

SECTION VI

CONTROL STRATEGY

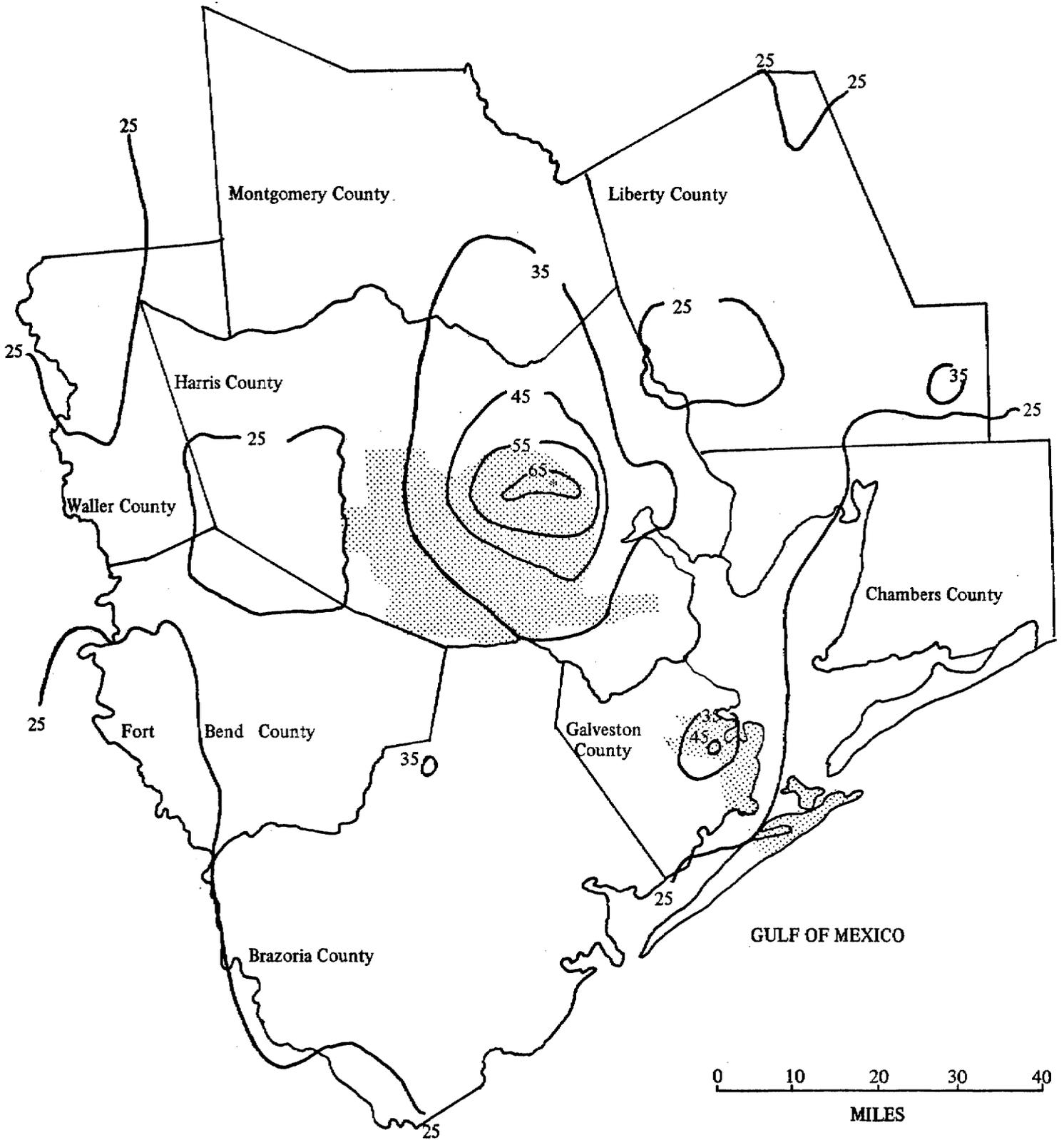
## SECTION VI - CONTROL STRATEGY

### A. Particulates (Example Region)

1. The control strategy is based upon applying Regulation I (Section XIV) to existing point sources (and area sources where applicable) by use of the Air Quality Display Model (AQDM) referenced in Paragraph 51.13(e)(3)(i), Federal Register 36, Volume No. 228 dated November 25, 1971. This was accomplished by Radian Corporation under contract to the Texas Air Control Board. Inventory data input on a county by county basis and emissions resulting from application of Regulation I are contained in Appendix A of the Implementation Plan dated January 28, 1972.
2. The isopleths produced (Figure 1) by the AQDM indicate an existing particulate concentration of  $92 \mu\text{g}/\text{m}^3$  annual geometric mean (AGM). Through a contractor error the original AQDM printout was on an annual arithmetic mean (AAM) rather than the required AGM. Figures 1 and 2 have been corrected to an AGM. The controlled isopleths (Figure 2) reflect a  $55 \mu\text{g}/\text{m}^3$  air quality. All sources are programmed to be in compliance by December, 1973 (see Compliance Schedule, Section VII) thus giving some lead time to reach the selected air quality standard by 1975. A background concentration of  $25 \mu\text{g}/\text{m}^3$  was utilized. Matagorda County air quality was selected as representative of background as it contains only minor sources of man produced particulates.
3. To determine if the standard could be maintained a study was conducted to ascertain the growth of particulate sources in the Example Region (Lace Engineering study available in Austin office). The study shows an annual anticipated increase of 5.3% in particulate sources. Each of these sources will require permits to construct and operate (The Permit System, Section X). The permit system will require proven "state of the art" control or conservatively 95%. A net annual increase therefore of 0.265% will result. It is estimated that the air quality by 1977 will be  $55.74 \mu\text{g}/\text{m}^3$ .

#### COMPUTATIONS:

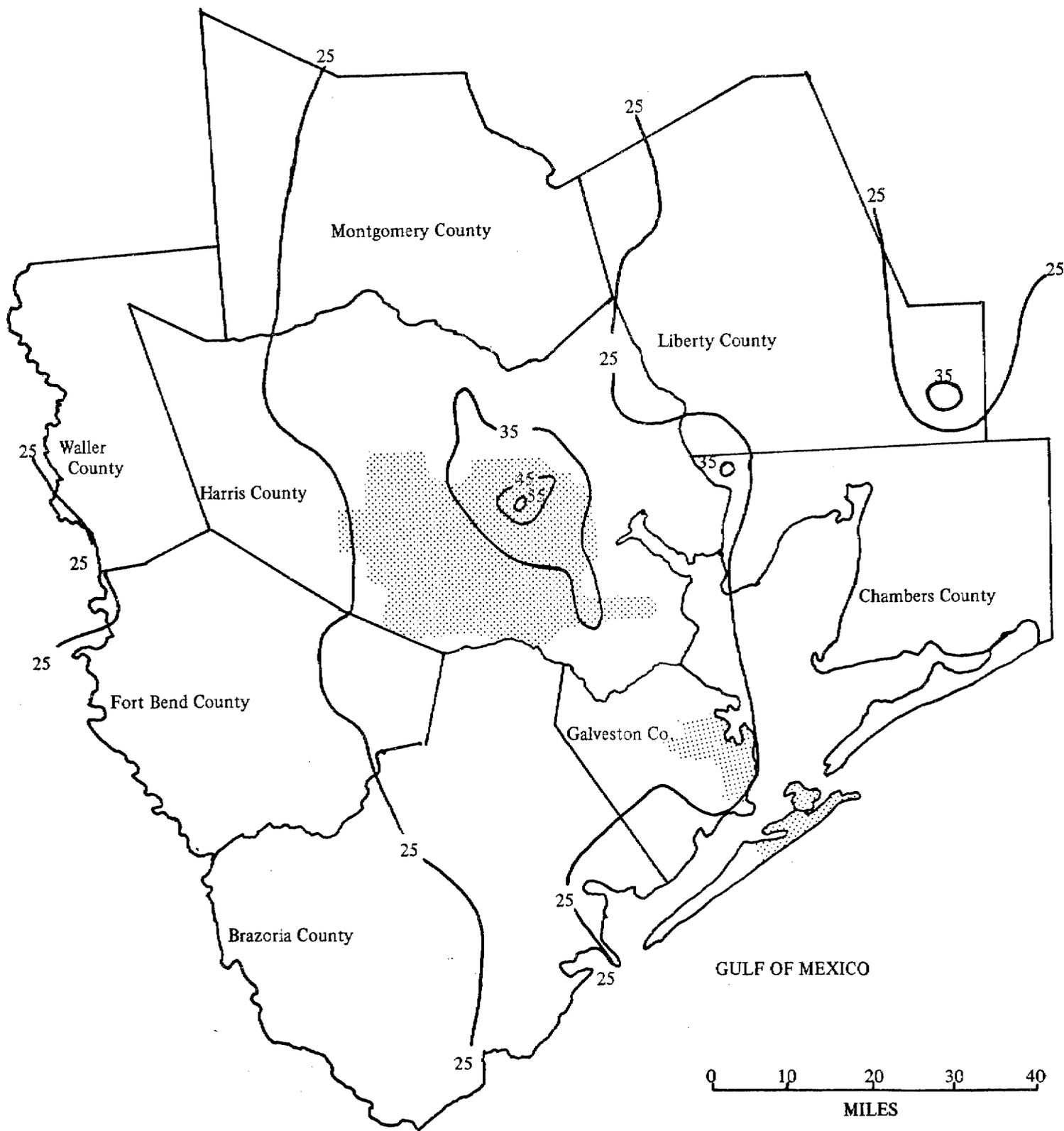
|                               |   |                                |
|-------------------------------|---|--------------------------------|
| 5 years growth at 0.265%/year | = | 1.325%                         |
| AQ at end of 1973             | = | $55 \mu\text{g}/\text{m}^3$    |
| X                             | = | AQ by 1975                     |
| X = $55/1.0000 - 0.01325$     | = | $55.74 \mu\text{g}/\text{m}^3$ |



AQDM PARTICULATE CONCENTRATION – EXISTING ( $\mu\text{g}/\text{m}^3$  AGM)

EXAMPLE REGION

\* Because of space limitations isopleths of concentrations greater than  $65 \mu\text{g}/\text{m}^3$  were omitted in Central Houston. Maximum concentration was  $92 \mu\text{g}/\text{m}^3$ .



AQDM PARTICULATE CONCENTRATION – CONTROLLED ( $\mu\text{g}/\text{m}^3$  AGM)

EXAMPLE REGION

FIGURE TWO  
VI-3

## B. Sulfur Dioxide (SO<sub>2</sub>)

### 1. Example Region

- a. Air quality for Region 7 was estimated to be 70 ug/m<sup>3</sup> using the Miller-Holzworth model (Appendix A, Federal Register 228) and existing inventory data (Appendix A, 1969 Data). Detailed computations are available for review in the Austin office. Attainment of an air quality standard of 60 ug/m<sup>3</sup> (National Secondary) was considered feasible. A reduction of 14.3% in inventory emissions is necessary to meet the standard  $\frac{70-60}{70} \times 100 = 14.3\%$
- b. Regulation II was applied to the major sources (62) (of these the first 20 account for 99.7% of the total emissions, 1969 data) with a resultant reduction of 55,700 tons per year (TPY). Table One contains inventory details. Total inventory emissions (point and area, Appendix A of 1969 data) show a total SO<sub>2</sub> emission of 176318 TPY. Therefore, the control results in 31.5% reduction indicating the adequacy of the regulation to attain the National Secondary AQS of 60 ug/m<sup>3</sup> AAM. (The compliance date for Regulation II for all sources is December, 1973. This will provide some lead time for an attainment date of 1975.) Air quality attained is estimated to be 48 ug/m<sup>3</sup>.
- c. The Lace Engineering study referred to under paragraph A.3 above predicted a 7.4% annual growth in SO<sub>2</sub> sources. The sources will be controlled to "state of the art" by application of the Permit System (Section X). Controls imposed are estimated to be 95% effective resulting in a net increase in emissions for new sources of 0.37% annually. The estimated air quality by 1977 will be 49.0 ug/m<sup>3</sup>.

#### COMPUTATIONS:

|                              |   |                        |
|------------------------------|---|------------------------|
| 5 years growth at 0.37%/year | = | 1.85%                  |
| AQ at end of 1973            | = | 48 ug/m <sup>3</sup>   |
| X                            | = | AQ 1975                |
| X - 48/1.000 - 0.0185        | = | 49.0 ug/m <sup>3</sup> |

### 2. Region 11 - El Paso

A separate SO<sub>2</sub> control strategy for Region 11 is required because of the special combination of a large SO<sub>2</sub> source and the unique terrain factors which do not exist in other industrialized areas of Texas. The principal SO<sub>2</sub> emission source in Region 11 is from the American Smelting and Refining Company (ASARCO) in El Paso which operates a large nonferrous smelter producing primary

lead, copper, and zinc. The emission of SO<sub>2</sub> from this plant is about 94 percent of the Region 11 total. Nearby sources in Mexico and New Mexico, although not in the boundaries of Region 11, were included in the emission inventory listing. The following control strategy affects a major reduction of ASARCO emissions and accomplishes attainment and maintenance of the Federal Primary and Secondary SO<sub>2</sub> Ambient Air Quality Standards in Region 11.

a. The achievement of SO<sub>2</sub> National ambient air quality standards in Region 11 results with the implementation of Texas Air Control Regulation II, Control of Air Pollution from Sulfur Compounds, effective March 5, 1975. Ambient air data for 1973 and the estimate of ambient air levels for 1979 are given in Table Four. Table Five shows the reported emissions expected when ASARCO complies with the March 5, 1975 Regulation II. The overall Region 11 emission reduction is approximately 73 percent, as the result of a 79 percent reduction in the ASARCO plant emissions. It was assumed that the air quality improvement is in linear proportion to the emission reduction. Thus, a 73 percent reduction of the 1973 highest ambient 24 hour reading of 0.14 and of the 3 hour reading of 0.47 gives the 1979 estimates of 0.04 and 0.13 respectively as reflected in Table Four.

b. In order to provide additional ambient air data, Table Six is included to show data obtained from ASARCO. The Texas Air Control Board cannot verify the ASARCO data; however, it is useful to confirm the TACB data. It may be observed that the order of magnitude of the two sets of data are similar in that there are very few data points that are in excess of the primary and secondary SO<sub>2</sub> ambient air standards. It should be noted that both the emission data and the ambient data for 1973 reflect the effects of the Intermittent Control System that has been applied by ASARCO for several years. Since all available ambient air quality data reveals only a small variance from the Federal Standards, the substantial emission reduction obtained by Regulation II will be adequate to attain and maintain the SO<sub>2</sub> national ambient air quality standard.

c. The restrictions on emissions in paragraph 201.16 of Regulation II are in terms of concentration limits rather than rate-of-flow limits. With the ASARCO facility operating under the design conditions outlined in permits issued for construction in accordance with Regulation VI, the rate-of-flow in lbs/hr in 1979 has been calculated and is as shown in Table Five. These calculations are based on ASARCO operating at maximum design capacity. The rate-of-flow is the maximum that would be allowed at the ASARCO plant under Regulation II. Any change due to a new source, modification of an existing process, or change in method of operation would require ASARCO to submit in accordance with Regulation VI an application for permit to construct and/or operate. As outlined in other control strategies, the Permit System (Regulation VI) described in Section X, in conjunction with the other Regulations will enable the State to attain and maintain the national

ambient air quality standards in Region 11. Other Texas Air Control Board functions which will support evaluation of SO<sub>2</sub> ambient standards are (1) the Air Quality Surveillance Network as described in Section IX, (2) emission reporting and source surveillance as outlined in Section XI, and (3) dispersion modeling studies supported by adequate meteorological data.

d. Of necessity, several assumptions were made in the development of the SO<sub>2</sub> control strategy for Region 11. These assumptions are detailed in Table Seven. Each assumption is annotated with a brief statement of the rationale for support of the assumption. It is important to recognize that these assumptions reflect conditions to support the achievement and maintenance of air quality standards. As additional information concerning ambient air readings and emission inventories becomes available accompanied by the availability of weather data in the ASARCO area, a validated dispersion model may be developed to further support the validity of the control strategy. With a validated model further study will enable refinement of assumptions and requirements for maintaining ambient air quality standards. Supporting data, studies, and detailed calculations are available from the Texas Air Control Board's central office, 8520 Shoal Creek Blvd., Austin, Texas 78758.

C. Set II Parameters

1. Carbon Monoxide (CO)

In accordance with the revision of the priority classification (see Section II) from I to III in Region 11, there is no control strategy required for carbon monoxide since all regions meet the national ambient air secondary standards for carbon monoxide.

2. Photochemical Oxidants and Reactive Carbon Compounds

The results of a revision of the Texas Control Strategy for Oxidant/Hydrocarbon reductions are summarized in Table Three. The study evaluated the reductions in hydrocarbon (carbon compound) emissions that will be realized (as a result of compliance with Regulation IV, V and VI) in the seven Texas Air Control Regions now classified Priority I.

The data tabulated in Table Three indicates that the required reductions are achieved in the ten counties of concern within the seven Priority I Regions and, as a result, the reductions required to achieve ambient air quality standards are obtained by 1975 in all seven Regions. The data tabulated in Appendix C indicate that the standards will not be maintained in Region 7 and Region 10 after 1985. Therefore, additional industrial growth after 1985 will not be permitted if the projected trends in growth are realized. This will be facilitated through the implementation of Regulation VI.

The required reduction was determined from the second high measured ozone value in each case. A reactive carbon compound control strategy is employed and an oxidant non-methane hydrocarbon relationship was formulated using the publication Air Quality Criteria for Nitrogen Oxides (AP-84) as the basis. Although the set of data in the report AP-84 is used, it is most likely too severe because of the different meteorological conditions existing along the Gulf Coast as compared with the cities studied in the Report.

Compliance with Regulation IV, V and VI which apply to motor vehicles, volatile carbon compound emissions from point sources, and emissions from permit units, respectively, result in the high reductions required to achieve the standard. Regulation VI results in an emission of 0.43 gms/mile of hydrocarbons for the 1975 model as compared with 12.6 gms/mile for the pre-controlled 1967 model, a reduction of 97%. Most of the point sources along the Gulf Coast are within refineries and chemical plants. Compliance with Regulation V results in a reduction of 91% for the years 1975 through 1977 for the refineries, while chemical plant reductions are 79% and 86% for these years because of the different compliance dates in revised Regulation V. New and modified sources require construction permits and must employ the latest control technology; therefore, emissions associated with industrial growth will be at least 90% less than emissions that would result from uncontrolled industrial expansion.

Growth factors for automobiles were taken from the Texas Highway Department's projections for vehicle miles traveled. Growth rates for all other sources were taken from the Standard Metropolitan Statistical Areas report.

A county by county model was employed rather than a Regional Model. The carbon compound emission inventory in the base year and projections for the counties and the Regions are reflected in Appendix C.

Other supporting data and details of the calculations procedures employed are documented and available in a report available from the Texas Air Control Board, entitled Hydrocarbon Control Strategies.

### 3. Oxides of Nitrogen

The Federal Register Volume 39, Number 90, dated May 8, 1974 revised the priority classification from I to III for Regions 5, 7 and 8. In accordance with this revision there is no control strategy required for oxides of nitrogen since all regions meet the national secondary standards for nitrogen dioxide.

## TABLE ONE

LISTING OF REGION 7 POINT SOURCES DECENDING ORDER  
WITHIN COUNTY

## SULPHUR DIOXIDE

|               | <u>Rank</u> | <u>I. D.<br/>Number</u> | <u>(Tons/Yr.)<br/>Sulphur Dioxide</u> | <u>Allowable SO<sub>2</sub><br/>Emissions From<br/>Regulations Tons/Yr.</u> |
|---------------|-------------|-------------------------|---------------------------------------|---|
| Brazoria Co.  | 10          | PHI 086                 | 4421                                  | 1853  |
|               | 12          | DOW 004                 | 1654                                  | 1654  |
|               | 16          | MON 056                 | 404                                   | 375   |
|               | 20          | DOW 002                 | 236                                   | 76  |
|               | 24          | STA 238                 | 40                                    |   |
|               | 51          | HUM 030                 | 0.5                                   |   |
|               | 52          | PAN 036                 | <u>0.4</u>                            | <u>        </u>   |
|               |             | TOTAL                   | 6755.9                                | 3958  |
| Chambers Co.  | 43          | WAR 042                 | <u>1</u>                              |   |
|               |             | TOTAL                   | 1                                     |   |
| Ft. Bend Co.  | 28          | PP 004                  | 20                                    |   |
|               | 42          | JEF 012                 | <u>1</u>                              |   |
|               |             | TOTAL                   | 21                                    |   |
| Galveston Co. | 1           | AME 130                 | 37967                                 | 21649   |
|               | 6           | UNI 028                 | 12384                                 | 5843  |
|               | 13          | AMO 002                 | 1140                                  | 770   |
|               | 15          | MAR 002                 | 492                                   | 492   |

|                         | <u>Rank</u> | <u>I. D.<br/>Number</u> | <u>(Tons/Yr.)<br/>Sulphur Dioxide</u> | <u>Allowable SO<sub>2</sub><br/>Emissions From<br/>Regulations Tons/Yr.</u> |
|-------------------------|-------------|-------------------------|---------------------------------------|---|
| Galveston Co.<br>Con't. | 17          | GUL 010                 | 380                                   | 380   |
|                         | 19          | TEX 176                 | 336                                   | 336   |
|                         | 21          | BOR 004                 | 122                                   |   |
|                         | 23          | MON 052                 | 50                                    |   |
|                         | 26          | PP 005                  | 26                                    |   |
|                         | 34          | MIN 008                 | <u>3</u>                              | <u>          </u>   |
|                         |             | TOTAL                   | 52900                                 | 29470   |
| Harris Co.              | 2           | HUM 032                 | 36007                                 | 22324   |
|                         | 3           | STA 230                 | 16520                                 | 14827   |
|                         | 4           | DU 002                  | 15141                                 | 7665  |
|                         | 5           | SHE 032                 | 14598                                 | 11580   |
|                         | 7           | STA 232                 | 10783                                 | 8936  |
|                         | 8           | PEN 020                 | 6530                                  | 4613  |
|                         | 9           | SHE 020                 | 6460                                  | 6460  |
|                         | 11          | ATL 018                 | 2523                                  | 3001  |
|                         | 18          | HUB 038                 | 376                                   | 376   |
|                         | 22          | HNG 022                 | 75                                    |   |
|                         | 25          | MER 034                 | 28                                    |   |
|                         | 27          | ANH 002                 | 20                                    |   |
|                         | 29          | PP 006                  | 13                                    |   |
|                         | 32          | WAN 006                 | 7                                     |   |

|                      | <u>Rank</u> | <u>I. D.<br/>Number</u> | <u>(Tons/Yr.)<br/>Sulphur Dioxide</u> | <u>Allowable SO<sub>2</sub><br/>Emissions From<br/>Regulations Tons/Yr.</u> |
|----------------------|-------------|-------------------------|---------------------------------------|---|
| Harris Co.<br>Con't. | 33          | ROH 002                 | 7                                     |   |
|                      | 37          | PP 002                  | 3                                     |   |
|                      | 39          | USI 008                 | 2                                     |   |
|                      | 41          | CRO 066                 | 2                                     |   |
|                      | 45          | ELE 034                 | 1                                     |   |
|                      | 46          | HOU 116                 | 1                                     |   |
|                      | 47          | GUL 078                 | 1                                     |   |
|                      | 49          | TEN 012                 | 0.6                                   |   |
|                      | 50          | GUL 040                 | 0.6                                   |   |
|                      | 53          | PP 001                  | 0.4                                   |   |
|                      | 54          | UNC 002                 | 0.3                                   |   |
|                      | 55          | UNI 180                 | 0.2                                   |   |
|                      | 57          | UNI 012                 | 0.2                                   |   |
|                      | 58          | HOU 124                 | 0.1                                   |   |
|                      | 59          | RIV 020                 | 0.1                                   |   |
|                      | 60          | PP 003                  | 0.04                                  |   |
|                      | 62          | PEP 002                 | <u>0.02</u>                           | <u>          </u>   |
|                      |             | TOTAL                   | 109100.56                             | 79782   |
| Liberty Co.          | 35          | LIB 010                 | 3                                     |   |
|                      | 38          | WIL 096                 | 3                                     |   |

|                       | <u>Rank</u> | <u>I. D.<br/>Number</u> | <u>(Tons/Yr.)<br/>Sulphur Dioxide</u> | <u>Allowable SO<sub>2</sub><br/>Emissions From<br/>Regulations Tons/Yr.</u> |
|-----------------------|-------------|-------------------------|---------------------------------------|---|
| Liberty Co.<br>Con't. | 44          | TEX 290                 | 1                                     |   |
|                       | 48          | WIL 072                 | <u>0.7</u>                            |   |
|                       |             | TOTAL                   | 7.7                                   |   |
| Montgomery Co.        | 14          | COL 112                 | 604                                   | 503   |
|                       | 30          | GRO 008                 | 10                                    |   |
|                       | 31          | BRA 002                 | 8                                     |   |
|                       | 36          | GRI 016                 | 3                                     |   |
|                       | 40          | SUP 034                 | 2                                     |   |
|                       | 56          | WIL 150                 | 0.2                                   |   |
|                       | 61          | CUR 006                 | <u>0.03</u>                           |   |
|                       |             | TOTAL                   | 627.23                                | <u>503</u>  |

Of the sixty-two companies listed above, the companies ranked 1 - 20 account for 99.73% of the total emissions in Region 7.

EMISSIONS: Point = 169413.39                      Area = 6905

TOTAL    176318 TPY

Allowable Point Source (Regulation II) = 113713

Overall Control (%) =  $\frac{176318 - (113713 + 6905)}{176318} (100) = 31.5$

TABLE TWO  
CONTROL STRATEGY  
CARBON MONOXIDE  
(DELETED)

PRESENT HYDROCARBON AND PROJECTED REDUCTIONS BY PRIORITY I REGIONS

| COUNTY    | MEASURED AMBIENT OZONE LEVEL <sub>3</sub> μg/m <sup>3</sup> (PPM) | % HC REDUCTION TO ATTAIN NATIONAL STANDARD <sub>3</sub> OF 160 μg/m <sup>3</sup> | CONTRIBUTION TO TOTAL HC FROM GASOLINE VEHICLES |      |      | REDUCTIONS BY 1975/1977                    |                                 |                      |           | TOTAL REDUCTION |
|-----------|---|--|---|------|------|--|---------------------------------|----------------------|-----------|-----------------|
|           |   |  | 1971  | 1975 | 1977 | FROM FEDERAL CONTROLS ON GASOLINE VEHICLES | FROM STATIONARY SOURCE CONTROLS | OTHER TRANSPORTATION |           |                 |
| TRAVIS    | 218 (.109)  | 18   | 71.0  | 65.9 | 59.9 | 27.0 / 39.0                                | 3.7 / 4.8                       | 2.5 / 3.6            | 33 / 46   |                 |
| NUECES    | 368 (.184)  | 62   | 7.8   | 18.7 | 16.3 | 3.4 / 4.7                                  | 71.5 / 74.4                     | 1.6 / 2.1            | 77 / 81   |                 |
| HARRIS    | 630 (.315)  | 75 *   | 13.1  | 34.8 | 32.3 | 3.9 / 6.4                                  | 70.0 / 72.6                     | -0.1 / 0.2           | 74 # / 79 |                 |
| GALVESTON | 440 (.220)  | 64 *   | 5.0   | 17.9 | 16.7 | 1.4 / 2.3                                  | 78.8 / 82.0                     | 0.0 / 0.0            | 80 / 84   |                 |
| BRAZORIA  | 530 (.265)  | 70 *   | 16.1  | 37.2 | 35.6 | 5.3 / 8.1                                  | 65.8 / 69.8                     | -0.1 / -0.3          | 71 / 78   |                 |
| DALLAS    | 250 (.125)  | 24   | 69.5  | 65.9 | 63.0 | 23.0 / 34.3                                | 7.1 / 7.5                       | -0.8 / 2.3           | 29 / 44   |                 |
| BEXAR     | 290 (.145)  | 40   | 64.4  | 62.4 | 55.7 | 25.4 / 36.3                                | 8.9 / 9.1                       | 3.2 / 4.2            | 40** / 50 |                 |
| JEFFERSON | 682 (.341)  | 77 *   | 3.0   | 10.5 | 9.2  | 1.1 / 1.7                                  | 80.8 / 84.0                     | 0.0 / 0.0            | 82 / 86   |                 |
| ORANGE    | 430 (.215)  | 63 *   | 12.0  | 25.7 | 24.2 | 4.4 / 6.7                                  | 66.1 / 71.5                     | 0.0 / 0.0            | 71 / 78   |                 |
| EL PASO   | 240 (.120)  | 25   | 52.8  | 63.5 | 56.9 | 18.3 / 27.1                                | 25.8 / 25.5                     | 1.7 / 2.2            | 46 / 55   |                 |
|           |   |  |   |      |      |  |                                 |                      |           |                 |
|           |   |  |   |      |      |  |                                 |                      |           |                 |
|           |   |  |   |      |      |  |                                 |                      |           |                 |

\* Straight percentage rollback

\*\*Includes 2% reduction from traffic flow improvements

\*\*\*This calculated reduction results from single measurement values of oxidant level

# 74% reduction obtained is equivalent to 75% reduction required within the accuracy of the data

TABLE FOUR  
 REGION 11 SO<sub>2</sub> DATA  
 TEXAS AIR CONTROL BOARD STATIONS

| Station    | Type           | Sample Period For 1973 | SO <sub>2</sub> PPM Averages |       |            |       |
|------------|----------------|------------------------|------------------------------|-------|------------|-------|
|            |                |                        | 24 Hr. High                  |       | 3 Hr. High |       |
|            |                |                        | 1973                         | 1979* | 1973       | 1979* |
| Campbell   | Connie Trailer | 4/73                   | 0.06                         | 0.01  | 0.35       | 0.09  |
| Zach White | Bubbler        | 12 Mo.                 | 0.09                         | 0.02  | ----       | ----  |
| VTEP       | Bubbler        | 12 Mo.                 | 0.07                         | 0.02  | ----       | ----  |
| TIGUA      | Bubbler        | 12 Mo.                 | 0.03                         | 0.008 | ----       | ----  |
| Pershing   | Bubbler        | 12 Mo.                 | 0.01                         | 0.003 | ----       | ----  |
| H.D.       | Bubbler        | 12 Mo.                 | 0.01                         | 0.003 | ----       | ----  |
| Trans M.T. | Bubbler        | 12 Mo.                 | 0.01                         | 0.003 | ----       | ----  |
| Kern       | Bubbler        | 2/73                   | ----                         | ----  | 0.47       | 0.13  |
| Kern       | Bubbler        | 3/73                   | 0.14+                        | 0.04  | ----       | ----  |
| PRIMARY    |                |                        | 0.14                         | 0.14  | ----       | ----  |
| SECONDARY  |                |                        | ----                         | ----  | 0.5        | 0.5   |

\*Projected Effect of Regulation II.

TABLE FIVE  
REGION 11 EMISSIONS INVENTORY

| Company   | Source    | SO <sub>2</sub> - lbs/hr |                    |
|---|-----------|--------------------------|--------------------|
|   |           | 1973                     | 1979*              |
| ASARCO  | 16        | 8400.0                   | 2149.0             |
|   | 17        | 205.0                    | 0.0 Drafted to #16 |
|   | 18        | 36440.0                  | 6020.0             |
|   | 19        | 171.0                    | 1042.0             |
|   | FUG       | 807.0                    | 0.0 Drafted to #18 |
|   | 21        | 82.0                     | 387.0              |
|   | 22        | 6.0                      | 8.6                |
|   | Sub-Total | <u>46111.0</u>           | <u>9606.6</u>      |
| SWPC  | 101       | 212.0                    | 372.0              |
|   | 102       | 212.0                    | 372.0              |
| MEXCEM (e)<br>Mexico                              | 201       | 200.0                    | 400.0              |
| EL PASO ELEC (e)<br>New Mexico<br>(9 stk cluster) | 301       | 512.0                    | 618.0              |
|   | Sub-Total | <u>1136.0</u>            | <u>1762.0</u>      |
| TEXACO  | 31        | 105.0                    | 105.0              |
|   | 32        | 29.6                     | 29.6               |
|   | 33        | 88.8                     | 88.8               |
|   | 34        | 9.0                      | 9.0                |
|   | 35        | 238.0                    | 238.0              |
|   | 36        | 73.6                     | 73.6               |
|   | 37        | 73.6                     | 73.6               |
|   | 38        | 73.6                     | 73.6               |
|   | 39        | 212.0                    | 212.0              |
|   | 30        | 206.3                    | 206.3              |
|   | CHEVRON   | 52                       | 1.0                |
| 53  |           | 3.0                      | 3.0                |
| 57  |           | 1.0                      | 1.0                |
| 58  |           | 8.0                      | 8.0                |
| 59  |           | 5.0                      | 5.0                |
| 60  |           | 112.0                    | 112.0              |
| 62  |           | 6.0                      | 6.0                |
| 63  |           | 6.0                      | 6.0                |
| 67  |           | 30.0                     | 30.0               |
| 68  |           | 40.0                     | 40.0               |
| 71  |           | 2.0                      | 2.0                |
| 72  | 432.0     | 432.0                    |                    |
| ELPACID   | 85        | 214.0                    | 214.0              |
| P/D   | 92        | 12.8                     | 12.8               |
|   | 93        | 12.8                     | 12.8               |
|   | Sub-Total | <u>1995.1</u>            | <u>1995.1</u>      |
| TOTAL   |           | <u>49242.1</u>           | <u>13363.7</u>     |

\*Calculated Emissions

(e) Estimated  
Revised 4-15-75

TABLE SIX  
 REGION 11 SO<sub>2</sub> DATA  
 ASARCO MONITORS

| Station            | Date <sup>1</sup> | Time      | SO <sub>2</sub> PPM Averages |                   |                   |                   |                   |                   |
|--------------------|-------------------|-----------|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                    |                   |           | 24 Hr.                       |                   | 3 Hr.             |                   |                   |                   |
|                    |                   |           | 1973 <sup>1</sup>            | 1979 <sup>2</sup> | 1973 <sup>1</sup> | 1979 <sup>2</sup> | 1973 <sup>1</sup> | 1979 <sup>2</sup> |
| Rudolph            | 2/09/73           | 1330-1630 | ----                         | ----              | 0.52              | 0.15              |                   |                   |
| Rudolph            | 4/01/73           | 24 hours  | 0.143                        | 0.04              | ----              | ----              |                   |                   |
| Rudolph            | 4/29/73           | 1030-1330 | ----                         | ----              | 0.51              | 0.15              |                   |                   |
| Rudolph            | 5/18/73           | 1000-1300 | ----                         | ----              | 0.63              | 0.16              |                   |                   |
| Missouri           | 9/02/73           | 1000-1300 | ----                         | ----              | 0.535             | 0.15              |                   |                   |
| Farrell            | 9/08/73           | 0700-1000 | ----                         | ----              | 0.57              | 0.16              |                   |                   |
| Farrell            | 9/08/73           | 24 hours  | 0.163                        | 0.04              | ----              | ----              |                   |                   |
| Missouri           | 9/12/73           | 0930-1230 | ----                         | ----              | 0.568             | 0.16              |                   |                   |
| McKelligon         | 10/25/73          | 1130-1400 | ----                         | ----              | 0.57              | 0.16              |                   |                   |
| Robinson           | 10/25/73          | 1030-1330 | ----                         | ----              | 0.65              | 0.17              |                   |                   |
| Rudolph            | 10/25/73          | 1030-1330 | ----                         | ----              | 0.69              | 0.17              |                   |                   |
| Robinson           | 11/20/73          | 24 hours  | 0.152                        | 0.04              | ----              | ----              |                   |                   |
| Parkhill           | 11/21/73          | 1630-1930 | ----                         | ----              | 0.54              | 0.15              |                   |                   |
| Parkhill           | 12/10/73          | 1300-1600 | ----                         | ----              | 0.768             | 0.20              |                   |                   |
| PRIMARY STANDARD   |                   |           | 0.14                         | 0.14              | ----              | ----              |                   |                   |
| SECONDARY STANDARD |                   |           | ----                         | ----              | 0.5               | 0.5               |                   |                   |

1. The data for 1973 reflects violations only.
2. Projected effect of Regulation II.

TABLE SEVEN  
Assumptions Used In  
Region 11 SO<sub>2</sub> Control Strategy

| <u>No.</u> | <u>Assumption</u>  | <u>Rationale</u>  |
|------------|--|---|
| 1          | No major industrial growth in Region 11.                         | Present sources project no significant growth.                              |
| 2          | No conversions by sources to use high sulfur fuel (except SWPC). | Sources project no appreciable increased SO <sub>2</sub> above 1973 values. |
| 3          | ASARCO facilities operating at maximum capacity as shown below:  | ASARCO projects maximum capacity operation by 1979.                         |

| TONS/DAY       |                             |                       |             |              |              |
|----------------|-----------------------------|-----------------------|-------------|--------------|--------------|
| <u>Process</u> | <u>Ore and Concentrates</u> | <u>Converter Flux</u> | <u>Slag</u> | <u>Other</u> | <u>Total</u> |
| Copper         | 1000                        | 350                   | ----        | 300          | 1650         |
| Lead           | 1550                        | ---                   | ----        | ---          | 1550         |
| Zinc           | ----                        | ---                   | 800         | ---          | 800          |

|   |   |  |
|---|---|--|
| 4 | Fugitive losses will not cause violations of regulations or standards.                | Losses cannot be measured accurately. Major fugitive loss from converters will be drafted to copper stack. |
| 5 | Revisions will be made to copper stack to permit vertical discharge of annulus gases. | ASARCO has agreed to make this revision.   |
| 6 | ASARCO abatement program completed by 1979.   | As proposed by ASARCO.   |