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Otay Annex

LEG

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AP42

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apcd

County of San Diego

Ref. 25  
Some Uncontrolled HAPs

Data Qual. = C.



R. J. Sommerville  
Air Pollution Control Officer

December 7, 1988

TO: Barney McEntire  
Senior Air Pollution Control Engineer

FROM: R.Y. Robert Yelenosky  
Associate Air Pollution Control Chemist

SUBJECT: OTAY VALLEY/ANNEX LANDFILL

I have reviewed the Solid Waste Assessment Test (SWAT) report. This test was prepared and submitted by SAIC for the County of San Diego.

The Otay Valley/Annex Landfill is located in the southwestern part of San Diego County, south of the City of Chula Vista near Otay Valley Road and Interstate 805. The site has been in operation since 1966 and its service life is estimated to extend to 1999. The property has a total of 516 acres, with 294 acres of waste in place. The site serves several cities for general waste disposal and also accommodates a variety of special wastes, including sludges, cannery wastes, wastes from kelp processing and slaughterhouses. Although the Class I hazardous waste disposal area of the landfill is inactive, a hazardous materials transfer station is currently being operated at the west end of the Class I area.

Both the Otay Valley and Annex sections are currently undergoing landfill gas extraction with a gas recovery system that began in 1986. Methane concentrations are reported to have ranged from 48 to 51 percent since the operation began.

In June, 1986, gas migration monitoring wells were established along the northern and southern boundaries of the landfill. Readings taken from these wells in June, 1987, revealed no detectable methane gas migration from the landfill.

In late July and early August, 1988, an Air SWAT was conducted. Gas Stream Characterizations (GSC) were performed at two test wells. One well is located in the Otay Valley Landfill and the other well is located in the Annex. The landfill gas

samples were found to contain 2,400-16,400 ppb vinyl chloride, 3,361-8,483 ppb benzene, 12,367-22,821 ppb methylene chloride, 2,940-3,468 ppb perchlorethylene, 10.3-169 ppb methyl chloroform, 2,093-3,234 ppb trichloroethylene and 41.5-53.9 percent methane. Two Integrated Surface Samples (ISS) were also collected, one over the Class I area in the Otay Valley Landfill and the other in the Annex. Both samples were analyzed for methane only and measured 2 and 9 ppm respectively.

Twenty-four hour ambient air sampling was conducted to measure the air quality impacts of the landfill for all specified Toxic Air Contaminants (TAC). The samples were collected from two landfill sites, plus a background control located four miles from the landfill. The samples were collected over ten consecutive days beginning on July 25, 1988. During this period vinyl chloride, ethylene dibromide and trichloroethylene were not detected at or above the detection limit. Benzene was not detected during the ten day test except on days 2 and 3 in the background control samples. Methyl chloroform ranged from <0.5-3.0 ppb in the landfill and <0.5-1.5 ppb in the background controls. Methylene chloride measured <1-58.3 ppb in the landfill and <1-4.9 ppb in the controls. Perchloroethylene measured <0.2 -0.86 ppb in the landfill and <0.2-2.2 ppb in the controls. Carbon tetrachloride measured less than the detection limit except for one day at one landfill site, when it measured 0.71 ppb. Chloroform also measured less than the detection limit in every sample except for 7.6 ppb in one landfill sample and 0.99 ppb in one background control sample. Ethylene dichloride was detected only in one landfill sample measuring 1.1 ppb and one background control sample measuring 3.5 ppb.

Five gas migration test probe wells were also sampled and tested for methane only. The methane concentrations ranged from 0.8-58 ppm.

RY:jw



Figure 2-3 Otay SWAT Sampling Locations

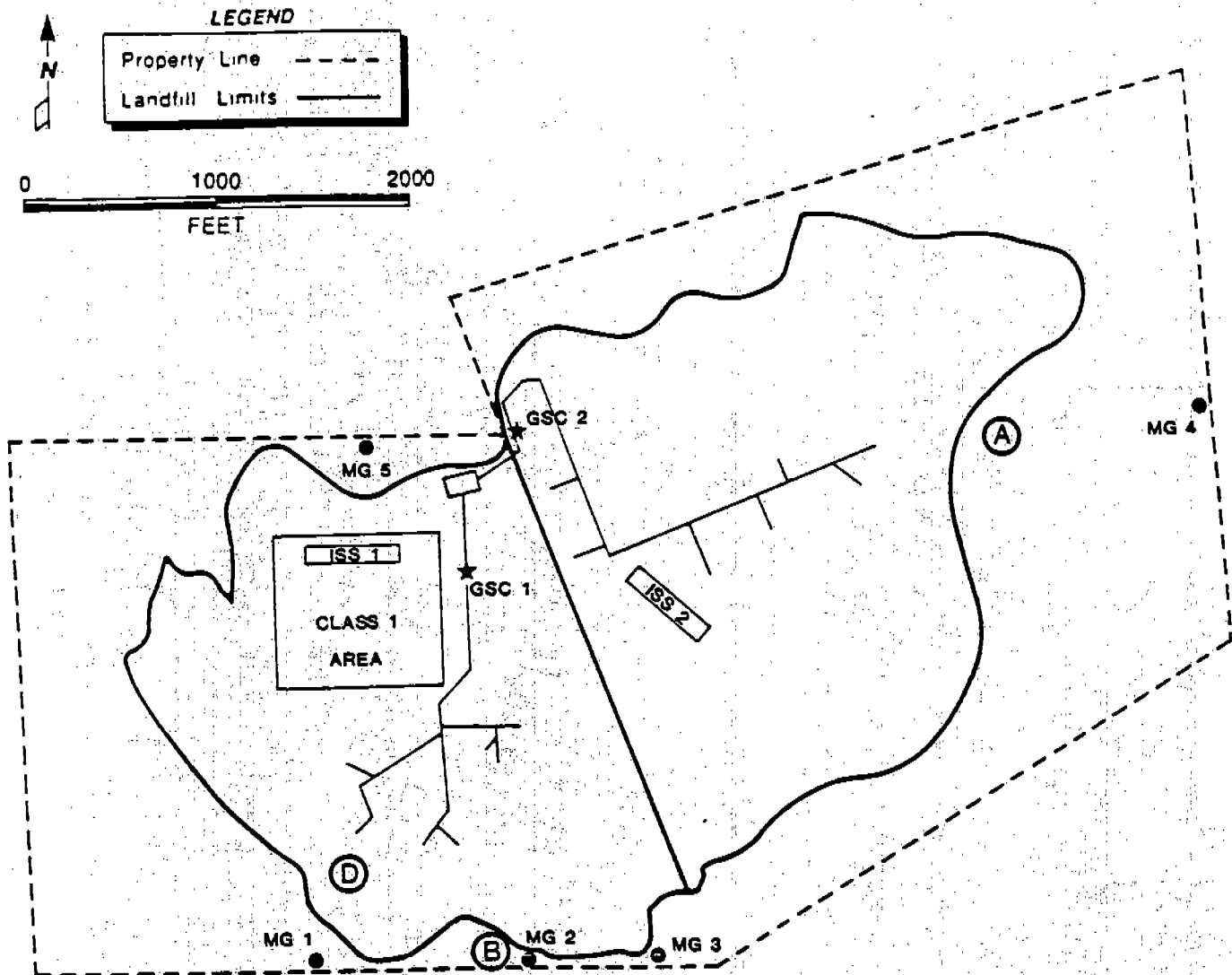


Table 1-1

## Toxic Air Contaminants

| <u>Compound</u>                           | Detection Limits, ppb |            |
|-------------------------------------------|-----------------------|------------|
|                                           | <u>Air</u>            | <u>Gas</u> |
| Chloroethene (vinyl chloride)             | 2                     | 500        |
| Benzene                                   | 2                     | 500        |
| 1,2-Dibromoethane (ethylene dibromide)    | 0.5                   | 1          |
| 1,2-Dichloroethane (ethylene dichloride)  | 0.2                   | 20         |
| Dichloromethane (methylene chloride)      | 1                     | 60         |
| Tetrachloroethene (perchloroethylene)     | 0.2                   | 10         |
| Tetrachloromethane (carbon tetrachloride) | 0.2                   | 5          |
| 1,1,1-Trichloroethane (methyl chloroform) | 0.5                   | 10         |
| Trichloroethylene                         | 0.6                   | 10         |
| Trichloromethane (chloroform)             | 0.8                   | 2          |

Table 2-2

## LANDFILL GAS TEST RESULTS (ppb)

| COMPOUND / Sample (GSC) Number    | <u>Infiltration</u><br><u>Correction</u><br>ppm | LANDFILL<br>1 | <u>Infiltration</u><br><u>Correction</u><br>ppm | ANNEX<br>2 | <u>Avg</u> |
|-----------------------------------|-------------------------------------------------|---------------|-------------------------------------------------|------------|------------|
| Vinyl Chloride                    | 22.3                                            | 16,400        | 2.59                                            | 2,400      | 9,400      |
| Benzene                           | 11.5                                            | 8,483         | 3.63                                            | 3,361      | 5,922      |
| Ethylene Dibromide                | .0005                                           | <0.8          | .0004                                           | <0.8       | 40.8       |
| Ethylene Dichloride               | .034                                            | <50*          | .027                                            | <50*       | 450        |
| Methylene Chloride                | 31.0                                            | 22,821        | 13.41                                           | 2,367      | 17,594     |
| Perchloroethylene                 | 4.71                                            | 3,468         | 3.18                                            | 2,940      | 3,204      |
| Carbon Tetrachloride              | .0002                                           | <0.3          | .0002                                           | <0.3       | 40.3       |
| ✓ Methyl Chloroform               | .014                                            | 10.3          | 0.18                                            | 169        | 89.7       |
| Trichloroethylene                 | 4.39                                            | 3,234         | 2.26                                            | 2,093      | 2664       |
| Chloroform                        | .0007                                           | <1.0          | .0005                                           | <1.0       | 41.0       |
| Methane, percent                  |                                                 | 41.5          |                                                 | 53.9       | 47.7       |
| Oxygen, percent                   |                                                 | 3.3           |                                                 | 2.7        |            |
| Nitrogen, percent                 |                                                 | 22.7          |                                                 | 16.6       |            |
| Carbon Dioxide, percent           |                                                 | 32.1          |                                                 | 38.6       | 35.4       |
| CO <sub>2</sub> + CH <sub>4</sub> |                                                 | 73.6          |                                                 | 92.5       |            |

\* Guideline detection limit of 20 ppb exceeded due to small injection volume required to quantify other analytes.

Table 2-3

INTEGRATED SURFACE SAMPLING RESULTS\*

| COMPOUND / ISS Grid # | 1 | 2 |
|-----------------------|---|---|
| Vinyl Chloride        | - | - |
| Benzene               | - | - |
| Ethylene Dibromide    | - | - |
| Ethylene Dichloride   | - | - |
| Methylene Chloride    | - | - |
| Perchloroethylene     | - | - |
| Carbon Tetrachloride  | - | - |
| Methyl Chloroform     | - | - |
| Trichloroethylene     | - | - |
| Chloroform            | - | - |
| Methane, ppm          | 2 | 9 |

\* Analyses for methane only

Summary of conditions during testing:

- ISS #1. Winds averaged 2 mph, with gusts to 3.5 mph.
- ISS #2. Winds averaged 1.5 mph, with gusts to 2 mph.



# DISPOSAL SITE REPORT

Disposal Site Name: Otay Valley/Annex Landfill

Location (UTM): 160,500 North, 1,767,000 East

POPULATION: Within 1 mile 1 to 2 miles 2 to 3 miles  
NA NA NA

Table 2-1a AMBIENT AIR TEST RESULTS (ppb)  
DAY 1

| COMPOUND             | Downwind |         | Downwind | Background |
|----------------------|----------|---------|----------|------------|
|                      | Site A1  | Site A2 | Site B   | Site C     |
| Vinyl Chloride       | <2       | <2      | <2       | <2         |
| Benzene              | <2       | <2      | <2       | <2         |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.2    | <0.2     | <0.2       |
| Methylene Chloride   | 2.0      | 1.6     | <1       | 1.2        |
| Perchloroethylene    | <0.2     | <0.2    | <0.2     | <0.2       |
| Carbon Tetrachloride | <0.2     | 0.71    | <0.2     | <0.2       |
| Methyl Chloroform    | 2.6      | 0.55    | <0.5     | <0.5       |
| Trichloroethylene    | <0.6     | <0.6    | <0.6     | <0.6       |
| Chloroform           | <0.8     | <0.8    | <0.8     | 0.99       |

Table 2-1b AMBIENT AIR TEST RESULTS (ppb)  
DAY 2

| COMPOUND             | Downwind |         | Downwind | Background | Field |
|----------------------|----------|---------|----------|------------|-------|
|                      | Site A1* | Site A2 | Site B   | Site C     | Blank |
| Vinyl Chloride       | <2       | <2      | <2       | <2         | <2    |
| Benzene              | <2       | <2      | <2       | 2.5        | 2.5   |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5     | <0.5       | <0.5  |
| Ethylene Dichloride  | 1.1      | <0.2    | <0.2     | <0.2       | <0.2  |
| Methylene Chloride   | 10.4     | 1.7     | 13.0     | <1         | <1    |
| Perchloroethylene    | 0.46     | 0.86    | <0.2     | <0.2       | <0.2  |
| Carbon Tetrachloride | <0.2     | <0.2    | <0.2     | <0.2       | <0.2  |
| Methyl Chloroform    | 2.7      | 0.94    | <0.5     | 0.73       | <0.5  |
| Trichloroethylene    | <0.6     | <0.6    | <0.6     | <0.6       | <0.6  |
| Chloroform           | <0.8     | <0.8    | 7.6      | <0.8       | <0.8  |

\* Average of duplicate analyses. See Table 2-5

Table 2-1c AMBIENT AIR TEST RESULTS (ppb)  
DAY 3

| COMPOUND             | Downwind |         | Downwind | Background |
|----------------------|----------|---------|----------|------------|
|                      | Site A1  | Site A2 | Site B   | Site C     |
| Vinyl Chloride       | <2       | <2      | <2       | <2         |
| Benzene              | <2       | <2      | <2       | 2.1        |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.2    | <0.2     | 3.5        |
| Methylene Chloride   | <1       | <1      | <1       | 4.9        |
| Perchloroethylene    | <0.2     | <0.2    | 0.39     | 0.21       |
| Carbon Tetrachloride | <0.2     | <0.2    | <0.2     | <0.2       |
| Methyl Chloroform    | 1.9      | <0.5    | <0.5     | 0.68       |
| Trichloroethylene    | <0.6     | <0.6    | <0.6     | <0.6       |
| Chloroform           | <0.8     | <0.8    | <0.8     | <0.8       |

Table 2-1d AMBIENT AIR TEST RESULTS (ppb)  
DAY 4

| COMPOUND             | Downwind |                        | Downwind | Background |
|----------------------|----------|------------------------|----------|------------|
|                      | Site A1  | Site A2 <sup>a,b</sup> | Site B   | Site C     |
| Vinyl Chloride       | <2       | <4                     | <2       | <2         |
| Benzene              | <2       | <4                     | <2       | <2         |
| Ethylene Dibromide   | <0.5     | <1.0                   | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.4                   | <0.2     | <0.2       |
| Methylene Chloride   | 5.9      | 58.3                   | 2.6      | <1         |
| Perchloroethylene    | <0.2     | <0.4                   | <0.2     | 0.22       |
| Carbon Tetrachloride | <0.2     | <0.4                   | <0.2     | <0.2       |
| Methyl Chloroform    | <0.5     | 2.1                    | <0.5     | 0.91       |
| Trichloroethylene    | <0.6     | <1.2                   | <0.6     | <0.6       |
| Chloroform           | <0.8     | <1.6                   | <0.8     | <0.8       |

<sup>a</sup> Average of duplicate analyses. See Table 2-5

<sup>b</sup> Guideline detection limits exceeded due to small injection volume required to quantify Methylene Chloride.

Table 2-1e AMBIENT AIR TEST RESULTS (ppb)  
DAY 5

| COMPOUND             | Downwind |         | Downwind | Background |
|----------------------|----------|---------|----------|------------|
|                      | Site A1  | Site A2 | Site B   | Site C     |
| Vinyl Chloride       | <2       | <2      | <2       | <2         |
| Benzene              | <2       | <2      | <2       | <2         |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.2    | <0.2     | <0.2       |
| Methylene Chloride   | <1       | <1      | <1       | <1         |
| Perchloroethylene    | <0.2     | <0.2    | <0.2     | 0.22       |
| Carbon Tetrachloride | <0.2     | <0.2    | <0.2     | <0.2       |
| Methyl Chloroform    | 2.3      | 1.9     | <0.5     | 1.5        |
| Trichloroethylene    | <0.6     | <0.6    | <0.6     | <0.6       |
| Chloroform           | <0.8     | <0.8    | <0.8     | <0.8       |

Table 2-1f AMBIENT AIR TEST RESULTS (ppb)  
DAY 6

| COMPOUND             | Downwind |          | Downwind | Background |
|----------------------|----------|----------|----------|------------|
|                      | Site A1  | Site A2* | Site B   | Site C     |
| Vinyl Chloride       | <2       | <2       | <2       | <2         |
| Benzene              | <2       | <2       | <2       | <2         |
| Ethylene Dibromide   | <0.5     | <0.5     | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.2     | <0.2     | <0.2       |
| Methylene Chloride   | <1       | <1       | <1       | <1         |
| Perchloroethylene    | <0.2     | <0.2     | <0.2     | <0.2       |
| Carbon Tetrachloride | <0.2     | <0.2     | <0.2     | <0.2       |
| Methyl Chloroform    | 0.66     | <0.5     | <0.5     | 0.87       |
| Trichloroethylene    | <0.6     | <0.6     | <0.6     | <0.6       |
| Chloroform           | <0.8     | <0.8     | <0.8     | <0.8       |

\* Average of duplicate analyses. See Table 2-5.

Table 2-1g AMBIENT AIR TEST RESULTS (ppb)  
DAY 7

| COMPOUND             | Downwind |          | Downwind | Background |
|----------------------|----------|----------|----------|------------|
|                      | Site A1  | Site A2* | Site B   | Site C     |
| Vinyl Chloride       | <2       | <2       | <2       | <2         |
| Benzene              | <2       | <2       | <2       | <2         |
| Ethylene Dibromide   | <0.5     | <0.5     | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.2     | <0.2     | <0.2       |
| Methylene Chloride   | <1       | <1       | <1       | <1         |
| Perchloroethylene    | <0.2     | <0.2     | <0.2     | <0.2       |
| Carbon Tetrachloride | <0.2     | <0.2     | <0.2     | <0.2       |
| Methyl Chloroform    | 1.8      | 0.68     | <0.5     | 1.2        |
| Trichloroethylene    | <0.6     | <0.6     | <0.6     | <0.6       |
| Chloroform           | <0.8     | <0.8     | <0.8     | <0.8       |

\* Average of duplicate analyses. See Table 2-5.

Table 2-1h AMBIENT AIR TEST RESULTS (ppb)  
DAY 8

| COMPOUND             | Downwind |         | Downwind<br>Site B | Background<br>Site C |
|----------------------|----------|---------|--------------------|----------------------|
|                      | Site A1  | Site A2 |                    |                      |
| Vinyl Chloride       | <2       | <2      | <2                 | <2                   |
| Benzene              | <2       | <2      | <2                 | <2                   |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5               | <0.5                 |
| Ethylene Dichloride  | <0.2     | <0.2    | <0.2               | <0.2                 |
| Methylene Chloride   | <1       | <1      | <1                 | <1                   |
| Perchloroethylene    | <0.2     | <0.2    | <0.2               | <0.2                 |
| Carbon Tetrachloride | <0.2     | <0.2    | <0.2               | <0.2                 |
| Methyl Chloroform    | 1.9      | 0.77    | <0.5               | <0.2                 |
| Trichloroethylene    | <0.6     | <0.6    | <0.6               | 0.53                 |
| Chloroform           | <0.8     | <0.8    | <0.8               | <0.6                 |

Table 2-1i AMBIENT AIR TEST RESULTS (ppb)  
DAY 9

| COMPOUND             | Downwind |         | Downwind<br>Site B | Background<br>Site C |
|----------------------|----------|---------|--------------------|----------------------|
|                      | Site A1  | Site A2 |                    |                      |
| Vinyl Chloride       | <2       | <2      | <2                 | <2                   |
| Benzene              | <2       | <2      | <2                 | <2                   |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5               | <0.5                 |
| Ethylene Dichloride  | <0.2     | <0.2    | <0.2               | <0.2                 |
| Methylene Chloride   | <1       | <1      | <1                 | <1                   |
| Perchloroethylene    | <0.2     | <0.2    | <0.2               | <0.2                 |
| Carbon Tetrachloride | <0.2     | <0.2    | <0.2               | <0.2                 |
| Methyl Chloroform    | 2.4      | 1.1     | <0.5               | 0.6                  |
| Trichloroethylene    | <0.6     | <0.6    | <0.6               | <0.6                 |
| Chloroform           | <0.8     | <0.8    | <0.8               | <0.8                 |

Table 2-1j AMBIENT AIR TEST RESULTS (ppb)  
DAY 10

| COMPOUND             | Downwind |         | Downwind | Background |
|----------------------|----------|---------|----------|------------|
|                      | Site A1  | Site A2 | Site B   | Site C     |
| Vinyl Chloride       | <2       | <2      | <2       | <2         |
| Benzene              | <2       | <2      | <2       | <2         |
| Ethylene Dibromide   | <0.5     | <0.5    | <0.5     | <0.5       |
| Ethylene Dichloride  | <0.2     | <0.2    | <0.2     | <0.2       |
| Methylene Chloride   | <1       | <1      | <1       | <1         |
| Perchloroethylene    | <0.2     | <0.2    | <0.2     | <0.2       |
| Carbon Tetrachloride | <0.2     | <0.2    | <0.2     | <0.2       |
| Methyl Chloroform    | 3.0      | <0.5    | 0.9      | 0.81       |
| Trichloroethylene    | <0.6     | <0.6    | <0.6     | <0.6       |
| Chloroform           | <0.8     | <0.8    | <0.8     | <0.8       |

Table 2-4

## OFFSITE GAS MIGRATION TEST RESULTS \*

| COMPOUND / Sample #  | MG1 | MG2 | MG3 | MG4 | MG5 |
|----------------------|-----|-----|-----|-----|-----|
| Methane, ppm         | 0.8 | 3.1 | 58  | 1.0 | 30  |
| Vinyl Chloride       | -   | -   | -   | -   | -   |
| Benzene              | -   | -   | -   | -   | -   |
| Ethylene Dibromide   | -   | -   | -   | -   | -   |
| Ethylene Dichloride  | -   | -   | -   | -   | -   |
| Methylene Chloride   | -   | -   | -   | -   | -   |
| Perchloroethylene    | -   | -   | -   | -   | -   |
| Carbon Tetrachloride | -   | -   | -   | -   | -   |
| Methyl Chloroform    | -   | -   | -   | -   | -   |
| Trichloroethylene    | -   | -   | -   | -   | -   |
| Chloroform           | -   | -   | -   | -   | -   |

\* Analyses for methane only.

INSPECT FOR COMPLIANCE  
WITH RULE 509.

5/3/89.