4207736.50	0.00021
609049.62	4207760.00	0.00024	609049.81	4207784.00	0.00028
609050.00	4207807.50	0.00033	609050.19	4207831.00	0.00039
609050.38	4207855.00	0.00048	609050.62	4207878.50	0.00060
609050.81	4207902.50	0.00078	609026.81	4207926.50	0.00000
609002.62	4207927.50	0.00056	608978.44	4207928.00	0.00050
608954.25	4207928.50	0.00046	608930.06	4207929.50	0.00042
608905.94	4207930.00	0.00038	608881.75	4207931.00	0.00035
608857.56	4207931.50	0.00031	608833.38	4207932.00	0.00028
608809.19	4207933.00	0.00024	608785.00	4207933.50	0.00022
608760.81	4207934.00	0.00020	608736.62	4207935.00	0.00018
608712.44	4207935.50	0.00016	608688.25	4207936.00	0.00014
608664.06	4207937.00	0.00013	608639.94	4207937.50	0.00012
608615.75	4207938.50	0.00011	608591.56	4207939.00	0.00010
608567.38	4207939.50	0.00009	608543.19	4207940.50	0.00009

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF DIESEL IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.00248 AT (609193.56, 4208011.50, 3.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	0.00248 AT (609193.56, 4208011.50, 3.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.00240 AT (609200.00, 4208000.00, 3.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.00240 AT (609200.00, 4208000.00, 3.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	0.00221 AT (609193.25, 4207986.50, 3.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	0.00221 AT (609193.25, 4207986.50, 3.00, 0.00)	DC	NA
	7TH HIGHEST VALUE IS	0.00184 AT (609218.25, 4207986.00, 2.90, 0.00)	DC	NA

```
        8TH HIGHEST VALUE IS       0.00184 AT (  609218.25,  4207986.00,      2.90,      0.00)  DC      NA
        9TH HIGHEST VALUE IS       0.00182 AT (  609200.00,  4207975.00,      3.00,      0.00)  DC      NA
       10TH HIGHEST VALUE IS       0.00182 AT (  609225.00,  4208000.00,      2.90,      0.00)  DC      NA


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
                      BD = BOUNDARY

 *** ISCST3 - VERSION 02035 ***    *** Gateway Generation Station; A/N 20242; Plant # 18143              ***        04/14/09
                                   ***                                                                  ***        09:11:20
**MODELOPTs:                                                                                                      PAGE 702
CONC                    RURAL ELEV                        NOSTD


*** Message Summary : ISCST3 Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of          278 Informational Message(s)

A Total of          278 Calm Hours Identified


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320    18 PPARM :Input Parameter May Be Out-of-Range for Parameter       DS
RE W282 29298 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in  MCB#9

   ************************************
   *** ISCST3 Finishes Successfully ***
   ************************************
```