AIR QUALITY CONTROL PLAN

VOLUME 1

Plan

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

William A. Egan
Governor

Max C. Brewer
Commissioner

STATE OF ALASKA

AIR QUALITY CONTROL PLAN

VOLUME I

PLAN

April 21, 1972

State of Alaska

Department of Environmental Conservation

William A. Egan, Governor

Max C. Brewer, Commissioner

PREFACE

The complete State of Alaska Air Quality Control Plan is contained in two volumes. The first volume includes the plan without the appendices, and contains descriptions of State and local programs, air surveillance system control strategies, air episode plans and references. The second volume is the appendices of the plan which are referenced in the first volume. The appendices include detailed calculations, the State of Alaska enabling statutes, State air quality control regulations, local air quality control regulations, public hearing summary, and the State air emissions inventory.

TABLE OF CONTENTS

VOLUME I: PLAN

TABLE OF CONTENTS (CONT.)

VOLUME I: PLAN

TABLE OF CONTENTS (CONT.)

VOLUME I: PLAN

TABLE OF CONTENTS (CONT.)

VOLUME I: PLAN

TABLE OF CONTENTS

VOLUME II: APPENDIX

TABLE OF CONTENTS (CONT.)

VOLUME II: APPENDIX

LIST OF TABLES

VOLUME I

PLAN

LIST OF TABLES (CONT.)

VOLUME I: PLAN

LIST OF FIGURES/MAPS

VOLUME I

PLAN

I. INTRODUCTION

I. A. Summary

The plan as described in this document represents the first State comprehensive plan for air quality control. This plan sets forth primarily a preventive air quality program, because:

1. Existing air quality is good throughout most of the State.
2. There are relatively few industries in Alaska, and air quality considerations can be more readily and economically built into new plants.
3. Meteorological and topographical constraints are severe throughout much of Alaska. Any industrial development that takes place, therefore, should be designed with air quality control considerations in its initial concept.

The Alaska Air Quality Control Plan has been developed to satisfy the needs of Alaska, and to comply with the requirements of the 1970 Amendments to the Clean Air Act (as specified in the August 14, 1971 Federal Register, Requirements for Preparation, Adoption and Submittal of Implementation Plans). The first comprehensive State Air Quality Control Regulations have been developed as part of this plan, with the major enforcement procedure being that of a statewide permit system. A statewide air surveillance network also has been developed, in addition to control strategies and air episode plans where necessary. Major air contaminant emission sources are shown on Map I.1, and the first State air contaminant emission inventory is presented in Appendix I.

The complete Plan is in two volumes, entitled PLAN and APPENDIX. Volume I, PLAN, is divided into six sections: Section I is INTRODUCTION. Section II is STATE AND LOCAL PROGRAMS, and provides a regional description of the State, resources existing and required for the program, a guideline for program development and a development schedule; Section III is AIR SURVEILLANCE, and describes the existing air quality data and sampling conducted thus far, in addition to a description of the projected air surveillance network and evaluations of control strategies. Section IV is CONTROL STRATEGIES, and presents an evaluation of known air quality problems for each region, and proposed control strategies for each region. Section V is AIR EPISODE PLANS, and presents the abatement measures expected to be carried out if and when air contaminant concentrations reach episode levels. Section VI is REFERENCES and presents the references specifically noted throughout the preceding sections.

Volume II, APPENDIX, provides supporting documentation to Volume I, PLAN, including emission inventory, Alaska Statutes, State and local program regulations, public hearing summary, resource information, permit forms, and control strategy calculations.

I.B. Revision to the Plan

Because of its comprehensive nature, the State Air Quality Control Plan (as presented in this document) is expected to undergo numerous

minor modifications as it is implemented. As these modifications become necessary, they will be discussed in detail in the semi-annual reports to the Environmental Protection Agency (which are summaries of progress made in implementing the plan during the previous six months). These reports will include an evaluation of the work required to be completed to carry out the plan and whatever minor modifications within the plan are necessary. As long as these modifications are minor and the overall philosophy and intent of the plan is not changed, these modifications will be made in the semi-annual report. However, major modifications to any of the sections (such as Enforcement, Control Strategies or Air Surveillance) will be publicized. The semi-annual reports to the Environmental Protection Agency will be made available to the general public upon request.

Regulations on air quality control included as part of the plan under Title 18, Chapter 50 of the Alaska Administrative Code only can be changed through the procedures established in the Alaska Administrative Procedures Act. Minor changes to the regulations can be made through administrative hearings, but any major changes in the regulations, or those changes which may result in a lessening or a tightening of regulations, must be given notice of public hearing, after which public hearings must be held. Consequently such changes in the regulations will not be made without notification or involvement of the public.

I.C. State Program

Figure I-2 shows the Department of Environmental Conservation organization chart as presently proposed. The air quality control program functions out of the General Engineering Section of the Water and Air Quality Division, which is one of five divisions. As the air program develops, especially as enforcement activity begins and permits to operate are negotiated and finalized, these other environmental programs within the Department will have review responsibility to insure that their areas of concern are not adversely affected because of air quality concerns. Through the same mechanism, air quality concerns will be taken into consideration when the other Departmental programs take actions in their areas, thereby insuring an overall coordinated environmental program.

Because the Department of Environmental Conservation was established on July 1, 1971, development of many of its programs is still in the formative stages. As these programs are developed, the air quality program will be integrated into these other programs as well. In particular, development of the Land Use Planning Division within the Department should have a significant effect on various aspects of air quality control, notwithstanding its effect on other Departmental programs.

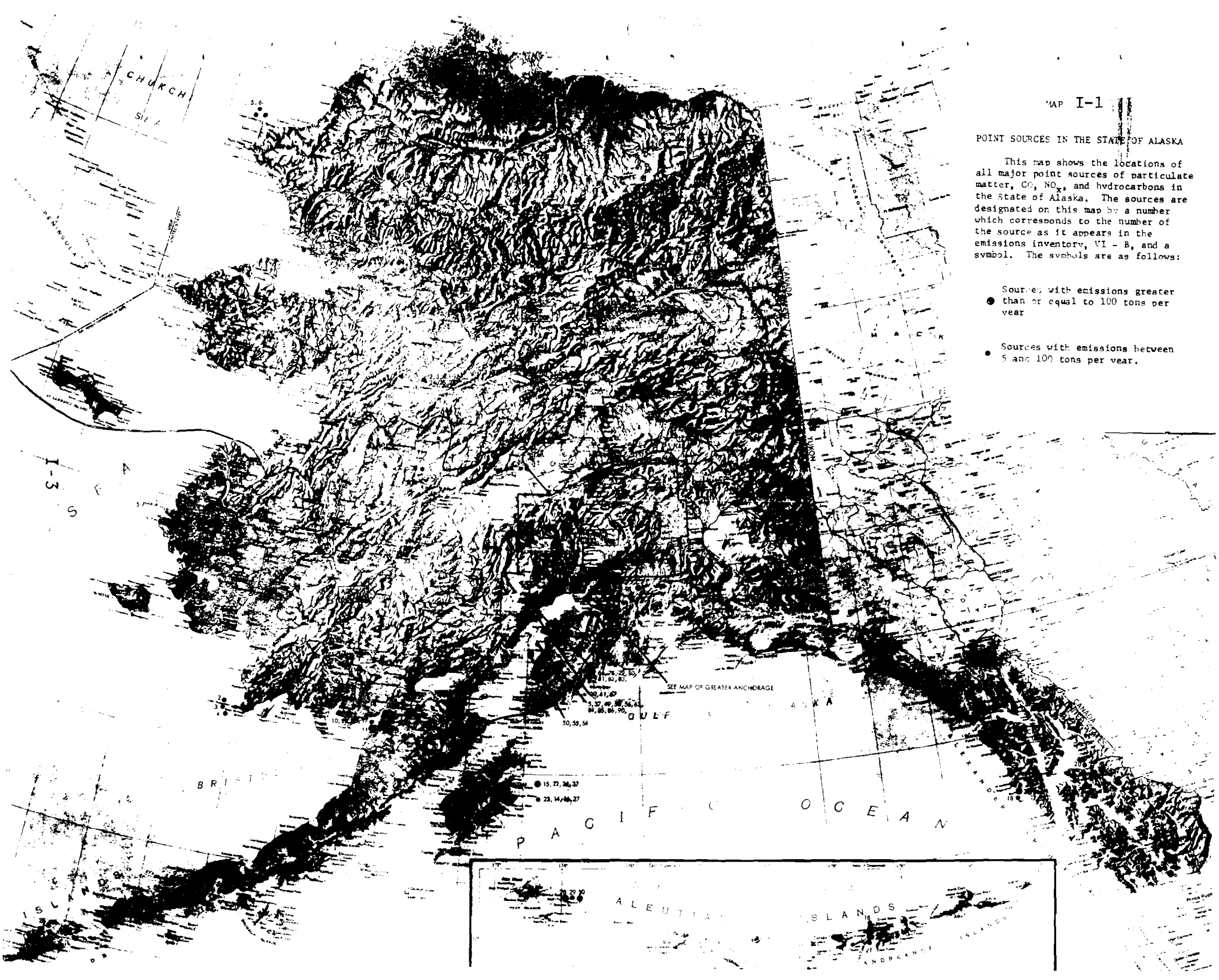

MAP I-1
POINT SOURCES IN THE STATE OF ALASKA
This map shows the locations of all major point sources of particulate matter, CO, NO_x, and hydrocarbons in the State of Alaska. The sources are designated on this map by a number which corresponds to the number of the source as it appears in the emissions inventory, VI - B, and a symbol. The symbols are as follows:
Sources with emissions greater than or equal to 100 tons per year
Sources with emissions between 5 and 100 tons per year.
SEE MAP OF GREATER ANCHORAGE
PACIFIC OCEAN
GULF
ALEUTIAN ISLANDS
I-3

Figure I-2
(Page 1 of 2 pages)

Proposed Organization Chart - Department of Environmental Conservation

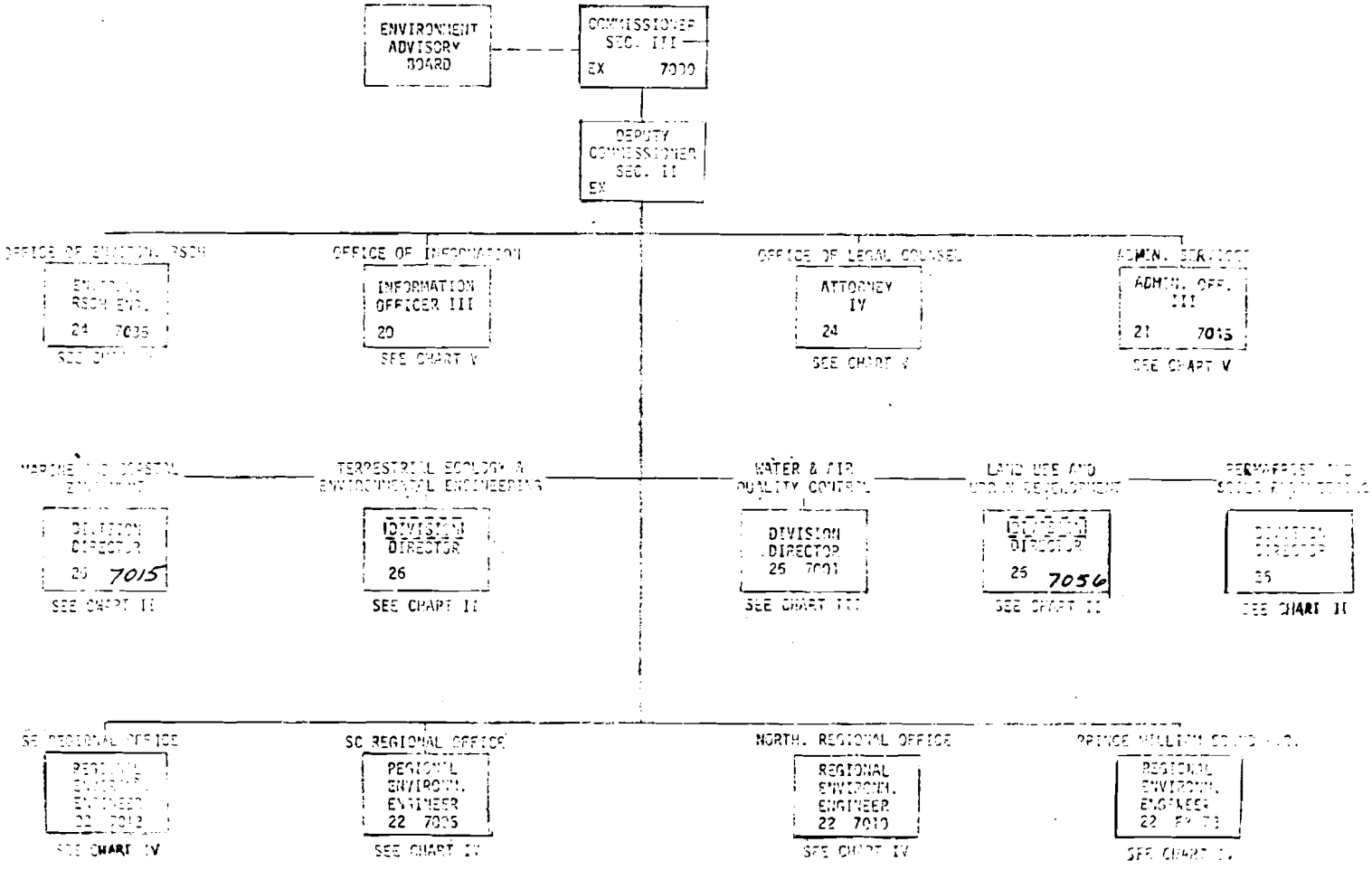
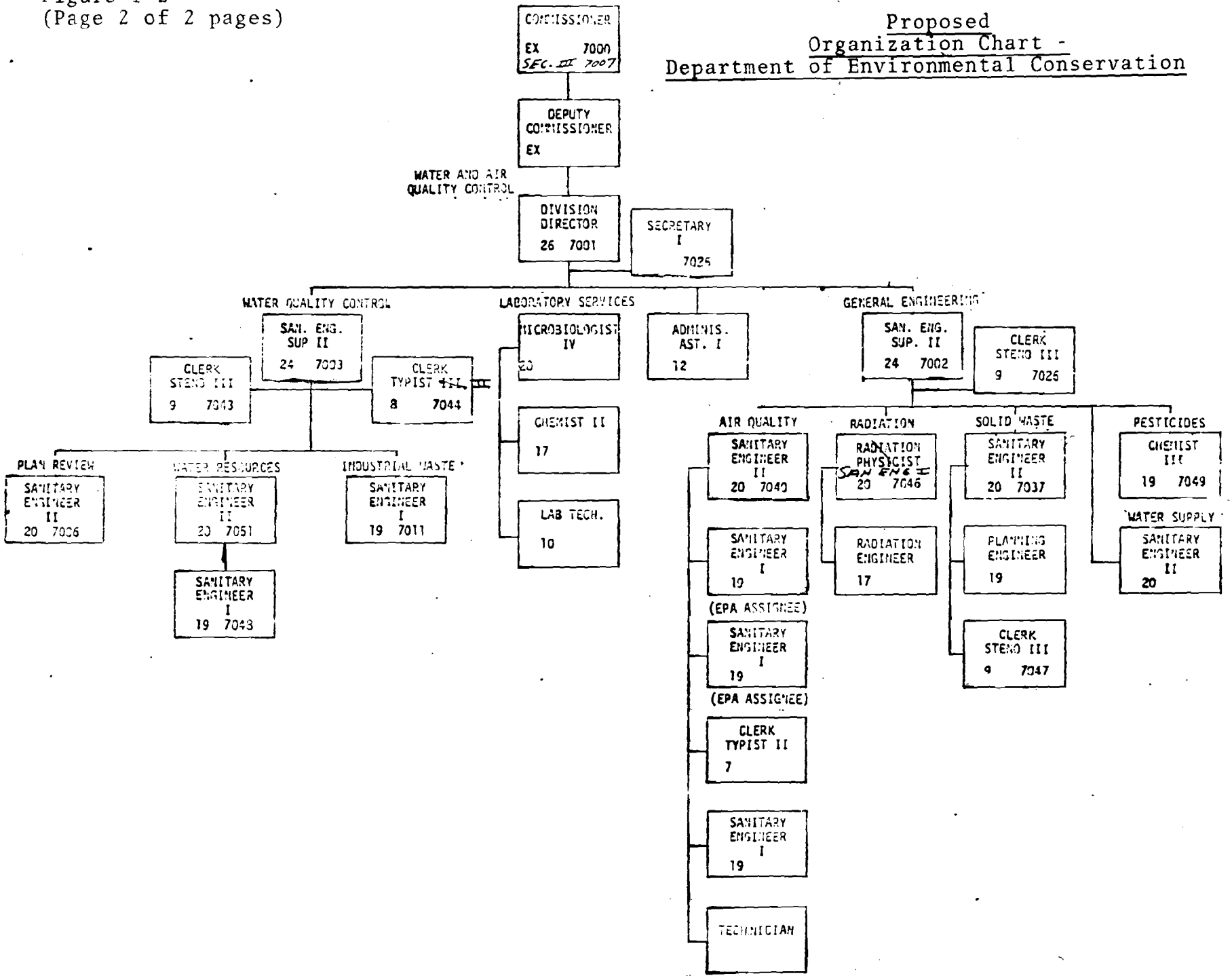


Figure I-2
(Page 2 of 2 pages)

Proposed Organization Chart - Department of Environmental Conservation



II. STATE AND LOCAL PROGRAMS

The State air quality control program is administered by the Department of Environmental Conservation, which is the primary organization responsible for implementing the plan described in this document (refer to Figure I-2 for an organization chart). This Department is responsible for establishing the "floor", or minimum, for air quality control throughout the State, and the major purpose of the Department is to insure that this "floor" (for both regulations and enforcement) is carried out and enforced statewide. Where local programs exist, they are encouraged to develop a strong organization, and in fact to develop more stringent regulations than those of the State, if warranted by local conditions. In this way local programs will carry out important parts of the comprehensive statewide air quality control program. The two present local programs, the Cook Inlet Air Resources Management District and the Fairbanks North Star Borough, are expected to carry out major portions of this plan as it affects their areas.

This section presents a regional description of the State, a description of the resources and manpower existing and required for implementing this plan, a guideline for future local program development, a description of the legal authority, the present and projected air quality regulations, and a description of how enforcement of regulations and plan will be carried out.

II.A. Air Quality Control Regions

Alaska is divided into four intrastate air quality control regions, as shown on Figure II-1. These regions cover an area of 586,000 square miles (which is approximately 17 percent of the area of the rest of the United State), in which only 302,400 people live (1970 census). Because of Alaska's rather remote position relative to the rest of the United States, no interstate air quality control problems are foreseen. Although Alaska borders Canada for a considerable distance, no air quality control problems are foreseen for some time because of the unpopulated nature along the boundary.

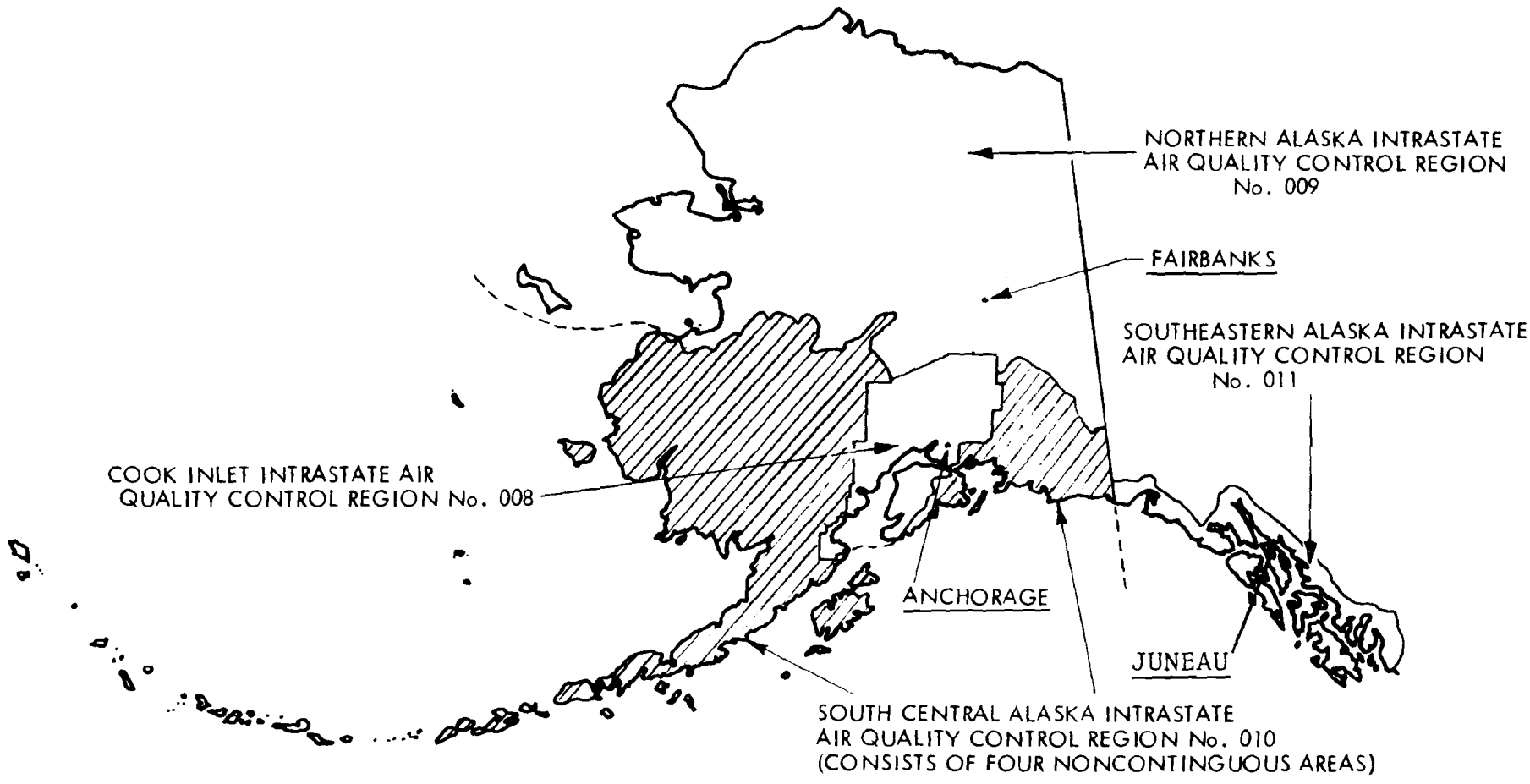


Figure II-1: Air Quality Regions of Alaska

The characteristics (meteorology, topography, population) of each region are discussed in this section.

II.A.1. Cook Inlet Region

The Cook Inlet Intrastate Air Quality Control Region, No. 008, consists of the Greater Anchorage Area Borough, the Kenai Peninsula Borough and the Matanuska-Susitna Borough, and encompasses a total area of approximately 44,000 square miles (Figure II-1). The principle topographical feature of this region is the Cook Inlet Basin (Cook Inlet itself encompasses approximately 7,750 square miles of water). This basin is bounded by four mountain ranges: the Alaska Range forms the north and west boundaries and consists of peaks of approximately 11,000 to 20,000 feet; the Chugiak Mountains connect with the Kenai and Talkeetna mountain ranges to form the eastern and southeastern boundaries, with elevations ranging from 4,000 to 12,000 feet. The Cook Inlet is approximately 190 miles long and empties into the Pacific Ocean in the southwest area of the region.

A low-lying coastal shelf ten to fifteen miles wide extends along both sides of the Cook Inlet throughout its length. This shelf is generally below 600 feet in elevation, is relatively flat, and serves as the principal location of commercial and residential development. Future commercial and residential development is anticipated to continue to locate along this coastal area.

The total population of the region is 149,430 (1970 census). This population is further broken down as follows:

Greater Anchorage Area Borough - 126,330

- Anchorage - 42,600
- Eagle River - 2,440
- Sand Lake - 4,170
- Spenard - 18,090
- Fort Richardson - 10,760
- Elmendorf AFB - 12,590
- Remainder - 35,680

Kenai Borough - 16,590

- Kenai - 3,500
- Homer - 1,090
- Soldotna - 1,200
- Seward - 1,590
- Remainder - 9,210

Matanuska-Susitna Borough - 6,510

- Palmer - 1,140
- Butte - 450
- Remainder - 4,920

The Department of Labor forecasts a population increase of 7.3% between 1971 and 1975, while an extrapolation of the Greater

Anchorage population growth (refer to section VI.F.9) predicts a 17% population increase.

The prevailing wind pattern throughout the Cook Inlet Basin is predominantly from the southwest up the Inlet in the summer, and from the northeast down the Inlet in the winter. Seasons are well defined in the Basin, with winter extending from mid-October to mid-April and being characterized by cloudy mild weather alternating with clear cold weather. Clear cold days frequently are accompanied by significant occurances of ground fog due to moisture from Cook Inlet. Temperatures occasionally reach -15° to -25° F. at the airport, with temperatures from -30° to -40° F. in some of the suburbs of Anchorage. Normally the depth of snow cover on the ground does not exceed fifteen inches. Spring occurs from mid-April to June and during this period ice break-up occurs on the major streams. The season is characterized by warm days and chilly nights with little precipitation. Summer occurs between June and early September with the latter half of the season accounting for approximately 40% of the annual precipitation. Autumn is brief, beginning shortly after mid-September and lasting until mid-October. Precipitation is light and may occur as snow or rain. Some of the stronger southerly winds occur late in summer or fall.

II.A.2. Northern Region

The northern region is an extremely large area covering approximately 320,000 square miles. Much of this area is unpopulated, and has a total population of 69,300 (1970 census). Most of this population lives within the Fairbanks North Star Borough (10,000 square miles). The population breakdown for the region is as follows:

Fairbanks North Star Borough - 45,860

- College - 3,400
- Fairbanks - 16,100
- Greater Fairbanks - 8,100
- Eielson Air Force Base - 6,150
- Fort Wainwright - 9,100
- Remainder - 3,010

Barrow - 2,100
Fort Greely - 1,820
Nome - 2,500
Kotzebue - 1,700
Remainder - 15,320

The topography of this vast area is dominated by the Yukon and Tanana Rivers in the southern portion, the Brooks Mountain Range (which is approximately 6,000 foot elevation) situated across the middle of the region and the North Slope existing to the north of the range and extending east to west. The interior is characterized by long and relatively warm summer days and very short and cold days in the winter. In Fairbanks

the sun is above the horizon for eighteen to twenty-one hours each day during the months of June and July and temperatures sometimes reach 90 degrees F. In December the sun is above the horizon less than four hours per day and temperatures often fall below -60° F.

Most of the population and commercial/business activities are situated near Fairbanks and it is expected for the most part to remain that way. Because this is the area of most concern from an air quality standpoint, the meteorological description that follows relates primarily to Fairbanks: Fairbanks is located near the mouth of the Chena River on the northern portion of the Tanana drainage basin. It is surrounded by low lying hills on the northwest, north and northeast. These hills or ridges are approximately 500 to 1000 feet above the city and thus form a natural boundary in these directions for a micrometeorological Fairbanks airshed which opens out into the very large and broad Tanana River Basin to the southwest, south and southeast (the Tanana River plain at this point extends to the south approximately 50 miles). The interior of Alaska is subjected to numerous and persistant high pressure atmospheric systems, during which times calm weather conditions often occur. Prevailing upper air winds are from the east in winter and summer and from the east or west in spring or fall. Surface winds are not strong, averaging 2.3 meters per second (reference 3). Temperature inversions are frequent and extremely strong throughout the Fairbanks Basin. Surface inversions are present more than 60% of all night soundings and 80% of both day and night soundings in the winter (reference 3). These inversions are among the strongest in the world (up to three times those present in Los Angeles). Annual precipitation in the Fairbanks regions is approximately 12 inches. Much of the rain occurs in August, although it may begin as early as May. Precipitation is very light from September to December, when snowfall begins and reaches a peak in January. Persistant snow cover is present throughout the winter months, with April having the lightest precipitation. Freezing temperatures persist from the first of September to mid-May with ice beginning to form on the rivers in October (break-up beginning in early May).

One of the unique problems existing in arctic type climates (and especially in Fairbanks) is the formation of ice fog whenever temperatures are less than -30 degrees F. During the early part of the 1971-72 winter, ice fog was present at temperatures even as high as -20° F. Ice fog is formed when relatively warm air carrying water vapor is injected into cold ambient air of approximately -30° F. The water vapor quickly becomes ice crystals of varying sizes and characteristics, depending on the source and temperature. Because water vapor and carbon dioxide are the normal end products of any combustion process, there naturally is a considerable amount of water vapor generated wherever populated areas exist. If the populated area is located in the severe climate that Fairbanks experiences, then ice fog potentially can become a considerable air contaminant by itself. Because of its potential to limit visibility, it not only causes an extreme safety hazard, but it also adds to psychological problems associated with "cabin fever".

II.A.3. Southcentral Region

The Southcentral region consists of four noncontiguous areas (refer to Figure II-1): the large area west of the Cook Inlet Region; another relatively large area to the east of the Cook Inlet; Kodiak Island, and the Aleutian Island Chain. This region is approximately 180,000 square miles, with a population of only 41,050. This population is distributed throughout the region as follows:

Kodiak Borough - 9,410

Kodiak - 3,800
Kodiak Naval Station - 3,050
Remainder - 2,560

Bethel - 2,400

Cordova - 1,830

Dillingham - 914
Valdez - 1,000
Remainder - 25,946

This region is dominated by numerous mountain ranges. Much of the region east of the Cook Inlet is drained by the Copper River, with the principal population centers being Yakutat, Cordova, Glenallen and Valdez, all of which being separated by great distances. The area west of the Cook Inlet region is dominated by the Yukon Delta and the Kuskokwim River Basin, and the major population centers are Bethel and Dillingham. Fishing in the Kodiak, Dillingham, and Bethel areas is the major activity although some mining does occur.

Meteorology of the area varies, from a climate similar to Fairbanks in the northern areas to an extremely stormy and wet climate in the Aleutian Islands and some of the western coast line, to that of a much more temperate and moist climate in the Gulf of Alaska region (Valdez, Cordova).

II.A.4. Southeastern Region

The Southeastern region consists of the panhandle of Alaska, and is made up of several major islands, a thin strip of mainland bounded on one side by Canada and on the other side by the Pacific Ocean, and numerous smaller islands. The land area is approximately 35,000 square miles, and the major population centers are connected by the Alaska Marine Highway System (in addition to airline service). Major population centers are as follows:

Juneau - 13,500

Skagway - 700

Ketchikan - 10,900

Sitka - 6,900
Wrangell-Petersburg - 2,500
Remainder - 8,060

This region is characterized by abundant rainfall (Ketchikan averages approximately 160 inches of precipitation per year, and Sitka and Juneau average approximately 100 inches). The topography of the region is that of fjord-like ocean inlets and sounds throughout the region, and very rugged mountainous terrain on the island and mainland. Such topography lends itself to large variations in meteorology from one area to another. The population is engaged primarily in fishing, lumbering, government, pulp manufacturing and tourism. Sitka and Ketchikan are the locations of the two sulfite pulp mills, whereas lumbering exists in Wrangell, Haines and Metlakatla.

II.B. Legal Authority

The legal authority for establishing the State's Air Quality Control Program is found in Alaska Statutes 46.03 which was enacted during the 1971 Alaska State Legislative Session. This legislation created the Department of Environmental Conservation on July 1, 1971. One of the Department's five divisions is the Water and Air Quality Control Division, which includes the environmental control programs of water quality, air quality, solid waste, pesticides and radiation.

II.B.1 State

The Attorney General of the State of Alaska has reviewed the air quality control section of AS 46.03 and has found that the six legal requirements as stipulated in the Federal Register, Line 36, No. 158 Requirements for Preparation, Adoption and Submittal of Implementation Plans (August 14, 1971, paragraph 420.11) are fulfilled in AS 46.03. Refer to Appendix II for the full text of Alaska Statutes 46.03 and the Attorney General's legal opinion on the authority for air quality control. Even though the Attorney General has ruled that the legal authority as outlined in the above Federal Register is present in AS 46.03, the following changes in the air quality control section of AS 46.03 have been proposed to the current legislature. These changes provide for a more explicit definition of the methods by which the Department will determine compliance or non-compliance with the applicable regulations, and will more explicitly define emission control requirements (including reporting of emission data) and confidentiality of records. Changes to AS 46.03 as they affect air quality control which have been proposed to the current legislature may be found in Appendix II.4.

II.B.2. Local Programs

The Cook Inlet Air Resources Management District is the only local air quality program operating within the Cook Inlet Intrastate Air Quality Control Region. Its area of jurisdiction includes the Greater Anchorage Area and Kenai Peninsula Boroughs. The remainder of the Region, not within the jurisdiction of the District, consists of the Matanuska-Susitna Borough. The Cook Inlet District was

established in 1968 under authority of AS 46.03.210, LOCAL AIR POLLUTION CONTROL PROGRAMS. A copy of the Cook Inlet District's regulations is provided in Appendix II.

The Fairbanks North Star Borough also has established an air pollution control ordinance under authority of AS 46.03.210, which went into effect in January 1972. A copy of this ordinance also may be found in Appendix II.

II.C. Regulations

II.C.1. State

When the Alaska Statutes 46.03 formed the Department of Environmental Conservation on July 1, 1971, the existing air quality control regulations for the State were based on abating public nuisances. Since then an extensive review and modification of the air quality control administrative code has been completed. The revised State regulations (refer to Appendix III) establish a base level for the entire State, from which State and local programs must operate. These regulations are based on a preventive approach to air quality control, and include:

1. Regulations which prohibit the burning of putrescible matter and rubber material in low to densely populated areas, and require written permission for open burning in those areas which are sparsely populated.

2. Visible emission and particulate matter concentration limitations for incinerators, industrial processes and fuel burning equipment.

3. Emission source regulations for sulfite and kraft pulp mills.

4. Visible emission regulations on motor vehicles (to minimize the public nuisance aspects of "smoking" motor vehicles).

5. Carbon monoxide limitations.

6. Visible emission regulations on marine vessels

7. Requirements for a data submittal and permit system which will be used as the basic enforcement mechanism for the State.

8. Criteria for calling air episodes.

9. Source testing requirements.

A complete copy of the State Air Quality Control Regulations may be found in Appendix III. Public Hearings were conducted on the proposed plan and regulations in Fairbanks on February 25, 1972, in Anchorage on February 26, 1972, in Juneau on February 29, 1972, and in Ketchikan on March 2, 1972. A copy of the proposed State Air Quality Control Regulations may be found in the announcement of public hearing included in Appendix IV. The changes made in the proposed plan and regulations as a result of the public hearings also are summarized in Appendix IV, as is each person's testimony from the four public hearings.

Two parts of the State regulations were not developed because of insufficient information. These parts will be evaluated and status reports will be included in the first semi-annual report to the Environmental Protection Agency. Both the parts are discussed below.

1. A prohibition of open burning in densely populated areas appears to be desirable. However, necessary information presently is lacking on how dense a populated area should open burning be prohibited.

2. Presently there is an ambient standard for "suspended" particulate matter. Further evaluation is necessary to define in quantitative terms what is "suspended" and what is "settleable". Once this determination has been made (and this is expected to be submitted with the first semi-annual report to the Environmental Protection Agency) then there should be a regulation for "settleable" particulate matter as well. This will be evaluated and reported on in the first semi-annual report to the Environmental Protection Agency.

II.C.2. Local Programs

The regulation and ordinance of the two local programs in the State may be found in Appendix II. The Cook Inlet District has indicated their intent to revise their regulations during the next several months. The Fairbanks North Star Borough has not yet scheduled a revision of their regulations. Revision of the local regulations is necessary to be compatible with the applicable State regulations and is required by AS 46.03.210(1) and 18 AAC 50.010. The local regulations must be at least as stringent as the State regulations. However, the local programs may (and in fact are encouraged to) adopt more stringent regulations as necessary to meet local needs.

The Fairbanks North Star Borough Air Pollution Control Program is expected to update their ordinance in those areas which are applicable for Fairbanks, such as particulate matter concentration requirements for stationary sources, ambient air quality standards, air episode criteria and carbon monoxide limitations. In the interim the Borough will be enforcing its present ordinance and will develop and implement emergency procedures to be carried out to abate potential high concentration levels of particulate matter and carbon monoxide (reference 45.05.100, Emergency Procedures of the Fairbanks North Star Borough Ordinance, included in Appendix III). At the same time the Department will be enforcing its regulations, including the statewide permit system.

II.D. Enforcement

The State's ambient air quality will be controlled by the use of a permit system and stringent air contaminant emission standards.

Large air contaminant emission sources will be required to obtain a permit to operate, through which the Department of Environmental Conservation will be able to determine whether or not the source is in compliance with both ambient air quality and emission regulations (reference Appendix III).

Regardless of whether air quality is better than the ambient air quality standards, all air contaminant emission sources will be required to comply with the stringent emission standards in 18 AAC 50 (refer to Appendix II).

Implementation of the State plan will be accomplished by the Department of Environmental Conservation with the assistance and cooperation of local programs where they exist. Enforcement procedures to be used on the State and local program levels are discussed in this section.

II.D.1. State

Enforcement of the State air quality control regulations will be accomplished through two mechanisms: a permit system for all large sources of air contaminant emissions, and a periodic field inspection by State personnel based primarily on enforcing visual particulate matter regulations. Emission data must be submitted to the Department by medium to large emission sources every two years. This section describes the requirement for data submittal and permits, in addition to the method by which the State will provide enforcement.

The State of Alaska is in a unique situation in which approximately 30% of all sources requiring permits to operate are federal facilities, many of which are located in the Anchorage and Fairbanks areas. Section 118 of the 1970 Amendments to the Clean Air Act, entitled CONTROL OF POLLUTION FROM FEDERAL FACILITIES, specifies that all federal facilities emitting air contaminants must comply with "federal, state, interstate and local requirements affecting control and abatement of air pollution to the same extent that any person is subject to such requirements." Therefore, federal facilities are to be treated as any other air contaminant emission source and those sources large enough to require a permit to operate shall be required to do so. Compliance schedules will be negotiated and included as part of the required permit to operate for those federal facilities determined to be presently in non-compliance.

II.D.1.a. Air Emission Data Submittal

Submittal of air contaminant emission data is required every two years from those sources capable of emitting five tons per year of hydrocarbon, carbon monoxide, nitrogen oxide, sulfur oxide or particulate matter, assuming that all air quality control equipment is inoperable (refer to Appendix II). Tables II.D-1 and II.D-2 provide guidelines on the sizes of air contaminant emission sources for which data submittal is required.

Data submittal forms which the Department will use are shown in Appendix VI. The information provided on these forms will allow the Department to keep a continually updated inventory on the air contaminant sources as they exist throughout the State. It also will provide the Department with a mechanism by which a periodic review of its air program will be conducted. Sources requiring permits to operate also will submit data in the format shown in Appendix VI, in addition to complying with the permit requirements as discussed in paragraph II.D.1.b.

The first compilation of air contaminant emission data throughout the State was completed in September 1971. This emission inventory will be updated in 1973 based on the first air emission data submittal required under 18 AAC 50.120(b) and every two years thereafter.

Where local programs exist, the obtaining of air contaminant emission data will be accomplished by that program on forms provided by the Department, compiled by those programs and submitted to the State on December 31st of those years which submittal is required.

II.D.1.b. Permit to Operate

The Department of Environmental Conservation will monitor and control new and existing large sources of air contaminant emissions by a statewide permit system (refer to 18 AAC 50.120, Appendix III). This system will allow the Department to:

1. Determine whether existing sources are in compliance with regulations.

2. Establish compliance schedules for those existing sources presently not in compliance with the regulations.

3. Determine prior to initiation of construction whether new/modified sources will comply with the regulations.

4. Provide the capability to approve or disapprove construction/modification/operation of sources based on ambient air quality considerations.

5. Provide source emission and other data to estimate air quality trends.

As can be seen by these considerations, the permit system will be the major mechanism by which the Department will develop and enforce its regulations. Through the permit system, large air contaminant emission sources will also be required to show compliance with ambient air quality standards. The permit application form, including instructions, which the Department of Environmental Conservation anticipates using for all operators of sources requiring a permit to operate is shown in Appendix VI. Tables II.D-1 and II.D-2 provide guidelines on the size of emission sources for which permits to operate are required. All operators of facilities requiring a permit are to apply for the permit from the Department. Application forms may be obtained from the Department's regional offices in Anchorage, Fairbanks or Juneau. The application form shown in Appendix VI indicates the information required to be submitted. If the facility is found by the Department

to be, or is suspected to be, in non-compliance with State requirements the operator of the facility will be notified by certified mail of the Department's determination, along with a description of what is required of the operator to obtain approval. The application may be modified and resubmitted by the applicant for additional review, or within 30 days of the receipt of the Department's determination the applicant may make written request for a hearing to review the Department's denial.

Any proposed air contaminant emission source requiring a permit must have the permit prior to construction. The operator of the proposed facility shall apply for the permit from the Department and submit the information required in the permit application (refer to Appendix VI). If the Department finds that the proposed facility may be, or will be, in non-compliance with State regulations as proposed, the Department will notify the applicant of its findings along with a description of what is required for the applicant to obtain approval. The application may be modified and resubmitted by the applicant for additional review, or within 30 days of the receipt of the Department's determination the applicant may make written request for a hearing to review the Department's denial.

The approval of any construction or modification shall not affect the responsibility of the operator to comply with all applicable emission limitations or other air quality control regulations. The application will be denied in the following cases:

1. The proposed facility cannot be built in the geographic area indicated without violating the ambient air quality standards in 18 AAC 50.020.

2. The emission control systems are inadequate.

3. The air episode plan provisions are inadequate.

4. Stack sampling equipment, air monitoring equipment or sampling ports are inadequate.

5. The submitted information is not adequate or is not in acceptable format to be evaluated.

6. The proposed facility is not in compliance with other environmental requirements of the Department of Environmental Conservation.

All permits to operate will require, as a minimum, that the operator of the affected source submit to the Department a status report of the facility's air quality control aspects every six months. These reports will include air contaminant emission data and air quality monitoring data as required by the permit. Continuous and/or batch emission sampling will be required, primarily on the very large sources such as large power plants and pulp mills. Ambient air monitoring requirements also will be considered for these very large sources. Reporting of data for large sources will be on a monthly basis, such as for pulp mills.

Approximately 80 to 100 air contaminant emission sources are expected to require permits to operate. Referring to Table II.G-1, all permits to operate are scheduled to be finalized by December 31, 1973. A schedule by which these permits will be negotiated and finalized within this time period will be developed and included in the first semi-annual report. Those sources known to be in non-compliance with the regulations will be required to have their permits to operate (which would include an acceptable compliance schedule) negotiated and finalized by December 31, 1972 (refer to section II. D.1.c). The number of sources expected to require permits to operate is summarized in the table below. The figures in this table were obtained from the emission inventory (included in Appendix I). This emission inventory will be reviewed to insure that large sources which have not been covered will be required to obtain a permit. For example, the numbers shown in the table and in the emission inventory do not include asphalt batching plants, most of which will require permits to operate:

LOCATIONS OF FACILITIES REQUIRING PERMITS

Type of Facility	Cook Inlet Region	Northern Region	Southcentral Region	Southeastern Region
Industrial	20*-35	-	1	9
Airport	3	1	1	1
Municipality	-	3	-	1
Federal	1	15	11	1
Electric	4	5	2	3
TOTAL PERMITS	28-43	24	15	15

*All facilities, except 1, are oil corporation facilities.

To insure that potential new sources of air contaminant emissions will be in compliance with regulations when they are installed, those sources requiring a permit to operate are required to obtain their permit based on their air contaminant emissions regardless of whether air quality control devices are operable. This factor greatly decreases the size of sources which are required to obtain a permit, and effectively requires that nearly all asphalt batching plants obtain a permit to operate, as is the case for the lumber mills existing in Alaska. Also, to insure that fuel burning electric power generating facilities are properly designed when constructed, nearly all such facilities will be required to obtain a permit to operate prior to initiation of construction/installation of any devices (refer to 18 AAC 50.120(c), Appendix III). If it appears that an even smaller source than is covered by requirements for a permit to operate will exceed the State standards if it is put into operation, then the proposed COMPLIANCE ORDER (proposed section AS 46.03.130, refer to section II.B.1) will be used to require that this source take steps to come into compliance with the applicable State regulations.

II.D.1.c. Compliance Schedule

Compliance schedules are required for all air contaminant emission sources presently not meeting the State air quality control regulations. Several large air contaminant emission sources are suspected to be in non-compliance with the newly established regulations. For these sources (including the Fairbanks coal burning power plants, two sulfite pulp mills in the southeastern region and several lumber mills in the southeastern region), permits to operate will be negotiated and finalized by December 31, 1972. Included in their permits will be compliance schedules if the sources are found to be in non-compliance. If compliance schedules are necessary, they will be required to be reviewed and renewed each year that the compliance schedule is active. All of the initial required compliance schedules will be finalized such that the facility will come into compliance with the State regulations as soon as possible, but in no event later than July 1, 1975. These permits (including compliance schedules) will be included in the first semi-annual report to the Environmental Protection Agency.

Increments of progress for all compliance schedules will be reported to the Department at a minimum of once every six months, and for many of the large sources on a monthly basis. The number of reporting periods required of operators of each source will be negotiated and finalized in the permit requirements. Refer to section II.D.1.b and Appendix VI for more details of the State permit system.

During the first 90 days the regulations are in effect, it is anticipated that several other sources will be found to be in non-compliance with the regulations. These sources also will come under a permit to operate by December 31, 1972. Refer to Table II.G-1 for the development schedule of the State air quality control program.

II.D.1.d. Source Surveillance

Emission source surveillance will be accomplished for large sources through the State permit system and for all sources through periodic field enforcement, both on a State and local program level (see section II.D.2 for a description of local program enforcement). 18 AAC 50.120 specifies the legal requirements of the State permit system, and section II.D.1.b and Appendix VI describe the method by which the Department of Environmental Conservation will implement the permit system (which will include periodic testing and inspection of large stationary sources, refer to section II.D.1.b).

Field enforcement of the air quality control regulations is to be accomplished both through the State and local programs (see section II.D.2 for local program enforcement). On the State level Department personnel periodically will field inspect areas for large and small source violations, primarily based on visual particulate matter regulations. Within local jurisdictions this field enforcement is intended to be carried out by State and local program personnel. Unscheduled inspections of air contaminant emission sources under a permit to operate also will be included in this field enforcement function. This capability is to be initiated in fiscal year 1973. One air quality engineer will spend a major portion of his time answering complaints and conducting field enforcement throughout

the State. Refer to Appendix V for a breakdown of the functions to be carried out on a per man basis (projected for fiscal year 1976 when the program is expected to be in full operation). Approximately 40% of the State's air quality control personnel time is projected to be spent enforcing the air quality control regulations. The regional offices will provide support for handling complaints in their jurisdiction regarding air quality control violations. In many situations a citizen complaint would first be received in the regional offices and initial follow-up of the complaint would be handled by the regional office. If additional detailed investigation is necessary it will be handled either by the regional office staff or by State air quality control program personnel depending on the severity and the nature of the complaint. When it is possible, the objective is to have the regional office staff trained to evaluate visible air contaminant emissions so that they may make direct field enforcement as necessary (refer to section II.D.1.b).

II.D.2. Local Programs

Strong local air quality control programs are encouraged. Where such programs presently exist (in the Greater Anchorage Area Borough, the Kenai Peninsula Borough and the Fairbanks North Star Borough) they are expected to enforce their local ordinances. These ordinances are to be updated to be compatible with the newly established State air quality control regulations (refer to Appendix II). Local programs are encouraged to adopt more stringent regulations to meet local needs and conditions; however, the newly established State air quality control regulations establish the minimum requirements or "floors" from which local programs may operate. The intent is to make maximum utilization of local programs, to encourage them to carry out strong programs backed by the State program and resources. Consequently the State will make every effort to provide and encourage maximum local involvement, such that they will be compatible with the "floor" established by the State program. Duplication of functions are to be avoided wherever practicable.

The statewide permit system, which is considered to be the minimum or "floor" for enforcement, will be developed by the Department of Environmental Conservation throughout the State, even within the local jurisdictions. However, local program personnel will be consulted to insure compatibility with local regulations and requirements prior to finalization of State permits affecting a local jurisdiction. This arrangement will insure that:

1. The State Administrative Code 18 AAC 50 and the applicable local regulations will be enforced.
2. All present large and future sources of air contaminant emissions will be under continual air quality control surveillance as a result of the permit system (and thus relieving to a large extent the reliance on field enforcement of regulations, which by necessity would have to be based on visual emissions only).
3. Stationary source air contaminant emission data will be continually updated and available to be used in planning and review purposes on both State and local levels.

Local programs may establish any type of permit system (whether it be for large or small sources) they desire. In particular, for smaller sources not covered by the State permit system, they are encouraged to do so. Should a local program desire greater control of the emission sources in their jurisdiction, they are encouraged

to establish a permit system compatible with the State system to facilitate this control.

The Cook Inlet Air Resources Management District presently has a "Notice of Construction and Application for Approval" system for determining whether proposed new sources are in compliance with local regulations. Once the source is approved and goes into operation, however, there is no further permit or requirements for that source to provide additional or routine data to the District. The District also has a variance procedure by which sources may apply for and receive temporary exemption from rules and regulations (see section 3.19 of the Cook Inlet District's Regulation 1 in Appendix III). The District also may serve written notice on suspected violators which "may include an order that necessary corrective action be taken within a reasonable time" (refer to section 3.25 of the District's Regulation 1, see Appendix III). Table II.F.4 indicates that approximately 35% of the District personnel time will be spent in enforcement activities. The District engineer and air resources specialist have been trained and qualified as smoke readers and the District has purchased a smoke generating unit. One smoke school has been conducted in cooperation with the Environmental Protection Agency. This smoke school is expected to continue for the Cook Inlet personnel and for State, local agency and industrial personnel as requested. The two technicians for the District have not as yet qualified as smoke readers, but they are expected to attend smoke schools in the future. The Cook Inlet District also utilized part of the time of field inspectors from the Greater Anchorage Area Borough, Department of Environmental Quality. These persons will be qualified as smoke readers and will be responsible for reporting excessive smoke densities to the air resources staff for legal action. Presently the District does not have the capability for source monitoring or testing. However, the proposed budget for the Cook Inlet District provides funds for the services of consulting engineering firms to conduct source tests as necessary. Refer to Appendix III for a summary and complete test of the Cook Inlet District's Regulation 1.

Details on the enforcement capability in the Fairbanks North Star Borough program will be included in the Borough's first federal air pollution control grant proposal to be completed by June 1972 and in the first State semi-annual report. Also to be included in the grant proposal will be a summary of the enforcement actions under the present local ordinance (refer to Appendix III for a summary and a full text of the Fairbanks Borough ordinance) which has been in effect only since October 1971. The Borough program is expected to provide for enforcement of its local ordinance and to update the ordinance to be compatible with the State air quality control regulations.

Table II.D-1: DATA SUBMITTAL AND PERMIT TO OPERATE: GUIDELINES FOR PROCESS EQUIPMENT*

PROCESS DESCRIPTION	Data Submittal Required**	Permit Required***
Dry Cleaning		
Petroleum Solvents	30 tons clothes cleaned/yr	600 tons clothes cleaned/yr
Synthetic Solvents	45 " " " "	900 " " " "
Petroleum Storage		
Fixed roof tanks storing gasoline or finished petroleum product	60,000 gal - total storage 9,000,000 gal/yr - throughput	1,000,000 gal - total storage 180,000,000 gal/yr - throughput
Fixed roof tanks storing crude oil	90,000 gal - total storage 10,000,000 gal/yr - throughput	1,800,000 gal - total storage 250,000,000 gal/yr - throughput
Floating roof tanks storing gasoline or finished petroleum product	Any single tank greater than 40 ft diameter	If greater than four (4) 100 ft diameter tanks or equivalent
Floating roof tanks storing crude oil	Any single tank greater than 45 ft diameter	If greater than four (4) 100 ft diameter tanks or equivalent
Gasoline Marketing		
Assumes splash fill system - if submerged or other vapor return systems are used, these will be considered as control measures	4,000,000 gal/yr - throughput	8,000,000 gal/yr - throughput

Table II.D-1 (Cont.)

PROCESS DESCRIPTION	Data Submittal Required	Permit Required
Asphalt Batching Plants	All Capacities	All Capacities
Concrete Batching	5,000 cu yards concrete/yr	5,000 cu yards concrete/yr
Stone Quarrying and Processing		
Without tertiary crushing	600 tons raw material/yr	3000 tons raw material/yr
With tertiary crushing	500 " " " "	2500 " " " "
Incinerators		
Municipal	100 tons waste/yr	1000 tons waste/yr
Industrial/Commercial	100 tons waste/yr	1000 tons waste/yr
Flue Fed	100 tons waste/yr	1000 tons waste/yr
Pathological	100 tons waste/yr	500 tons waste/yr
Air Curtain	All Capacities	All Capacities

Table II.D-1 (Cont.)

PROCESS DESCRIPTION	Data Submittal Required	Permit Required
Ammonia Production	All Capacities	All Capacities
Nitrate Fertilizers		
With Prilling Tower	700 tons product/yr	3800 tons product/yr
With Granulator	600 tons product/yr	6500 tons product/yr
Copper Smelting	All Capacities	All Capacities
Lead Smelting (Primary)	All Capacities	All Capacities
Zinc Smelting	All Capacities	All Capacities
Secondary Lead Smelting		
Reverberatory Furnace	40 tons processed/yr	360 tons processed/yr
Blast Furnace	30 tons processed/yr	250 tons processed/yr
Rotary Reverberatory Furnace	140 tons processed/yr	700 tons processed/yr
Secondary Magnesium Smelting	2500 tons processed/yr	12,500 tons procssed/yr

Table II.D-1 (Cont.)

PROCESS DESCRIPTION	Data Submittal Required	Permit Required
Petroleum Refining	All Process Rates	All Process Rates
Mercury Retorts		
Wood Pulping		

*Operators of facilities emitting air contaminants should consult the Department if questions arise regarding requirements for data submittal or permits.

**These process rates present an air contaminant emission, regardless of whether process air quality control equipment is operating, in excess of five tons per year of hydrocarbons, nitrogen oxides, carbon monoxide, sulfur oxides or particulate matter, from the complete facility.

***These process rates represent an air contaminant emission, regardless of whether process air quality control equipment is operating, in excess of 25 tons per year of sulfur oxides, or particulate matter, or 100 tons per year of nitrogen oxides, carbon monoxide, or hydrocarbons, from the complete facility.

Table II.D-2: DATA SUBMITTAL AND PERMIT TO OPERATE: GUIDELINES FOR FUEL BURNING EQUIPMENT*

FUEL BURNING EQUIPMENT	Data Submittal Required**	Permit Required***
Electric Generators	250 kilowatts rated capacity	250 kilowatts rated capacity
Bituminous Coal Fired Equipment		
Commercial, municipal, industrial and domestic furnaces	150 tons coal/yr	1500 tons coal/yr
Handfired units	100 tons coal/yr	1000 tons coal/yr
Residual/Crude Oil Fired[1] Equipment		
Power Plants	50,000 gallons oil/yr	250,000 gallons oil/yr
Industrial and commercial - Residual oil fired	50,000 gallons oil/yr	250,000 gallons oil/yr
Distillate Oil Fired Equipment[1]		
Industrial and Commercial - Distillate Oil Fired	70,000 gallons oil/yr	350,000 gallons oil/yr
Domestic Equipment	70,000 gallons oil/yr	350,000 gallons oil/yr

1. This assumes oil is 1.0% sulfur. For oil of different sulfur content, divide oil usage by its sulfur content (in percent).

Table II.D-2 (Cont.)

FUEL BURNING EQUIPMENT	Data Submittal Required	Permit Required
Natural Gas Fired Equipment		
Power Plants	20 million cu. ft gas/yr	500 million cu. ft gas/yr
Industrial Process Boilers	40 " " " " "	1000 " " " " "
Domestic and Commercial Heating Units	75 " " " " "	2500 " " " " "
Gas Fired Turbines	50 " " " " "	1000 " " " " "
Gas Fired Engines for Oil and Gas Production	10 " " " " "	250 " " " " "
Gas Fired Engines for Gas Plants	2 " " " " "	45 " " " " "
Gas Fired Engines for Refineries	2 " " " " "	45 " " " " "
Gas Fired Engines for Pipelines	1 " " " " "	25 " " " " "

*Operators of facilities emitting air contaminants should consult with the Department if questions arise regarding requirements for data submittal or permits.

**These process rates represent an air contaminant emission, regardless of whether process air quality control equipment is operating, in excess of 5 tons per year of hydrocarbons, nitrogen oxides, carbon monoxide, sulfur oxides or particulate matter.

***These process rates represent an air contaminant emission, regardless of whether process air quality control equipment is operating, in excess of 25 tons per year of sulfur oxides or particulate matter, or 100 tons per year of nitrogen oxides, carbon monoxide, or hydrocarbons.

II.E. Guidelines to Program Development

One of the functions of the State program will be to insure that the comprehensive State plan for air quality control is fully implemented, whether the implementation is to be done by the Department or through local programs. Participation by local programs throughout the State is encouraged to:

1. Insure maximum utilization of State and local resources for control of air quality, and
2. Insure that the State air quality control plan is carried out.

The necessary State/local coordination to accomplish the above goals will be accomplished by the State through the following mechanisms (these mechanisms will provide for backup and assistance to local programs in developing their air surveillance, enforcement and control strategies, and also will provide for the development of additional local programs if and when they come into being):

1. 21 days before each quarterly and semi-annual report is required to be submitted to the EPA by the State, local programs are to submit to the Department information required of their jurisdiction. These reports will be reviewed by the Department for their subsequent incorporation into the State report. Information relating to the air surveillance system as described in paragraph III.E and information required regarding control strategy and their evaluations are described in sections III.F and IV.A.3, IV.B.3 and IV.C.3.

2. To adequately monitor how manpower and resources are being used, local programs are to submit to the Department a breakdown of the time spent doing specific tasks in the formats shown in Tables II.F.5, II.F.7, and Appendix V. This information will be submitted to the State 21 days before each semi-annual report for subsequent incorporation into the Statewide report.

3. During the first quarter of each calendar year, State and local program personnel will coordinate their needs for the next fiscal year in order to facilitate the coming year's federal grant requests.

The Cook Inlet Air Resources Management District is expected to take on major responsibility for developing and implementing the State air quality control plan for the Greater Anchorage Area and Kenai Peninsula Boroughs. This will include:

1. Develop, maintain and operate the air monitoring network as described in section III.B.
2. Develop and operate an air episode abatement plan as described in section V.
3. Modify the present District regulation to be compatible with State regulations.
4. Enforce the District regulations throughout the District.
5. Evaluate and develop control strategies and solutions to the particulate matter problem in Anchorage as discussed in sections IV.A and III.F.1.

6. Analyze and interpret air quality data (refer to section III.E).

Detailed status reports in each of the above areas will be compiled by the District and sent to the Department for subsequent review and incorporation into the semi-annual reports. Refer to Tables II.F-5 and II.F-6 for manpower and resource projections for the Cook Inlet Air Resources Management District program.

The Fairbanks North Star Borough program is projected to obtain a federal air pollution control grant in the fiscal year 1973 (refer to section II.F.4 for a projected manpower and resources for the Fairbanks North Star Borough). Due to the severity of the air quality problem in Fairbanks, assistance from the State will be necessary as the program develops. However, the Fairbanks Borough program will be expected to carry out the following portions of the State air quality plan as it affects the Borough:

1. Purchase the necessary air monitoring equipment, establish, maintain and operate the air surveillance system throughout the Borough (refer to section III.C).

2. Develop, in cooperation with the State, the special evaluations which are required to more fully understand the air quality problems in the Borough (refer to sections III.F and IV.C).

3. Update the present Borough ordinance to be compatible with the State air quality control regulations.

4. Enforce the Borough regulations throughout the Borough.

5. Develop and operate an air episode abatement plan including routing of traffic around areas of suspected high CO concentrations, (refer to sections IV.B, IV.C and V).

6. Develop ways to reduce the high levels of particulate matter within Fairbanks (refer to section IV.B).

7. Evaluate and develop alternative solutions to the carbon monoxide problem in Fairbanks. State personnel will assist the Borough as necessary but the major initiative for developing this program is to come from the Borough (refer to section IV.C).

8. Analyze and interpret air quality data (refer to section III.E).

Detailed status reports in each of the above areas will be compiled by the Borough and sent to the Department for subsequent incorporation into the semi-annual reports.

In the event that other local programs in the State develop as a result of AS 46.03.210, it would be expected that these programs also would carry out portions of the comprehensive State air quality

control plan. Therefore, such a local program would be expected to have at least:

1. An enforceable ordinance which is compatible with State regulations and plan.

2. A department and a person within the department charged with responsibility for carrying out provisions of the local ordinance.

3. Procedures by which the provisions of the local ordinance will be adequately enforced.

4. Assistance with maintaining any air monitoring stations which may be located within the local program jurisdiction.

The Department of Environmental Conservation has the responsibility to insure that the State air quality control program (including local programs) as described in this document is implemented and attains maximum utilization of the resources which are available. The Department will carry out the following responsibilities:

1. Coordinate and oversee local programs to insure that the plan as it affects their jurisdictions is carried out. This will include providing of resources manpower, and technical assistance as necessary.

2. Develop, maintain and operate air monitoring network as described in section III.D.

3. Insure that an overall air quality evaluation is adequately carried out prior to the submittal of each semi-annual report.

4. Develop and implement the statewide permit system as described in section II.D.1.b.

5. Develop and carry out a field inspection and enforcement system throughout the State.

6. Analyze and interpret air quality data (refer to section III.E).

7. Review and update the State air quality control plan and regulations as necessary to attain and maintain State air quality objectives.

II.F. Existing and Projected Resources

The State air quality control plan will require more resources and manpower than presently are available. The projected resources in this section are those necessary to carry out provisions of this plan, and to comply with the requirements of the 1970 Federal Amendments to the Clean Air Act (as interpreted in the August 14, 1971 Federal Register, Requirements for Preparation, Adoption and Submittal of Implementation Plans). This section will describe the projected resources considered necessary to carry out the plan at the local and State levels. A description of where funding is obtained and the current levels of funding also are discussed in this section.

II.F.1. Methods of Program Funding

The major methods of finance assistance available to State and local programs are the following:

1. Federal funding for air pollution control program grants is available to State and local programs, with State or local funding matched by a varying percentage of federal funding. The federal funding matching percentage is based on several factors: 1) often there is a maximum amount of federal funding available to the State of Alaska, as there was last year; 2) there are basic different types of federal grants, and that when a State or local program goes from one type to another, the amount of State or local funding required goes up in order to have any "matchable" portion available for federal funding. In effect, this type of federal funding requires that the State allocation for their air quality control program never decrease and periodically must increase in order to continue to have federal funding. For instance, the State's present air quality program has a "development" grant. This grant continues only two years, after which the State must enter into an "establishment" grant in order to maintain federal funding. In the second year of establishment support the "matching" portion of the State funding becomes that amount of State funding which is above the previous year's State expenditures; 3) State grants must be approved by the Environmental Protection Agency, while local program grants must be approved by the State and the Environmental Protection Agency. After the State or local program becomes fully operational, it is eligible for maintenance support, which does not require increased matching funds.

2. State Funding of Local Programs. There is a two doller per capita fund available to local governments which have an operational air or water quality control program. However, this funding is not required to be spent for air quality control purposes and the funding goes to the local government's general fund. Table III.F-1 shows the current fiscal year revenue sharing allocation to local programs.

There also is a 75% maximum State matching fund under Alaska Statutes 46.03.230. Available funds under this Statute are appropriated by the legislature and they are to be prorated among the various local governments having acceptable air quality control programs. Funding distributed under this Statute goes to the general fund of each local government. However, the amount of funding allocated is based on the amount of local financing given to its air quality control plan.

The current year's funding under this statute is $50,000, which will match approximately 60% of the present local air quality control program funding levels. This allocation is shown in Table II.F-1.

II.F.2. State Program

The State currently is operating under its first federal air pollution control grant. The grant consists of $100,000, of which State funding portion is $40,000 and the federal matching portion is $60,000. Currently two engineers work full time in air quality control. One of these engineers is responsible for developing the program, and the other engineer will be primarily responsible for developing the air surveillance network (as described in section III) for the State. One additional engineer is to be obtained this fiscal year under the present federal grant.

Currently the Department of Environmental Conservation has three regional offices located in Fairbanks, Anchorage and Juneau. These offices will be available to assist the State air quality control program in their areas as necessary. They also will be available to provide enforcement and investigative capability as necessary in the field for the State air program. The professional personnel both present and projected for these regional offices are the following:

Northern Regional Office (Fairbanks): One regional engineer (position filled), one engineer (not filled), one field officer (position filled).

Southcentral Regional Office (Anchorage): One regional engineer (position filled), two engineers (positions vacant), two field officers (positions vacant).

Southeastern Regional Office (Juneau): One regional engineer (position filled), one field officer (position vacant).

In addition to support from the regional department offices, the Department air quality control program also will receive direct assistance from the combined use of the pesticides/water quality/air quality laboratory to be established in 1972, in addition to assistance in laboratory analysis from the Pesticides Program Coordinator, who is responsible for developing and maintaining the joint laboratory.

Table II.F-2 presents the present and projected resources for developing an air quality control program to implement the plans described in this document. The program is projected to increase to five professional personnel by the end of fiscal year 1973 and to stablize at that level. The equipment budget for this fiscal year is $22,000, and it is projected to be complimented with a $12,000 equipment expenditure in 1973 and an additional $14,000 expenditure in fiscal year 1974. Table II.F-3 presents the distribution of the time expected to be spent in the various functions of the air quality control program for the State personnel, and Tables V.1 and V.2 provide additional manpower and resource information.

II.F.3. Cook Inlet Air Resources Management District

Until this year the Cook Inlet District was a local program operating throughout the Cook Inlet. Presently it covers the Kenai Peninsula and Greater Anchorage Area Boroughs, but not the Matanuska-Susitna Borough. The District has a federal air pollution control grant which consists of $112,000, of which $52,000 is the local contribution and $60,000 is the federal matching portions. The Cook Inlet District has received a two dollar per capita funding for several years (see Table II.F-1). However, this financing is not required to be spent on air quality control purposes. The District also received State matching funding under AS 46.03.230 for fiscal year 1972 (see Table II.F-1).

The Cook Inlet District presently consists of a staff of four, made up of one engineer, one sanitarian, and two technicians. The District's present equipment and laboratory capabilities are approximately what is needed (outside of some equipment for evaluating control strategies) to implement its portions of the State air quality control plan. Table II.F-4 presents existing and projected resources necessary for the District to carry out its portion of the State plan and Table II.F-5 presents a detailed breakdown of expected time breakdown of the professional personnel.

II.F.4. Fairbanks North Star Borough

The Fairbanks North Star Borough is only a small portion of the Northern Air Quality Control Region. However, the majority of the population in this region is situated in the Borough, and by far the most severe air pollution problems identified in the State are within this area. The Fairbanks program presently is funded at $34,000 for fiscal year 1972, and has a pollution control officer on the staff. The program received both the $2 per capita revenue sharing funding and the State matching funding for the first time in fiscal year 1972 (refer to Table II.F-1). Because this program only recently started (its ordinance went into effect in January 1972) much of its operating and enforcement procedures have not been clearly established. Table II.F-6 presents the present and anticipated resources necessary to develop and operate the Fairbanks Borough program and Table II.F-7 presents expected manpower breakdown of the time expected to be spent in various program functions. Table V.5 presents additional resources information.

Because of the severity of the air pollution problems in Fairbanks area, a federal air pollution control grant is projected to be applied for and obtained (refer to Table II.F-6). This grant will allow the program to develop a three man program at approximately a $100,000 yearly expenditure level. These resources will allow the Borough to purchase, develop and maintain its air surveillance network (refer to section II.E for the functions to be carried out by the Borough program), to evaluate its air pollution problems, to develop and implement its control strategies, and to modify and enforce its local ordinance.

Table II.F-1

State Aid to Local Governments
For
Air Quality Control Programs

Fiscal Year 1972

	Revenue Sharing*	Matching Grant**	Total
Fairbanks North Star Borough	$62,440	$20,350	$82,790
Greater Anchorage Area Borough	$220,912	$26,220	$247,132
Kenai Peninsula Borough	$31,672	$3,430	$35,102
Matanuska-Susitna Borough	$13,018	-	$13,018
City and Borough of Juneau	$27,900	-	$27,900
TOTAL	$355,942	$50,000	$405,942

*$2 per capita available for those local governments having an air or water quality control program (see section II.F.1).

**Maximum matching capability of up to 75% of a local government's cost of operating its air quality control program (as appropriated funds are available).

Table II.F-2

Estimated State Air Quality Control Program Resource Requirements

(Figures are x $1,000)

Program	Fiscal Year 1972	1973	1974	1975	1976
Personnel	53	82*	87*	110	115
Consumable Supplies	2	5	6	6	7
Travel	9	12	14	15	15
Other	12	16	20	20	20
Equipment	22	12	15	12	5
TOTALS	98	127	142	163	162
State Funding	38.8	38.8	42	72.2	72.2
Federal Funding	59*	88*	100*	90.8	89.8

Refer to Appendix V for other manpower and cost estimates.

*One air quality engineer (State assignee) provided by EPA outside of federal grant.

Table II.F-3

State Air Quality Control Program
Estimated Work Breakdown
(Man-Years)

Function	Fiscal Year				
	1972	1973	1974	1975	1976
Administration	1	1	1	1	1
Planning	.4	.2	.2	.2	.2
Coordination with local programs plans					
Development and updating of program plans					
Fiscal					
Regulations					
Departmental Coordination	.2	.2	.2	.1	.1
Reports	.1	.2	.2	.2	.2
Federal					
State					
Local					
Public Relations	.1	.1	.1	.1	.1
Training	.1	.4	.3	.3	.3
Processing of Misc. Mail, Timesheets	.1	.1	.1	.1	.1
Enforcement	.1	1	1.5	2	2
Permit System	.1	.8			1.0
Plant inspections					
Plan review					
Data review					
Complaints and Field Patrol					.7
Source Testing		.1			.2
Reports		.1			.1
Air Surveillance	.4	2	2.5	2	2
Network Development and Operation		.4	.5	.5	.5
Instrument Calibration and Maintenance		.1	.1	.1	.1
Control Strategy Evaluations		.8	.8	.5	.5
Data Processing		.2	.2	.2	.2
Data Evaluation, Reports		.4	.7	.5	.5
Laboratory Operations		.1	.2	.2	.2
TOTALS	1.5	4	5	5	5
Clerical	.6	1	1	1	1

Refer to Appendix V for other manpower estimates.

Table II.F-4

Estimated Cook Inlet Air Resources Management District

Resource Requirements

(Figures are x $1,000)

Program	Fiscal Year 1972	1973	1974	1975	1976
Personnel	76	94	99	105	111
Consumable Supplies	1.5	1.5	1.5	1.5	1.5
Travel	10	10	10	10	10
Other	15	14	14	14	15
Equipment	7.5	1.5	1.5	1.5	1.5
TOTALS	112	121	126	132	139
Local Funding	52	52	72	72	74
State Funding	26.2*	**	**	**	**
Federal Funding	60	69	74	60	65

*Matching grant funding, which is based on the local funding level for air quality control. Amount does not include funding obtained from State revenue sharing (See Table II.F-1).

**Funding available for local air quality programs to be appropriated each year by State legislature (see section II.F.1).

Refer to Appendix V for other manpower and cost estimates.

Table II.F-5

Cook Inlet Air Resources Management District
Estimated Manpower Requirements

Function	Fiscal Year				
	1972	1973	1974	1975	1976
Administration	1.1	Same	Same	Same	Same
Planning	.25				
Coordination with local programs plans					
Development and updating of program plans					
Fiscal					
Regulations					
Departmental Coordination	.1				
Reports	.2				
Federal					
State					
Local					
Public Relations	.25				
Training	.25				
Processing of Misc. Mail, Timesheets	.05				
Enforcement	1.4				
Permit System	.5				
Plant inspections					
Plan review					
Data review					
Complaints and Field Patrol	.4				
Source Testing	.2				
Reports	.3				
Air Surveillance	1.5				
Network Development and Operation	.5				
Instrument Calibration and Maintenance	.2				
Control Strategy Evaluations	.25				
Data Processing	.15				
Data Evaluation, Reports	.15				
Laboratory Operations	.25				
TOTALS	4	4	4	4	4
Clerical	1	1	1	1	1

Refer to Appendix V for other manpower estimates.

Table II.F-6

Fairbanks North Star Borough

Estimated

Resource Requirements

(Figures are x $1,000)

Program	Fiscal Year 1972	1973	1974	1975	1976
Personnel	25	65	68	72	76
Consumable Supplies	2	5	5	5	5
Travel	1.5	4	4	4	4
Other	3.5	15	18	18	18
Equipment	2	12	8	4	2
TOTALS	34	101	103	103	105
Local Funding	34	57	57	70	70
State Funding	20.3*	**	**	**	**
Federal Funding***	-	44	46	33	35

*Matching grant funding, which is based on the local funding level for air quality control. Amount does not include funding obtained from State revenue sharing (see Table II.F-1).

**Funding available for local air quality programs to be appropriated each year by State legislature (see Section II.F.1).

***Fairbanks Borough to apply for federal air pollution control grant (reference Section II.E).

Refer to Appendix V for other manpower and cost estimates.

Table II.F-7

Fairbanks North Star Borough
Estimated Work Breakdown*
(Man-Years)

Function	Fiscal Year				
	1972	1973	1974	1975	1976
Administration	.45	.7	.8	.9	1.1
Planning					.25
Coordination with local programs plans					
Development and updating of program plans					
Fiscal					
Regulations					
Departmental Coordination					.1
Reports					.2
Federal					
State					
Local					
Public Relations					.25
Training					.25
Processing of Misc. Mail, Timesheets					.05
Enforcement	-	.5	.7	.7	.7
Permit System					.25
Plant inspections					
Plan review					
Data review					
Complaints and Field Patrol					.2
Source Testing					.1
Reports					.15
Air Episode					
Air Surveillance	.3	1.5	1.5	1.4	1.2
Network Development and Operation					.4
Instrument Calibration and Maintenance					.2
Control Strategy Evaluations					.2
Data Processing					.1
Data Evaluation, Reports					.1
Laboratory Operations					.2
TOTALS	.75	2.7	3	3	3
Clerical	.5	1	1	1	1

*To be more fully developed in the Fairbanks North Star Borough Federal Air Pollution Grant Application
Refer to Appendix V for other manpower estimates.

II.G. Development Schedule

Table II.G-1 presents the schedule by which the State will implement its air surveillance system (refer to sections III.B.3, III.C.3, III.D.2, III.F and III.G), its air episode monitoring network (refer to section V.B), and its permit system (refer to section II.G). Other sections within the Plan which contain schedules can be found in section II.F (where existing and projected program resources are discussed), and sections IV.A.3, IV.B.3, IV.C.4, IV.D.3 and IV.B (all of which discuss the control strategies which are to be carried out for various areas of the State).

The schedules shown in Figure II.G-1 and the sections mentioned above are to:

1. Provide for the attainment of air quality at least equal to that of the National Primary Ambient Air Quality Standards by 1975.

2. Provide for the attainment of the Alaska Ambient Air Quality Standards (which are the same as the National Secondary Ambient Air Quality Standards) throughout Alaska by 1980 for those areas presently over those standards.

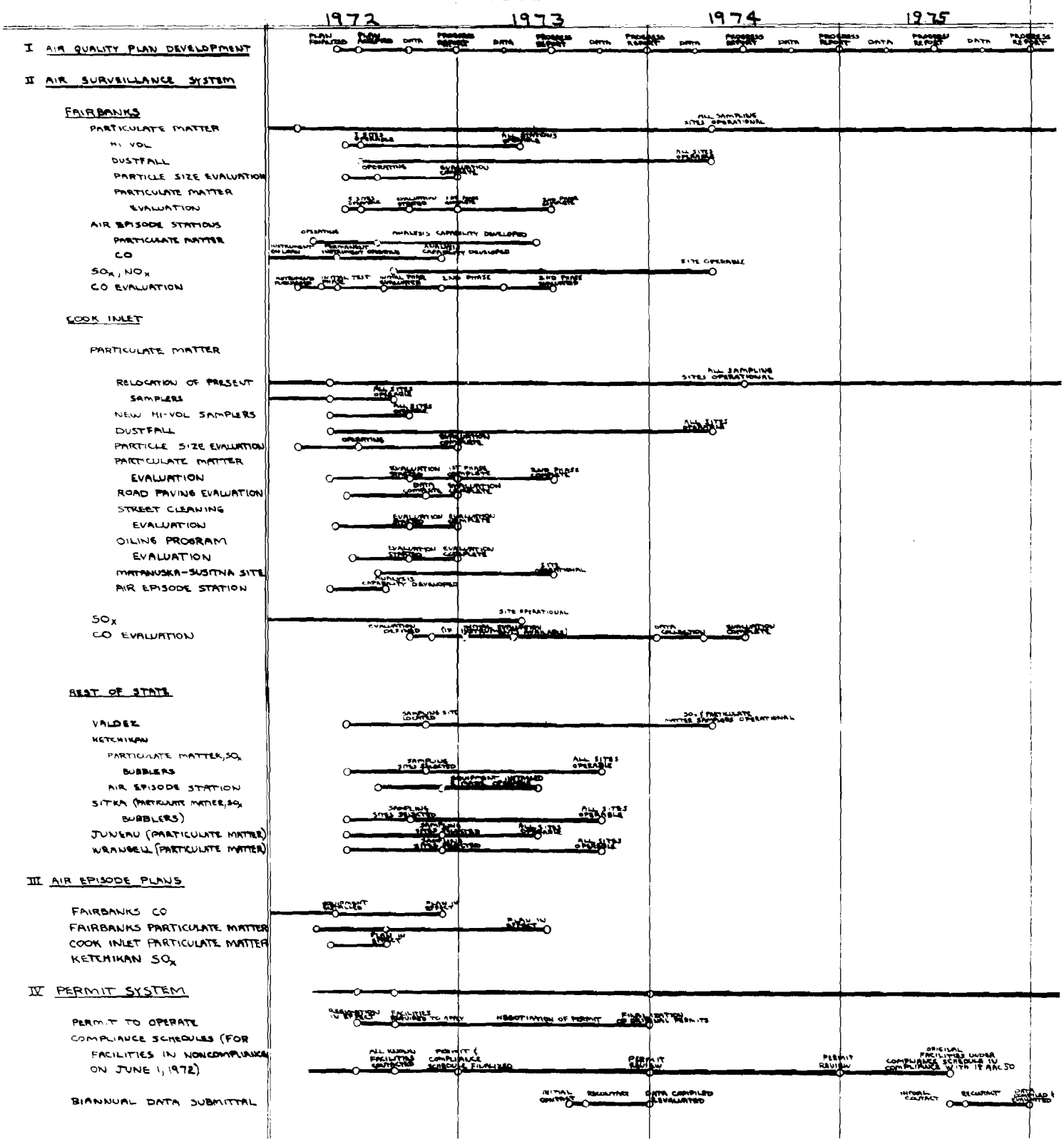
3. Provide for a fully operational statewide air monitoring network (as described in this document) by June 1, 1974.

4. Develop the necessary air episode monitoring capability by July 1973.

5. Provide for full implementation of the State permit system by December 31, 1974.

6. Provide for air episode abatement plan being fully operational in Anchorage, Fairbanks, and Ketchikan by June 1, 1973.

TABLE II.G-1: DEVELOPMENT SCHEDULE - AIR QUALITY CONTROL PROGRAM



III. AIR SURVEILLANCE SYSTEM

III.A. Summary

The State air quality surveillance network is intended to:

1. Define the air quality of the State and correlate it to the time of year, meteorological and topographical conditions, and emission sources.

2. Judge the effectiveness of control strategies and evaluate the progress being made towards the achievement of ambient air standards or the maintenance of existing air quality.

3. Provide for the activation of emergency control measures.

4. Indicate trends in regional air quality which may be related to industrial development, urbanization, agricultural development, or other activities.

5. Provide an air quality data base to evaluate and direct regional land use planning.

Good air quality data in the State presently is minimal. Ambient air sampling has been done in the Fairbanks and Anchorage areas. This sampling has not provided sufficient data to adequately evaluate the existing air quality problems, although it has given an indication that problems do exist in these areas. Ambient air surveillance in the State will be confined mainly to populated regions.

Both Fairbanks and Anchorage are rated Priority I for particulate matter and will have particulate matter monitoring networks. Particulate matter also is to be measured at Valdez, Juneau, Sitka, Ketchikan and Wrangell. Initially, carbon monoxide is to be measured only in Fairbanks, where a problem is known to exist. However, a second carbon monoxide analyzing instrument is to be obtained and will be used to evaluate the carbon monoxide concentrations existing in Anchorage and other areas of the State. Sulfur dioxide is to be monitored at Ketchikan (where a problem is suspected to exist), Sitka, Valdez, Anchorage, and Fairbanks on a routine basis. Evaluations are expected to be conducted periodically for nitrogen oxides, photochemical oxidants and other hazardous pollutants such as mercury.

Paragraphs B, C and D of this section contain descriptions of the existing air pollution control programs in the State of Alaska, details of the existing air quality data, and a definition of the projected air quality surveillance program. Paragraph E defines the procedures which will be used in sample collection, sample analysis, and data handling. Paragraph F describes control measure evaluations which are intended to be conducted, and paragraph G presents the development schedule of the network.

III.B. Cook Inlet Intrastate Air Quality Control Region #008

III.B.1. Existing Program and Air Quality Data

The National Air Surveillance Network (NASN) has measured suspended particulates in Anchorage since 1953. The high volume sampler has been operated at three different locations, as noted in Table III-1. From 1958 through 1962, an additional NASN high volume sampler was operated at an FAA remote receiver on Point Woronzof, at the tip of the Anchorage Peninsula.

For a one-year period between September, 1967, and September, 1968, the Arctic Health Research Center of the U.S. Public Health Service conducted an air quality study at Elmendorf Air Force Base in Anchorage. Four sampling sites on the Base were evaluated for suspended particulates, nitrogen dioxide, total nitrogen oxides, sulfur dioxide, aldehydes, and ammonia. This data is summarized in Table III-2.

The Cook Inlet Air Resources Management District began an air quality surveillance program in 1969 for measurement of particulate matter concentrations. The program has provided data for locations throughout the region. High volume samplers have been operated by the District at 15 sites within the region, including the NASN site. Except for the NASN station (which is 26 feet above street level) these stations have been operating at a height of 5 feet above street level.

Suspended particulate matter data for this network are shown in Table III-3. Seven of the fifteen stations are at high school sites in the region. The data from these sites are not included because limited assistance was received in changing samples, and there were too few samples for valid statistical treatment.

During 1969, a six-month study of dustfall was conducted at twenty locations in Anchorage. The levels are high compared to most urban areas in the lower 48 states. A point of reference is an opinion study conducted in Birmingham, Alabama where interviews with 7,200 households indicated that half the population considered dustfall a nuisance at 40 $T/mi^2/mo$ and one-third of the population considered it a nuisance at 30 $T/mi^2/mo$. The dustfall levels determined in Anchorage, Table III-4, frequently are above these values. (39)

An analysis of the correlation of suspended particulates with climatological factors is presented in Appendix VI-F.1. It suggests that suspended particulate concentrations appear to be 1) higher on dry days than on wet days, 2) relatively insensitive to wind speed, somewhat sensitive to wind direction at some sampling sites, and 3) higher as the temperature raises above freezing. Further data analysis is necessary to more fully examine the relationship between high measurements of suspended particulate matter and meteorological conditions.

A comparison of the data from the NASN sampler and the City Fire Station sampler, which are both in downtown Anchorage, suggests that the elevation of the sampler above ground may have a strong influence on the reported data. The Cook Inlet sampler located at the City

Fire Station reported mean values of 124 and 53 $\mu g/m^3$ for dry and wet days, respectively. The NASN results for dry and wet days were 82 and 66 $\mu g/m^3$, respectively. The ratios of suspended particulate concentration for dry and wet days are 2.34 for the City Fire Station data and 1.28 for the NASN data. The sampler elevation at the City Fire Station is five feet, and at the NASN site it is 26 feet. There is reason to doubt the validity of measurements from a high volume air sampler operating at 5 feet from the ground because of the high probability of "settleable" particulate matter being entrained in the high volume sample and recorded as part of the suspended particulate matter.

The Cook Inlet Air Resources Mangement District has a current equipment inventory of 17 high volume samplers, 15 high volume sampler shelters, one high volume sampler calibrator, three MRI portable weather stations, three AISI tape samplers, one manual spot evaluator, two RAC #2333A bubblers, one spirometer, and one Mark 2 visible emission training smoke generator. A laboratory with a fume hood and approximately 25 feet of bench space is in use. The laboratory is equipped with a spectrophotometer, analytical balance and a standard assortment of laboratory ware.

III.B.2. Regional Classification

The Cook Inlet Intrastate Air Quality Control Region is classified as Priority I for suspended particulate matter on the basis of a 1970-71 annual geometric mean suspended particulate concentration of 104 $\mu g/m^3$ measured at the City Fire Station. (This station also had a maximum 24-hour concentration of 371 $\mu g/m^3$). This station had a sampler height of 5 feet above ground, which is suspected of biasing the concentrations with "settleable" particulate matter. This same biasing effect is suspected to have occurred with the other Tri-Borough District measurements (most of the other sampler locations have high 24-hour maximum concentration values). The classification for all other pollutants is Priority III, based on the Arctic Health Research Center study at Elmendorf Air Force Base and because the "urban place" population does not exceed 200,000.

Based on the population and these classifications, the minimum requirements for air quality surveillance as defined in the August 14, 1971 Federal Register are:

> For particulate matter, five high volume samplers collecting one 24-hour sample every sixth day, and one tape sampler collecting 2-hour samples continuously.
>
> For sulfur dioxide, one bubbler collecting one 24-hour sample every sixth day.

III.B.3. Projected Air Surveillance System

Major point air emission sources (>100 tons/year uncontrolled emissions) for the Cook Inlet Intrastate Air Quality Control Region are given in Table III-5. These point sources are concentrated in the Anchorage and Kenai Boroughs. Airports are the major point sources of carbon monoxide and SO_2 in this region. Emission sources for only

particulate matter, SO_2, and carbon monoxide are given in Table III-5. More detailed information on all sources is contained in the Air Emissions Inventory, presented in Appendix I. The locations of major point sources are shown on Figure IV.A-1.

The projected air surveillance system, as developed by the Cook Inlet Air Resources Management District, for the Cook Inlet Intrastate Air Quality Control Region is summarized in Table III-6. Major emphasis of the surveillance network is placed on developing a detailed understanding of the particulate matter sources existing throughout the Greater Anchorage Area. The emphasis for this network will be placed on a combination of high-volume air samplers and dustfall stations. Sulfur dioxide, oxides of nitrogen, and oxidant bubblers are intended to be operated on a periodic basis to determine general trends in the ambient concentrations of these pollutants.

The Cook Inlet Air Resources Management District currently owns sampling equipment beyond that specified by the minimum requirements. In order to provide for an adequately detailed particulate matter map of the Greater Anchorage area (which will be used to evaluate the present problems and to serve as a guide for land use planning within the region), a particulate matter sampling network is intended to be established which will:

1. Continue sampling at established sites.

2. Begin sampling at some areas as necessary to determine particulate matter concentration patterns.

3. Facilitate the evaluation of control strategies.

The projected particulate matter sampling network to meet the above requirements will have the following sampler locations:

1. Kenai Peninsula. The existing sampling location to be continued at the Phillips Petroleum Company plant.

2. Palmer. The existing sampling site at the Matanuska Valley experimental farm (which will be operated through the Department of Environmental Conservation because of the Matanuska-Susitna Borough not being in the jurisdiction of the District).

3. Trail's End Road. One site to establish an Anchorage city background value, the station will be about eight miles southeast of downtown Anchorage.

4. Downtown Anchorage. The present NASN sampler at 527 E. 4th Street.

5. Downtown Anchorage. Two samplers located at the city fire station sampling location, which is the point of maximum measured particulate matter concentration, one is to be situated at the present height of 5 foot and the other sampler at a height of between 10 to 20 feet from street

level. In this way a correlation of concentrations will be obtained between the two heights.

6. Cook Inlet District office at 3500 Tudor Road.

7. Muldoon. Existing sampler location about 4 miles east of the downtown area.

8, 9. & 10. Talkeetna, Seward and Eagle River are projected to have samplers in order to obtain particulate matter concentration data for outlying areas.

This proposed network meets the criteria for a number of sampling stations for a city the size of Anchorage (reference Guidelines, Air Quality Surveillance Networks, published by the Environmental Protection Agency, Office of Air Programs Publication, Number AP-98). The particulate matter sampling stations will be operated at an elevation of between 10 to 20 feet wherever possible to minimize the interference with settleable particulate matter. This sampling height is in agreement with the criteria set forth in the above mentioned publication AP-98.

In order to provide some estimate of the background levels for photochemical oxidants and nitrogen oxides, samples will be taken at the 3500 Tudor Road building on a 26 random samples per year basis. For photochemical oxidants, 30 to 60 minutes samples will be collected and analyzed according to ICS method #4101-01-70T and on the same date nitrogen oxides will be measured using the 24-hour bubbler technique described in an April 30, 1971 Federal Register.

A study to investigate the levels of carbon monoxide in the Anchorage area will be conducted sometime beginning in 1973. The Department of Environmental Conservation intends to purchase two non-dispersive infrared CO monitors in early 1972; one to be used in Fairbanks, and the other to conduct evaluations throughout the State. The second is to be used in Anchorage once the Fairbanks evaluations are completed.

The measurement of dustfall provides an indication of the level of settleable particulates in a localized area. While not a highly precise measurement, it is relatively inexpensive and will provide data which can be evaluated on a year-to-year basis to show trends. This will be an effective check on any control strategies which are implemented to reduce blowing and/or traffic-entrained dust. Dustfall will be measured at those locations shown on Table III-6 according to ISC Method #21101-01-70T. A sampler elevation of 8-12 feet will be used.

The procedures for locating samplers at these sites, for collecting and analyzing samples, and for data handling are in paragraph 5.0.

TABLE III-1

National Air Surveillance Network Data: Anchorage

Pollutant	Location (Height)*	Start Date	End Date	No. of Samples	24-Hr. Max. µg/m³	Geo. Mean µg/m³	Geo. Std. Dev.
TSP**	Anchorage	01/54	12/54	48	3112	214	2.43
1.	City Fire Hall (15 feet)	01/55	12/55	34	703	165	3.02
2.	6th and K. St. (26 feet)	01/16/57	12/29/57	26	338	144	2.12
		01/14/58	12/29/58	26	487	106	2.19
		01/14/59	12/28/59	25	281	65	2.07
		01/30/60	12/21/60	26	269	74	2.19
		01/22/61	12/04/61	25	243	54	1.98
		01/27/62	12/22/62	25	165	69	1.57
		01/03/63	12/19/63	27	234	51	2.38
		01/08/64	12/16/64	24	342	68	2.79
3.	527 E. 4th (26 feet)	01/16/67	12/21/67	24	320	69	2.36
		01/12/68	12/16/68	26	190	60	2.21
		01/04/69	12/16/69	25	268	79	2.30
		01/03/70	12/12/70	24	258	72	2.21
4.	Pt. Woronzof	01/11/58	12/26/58	23	83	18	2.04
	FAA Remote Site (5 feet)	01/04/59	12/18/59	25	54	13	2.02
		01/02/60	12/22/60	26	48	15	2.07
		01/04/61	12/19/61	26	45	11	2.08
		01/09/62	12/24/62	25	125	12	2.29

*elevation of sampler inlet above ground.
**TSP - Total Suspended Particulate Matter.

Refer to Map III-2 for sampling locations.

TABLE III-2

Arctic Health Research Center Study Data

Elmendorf Air Force Base 9/14/67 to 9/26/68

Pollutant	Sampler Location*	No. of Samples	24-Hour Maximum $\mu g/m^3$	Geo. Mean $\mu g/m^3$	Geo. Std. Dev.
TSP**	Firehouse	15	270	84	2.98
SO_2		17	5	-	-
NO_2		15	51	18	1.91
TSP	Bldg. 31-270	14	152	55	2.47
SO_2		14	9	-	-
NO_2		14	33	17	1.90
TSP	At "Top Cover" Sign	14	173	58	2.27
SO_2		16	6	-	-
NO_2		12	47	15	2.14
TSP	At Diesel Plant	16	321	79	2.73
SO_2		18	7	-	-
NO_2		17	81	14	2.18

*all sampling elevations at 5 feet off the ground

**TSP - Total Suspended Particulate Matter

Notes: SO_x - determined by West Gaeke Method

NO_x - determined by Saltzman Method

TABLE III-3

Cook Inlet Air Resources Management District Suspended Particulate Data

Pollutant	Location (Height)*	Start Date	End Date	No. of Samples	24-Hr. Max. $\mu g/m^3$	Geo. Mean $\mu g/m^3$	Geo. Std. Dev.
TSP**	Anchorage:						
	1. Muldoon Fire Station(5')	03/19/69	03/06/70	99	358	97	2.71
		03/21/70	03/05/71	124	413	55	1.94
	2. Sand Lake Fire Station(5')	03/25/69	03/24/70	101	503	80	2.99
	3. City Fire Station(5')	03/25/69	03/19/70	134	312	86	2.05
		03/21/70	03/15/70	128	371	104	2.06
	4. Tudor Fire Station(5')	03/21/70	03/15/71	124	255	62	1.91
	5. Matanuska Valley Exp. Farm(5')	01/20/71	01/08/71	39	586	52	3.44
	6. Palmer Agric. Bldg.(5')	01/20/70	01/08/71	45	2020	55	4.67
	7. Nikiski-Phillips Plant(5')	01/13/70	01/12/71	39	68	16	1.94
	8. Kenai Borough Office	01/13/70	01/12/71	38	246	52	2.77

*elevation of sampler inlet above ground
**TSP - Total Suspended Particulate Matter

Refer to Map III-2 for locations.

TABLE III-4

Cook Inlet Air Resources Management District
Dustfall Study Data

Location	1969 Dustfall, Tons/Mi^2/Mo.					
	June	July	Aug.	Sept.	Oct.	Nov.
1. 3rd & Eagle	15	21	18	22	23	25
2. 10th & Hyder	85	68	77	160	106	36
3. Airport Dr. & DeBarr	29	lost	32	42	52	lost
4. Mt. View & Commercial	20	43	29	32	41	13
5. Hoyt & Thompson	28	lost	17	lost	lost	lost
6. Muldoon Fire Station	23	9	lost	45	28	18
7. 16th & Ermine	45	52	12	20	28	lost
8. Henning Way & Debora	6	28	13	10	lost	9
9. N. Lights & Boniface	12	98	52	79	109	55
10. Dog Pound	74	16	8	34	5	5
11. Lake Otis & Tudor	43	35	30	10	38	17
12. Lake Otis & N. Lights	46	lost	37	60	48	23
13. C. St. & N. Lights	41	52	33	60	48	24
14. Arctic & Chugac Dr.	164	56	44	50	39	14
15. Wilson Way & 46	24	28	23	16	18	9
16. Sand Lake Fire	47	14	8	78	8	2
17. Spenard & Northwood	45	63	38	77	70	23
18. N. Lights & Barbara	16	27	18	30	26	13
19. 20th & Arctic	21	34	17	17	9	6
20. 7th & C.	void	22	13	14	18	10

Refer to Map III-2 for sampling locations.

TABLE III-5

Major Emission Point Sources (>100 Tons/year)
Region 008 - Cook Inlet Intrastate*

Pollutant	Source No. (Inventory)	Source Name	Political Jurisdiction**	Estimated Current Emissions (T/yr)
Particulate Matter	1	Anchorage Int'l. Airport	1	550
	30	McArthur River-Union/A	2	107
	69	Elmendorf AFB	1	257
	72	Collier Carbon & Chemical	2	201
SO_2	1	Anchorage Int'l. Airport	1	168
	29	Merrill Airport	1	130
CO***	1	Anchorage Int'l. Airport	1	2310
	27	Hood Airport	1	140
	29	Merrill Airport	1	771
	69	Elmendorf AFB	1	577
	76	Atlantic-Richfield Spark Platform	2	216

*Refer to Map III-1 for locations

**1. Anchorage Borough
2. Kenai Borough

***Refer to Section IV.C for a further discussion of Anchorage CO emissions, both from point sources and area sources.

Table III.6

Cook Inlet Region: Air Monitoring System*

Location	Hi-Vol	Tape	Dustfall	SO_2 Bubbler	UTM Coordinates for Hi-Vol Sampling Sites	
					Northing	Easting
1. 527 E. 4th (NASN)	XX	XX	X	XX	6790.380 km	345.950 km
2. 3500 Tudor Road	XX		X		6786.000 km	349.000 km
3. Kenai-Phillips Plant	XX		X		6760.000 km	630.000 km
4. Palmer (Agric. Farm)	XX		X		6828.100 km	587.700 km
5. Muldoon Fire Station	XX		X		6791.000 km	353.530 km
6. Eagle River	XX		X		6801.000 km	363.000 km
7. Talkeetna	X		X		6893.000 km	650.000 km
8. Seward	X		X		6667.700 km	365.000 km
9. City Fire Station (2)	X		X		6790,250 km	344.700 km
10. Trails End Road	X		X		6779.000 km	352.800 km
11. 3rd & Eagle			X			
12. 10th & Hyder			X			
13. Airport Drive & DeBarr			X			
14. Mt. View & Commercial			X			
15. Hoyt & Thompson			X			
16. 16th & Ermine			X			
17. Henning Way & Deborah			X			
18. N. Lights & Boniface			X			
19. Lake Otis & Tudor			X			
20. Lake Otis & N. Lights			X			
21. Arctic & Chugach			X			
22. Wilson Way & 46th			X			
23. Sand Lake Fire Station			X			
24. Spenard & Northwood			X			
25. N. Lights & Barbara			X			
26. 20th & Arctic			X			

XX = Minimum Federal Requirement

XX = Episode Monitoring Station

*Refer to Map III-3 for sampling locations.

GREATER ANCHORAGE

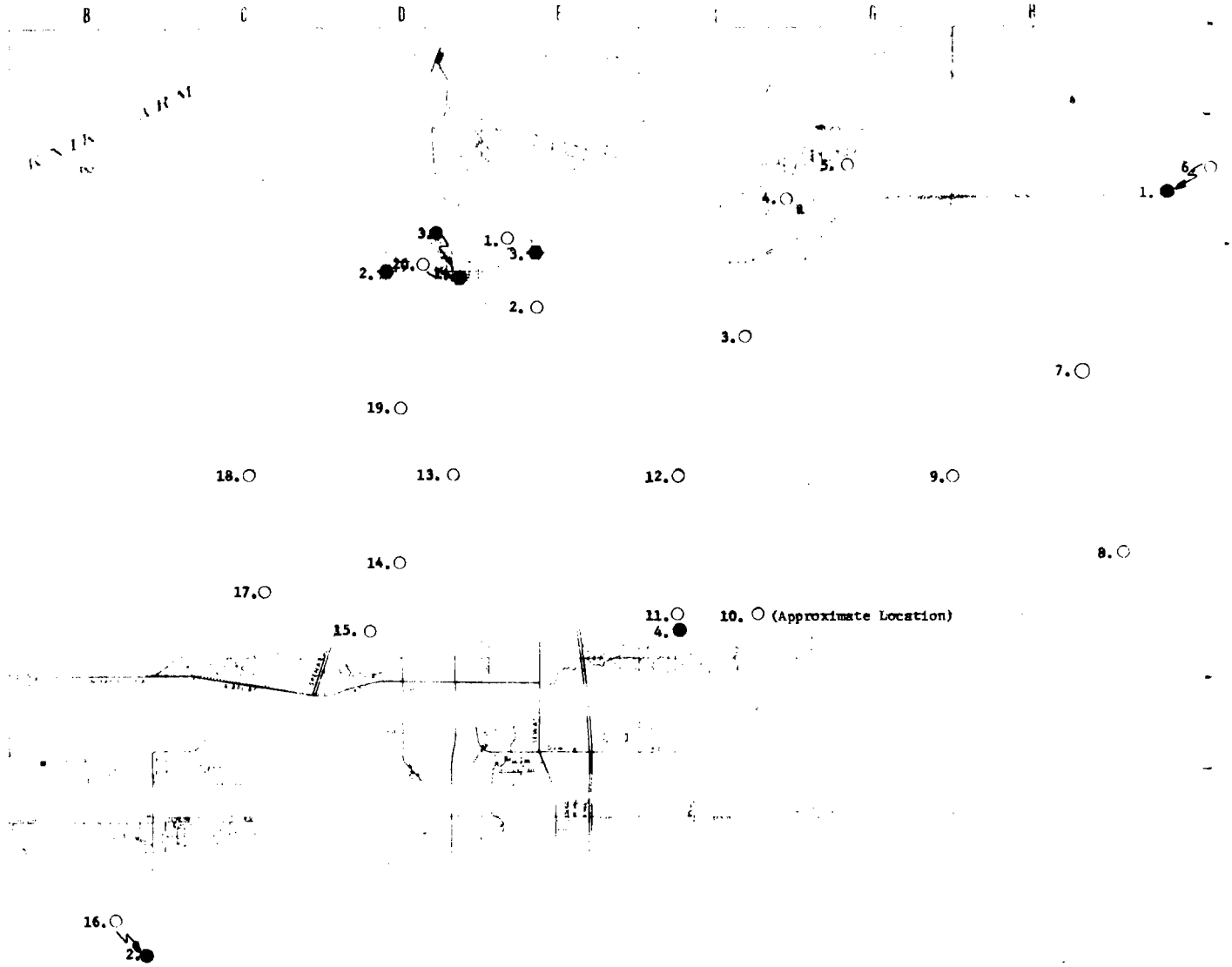
MAP III-1

POINT SOURCES IN THE GREATER ANCHORAGE AREA

This map shows the locations of all major point sources of particulate matter, CO, NO_x, and hydrocarbons in the Anchorage Area. The sources are designated on this map by a number which corresponds to the number of the source as it appears in the emissions inventory, VI - B, and a symbol. The symbols are as follows:

- ● Sources with emissions greater than or equal to 100 tons per year
- • Sources with emissions between 5 and 100 tons per year

GREATER ANCHORAGE



Map III-2

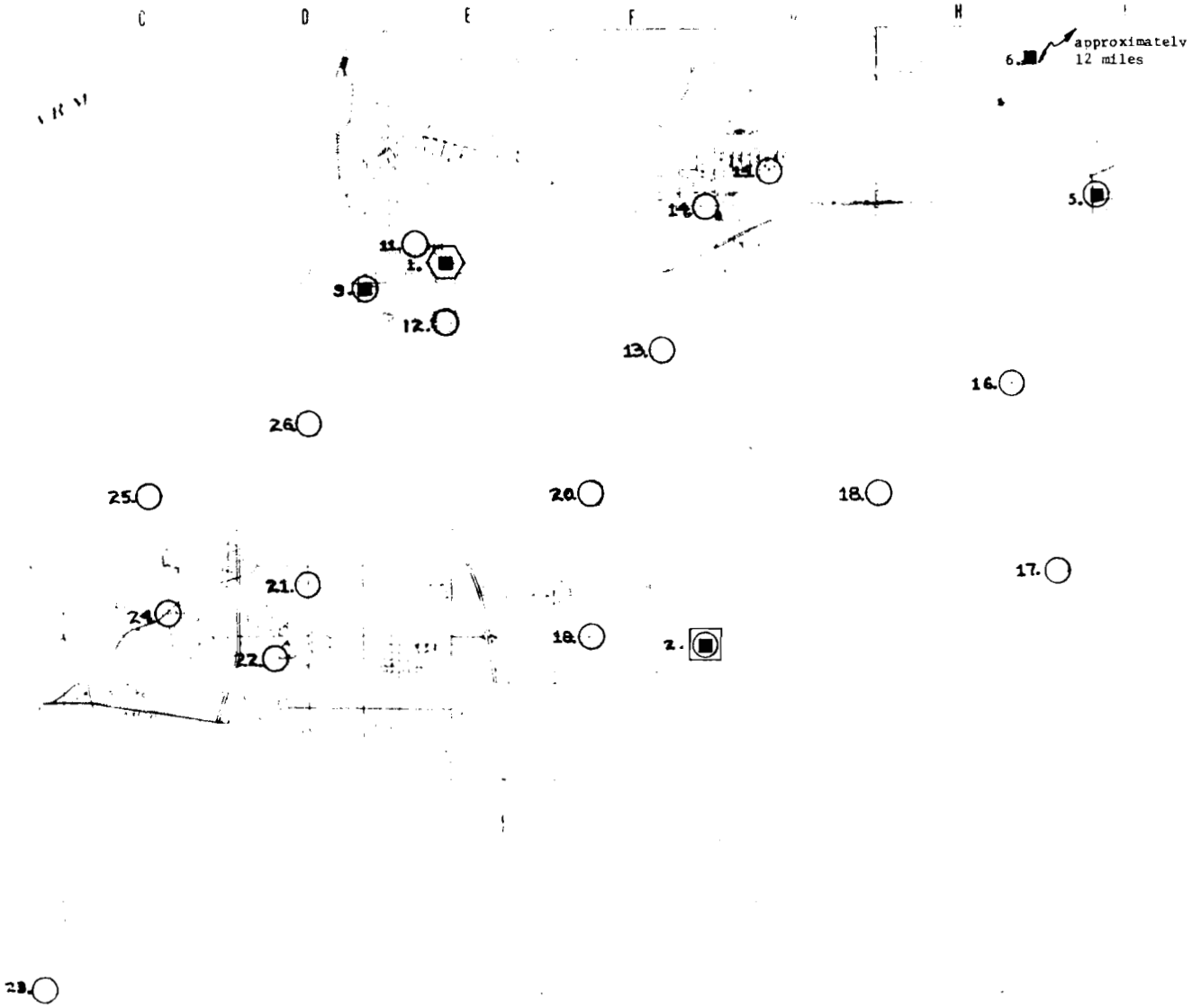
PREVIOUS PARTICULATE MATTER SAMPLING SITES IN ANCHORAGE

The sampling sites shown are designated by a symbol and a number to the immediate left of the symbol. The numbers correspond to sampling location numbers in Tables III-1, III-3, and III-4. The symbols are as follows:

- ● Table III-1, NASN suspended particulate sampling site
- ● Table III-3, Tri-Borough suspended particulate sampling site
- ○ Table III-4, Tri-Borough dustfall sampling site

LEGEND

GREATER ANCHORAGE



Map III-3

PROPOSED SAMPLING NETWORK IN ANCHORAGE

The sampling sites shown are designated by a symbol and a number to the immediate left of the symbol. The numbers correspond to sampling location numbers in Table III-6. The symbols are as follows:

- ■ High volume air sampler
- ⬡ Tape sampler
- ○ Dustfall jar
- □ SO_2 bubbler

III.C. Fairbanks North Star Borough

III.C.1. Existing Program and Air Quality Data

A National Air Surveillance System high volume sampler and gas bubbler have operated at Third and Cushman Streets, with a sampler inlet elevation of three feet, since 1967. Gas bubbler sample results have been reported for sulfur dioxide and the Jacobs-Hochheiser technique for nitrogen dioxide were used. Date are shown in Table III-7.

The NASN high volume sampler and gas bubbler are the only samplers active in the Fairbanks North Star Borough at the present time. The Arctic Health Research Center has carried out a number of programs which are no longer active. During the two-year period 08/25/67 to 6/1169, an air quality study was conducted at four sampling sites at Eielson Air Force Base, approximately 23 miles southeast of Fairbanks. Total suspended particulate, nitrogen dioxide, total nitrogen oxides, sulfur dioxide, aldehydes and ammonia were evaluated (Table III-8). Correlation of particulate matter concentrations with meteorological variables is presented in Appendix VII.

During 1970 and 1971, in conjunction with an epidemiological study (submitted to the Archives of Environmental Health for publication), extensive data on carbon monoxide and nitrogen dioxide concentrations were obtained in the city of Fairbanks. Some samples for suspended particulate were obtained during this period, although the sampling schedule for particulate was not as complete as for the gaseous air pollutants.

Carbon monoxide was monitored for the December-January periods of 1970 and 1971 using an MSA-Lira non-dispersive infrared carbon monoxide analyzer physically located in the basement of the Post Office at Third and Cushman Streets. The sampling inlet line extended out to the sidewalk and the inlet of the line was approximately 5 feet above sidewalk level. The average concentration of carbon monoxide during the month of February 1970 was 12 mg/m^3. The average of hourly data collected over an entire month compares with the National Ambient Air Quality Standard for an eight hour average of 10 mg/m^3. A maximum hourly value of 81 mg/m^3 was noted in between 7:00 and 8:00 pm, February 10, 1970.

To augment the data from this single point, air samples were collected in mylar bags at Nordale School, Barnette School and University Park School every morning, Monday through Friday, during the three-month period December, 1969, through February, 1970. For comparability of data, a bag sample was collected at the Post Office as well as at the three schools. The concentrations of carbon monoxide were evaluated using the continuous instrument. The concentrations are noted in Table III-9.

The Arctic Health Research Center has conducted special sampling studies during periods of ice fog. When high volume samplers were operated during these conditions, the ice buildup on the filter often reached a depth of over one inch. When the filters were returned to the laboratory, the built-up ice interfered with

the weighing procedure and made accurate particulate gravimetric determination impossible.

The Fairbanks North Star Borough employed a full time air quality control officer in September of 1971. A local air quality surveillance program is in the preliminary stages of development at this time.

III.C.2 Regional Classification

The Northern Alaska Intrastate Air Quality Control Region is classified as Priority I for suspended particulate matter on the basis of the National Air Surveillance Network Fairbanks data. It is classified as Priority I for carbon monoxide on the basis of the data collected in Fairbanks by the Arctic Health Research Center. On the basis of the NASN gas bubbler data and the Eielson Air Force Base study conducted by the Arctic Health Research Center the region is classified as Priority III for all other pollutants.

The Fairbanks North Star Borough encompasses all of the sampling sites where data for the regional classification were collected. On the basis of these classifications and the regional population, the minimum federal sampling requirements are:

> For particulates, four high volume samplers, each collecting one 24-hour sample every sixth day, and one tape sampler collecting 2-hour samples continuously.
>
> For sulfur dioxide, one bubbler collecting one 24-hour sample once every six days.
>
> For carbon monoxide, one continuous analyzer.

All of these sampling instruments will operate within the Fairbanks North Star Borough.

III.C.3. Projected Air Surveillance System

Major considerations in the design of this Fairbanks air quality surveillance system are the measured data which indicate locations of elevated concentrations, the population concentration in the City of Fairbanks, and the local geography.

Major point sources (>100 tons/year) for the entire Northern Alaska Intrastate AQCR are shown in Table III-10. Further detail will be found in the Air Emissions Inventory for the State of Alaska, Appendix I, and in sections IV.B and IV.C.

The area of estimated maximum concentration for particulate matter and CO is downtown Fairbanks. The NASN station will be one of the samplers for suspended particulates, and the bubbler at the station will be the minimum required sampler for SO_2.

A second high volume sampler, and the tape sampler, will be operated at the North Star Borough Pollution Control Office in downtown Fairbanks. This will be the episode monitoring station for particulate matter. Based on the Anchorage data, the elevation of the high volume

sampler can have an effect on the reported values. The NASN sampler in Fairbanks is located on a sidewalk between a busy street and a four-story building. This site will be extremely sensitive to reentrained street dust, if this is a contributing factor. To accomplish measurements which better indicate the true suspended particulate matter concentration in downtown Fairbanks, this high volume sampler will be located on a first or second story roof where it would not be unduly influenced by street dust.

The third high volume sampler will be located at University Park School, representative of a residential area in Fairbanks. A fourth high volume sampler will be a background monitor operated at a convenient location on Birch Hill. Observations during ice fog conditions indicate that Birch Hill is above the winter inversions.

Additional high volume samplers will be located at the Nordale School, at a site in the Aurora subdivision, at a site in the South Fairbanks subdivision, at the Fairbanks International Airport, and at a site in the community of North Pole. The last site will provide data on the suspended particulate concentration in a relatively uninhabited and unpopulated portion of the borough. This will be valuable in confirming whether or not the Birch Hill site represents an appropriate background.

The NASN bubbler will continue to obtain data on NO_2.

To provide baseline information on dust levels in the Borough, dustfall samples will be collected at the downtown site, University Park School, Nordale School and Birch Hill. Dustfall equipment is inexpensive and the data will be useful to evaluate trends on a year-by-year basis. The information gained will provide one measure of the effectiveness of particulate control strategies.

The proposed air quality surveillance system is shown in Table III-11.

The continuous CO monitor tentatively is to be kept at its present location, although an alternate location at the North Star Borough Pollution Control Office (approximately one block away from the present monitoring location) will be evaluated for suitability. The CO evaluation that the State, with assistance from Borough personnel (refer to Section III.F.2 for details), will provide considerable data regarding the regional extent of carbon monoxide in Fairbanks. At that time the Arctic Health Research Center CO monitor will be replaced with the State monitor at that location, or at another location dependent on the results of the evaluation.

The CO evaluation has already started in Fairbanks. This evaluation will:

1. Provide a basis for the evaluation of the readings from the continuous monitor at the North Star Borough Pollution Control Office.

2. Determine the spatial and temporal distribution of CO in the Fairbanks area in relation to the readings at the continuous location.

3. Provide the data necessary for the evaluation of the control strategy.

Refer to section III.F.2 for more details concerning this study.

The reported NASN data for suspended particulates suggests that there is a significant particulate problem in Fairbanks. The annual geometric mean of 175 $\mu g/m^3$ is nearly three times the secondary quality standard of 60 $\mu g/m^3$. This data appears to be representative of a localized dusty street problem rather than a significant industry or background related problem. Some of the evaluations described in section III.F are intended to more clearly define this matter.

TABLE III-7

NASN Data: Fairbanks

Pollutant	Location**	Start Date	End Date	Number Samples	24-Hr Max. $\mu g/m^3$	Arith. Mean $\mu g/m^3$	Geo. Mean $\mu g/m^3$	Geo. Std. Dev.
TSP*	Fairbanks NASN 3rd & Cushman	1/67	12/67	23	767		124	2.84
		1/68	12/68	24	715		157	2.15
		1/69	12/69	24	867		175	2.21
		1/70	11/70	21	511			
SO_2		1/67	12/67	41	107	9		1.97
		1/68	12/68	22	22	8		1.69
		1/69	12/69	25	28	9		1.54
NO_2		1/67	12/67	39	224	75		1.76
		1/68	12/68	21	269	96		1.64
		1/69	12/69	23	233	68		2.04
		1/70	12/70	11		87		
Oxidant		1/68	12/68	21	30	13.9		
		1/69	12/69	9	18	12.0		
		1/70	6/70	4	17	11.5		

*TSP - Total Suspended Particulate Matter

**height of sampler inlet 3 feet above ground level.

TABLE III-8

Arctic Health Research Center Study Data: Eielson Air Force Base
Sampling Period: 8/25/67 to 6/11/69

Pollutant	Location**	Number Samples	24-Hour Maximum $\mu g/m^3$	Arithmetic Mean $\mu g/m^3$	Geo. Mean $\mu g/m^3$	Geo. Std. Dev.
TSP*	Eielson AFB	23	178	67	56	2.06
SO_x	Guardhouse	26	4	0.18	-	-
NO_x		25	78	19.3	13	2.93
TSP	Eielson AFB					
SO_x	Warehouse	22	468	114	73	2.64
NO_x		25	4	0.52	-	-
		22	67	13.7	7.4	2.96
TSP	Eielson AFB					
SO_x	Chapel	23	336	111	83	2.21
NO_x		24	13	0.76	-	-
		23	60	18.6	12	2.98
TSP	Eielson AFB					
SO_x	Officers' Club	21	135	57	43	2.33
NO_x		23	12	0.63	-	-
		24	29	7.8	5.1	2.75

*TSP - Total Suspended Particulate Matter

**height of sampler inlet 5 feet above ground level.

TABLE III-9

Arctic Health Research Center Epidemiological Study

Average Weekly Carbon Monoxide Concentrations**

Winter 1969 - 1970

Date	Nordale School ppm	Post Office ppm	Barnette School ppm	Univ. Park School ppm	Average Wind, mph.	Mean Temp. °F.
Dec. 69						
3-5	15	31	11	8	5.2	13
8-12	8	20	14	6	2.2	-7
15-19	8	25	9	6	4.2	6
22-24	9	19	8	5	9.6	2
Jan. 70						
5-9	5	15	5	4	5.4	13
12-16	6	11	7	8	5.3	-26
19-23	8	22	8	8	4.0	-9
26-30	5	10	5	4	3.9	-17
Feb. 70						
2-6	6	17	4	3	7.1	13
9-13	8	15	11	8	5.2	13
16-20	4	13	3	4	4.8	8
23-27	6	9	8	6	7.6	25

*U. S. Weather Bureau, Fairbanks International Airport

**The CO concentration values in this table were obtained by taking one 3-minute sample each day during the afternoon. Therefore these values do not necessarily indicate the actual weekly CO concentration.

TABLE III-10

Major Emission Point Sources (>100 Tons/Year)

Northern Alaska Intrastate Region*

Pollutant	Source No.*	Source Name	Estimated Current Emissions (T/yr.)
Particulate Matter	9	Eielson Air Force Base	424
	10	Fairbanks Airport	190
	13	Fairbanks Municipal Util.	900
	14	Fairbanks Municipal Util.	160
	20	Fort Wainwright	366
	21	Fort Wainwright	178
	22	Fort Wainwright	1670
	28	Golden Valley Electric	957
	47	University of Alaska	195
SO_2	9	Eielson Air Force Base	570
	13	Fairbanks Municipal Util.	235
	22	Fort Wainwright	650
	28	Golden Valley Electric	392
	47	University of Alaska	190
CO	8	Eielson Air Force Base	852
	9	Eielson Air Force Base	750
	10	Fairbanks Airport	709
	19	Fort Greely	191
	22	Fort Wainwright	168
	28	Golden Valley Electric	103
	38	NASA Station	106

*Reference emission inventory in Appendix I

Refer to Maps I-1 and III-4 for source locations.

TABLE III-11

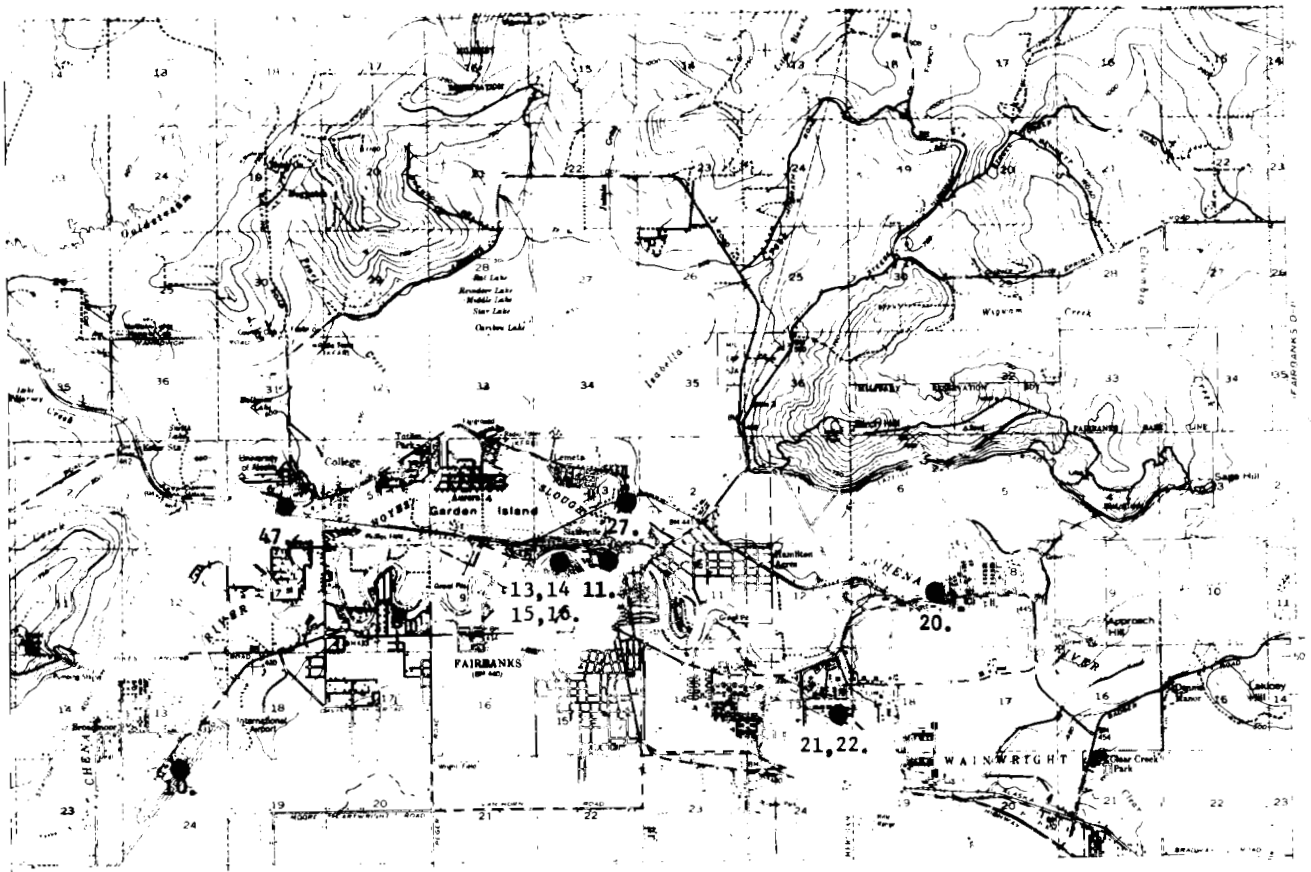
Fairbanks North Star Borough: Proposed Air Quality Surveillance*

Location	Hi Vol	Tape **	Dustfall	SO_2 Bubbler	NO_2 Bubbler	Continuous CO	UTM Locations Northing	UTM Locations Easting
1. 3rd & Cushman (NASN)	XX			XX	X		7190.890km	465.840km
2. Downtown	XX	XX	X			XX	7191.000km	466.070km
3. University Park School	XX		X				7192.050km	461.300km
4. Nordale School	X		X				7191.360km	467.150km
5. Aurora Subdivision	X						7193.100km	463.900km
6. S. Fairbanks Sub-Division	X						7188.860km	465.000km
7. Airport	X						7189.000km	460.000km
8. Birch Hill	XX		X				7193.430km	469.630km
9. North Pole	X						7180.900km	483.500km
TOTAL	9	1	4	1	1	1		

XX = Station to satisfy minimum federal requirements
XX = Episode monitoring station

*Refer to Map III-5 for sampling locations.

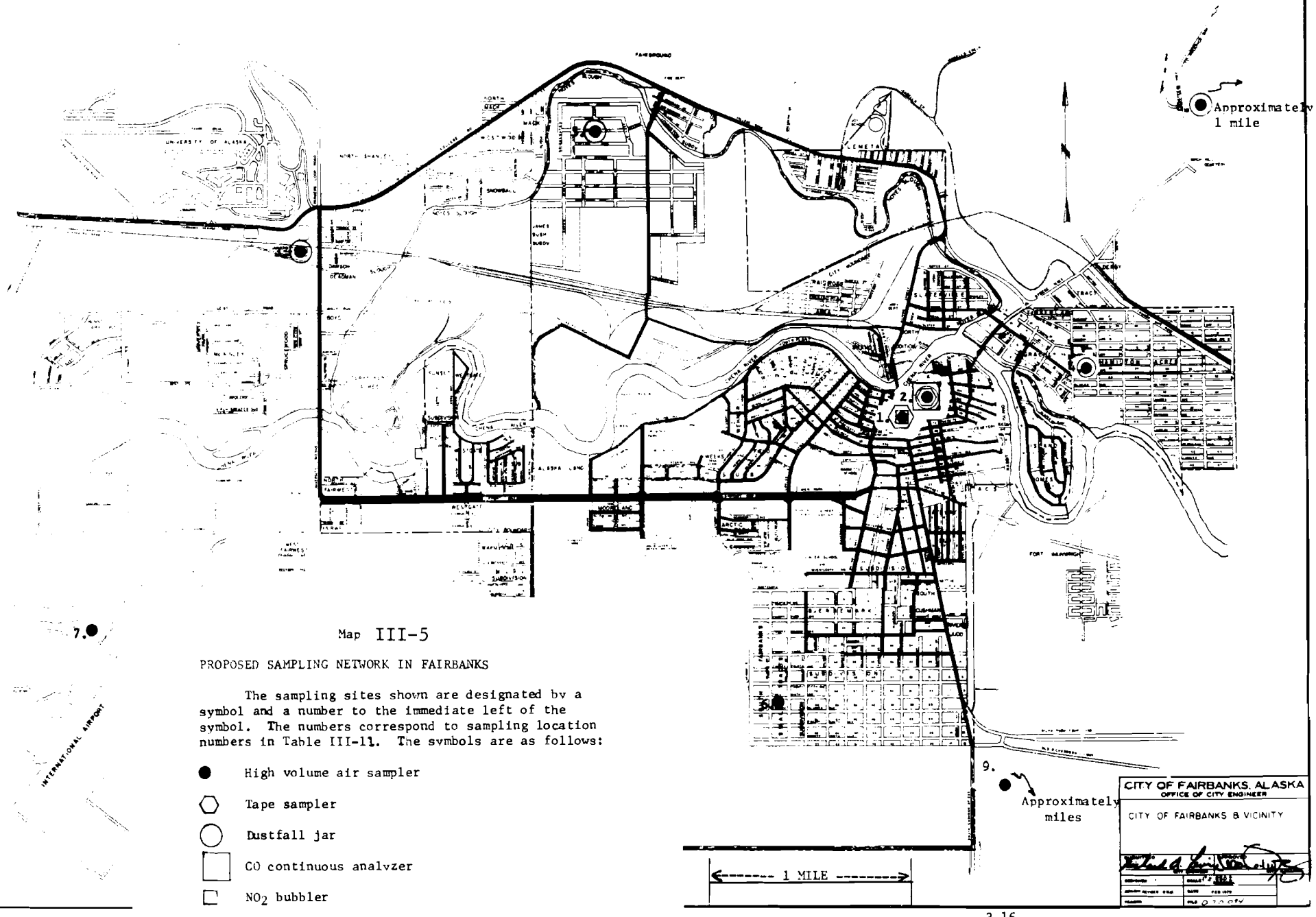
** Already in operation at 2nd and Cushman (as of Feb. 29, 1972)



Map III-4

POINT SOURCES IN THE FAIRBANKS AREA

This map shows the locations of major point sources for particulate matter, CO, SO_2, NO_x, and hydrocarbons in the Fairbanks Area. The sources are designated on this map by a ● and a number which corresponds to the number of the source as it appears in the emission inventory, VI-B.



Map III-5

PROPOSED SAMPLING NETWORK IN FAIRBANKS

The sampling sites shown are designated by a symbol and a number to the immediate left of the symbol. The numbers correspond to sampling location numbers in Table III-11. The symbols are as follows:

- ● High volume air sampler
- ⬡ Tape sampler
- ○ Dustfall jar
- □ CO continuous analyzer
- ⊏ NO_2 bubbler
- ⬡ SO_2 bubbler

III.D Balance of State

The State air quality control program will establish and maintain the air surveillance system projected for the area of the State not covered in sections III.B and III.C. This area consists of:

1. The Northern Alaska Intrastate Air Quality Control Region, excluding the Fairbanks North Star Borough.

2. The Southcentral Alaska Intrastate Air Quality Control Region.

3. The Southeast Alaska Intrastate Air Quality Control Region.

There is no existing air quality data for any of the above mentioned regions. Consequently, an important consideration throughout this large area is to develop a data base on which to evaluate any eventual changes in air quality.

III.D.1. Regional Classification

As discussed in paragraph III.C.2, the Northern Alaska Intrastate Air Quality Control Region #009 is classified as Priority I for particulate matter and carbon monoxide, and Priority III for all other air contaminants.

The Southcentral Intrastate Air Quality Control Region #010 is classified as Priority II for all air contaminants, and has very few air contaminant sources emitting greater than 100 tons per year of contaminants. (Table III-12).

The Southeastern Alaska Intrastate Air Quality Control Region #011 has the most temperate climate in the State. Forest product industries are the principal air contaminant sources as shown in Table III-13. Based on diffusion calculations (presented in control strategies section IV.C) this region has been classified as Priority IA for sulfur dioxide. Classification for all other air contaminants is Priority III.

Based on the above classifications the minimum Federal requirements for air sampling are:

Region 009. Northern Intrastate

Refer to section III.C.2 for the minimum sampling requirements. These requirements are satisfied by the Fairbanks North Star Borough surveillance system which is projected.

Region 010. Southcentral Intrastate

For particulate matter, one high volume sampler collecting a 24-hour sample every sixth day.

For sulfur dioxide, one bubbler collecting a 24 hour sample every sixth day.

Region 001. Southeastern Intrastate

For particulate matter, one high volume sampler collecting a 24 hour sample every sixth day.

For sulfur dioxide, three bubblers each collecting a 24 hour sample every sixth day and one continuous analyzer.

III.D.2. Projected Surveillance System

The Northern Alaska Intrastate Air Quality Control Region is not projected to have any additional air surveillance other than that described for the Fairbanks North Star Borough. Air surveillance monitoring will be conducted as necessary to evaluate suspected air quality control problems.

To satisfy the minimum Federal requirements for the Southcentral Air Quality Control Region, a permanent air surveillance station is to be established at Valdez, to monitor particulate matter and sulfur dioxide every six days. Valdez was selected as the site for the required air surveillance station because it is the terminus of the proposed Aleyeska Oil Pipeline. Consequently this station will be able to provide background air quality data for evaluating any eventual development in this area. This station has not been located specifically within Valdez as of this date. However, this is not expected to be a major problem and it will be located by October 1972 (to be included in the first semi-annual report to the Environmental Protection Agency).

In the Southeastern Alaska Air Quality Control Region the following samplers and their locations are to be established. Only the general locations of the samplers has been determined. Specific locations for the samplers will be evaluated and selected by August 1972 and will be included in the first semi-annual report to the Environmental Protection Agency (refer to section II.G and III.E for the sampler development schedule):

1. Ketchikan - a continuous sulfur dioxide analyzer to be situated near the pulp mill, which is on Ward Cove. A preliminary evaluation will be made regarding the areas of expected maximum concentration, and this sampler is intended to be located as close as possible to that location. A sulfur dioxide bubbler also will be sited in the vicinity of Ward Cove, to ensure adequate ambient air quality measurements in the area and to verify the siting location of the continuous instrument. Also, two high volume particulate matter samplers will operate along with the SO_2 samplers.

2. Sitka - one SO_2 bubbler, to be located in the vicinity of the sulfite mill, in addition to a high volume particulate matter sampler. A second sampling station loca-

tion in the Sitka area is to be established within the Sitka City area in order to provide data for comparison with the other sampler station. High volume particulate matter samplers will operate in the same locations as the SO_2 bubblers.

3. Two high volume particulate matter samplers are to be located in the Juneau area to evaluate the air quality associated with the capital city.

4. Two high volume particulate matter samplers are to be located in the Wrangell area to provide air quality data relating to the sawmill activity there.

TABLE III-12

Major Emission Point Sources (>100 Tons/Year)***

Southcentral Alaska Intrastate Region

Pollutant	Source No.**	Source Name	Political Jurisdiction*	Estimated Current Emissions (T/yr)
Particulate Matter	24	Naval Station - Kodiak	5	200
SO_2	6	Cape Romanzoff	2	151
	22	Naval Station - Kodiak	5	180
CO	11	King Salmon Airport	3	350
	15	Kodiak Electric	5	384
	19	Naval Comm. Sta. - Adak	1	153
	20	Naval Comm. Sta. - Adak	1	680
	24	Naval Station - Kodiak	5	1058
	28	Shemya AFB	1	488
	30	Shemya AFB	1	122

*Political Jurisdictions

1. Aleutian Islands
2. Bethel - Kiskokwin
3. Bristol
4. Kodiak Island

**Refer to Appendix I for more source information.

***Refer to Map I-1 for source locations.

TABLE III-13

Major Emission Point Sources (>100 Tons/Year)***

Region 011 - Southeastern Alaska Intrastate

Pollutant	Source No.**	Source Name	Political Jurisdiction*	Estimated Current Emissions (T/yr)
Particulate Matter	7	Alaska Wood Products	6	744
	8	Alaska Wood Products	6	107
	10	Belardi & Schneider	3	1270
	22	Wrangell Lumber	6	395
	23	Wrangell Lumber	6	143
	25	Alaska Lumber & Pulp	5	1000
	26	Ketchikan Pulp	2	2000
SO_2	25	Alaska Lumber & Pulp	5	1600
	26	Ketchikan Pulp	2	3400
CO	1	Alaska Electric Light	3	160
	4	Alaska Prince Timber	6	107
	6	Alaska Prince Timber	6	156
	8	Alaska Wood Products	6	1988
	9	Annette Airport	6	159
	10	Belardi & Schneider	3	3750
	11	Juneau Airport	3	243
	12	Ketchikan City P.U.	2	158
	14	Mitkoff Lumber	6	325
	21	Wrangell City	6	106
	22	Wrangell Lumber	6	7342
	23	Wrangell Lumber	6	2649

*Political Jurisdictions
2. Ketchikan
3. Juneau-Douglas
5. Sitka
6. Wrangell-Petersburg

**Refer to Appendix I for more source information.

***Refer to Map I-1 for source locations.

TABLE III-14

Air Surveillance System 1972 Sampling Schedule

Every 6th Day

Quarter 1					
January	4	February	3	March	4
	10		9		10
	16		15		16
	22		21		22
	28		27		28
Quarter 2					
April	3	May	3	June	2
	9		9		8
	15		15		14
	21		21		20
	27		27		26
Quarter 3					
July	2	August	1	September	6
	8		7		12
	14		13		18
	20		19		24
	26		25		30
			31		
Quarter 4					
October	6	November	5	December	5
	12		11		11
	18		17		17
	24		23		23
	30		29		29

III.E. Sample Collection and Data Sampling

III.E.1. Sample Collection and Analysis

The procedure for placement of samplers, the method of collecting samples, and the techniques for analysis will be consistent throughout the State. The criteria presented in EPA Publication No. AP-98, Guidelines, Air Quality Surveillance Networks, will be used for locating samplers throughout the State. The most important criteria in these guidelines relating to the Alaska sampling network is the following:

> An elevation of 3 to 6 meters is suggested as the most suitable for representative sampling especially in residential areas. Placement above 3 meters prevents most reentrainment of particulate matter as well as the direct influence of automobile exhaust.

This criteria is very important in light of the present sampler height locations, because the sampler inlet for particulate matter for the Cook Inlet Air Resources Management District network and the Fairbanks NASN station both were located approximately five feet off the ground. The proposed networks, therefore, will have sampling locations of between 10 and 20 feet from the ground.

All 24 hour samples will be collected from midnight to midnight local time. Where it is possible to locate bubblers inside buildings, glass or teflon tubing will be used to bring the sample to the bubbler. Environmental shelters will be a necessity for instrumentation located outside of heated buildings The operating procedures for the high volume particulate matter samplers, and the sampling and analytical procedures for sulfur dioxide (and nitrogen dioxide) bubblers are detailed in the April 30, 1971 Federal Register. This document includes procedures for instrument calibration. Because the sulfur dioxide bubblers rely on a very small orifice for air flow regulations, a flow check will be made prior to collecting each sample and just after the sampling period is completed. In this way, potential clogging problems will be minimized.

The operation of the high volume samplers and the tape sampler during ice fog conditions in Fairbanks, based on the Arctic Health Research Center experience, will require some modification of the standard instruments in order to collect useful data. One technique which appears promising is the warming of the incoming air to the point where the ice fog particles will melt and evaporate on the filter. The first technique which will be evaluated is the installation of radiant heat lamps in the roof of the high volume sampler shelters. For the tape sampler, a section of metal tubing wrapped with heating coils will be used.

All samplers, excluding continuous samplers, will sample every sixth day according to the schedule in Table III-12 as soon as they become operational (refer to section II.G, Development Schedule). The sampling schedule for each succeeding year will be issued by the State in November of each year.

The Cook Inlet District and the Fairbanks North Star Borough personnel will be responsible for maintaining and operating the air monitoring network within their jurisdictions (as described in section III.A), in addition to evaluating the collected data. In those areas where presently there are no local programs, the State will develop, maintain and operate the required monitoring stations. These stations presently are not in operation but are scheduled to be developed and made operable in the following time schedule:

1. Ketchikan particulate matter and sulfur dioxide stations: sites to be selected by October 1972; determination of how the sampling stations will be maintained and operated (organization/persons in the Ketchikan area will be required to assist in maintaining and operating the stations; the Department is intending to send preweighed and prepared filters and bubbler units, which will be sent back to the Department for sampling) by October 1972; sulfur dioxide bubblers and continuous analyzer to be purchased, installed and made operable by May 1973; particulate matter samplers to be purchased, installed and made operable by August 1973.

2. Sitka particulate matter and sulfur dioxide samplers: site selection to be determined by August 1972; determination of how the samplers will be maintained and operated by August 1972; sulfur dioxide bubblers to be purchased, installed and made operable by May 1973; particulate matter samplers to be purchased, installed and made operable by August 1973.

3. Valdez sulfur dioxide and particulate matter samplers; site selection to be determined by October 1972; samplers to be purchased, installed and made operable by April 1974.

4. Juneau particulate matter samplers: site selection to be determined by November 1972; samplers purchased, installed and made operable by May 1973 (by this time it is anticipated that the Juneau City Borough will have initiated its local program and will maintain and operate these new samplers).

5. Wrangell particulate matter samplers: site selection to be determined by November 1972; methods/persons to maintain and operate sampler to be determined by November 1972; equipment installed and operating by August 1973.

For each sampling day, as much qualitative and quantitative information relating to meteorological conditions will be collected. At the minimum it should include ambient temperature, history of any rainfall, wind conditions or any special conditions like forest fires over the previous six day period. There should also be qualitative evaluations of special conditions occurring near the sampler site, such as traffic conditions, the spreading of gravel/sand for alleviating icy road conditions, and construction activities. Such details should be noted on the sample collection form, to be available for analysis prior to submittal in the semi-annual reports to the Environmental Protection Agency. Much of this meteorological data will come directly from the National Weather Service offices located in Fairbanks, Anchorage, Annette, and Cordova, although local weather forecasters (such as in Juneau, Wrangell, Sitka) also will be used as a source of information.

Continuous sulfur dioxide analyzer calibration will be accomplished by one of three methods: 1. by the use of the bubbler sampler which will be collected; 2. by using a prepared mixture of sulfur dioxide and air; or 3. utilization of a calibrated permeation tube at a controlled temperature to generate a known concentration of sulfur dioxide. The CO continuous analyzers are to be calibrated by use of bottled, certified "zero" and "span" gases. The "zero" gas consists of dry air or nitrogen with 0.00 ppm CO, and the "span" gas contains between 50-80 ppm CO.

III.E.2. Data Analysis

All monitoring stations within the State, including those operated by local programs, will record all air quality data in the SAROAD format. Local program personnel will be responsible for developing and maintaining the air quality data in this format (the SAROAD Hourly Data Form and the SAROAD Daily Data Form will be used for recording the air quality and meteorological data; reference EPA Office of Air Programs Publication Number APTD-0663) for all of their stations. Any information which might be helpful for analyzing the air quality data, but which is not amendable to be included on the SAROAD data form (such as construction activity around the site, etc.) will be noted on an additional form and kept with the data so that the information can be used for analysis purposes.

Where areas are classified as Priority I for a specific pollutant, the air surveillance data for that pollutant will be analyzed such that it can be made available for evaluation within several days. Data from air episode monitoring stations are to be analyzed within one day of sampling during conditions which are conducive to possible high air contaminant concentrations. During other times when there is little likelihood of air contaminant buildup, the data from the air episode stations need not be analyzed as quickly. Fairbanks Borough and Cook Inlet District personnel will develop the capability for analyzing the data in this fashion and a summary of the data handling and analysis procedures will be included in the first semi-annual report.

Initially there will be no computer analysis of the data, nor will the data be punched onto computer cards. Each local program will be responsible for evaluating its air quality data and to develop relationships between the air quality data concentrations and the meteorological variables of temperature, wind speed and direction, precipitation, inversion level (if the data is available), or any combination of these parameters. Because these parameters are not mutually exclusive, the local program will be responsible for developing at first qualitative interpretations of the relationships and then developing quantitative working models for interaction of air quality and meteorology. The control strategy evaluations described in section III.F will be summarized, interpreted and evaluated as they are completed. This data will be developed in SAROAD format and the results of these studies will be then interpreted as to the effects on air quality which can be attributed to the portions of the problem being evaluated. For example, the carbon monoxide evaluation described in section III.F.2 will be directly related to carbon monoxide concentrations in the ambient air and emission sources and where they are located. From the results of the control strategy evaluations, an interpretation of the air quality data control strategies as presented in section IV will be modified as necessary based on the new information and new understanding of the various problems to be abated.

In those area where a large number of sampling stations are to be located (such as in Fairbanks and Anchorage) the goal will be to

develop isopleth maps of particulate matter concentrations. In this way the air monitoring data can be used to evaluate land use planning criteria, and to evaluate control measures necessary for the reduction of existing problems. Such maps will also afford an easy means of examining relationships of particulate matter concentrations and locations of major population, industrial, business and traffic centers in the area. This type of display of information is necessary for a preventive program.

The projected air surveillance networks for Anchorage and Fairbanks (refer to sections III.B and III.C) should be adequate to develop a general isopleth mapping of each area. However, to develop a more useful map, temporary sampling locations may be required to be established, or a mobile monitoring evaluation may be required, in order to provide more definititve definition of the particulate matter distribution in localized areas. This type of short-term evaluation is necessary in areas where local disturbances are thought to contribute significantly to particulate matter concentrations in that one area. For the results of such an evaluation to be integrated into the general isopleth mapping, the short-term evaluation would have to be qualitatively interpreted to project the results over the complete year. For mapping purposes, this should be able to be done to a sufficiently high degree to serve as a guide for regional planning. In Fairbanks this short-term evaluation concept will be tried in evaluating the spacial distribution of carbon monoxide in the Fairbanks ambient air.

All air surveillance sampling analysis for the Cook Inlet District will be conducted in the laboratory which presently exists at the Greater Anchorage Area Borough offices. This will include analyzing the particulate matter, sulfur dioxide and oxidant surveillance data. The Fairbanks Borough program is expected to develop the laboratory capability to analyze particulate and carbon monoxide data, but sulfur dioxide samples may be sent to the Cook Inlet District. The Department of Environmental Conservation is presently in the process of establishing a combined water quality/pesticides/air quality laboratory which will be used directly by air quality engineers. The person in charge of the laboratory is the pesticides program supervisor who also is an experienced organic chemist. Within the laboratory the following equipment has already been purchased and is expected to be operational by the end of 1972:

1. Varian Gas Chromatograph, equipped with electron capture (Ni^{63}), Flame ionization, and alkali flame ionization detectors.
2. Bausch and Lomb "Spectronic 600" spectrophotometer.
3. Bausch and Lomb "Spectronic 20" spectrophotometer.
4. Beckmann infrared spectrophotometer.
5. Thin-layer chromatography apparatus and supplies.
6. Mettler balances, vacuum pumps, blenders, homogenizer, extraction and distillation apparatus, glassware.
7. Incubator, constant temperature baths, muffle furnace, refrigerator oven, general supplies and chemicals for water analysis.

III.E.3. Data Handling

The State is required to submit air surveillance data as required

in paragraph 420.7 of the August 14, 1971 Federal Register:

"(a) On a quarterly basis commencing with the end of the first full quarter after approval of the plan or any portion thereof by the administrator, the State shall submit to the administrator (through the appropriate regional office) information on air quality. The quarters of the year are January 1 through March 31, April 1 through June 30, July 1 through September 30 and October 1 through December 31.

"(b) Reports required by this section shall be submitted within 45 days after the end of each reporting period in a manner which shall be prescribed by the administrator."

Data collected by the local program is to be submitted to the State within 21 days after the end of each recording period in the manner described above. Local programs are to submit to the Department of Environmental Conservation the following air quality information 21 days after each semi-annual reporting period:

1. Air quality data for the reporting period as required in Appendix H of the August 30, 1971 Federal Register.
2. The air surveillance data for each station will be portrayed graphically (such as graphs of particulate matter concentrations vs. day) for the reporting period. Included in this analysis will be a quantitative evaluation of the meteorological effects in relation to measured values (including such things as wind speed, wind directions, precipitation and temperature). The data will be evaluated as to the best way to summarize and quantify the measured air quality data and meteorological parameters.
3. An evaluation of any progress or significant trends noted in meeting air quality standards. In particular, progress toward meeting the ambient air quality standards should be discussed.
4. A description of any possibly biased data, troubles/comments encountered in operating the network.

Refer to paragraph III.E.3, Data Analysis, for a more complete discussion of data evaluation.

Prior to the time required for submittal of local program reports, the State will be in contact with the local programs and will assist in the evaluation of data and conducting of the control strategy evaluations. In particular, the Fairbanks Borough will receive considerable assistance from the State in evaluating the carbon monoxide and particulate matter problems associated with the area. To a much lesser degree the Cook Inlet District program will be assisted by State personnel.

III.F. Control Strategy Evaluations

The proposed air surveillance network described in paragraphs III.B, III.C, and III.D are to be continuously operated to obtain air quality data over long periods of time. However, in order to fully evaluate and monitor the successes of the proposed control strategies in section IV, several short-term monitoring evaluations are required. These evaluations are discussed in detail in this section.

III.F.1 Evaluations Related to Particulate Matter

The control measures proposed for the particulate matter problems of Fairbanks and Anchorage are heavily dependent on evaluating the measures as they are implemented, and more thoroughly understanding the problem associated with particulate matter. Consequently, the State will assist and coordinate with the local programs as necessary in conducting and evaluating the studies described herein.

III.F.1.a. Evaluation of Particulate Matter Size Distribution

The particulate matter concentrations measured in Fairbanks and Anchorage are suspected to be made up primarily of very large particle sizes. If this is the case, then the amount of "suspended" particulate matter needs to be determined. Generally, there is a distinction made between "suspended" and "settleable" particulate matter, although no quantitative distinction yet has been determined regarding the difference between these two "types". An evaluation of the particulate matter size distribution as proposed in this section will shed considerable light on how this distinction should be made and how it relates to the location of particulate matter samplers and/or evaluation of sampling results and control strategies as presently established.

Two particulate matter sampling stations are projected to be located at the city fire station in Anchorage, one five feet above ground elevation, and the other 10 to 20 feet above ground elevation. Once these stations are in operation, cascade impactor modification for hi-vol particulate matter samplers will be installed on each of the samplers. The data from these samplers will be used to evaluate the particulate matter size distribution and any seasonal or yearly changes that may occur in this distribution. This data will be evaluated and reported in the first semi-annual report to the Environmental Protection Agency. At that time a comparison will be made regarding these results and a more typical size distribution of particulate matter existing in various areas in the lower 48 states.

III.F.1.b. Evaluation of Air Quality Effect on Road Paving

Both the Fairbanks and Anchorage areas have ongoing road paving programs. Although it is known that such a program will assist in decreasing particulate matter concentrations, there presently is no way to determine how much of a decrease will be obtained. However, an indication of this measure's effectiveness can be obtained by operating one or two particulate matter samplers in the vicinity of a road which is scheduled to be paved the following year. In

this way, air quality data can be obtained and evaluated for the year prior to paving, during paving, and after paving. If it is possible to obtain particle size data along with these samplers, then the information will be all the more complete. Meteorological data (especially the wind speed and direction) should also be taken during the sampling period. The Cook Inlet Air Resources Management District will coordinate with the responsible local departments in selecting a test area and sampling location, and will operate the sampling stations. Initiation of measurements should begin in the latter part of the summer of 1972, with an interim progress report in the first semi-annual report to the Environmental Protection Agency.

III.F.1.c. Evaluation of Air Quality Effects of Street Cleaning

Because the highest measured particulate matter concentrations in Cook Inlet have been in downtown Anchorage, the increase in the street cleaning frequency is considered to be an important part of the Anchorage control strategy. Not enough information is known as to where the present street sweeping is done and with what frequency. It will be necessary to obtain this information before any evaluation of street sweeping as an air quality control measure can be accomplished. This evaluation is to be carried out by the Cook Inlet District personnel and consists of approximately the following steps (a more detailed procedure to be followed for the study can only be developed when Step 1 below is completed):

1. Coordinate with the applicable local departments to determine the present frequency of street cleaning, where it is done and the criteria presently being used for street cleaning various areas. This information should be then related to sampling sites in the downtown area to determine the degree of influence that the present program is having on the measurements.

2. Coordinate and develop with the appropriate local departments an increased street sweeping schedule which will have maximum effect on the downtown sampling stations. If, for instance, the street in front of the City Fire Station sampler is swept three times a week and the streets within a two block radius are swept approximately one to two times a week, then the proposed change in scheduling could be that all of the streets be swept three to four times a week.

3. Initiate the proposed change in street sweeping program during the middle of a meteorological condition which is forecasted to last one to two weeks in the summer. At the beginning of this meteorological condition, begin taking particulate matter samples every day at the station(s) in the area. The taking of daily samples should continue at least until the stable meteorological condition has terminated, after which the sampling schedule would revert to normal.

4. This study should be adequately defined and initiated during the summer of 1972. Enough data should be compiled such that at least an interim evaluation of the results can be completed and submitted as part of the first semi-annual report to the Environmental Protection Agency, 1973.

The results of this evaluation will be considered in the development of the air quality strategy for Fairbanks.

III.F.1.d. Evaluation of the Effects of Oiling Program on Air Quality

The oiling programs currently in existence in the Greater Anchorage Area and the Fairbanks North Star Boroughs are not adequately defined presently to propose any air quality control measures dealing with these programs. While it is true that such a program if judiciously developed will improve the air quality, it also could result in substantial water or land pollution if inappropriately applied. AS 46.03.740, OIL POLLUTION prohibits the discharge of petroleum products into or upon the water or land of the State except as permitted by the Department. Therefore, the Department of Environmental Conservation will require that the Boroughs obtain prior written approval in order to oil any roads within the Borough from the Department. Because of the potential desirable effect this program may have on air quality in the Boroughs, the Cook Inlet District personnel will coordinate with and assist the responsible local departments to:

1. Define the present oiling program (how many miles of roads are unpaved and how many are oiled, and where are they located).
2. Define the present constraints and criteria presently used for oiling roads.
3. Define the extent of the present oiling program (how many miles are oiled each year and whether or not the same sections of road are oiled each year).
4. Develop a testing program similar to that described in III.F.1.b for a road approved to be oiled.
5. Define other possible substitutes to road oiling as a dust control method.

The results of this evaluation also will be considered in the development of the air quality strategy for Fairbanks.

III.F.1.e. Evaluation of Fairbanks Particulate Matter

Because of the very high particulate matter concentrations measured in Fairbanks an evaluation in the summer of 1972 is necessary to understand from where the particulate matter is coming. Therefore, the air surveillance system (as proposed in section III.C) will have to be established and in operation as early as possible in the summer of 1972. Of the nine proposed stations for sampling particulate matter, at least five should be in operation no later than June 1, 1972. These five would include the NASN station (which is in operation presently), the University Park School station, the South Fairbanks subdivision and the background stations at Birch Hill and North Pole. The other four stations (at Nordale School,

the airport, Downtown and the Aurora subdivision) should be established as soon after June 1 as possible. These samplers would be placed on a schedule of sampling every third day, with meteorological data to be collected on the sampling days. This increased sampling schedule will continue at least into the early part of winter to develop an adequate evaluation of the characteristics of the particulate matter existing in Fairbanks. In order to obtain this type of data another Cascade Impactor Modification unit for High Volume Particulate Matter Samplers will be necessary. An interim report of the results up to December 1972, should be submitted as part of the first semi-annual report to the Environmental Protection Agency. Much of this study will be conducted by the Fairbanks Borough personnel, with assistance as necessary from the State.

III.F.2 Evaluation of Carbon Monoxide in Fairbanks

The ambient air measurements done thus far with carbon monoxide in the Fairbanks area have been primarily related to only one sampling location (Second and Cushman Streets in the downtown area). Although it appears reasonably certain that the motor vehicle traffic near the sampling station is responsible for much of the concentrations being measured, it is not known how widespread the carbon monoxide problem is throughout the Fairbanks area. Therefore an evaluation of the carbon monoxide concentrations existing throughout Fairbanks will be conducted by State personnel with assistance from the Fairbanks Borough during February-April, 1972. This evaluation is intended to provide a more adequate understanding of the carbon monoxide levels existing throughout Fairbanks so that a definitive long-range plan of abatement can be developed. It is anticipated that whatever plan is developed to abate the carbon monoxide problem in Fairbanks will also abate some, if not a large part, of the ice fog problems which exist during approximately the same time.

Two non-dispersive infrared CO analyzers have been purchased by the State and will be used in combination with the present non-dispersive infrared analyzer owned by the Arctic Health Research Laboratory (presently on loan to the Fairbanks North Star Borough). The Arctic Health Research Laboratory instrument will continuously monitor at the Third and Cushman street sampling throughout the test period. This point will be used as a reference base for evaluating the other study test data to be acquired. One continuous CO analyzer will be installed into a motor vehicle (possibly owned by the Fairbanks North Star Borough). Because the instrument has a response time of approximately thirty seconds, it can be used to develop isopleths of CO concentrations in various areas of the city for hours or a day at a time so that longer averaging times can be obtained. It is intended that for each area where the CO instrument is to be left for hours or a day at a time, a "mapping" will be done sometime during the day with the other instrument to relate to the longer averaging time. There will be approximately seven to eight locations throughout the Fairbanks airshed which will be monitored in this fashion. Meteorological conditions will be recorded with the time of day, in addition to extenuating circumstances such as automobile traffic and proximity of stationary sources.

The evaluation was initiated on March 14, 1972. Both continuous CO instruments were installed in a conditioned compartment and then into a mobile van. Numerous minor problems occurred, such as equipment not being received on time (especially the power converter which was to be used with one instrument so that a "mapping" could be done as the vehicle was moving). However, the initial testing period was concluded on April 10, 1972 and some preliminary data is shown in sections IV.C.3 and IV.C.4. This data indicates that the sampling station which is located in the downtown region of Fairbanks may be typical only of that downtown central area and not of the overall Fairbanks metropolitan area. All data from this initial testing period is expected to be analyzed by June-September 1972. In the meantime, arrangements have been made with the Department of Environmental Conservation regional office personnel in Fairbanks to continue to use one of the continuous CO instruments installed in a mobile van (the other CO instrument is intended to replace the Arctic Health Research Laboratory instrument at Second and Cushman) and have this instrument obtain 8 hour carbon monoxide concentration data at various sites throughout the city during the summer of 1972. Because the Borough Planning Department already has indicated an interest in using this instrument to evalute some facets of their planning, this schedule probably will be revised to obtain maximum utilization of the instrument to understand the Fairbanks carbon monoxide problem.

During the winter of 1972-73 the second continuous CO instrument will be available in Fairbanks to continue the carbon monoxide evaluation as necessary. It will also be available for use during times when the carbon monoxide concentrations reach levels which require routing of traffic. With this second CO instrument mounted in a mobile van, the Department will be able to determine whether or not the problem of high CO concentrations will move to another area. Because of the preliminary results already received, (refer to sections IV.C.3 and IV.D.4) the high CO concentrations are not anticipated to be moved to other areas. However, this assumption will be fully evaluated during the coming months. When the instrument can be spared from Fairbanks, it will be transfered to Anchorage to evaluate the potential for high CO levels in that area; refer to Table II.G-1 for the tentative time schedule of the Anchorage CO evaluations.

III.G. Equipment Acquisition

Table III.G-1 presents the schedule by which the State will be purchasing air surveillance equipment. Acquisition of this equipment as shown on this table will allow the State to:

1. Initiate evaluation of the Fairbanks particulate matter problem before fiscal year 1973 (when Fairbanks will be obtaining a federal grant).

2. Initiate evaluation of the Fairbanks carbon monoxide problem during the latter part of the winter 1972 so that this data may be available for evaluation prior to fiscal year 1973.

3. Provide for the installation and operation of all air episode monitoring equipment by July 1973.

4. Provide for the installation and operation of all permanent monitoring equipment by July 1974.

5. Provide for the acquisition of source testing equipment by July 1973.

Refer to Table II.G-1 for the schedule for establishing individual monitoring stations. Also, refer to sections III.C.3 and III.D.2 for more complete descriptions of individual sampling sites.

Referring to section III.E, the Cook Inlet Air Resources Management District currently owns equipment adequate to develop the sampling sites indicated in Table III.6 with the exception of the dustfall buckets (which currently are being manufactured). Table III.G-2 shows the expected purchase schedule for equipment for the Fairbanks North Star Borough. Because the State already has purchased some of the equipment necessary for the Fairbanks program, by the time Fairbanks obtains its federal grant, some equipment necessary for the State program will be purchased and "traded" for the equipment already purchased for the Fairbanks program by the State.

Table III.6.1

ESTIMATED STATE EQUIPMENT ACQUISITION SCHEDULE

Equipment	1972	1973	1974
1. Continuous CO Analyzers	2 @ $5200 EA***		
2. Particulate Matter Hi-Vol Samplers	9 @ $300 EA	1 @ $300	
3. Environmental Shelter for Samplers	2 @ $300 EA	4 @ $500 EA	
4. Continuous SOx Monitor		1 @ $7000	1 @ $7000
5. SO_x Bubblers	5 @ $500 EA		
6. Anderson Hi-Vol Particulate Matter Sizing Modifications	3 @ $600 EA		
7. Source Testing Equipment	1 @ $2,000	1 @ $5,000**	
8. Magnetic Tape Data Recording Unit		3 @ $1,000*	
9. Nephelometer			1 @ $7,000
10. Misc. (Power converter, etc.)	$2500		$1,000 $2,000
11. Hydrocarbon Analyzer			1 @ $7,000

Total Equipment Expenditure

Fiscal Year 72 - $22,500
Fiscal Year 73 - $12,000
Fiscal Year 74 - $15,000
Fiscal Year 75 - $ 9,000

*Desirable unit not yet located.

**To be purchased by Fairbanks Borough program.

***One analyzer to be used by Fairbanks Borough program permanently.

Table III.6-2

Estimated Fairbanks North Star Borough

EQUIPMENT ACQUISITION SCHEDULE

Equipment	1972	1973	1974
1. Continuous CO Analyzer	1 @ $5,200*		
2. Particulate Matter Hi-Vol Samplers	3 @ $300*	4 @ $300 EA	
3. Environmental Shelters for Samplers			
4. SO_X & NO_X Bubblers		2 @ $500 EA	
5. Source Testing Equipment		1 @ $5,000**	1 @ $1,000***
6. Magnetic Tape Data Recording Unit			
7. Weigh Scale		1 @ $1,200	
8. Misc., Unknown		$2,000	$2,000
9. Lab Equipment		$2,000	

Total Equipment Expenditure

Fiscal Year 72 - $ 2,000
Fiscal Year 73 - $12,000
Fiscal Year 74 - $ 8,000
Fiscal Year 75 - $ 4,000

*Purchased by State for use in Fairbanks.

**Purchased by Borough for use by State.

***Desirable unit not located.

IV. CONTROL STRATEGIES

Much of Alaska consists of unpopulated regions with very small native villages. Where industries or population do exist, however, the potential for degraded air quality is great because of the severe topographical and meteorological conditions existing throughout much of Alaska. Therefore the need for a preventive air quality control program throughout most of Alaska is very important, and the air surveillance system described in section III, and the permit system described in section II.D.1 are the major features of this preventive program. The air surveillance system will obtain the information necessary to evaluate present air quality, and the permit system will allow the State the necessary control of large sources to maintain ambient air quality standards and insure compliance with 18 AAC 50.

Air quality problems have been identified however, for several areas of the State. For each of these areas, control strategies have been developed to:

1. Initially abate the air quality problem.

2. Evaluate the air quality problem.

3. Update the initial control strategy as necessary based on the evaluation.

The control strategies described in this section are to achieve air quality at least equal to the Alaska Ambient Air Quality Standards (which are the same as the National Secondary Air Quality Standards, reference Federal Register 36, No. 84, April 30, 1971 "Environmental Protection Agency - National Primary and Secondary Ambient Air Quality Standards") by 1975. It is recognized that this goal may be difficult to achieve for particulate matter in Anchorage and Fairbanks. However, there is no data presently which indicates that 1975 is an unachievable date for achievement of Alaska Air Quality Standards in these two areas.

This methodology is necessary because of the lack of adequate air quality data and understanding of the present air quality problems of the State. These strategies have been developed with the intent that the federal Primary Ambient Air Quality Standards will be attained in those areas presently having exceeded those levels by 1975, and the Alaska State air quality control standards (refer to Appendix II, 18 AAC 50.020 - these levels are identical to the Federal Secondary Ambient Air Quality Standards) by 1980 for those areas presently exceeding the State ambient air quality standards. These strategies are presented and discussed in section IV.A, Particulate Matter - Cook Inlet; section IV.B, Particulate Matter - Fairbanks North Star Borough; section IV.C, Carbon Monoxide; and section IV.D, Sulfur Dioxide - Southeast Region.

IV.A. Particulate Matter - Cook Inlet Region

The measured particulate matter ambient air concentrations in the Greater Anchorage Area Borough are in excess of the Federal Primary Ambient Air Quality Standards. As shown in Table III.1, the Cook Inlet monitoring location at the City Fire Station registered an annual geometric mean concentration of 104 micrograms per cubic meter, which compares to the Primary Ambient Air Quality Standard of 75 micrograms per cubic meter. Because the Primary Ambient Air Quality Standard must be met by 1975, a control strategy has been developed not only with this goal, but with the intent to meet the Alaska Air Quality Standards (which have been established at the level of the Federal Secondary Ambient Air Quality Standards) by 1980.

As discussed in section III.A, there is doubt as to the validity of the measurements made at the City Fire Station, and consequently most of the particulate matter air samplers will be relocated from the present 5-foot elevation to 10-20 foot elevations. The major reason for relocating the air samplers in this manner is to get away from sampling "settleable" dust. This type of dust is made up of large diameter particles which settle out in a reasonably short time and normally do not contribute to an overall air quality degradation. In contrast, "suspended" particulate matter is of concern to an overall air quality particulate matter problem. A more representative sampling of "suspended" particulate matter should be obtained at the higher sampling level, and within a year more representative air quality data should be obtained on which to base a control strategy. However, at this time there appears to be enough data (refer to the discussion, section III.A) to indicate that a definite particulate matter problem exists for meeting at least the Secondary Ambient Air Quality Standards. Consequently the following control strategy has been mutually developed by the State and Cook Inlet District personnel, and is to be carried out by the Cook Inlet District.

The discussion of the control strategy for particulate matter in the Cook Inlet is as follows:

IV.A.1. Evaluates the sources of particulate matter presently identified in the Cook Inlet region. Included in these sources is an emission inventory of stationary and area sources (excluding road generated dust), road generated dust, and natural sources.

IV.A.2. Represents an evaluation of the effects of the various particulate matter emission sources in the region on regional air quality.

IV.A.3. Describes control strategies which will be carried out by the Cook Inlet Air Resources Management District.

IV.A.1. Particulate Matter Sources

IV.A.1.a. Emission Inventory

Examination of the man-made air emission sources included in the Emission Inventory (reference Appendix I) shows that 76% of identifiable particulate matter emissions in the Anchorage area are attri-

butable to transportation (gasoline motor vehicles = 9%, diesel motor vehicles = 33%; aircraft = 34%, reference 20, page 22). The total emission rate of particulate matter from point and area sources in the Anchorage area is 2626 tons/year, excluding traffic generated dust (reference 20).

Table IV.A-1 shows the emission rates of major point sources in the Cook Inlet region. The table indicates all sources emitting greater than 100 tons per year of air contaminants. The allowable particulate matter emissions from industrial processes were calculated on the basis of reasonably available control technology as defined in Reference 7, page 15495. The allowable emissions appearing in Table IV.A-1 are exceeded only in the case of source 72, a process source. The locations of point sources emitting in excess of 5 tons per year of particulates are shown in Figure IV.A-1. Of the point sources shown four have particulate emission rates higher than 100 ton/year. One source is an oil platform (No. 30, Figure IV.A.1) flaring natural gas. Its emissions contribute 5% of the yearly particulate emissions included in the inventory. Another source is the Elmendorf Air Force Base Airport (No. 69, Figure IV.A-1). Its contribution amounts to 10% of the total. The third source is the Anchorage International Airport (No. 1, Figure IV.A.1) which contributes about 21% of the total. The fourth source (No. 72, Figure IV.A.1) is the Collier Carbon and Chemical Plant. Its contribution of 201 tons/year is approximately 8% of the total.

Three of the four sources are located far from the city of Anchorage (see Figure IV.A-1) and should have minimal effect on Anchorage's air quality.

The small amount (2626 tons/year) of particulate emissions from these stationary and mobile sources indicate that other sources are contributing significantly to the high particulate measurements in the Anchorage area.

IV.A.1.b. Natural Sources

Air quality measurements taken at Point Woronzof, to the west of the Anchorage airport, indicate that particulate matter concentrations in the Cook Inlet can be as low as 18 micrograms per cubic meter on an annual geometric average. However, this level does not necessarily represent the background that would naturally exist several miles inland (or within Anchorage) because of additive effects due to the land. Topsoil conditions existing throughout the Anchorage area (as discussed in section III.A) are of a sandy nature with very little organic material to act as a binder. Once the soil surface is disturbed, there is very little to keep the exposed ground from generating airborne particulate matter during windy conditions in the absence of rain. Silty river beds also are potential sources of wind generated atmospheric dust, as are (to a much smaller degree) beaches and exposed tidal flats during low tide.

Although there are few fires in the Anchorage area which could be classified as forest fires, periodic smoke emissions from distant fires sometimes reach the area during the summers. In addition, open burning during land clearing outside the Anchorage city limits contributes to the particulate concentration in the air.

IV.A.1.c. Traffic Generated Particulate Matter

Traffic generated dust is suspected to be the largest contributor of suspended particulate matter in the Anchorage area, where industrial and commercial activity is centered primarily in the downtown business district and near the International Airport. The predominant land use in most of the metropolitan area is residential of various densities. Land use patterns are shown in Figure IV.A-2. The traffic patterns presented in Figures IV.A-3 and IV.A-4 indicate that the largest traffic volumes occur on main thoroughfares which interconnect the residential areas with the commercial/industrial areas and also those that serve the two large military bases (Elmendorf Air Force Base and Fort Richardson).

An examination of Anchorage metropolitan area road maps and available information concerning the condition of the roads in Anchorage (Reference 10) show that 55% of the roads and alleys in the city of Anchorage and 80% of the roads in the service areas of Spenard, Muldoon and Sandlake are unpaved. Although the main traffic thoroughfares presented in Figures IV.A-3 and IV.A-4 are paved, an unknown number of roads in the residential areas leading onto the main thoroughfares are unpaved. In addition to city and Borough maintained roads, there are many miles of private unpaved roads. Traffic-produced dust is produced by vehicles on the unpaved roads within the central business district and the residential and service areas. In addition, dust appears to be carried into the city by vehicles that have been driven on unpaved roads. An estimation of the vehicle/miles driven on paved vs. unpaved roads is presented in Appendix VI.F.3.

Paved roads in Anchorage appear to be quite dusty, with the result that traffic generates airborne particulate matter. A central strip of deposited dust near curbs can be seen in the business district of Anchorage. Cars driving (particularly at high speed) across the central strip or along the curb cause this dust to become suspended. Similarly, access roads to the business district are dust producers. The center strip is covered with a thick layer of dust and the shoulders are unpaved. Any car straying from the center of a traffic land, manoeuvering to pass another car or to pull off the road, generates a great deal of dust.

IV.A.2. Effect on Air Quality

IV.A.2.a. Area Source Model

In an attempt to determine the contribution to air quality levels from known sources (excluding particulate matter generated from traffic) an air quality model was developed and is presented in this section.

Conversion of air contaminant emission rates to air quality levels can be made using either a diffusion model which treats each source separately, or an area model (Reference 7, Appendix A). A diffusion model is not available for the region; therefore the area model estimation procedure was used. Air quality estimates were calculated using the following three choices for urban areas:

1. Area of the city of Anchorage, 129.5 km^2.

2. Area of Greater Anchorage, 184 km^2.

3. Area of "air shed" (Figure IV.A-5) which is bounded by the 1000-foot elevation line on the east, the seashore on the west, and straight east-west lines on the north and south, 450 km^2.

A typical average wind speed for the Anchorage area of 2.3 m/sec. was used in the calculations (see Appendix VI.F.2). The calculated air qualities resulting from the 2626 tons/year particulate emissions from known sources and corresponding to the above urban areas respectively, are:

1. = 27 $\mu g/m^3$

2. = 20 $\mu g/m^3$

3. = 10 $\mu g/m^3$

There are several significant shortcomings of this area source model. First, the model result is highly dependent on the choice of urban area. This casts doubt as to the validity of the model, because the true area over which the pollutants are distributed is not really known. Second, the model does not incorporate mixing depth as an input parameter. Third, the spatial distribution of the larger point sources in not considered. Rather, the model assumes a homogeneous mixture of air contaminants, which is seldom the case. There apparently is a large variation in the air quality measurements within the Anchorage area, thereby indicating that the air mixture on a daily basis is far from homogeneous, and that spatial distribution of the sources definitely does influence air quality.

Additionally the area model was calibrated for urban areas within the lower 48 states, and should therefore be used with caution in Alaska in light of the more rural nature of the particulate matter sources.

It is important to point out that particulate matter concentrations much higher than the above estimates are consistently measured in the downtown section of Anchorage. This implies that sources other than known particulate emission sources in the emission inventory contribute significantly to the Anchorage air quality problem.

Sources of particulates not included as known quantifiable emission sources are traffic-generated road dust, dust from exposed soils or blown in from glaciers and moraines, and smoke from forest fires. The extent of the contribution made by these sources is examined in the following section.

IV.A.2.b. Air Quality Implications

The suspended particulate matter measurements in Anchorage from 1968 to 1970 (Reference 6) are illustrated in Figures VI.F.1.a through VI.F.1.d. These data indicate that there are two seasons of the year in which a maximum particulate matter concentration occurs in Anchorage, spring (April/May) and the fall (September/October).

As pointed out in Reference 12, this pattern results because the spring thaw comes in March and by April considerable road dust develops. The rainy season occurs in June and July, after which the unpaved roads are graded smooth. The unpaved road surfaces once again become a source of loose soil in September and October until winter frost and snowcover begins. The minimum particulate measurement occurs during the winter months (November through March).

Appendix VII.4 shows quarterly maximum and minimum particulate concentrations measured by the NASN. The average variation between maximum concentrations measured (second or third quarter) and minimum concentrations (first or last quarter) is 65%. Since no identifiable man-made source would account for such a variation, the conclusion is that a major portions of the suspended particulate in the Anchorage area is generated by sources discussed in section IV.A.1.c, or are of natural origin.

IV.A.3. Control Strategy

The following control strategy is proposed to reduce particulate matter concentrations in the Cook Inlet. The strategy consists of applying reasonably available control technology to the existing industrial sources (as discussed in section II.D) and initiating a program to reduce traffic-generated dust and dust from other sources. Evaluations will be made to determine the contribution from particulate matter sources (refer to section III.F) and to measure the effectiveness of the proposed control measures as they are developed.

The proposed control strategies which follow have been mutually developed by State and Cook Inlet Air Resources Management District personnel. The Cook Inlet District personnel will perform the necessary coordination with the various Anchorage Borough departments and will develop, monitor, and evaluate the following strategies:

1972

The Greater Anchorage Area Borough's existing paving program (per communication with the Borough Planning Department) consists of paving 17 miles of roadway in the Borough by 1973. An increase in the present paving schedule for air quality control considerations is not recommended at this time, because of the considerable expense involved and because its effectiveness in improving the air quality has not yet been determined.

The Cook Inlet District will coordinate with the Borough Road Maintenance Department to develop a program of increased street cleaning between the months of May and September (reference discussion in paragraph IV.A.1.c). Presently four wet street sweepers are operating in the Greater Anchorage Area on a schedule of 28 miles of roadway per day, five days per week. It appears that this frequency might be increased to approximately 40 miles per day. Any increased sweeping effort should be concentrated in the center city area.

The oiling program currently in existence in the Greater Anchorage Area Borough is not well defined. While it is

true that such a program if judiciously developed will improve the air quality, it also could result in substantial water or land pollution if inappropriately applied. AS 46.03.740, OIL POLLUTION prohibits the discharge of petroleum products into or upon the water or land of the State except as permitted by the Department. Therefore, the Department of Environmental Conservation will require that the Borough obtain prior written approval in order to oil any roads within the Borough from the Department. To obtain a greater understanding of the extent and possible air quality effects of an oiling program, the District will coordinate with the Borough Road Maintenance Department to obtain a definition of the current oiling program, where oiling is being done and on what frequency, how effective is the program (both in terms of air and water quality) and the criteria presently being used to determine where to oil. This information along with the results of the oiling evaluation (refer to section III.F.1.d) will be submitted to the Department (along with recommendations) for review for inclusion in the first semi-annual report.

Evaluate the feasibility of developing a planting program on lands from which ground cover has been removed and which would be suspected to add to the blowing particulate matter problems associated with roads and populated areas (vacant lots, construction sites after work has been completed, and uncovered land strips along roadways).

As the above measures are developed and coordinated by the District with the applicable local departments, the Cook Inlet District will evaluate the effectiveness of each of the measures. These evaluations, at least an interim report, will be included in the summary report to the State, to be submitted in the first 1973 semi-annual report to the Environmental Protection Agency. Also to be included in this report will be an evaluation of the cost effectiveness of each of the proposed control measures.

1973

The strategies initiated and evaluated in 1972 will be continued and accelerated, based on the evaluation of the previous year's results and the availability of financing.

Compliance schedules to implement reasonably available control technology will have been negotiated by the Cook Inlet District with the applicable sources.

Evaluation of the particulate matter problem and effectiveness of the control measures initiated will be continued and developed in more detail. The first semi-annual report in 1974 will include a status report of the planting program development initiated in 1972 or early 1973.

1974

The overall objectives of the control measures which have been described for 1972-74 are to attain the Alaska Ambient Air Quality Standard for Particulate Matter (which is the same as

the National Secondary Ambient Air Quality Standard) by 1975. Data necessary to evaluate the effectiveness for the various strategies mentioned by necessity will be developed at the same time as the strategies are instituted. Contingent on the results of the evaluations, the strategy which is determined to be necessary to meet the ambient air quality standard will be implemented.

1975

All stationary sources known to be in non-compliance with State and Cook Inlet District Regulations will be in compliance by 1975.

Table IV.A-1 Characteristics of Major Point Source Particulate Emissions

Source	Designation	Rated Capacity Million Btu/hr	Annual Fuel Consumption	Uncontrolled Emissions (tons/yr)	Actual 1970 Emissions (tons/yr)	1975 Emissions (tons/yr) with Present Controls	Allowable Emissions in 1975 with Reasonably Available Control Technology (tons/yr)
1	Anchorage International Airport	Not Applicable	Not Applicable	550	550	620	310*
2	Anchorage Municipal Light and Power	350	3245 mmcf	24	24	27	27
3	Atlantic Richfield Flare	178	1484 mmcf	13	13	No Flaring **	0
8	Chugach Electric Bernice Plant	150	6468 thousand gal	49	49	55	55
11	Chugach Electric Beluga Plant	300	3510 mmcf	27	27	33	33
26	General Service Administration	175	1107 mmcf	11	11	13	13
29	Merril Airport	Not Applicable	Not Applicable	13	13	15	15
30	Union Oil Mc-Carthna River Flare	2260	14,332 mmcf	129	129	No Flaring	0
31	Mobil Amoco Granite Point Flare	1330	8416 mmcf	76	76	No Flaring	0
41	Shell-Amoco Middle Ground Flare	800	5050 mmcf	45	45	No Flaring	0
61	Union Oil-ARCO Trading Bay Flare	950	5912 mmcf	53	53	No Flaring	0
69	Elmendorf Air Force Base	Not Applicable	Not Applicable	257	257	330	330
70	Collier Carbon and Chemical (gas engines)	Not Applicable	10,703 mmcf	80	80	92	92
71	Collier Carbon and Chemical	1063	7067 mmcf	64	64	70	70
72	Collier Carbon and Chemical	95,820 lb/hr (process)	Not Applicable	201	201	224	141
76	Atlantic Richfield Sparks Platform	Diesel	1330 million gal	17	17	19	19
93	Union Oil Monopod Flare	1280	7300 mmcf	66	66	No Flaring	0
97	Union Oil Grayling Platform Flare	194	1100 mmcf	10	10	No Flaring	0

*Estimated that the Federal proposed aircraft emissions standard for visibility will reduce particulate emissions by 50%.

**Flaring operations will cease in accordance with regulations.

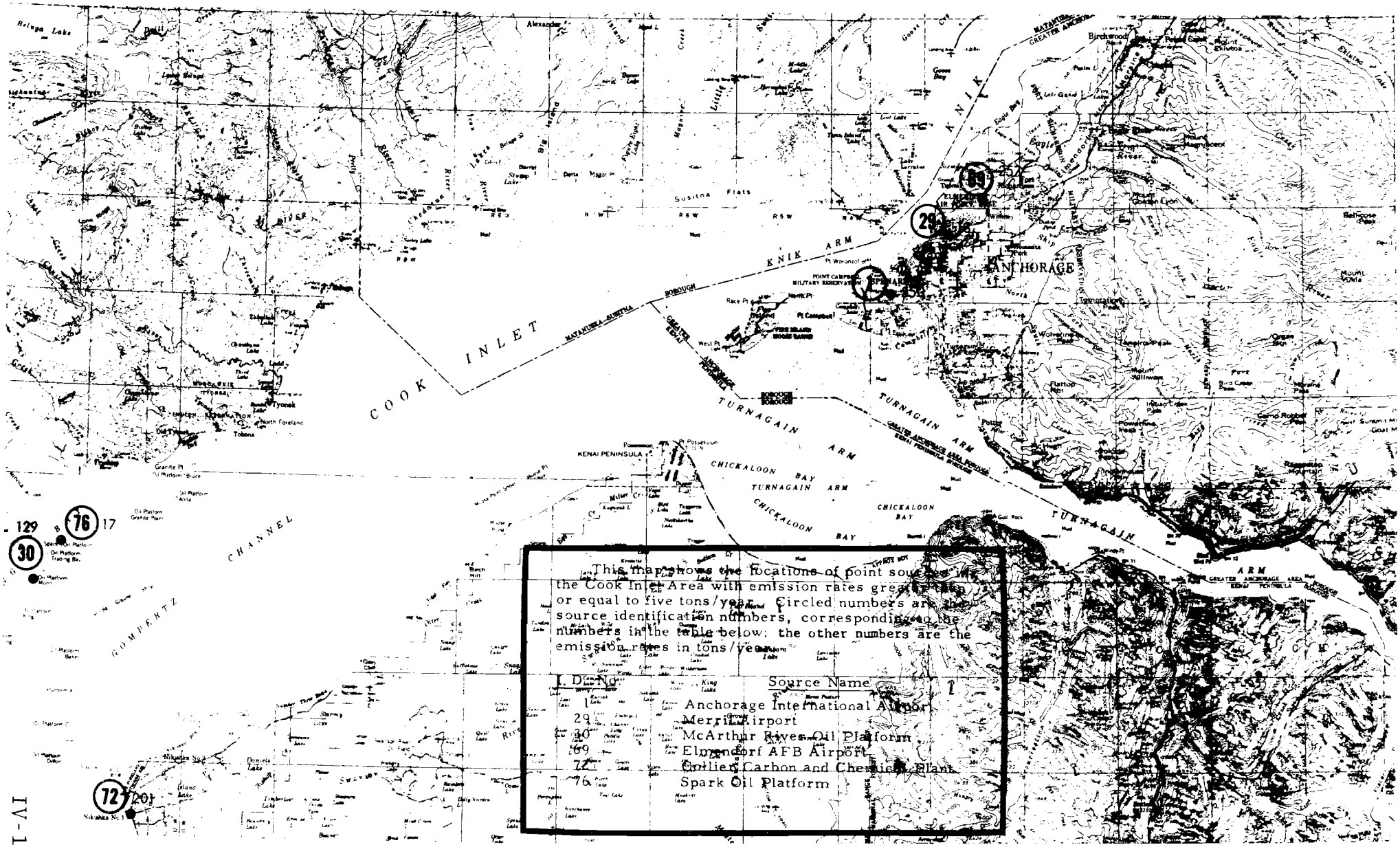


Figure IV.A-1 Cook Inlet Area - Major Particulate Point Sources

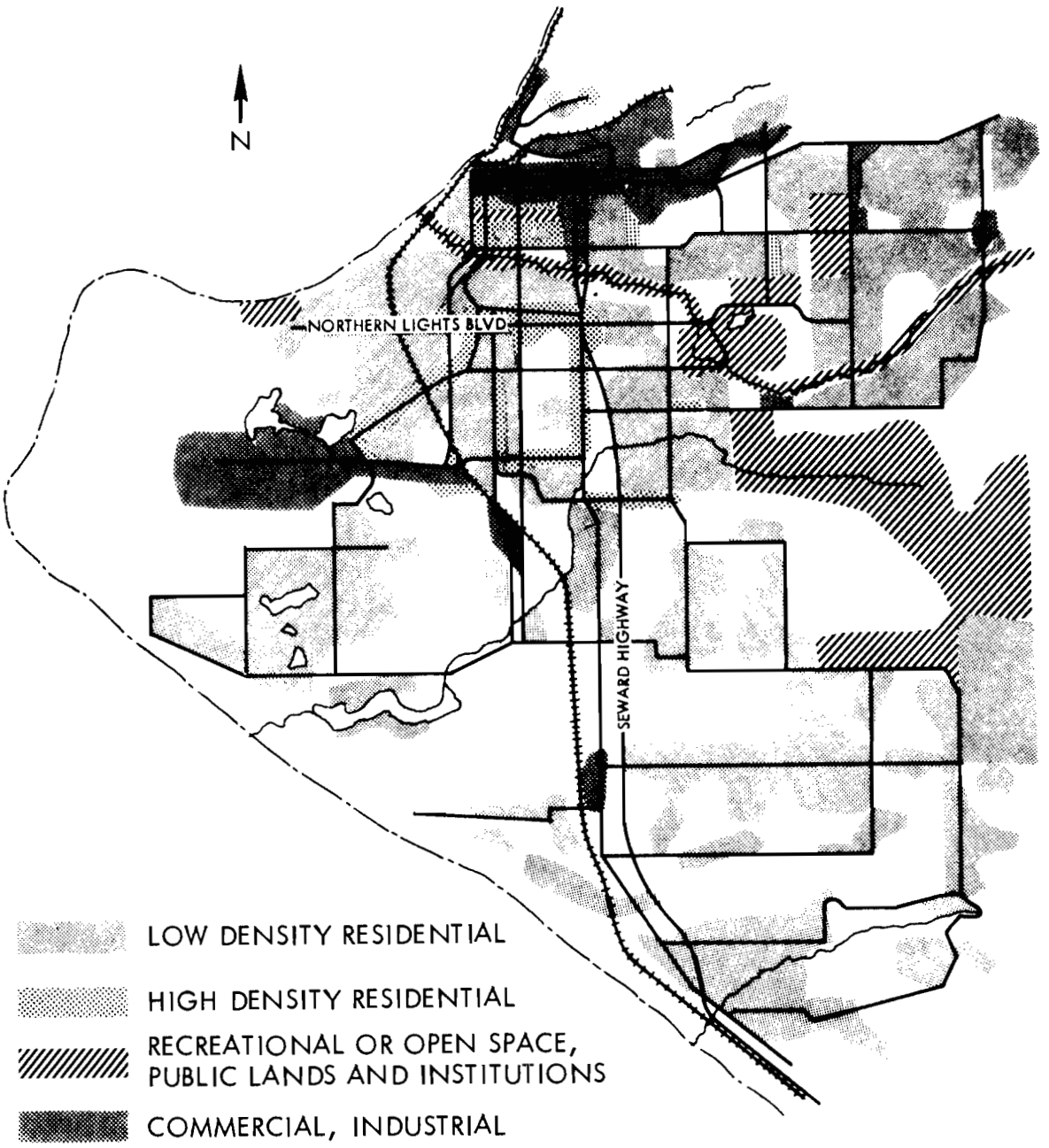


Figure IV.A-2 Existing Land Use, Anchorage Metropolitan Area (Reference 9)

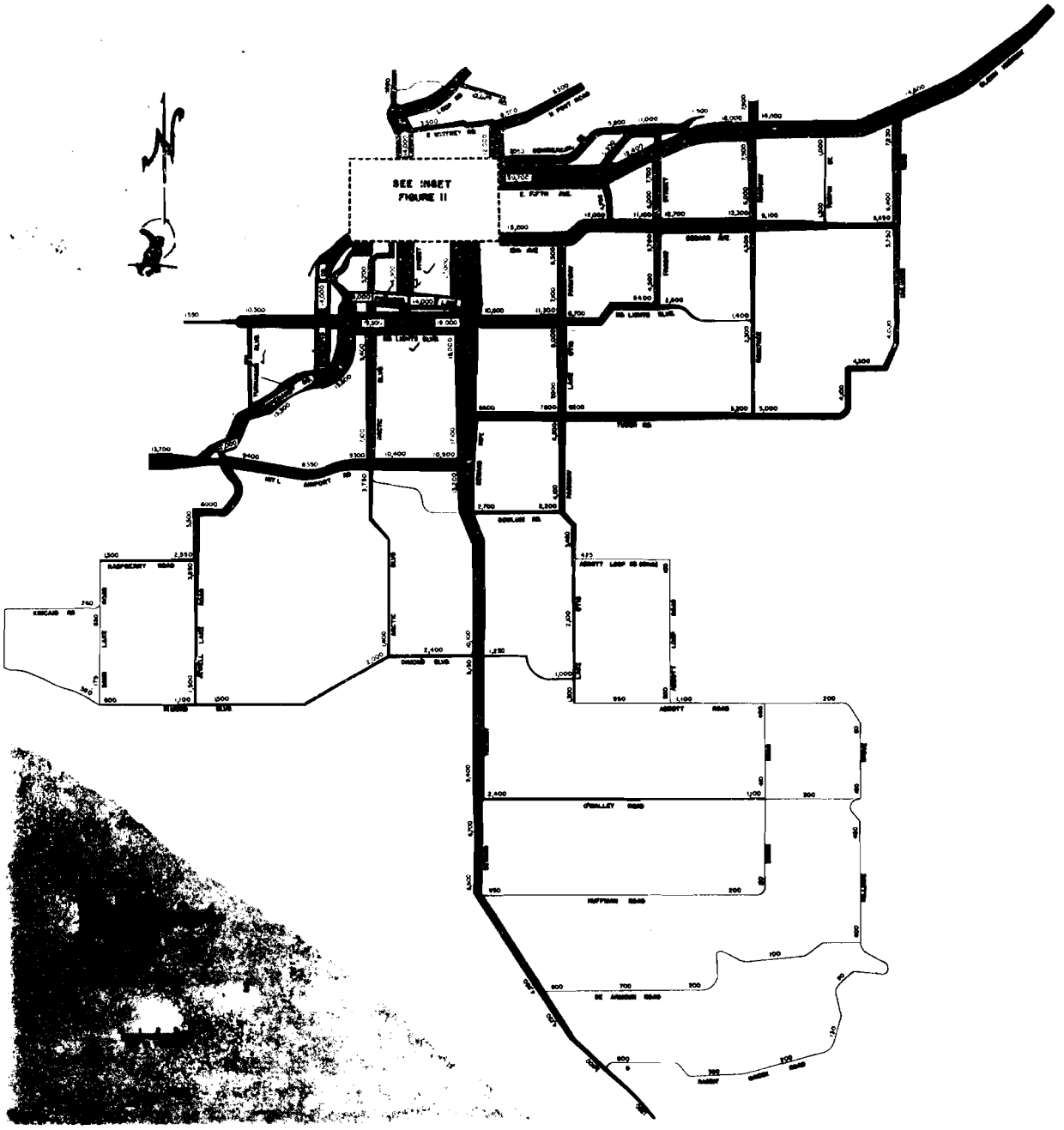


Figure IV.A-3 Average Daily Traffic Volumes—1968, Study Area (Anchorage Metropolitan Area Transportation Study, Wilbur Smith and Associates, reference 26)

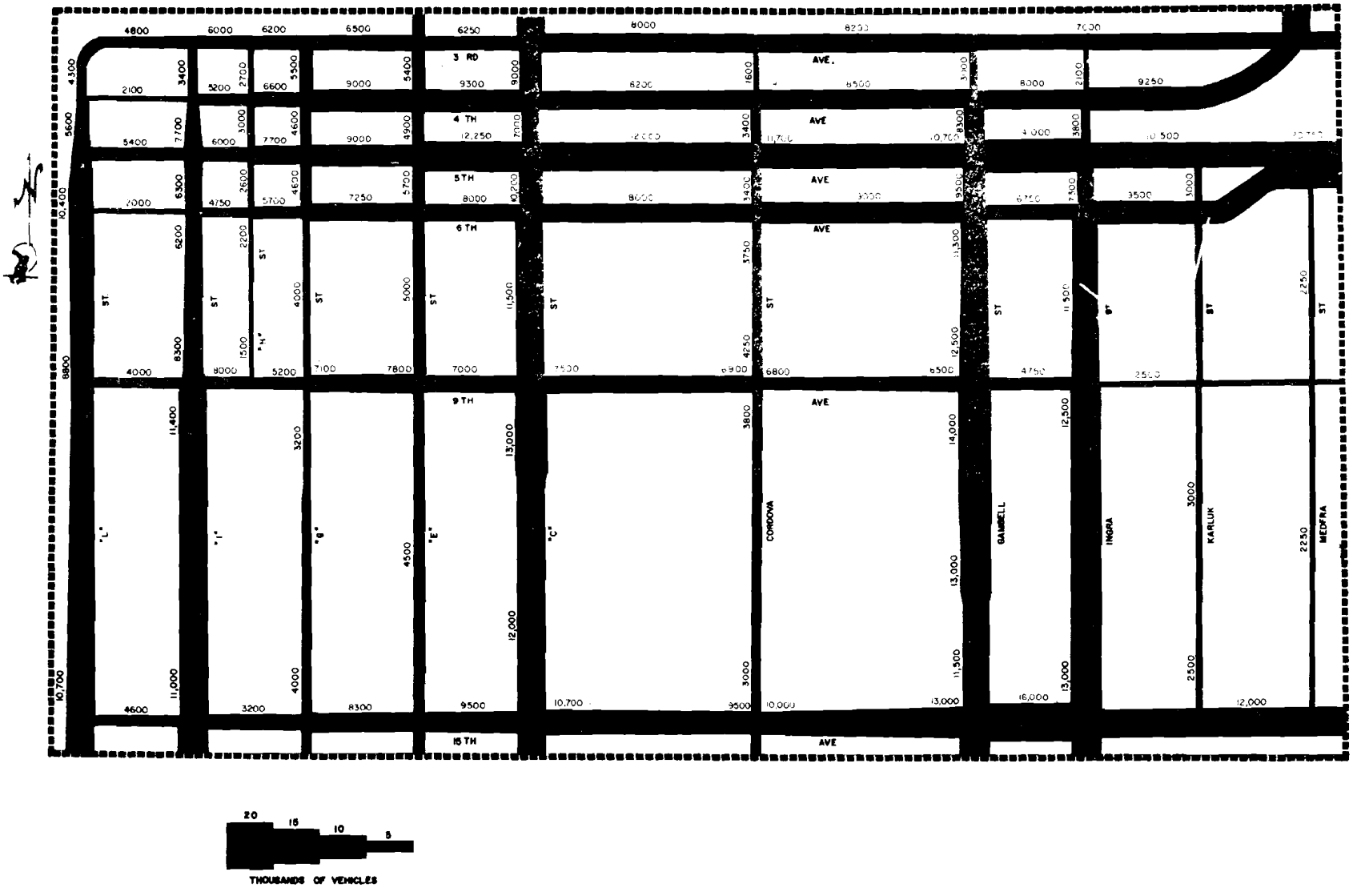


Figure IV.A-4 Traffic Volume Flow—1968, Central Area
(Anchorage Metropolitan Area Transportation Study,
Wilbur Smith and Associates, reference 26)

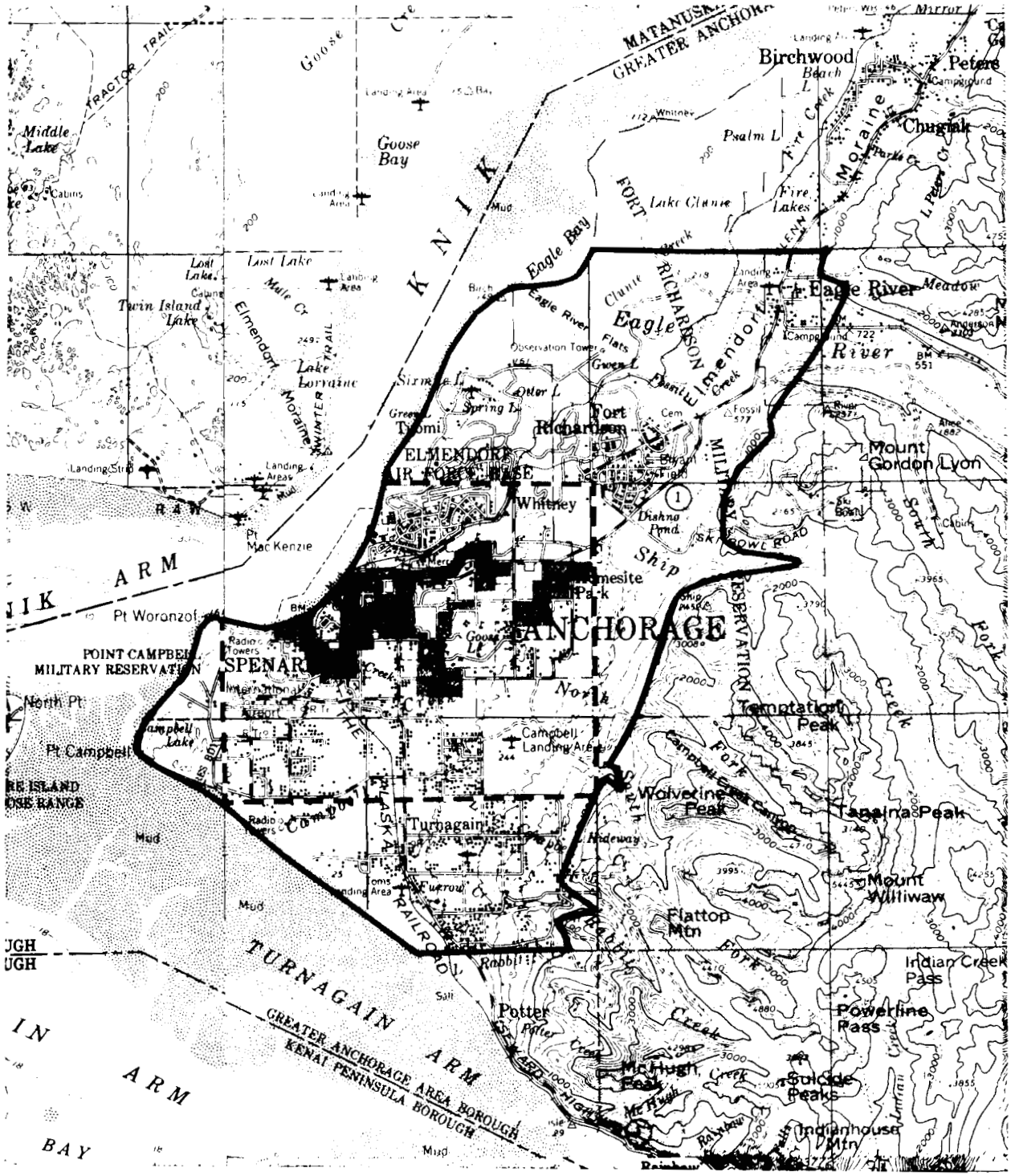


Figure IV.A-5 Area of City of Anchorage (129.5 km^2) and Area of Greater Anchorage (184 km^2)

IV.B. Particulate Matter - Fairbanks North Star Borough

Particulate matter concentrations of 175 $\mu g/m^3$ (annual geometric mean) have been measured in downtown Fairbanks (refer to section III.B), which compares to the National Primary Ambient Air Quality Standard of 75 micrograms per cubic meter. Some of the measured particulate matter concentration is known to be "settleable" particulate matter, because the NASN sampler (the only one operating in the Fairbanks area) is located five feet off the ground. Relocation should decrease particulate matter measurements, but not nearly enough to meet the Primary or Secondary Ambient Air Quality Standard. The following evaluation of the Fairbanks particulate matter problem and the proposed control strategies parallel closely those proposed for Cook Inlet in section IV.A, the major differences being that:

1. There are only approximately 35,000 people in the Fairbanks area, compared to 120,000 in Anchorage.

2. The problems in Fairbanks appear to be considerably more rural than those of Anchorage.

IV.B.1. Particulate Matter Sources

As was done in section IV.A, the potential sources of particulate matter are discussed in three categories: 1) Emission inventory sources (or sources excluding background and traffic generated dust); 2) Natural sources; and 3) Traffic generated dust.

IV.B.1.a. Emission Inventory

Examination of the identified man-made air emission sources included in the emission inventory (reference section VI.B), exclusive of natural or traffic generated ust, shows that motor vehicles contribute approximately 10% of the particulate matter emission in Fairbanks. Table IV.B.1 shows the characteristics of the major emission point sources in Fairbanks, and Figure IV.B.1 shows the locations of particulate matter sources within Fairbanks. To be noted is that the coal burning power plants encompass approximately 82% of the identified total particulate matter emissions in the Fairbanks area. Of these emissions, approximately 73% come from power plants located in the immediate Fairbanks city area. The estimated 1970 emission sources (excluding airports) contribute approximately 6,300 tons of particulate matter per year in the Fairbanks Borough. Transportation (other than aircraft) and area sources such as residential burning of coal, open burning and commercial sources were estimated to account for an additional 1,050 to 1,300 tons of particulate matter.

Forest fires also contribute to the particulate matter in the Fairbanks area (10,000 tons of particulate matter per year have been estimated throughout the Borough as originating from forest fires. However, the forest fires are seasonal and would contribute to the particulate mass concentrations only during the summer. The air quality data thus far does not show that forest fires are a major contributor to the measured particulate matter concentrations.

IV.B.1.b. Natural Sources

Fairbanks is subjected to periodic flooding from the Chena and Tanana Rivers. The last large flood that occurred in the area was in 1967, when many of the residential section were inundated with several feet of water. The effect of these floods is to distribute fine-grained silt throughout the area, which when dry readily becomes airborne. Consequently the natural particulate matter background of the Fairbanks area conceivably could be very high. Presently there is no air quality data which can be used as a representative value for the natural particulate matter background.

IV.B.1.c. Traffic Generated Particulate Matter

Most streets in the Fairbanks central business district are paved as are the main access roads. However, Figure IV.B-2 shows that the streets of the residential sections northeast and south of the central business district are unpaved. Traffic volume in the central business district is relatively high, as indicated in Figures IV.B-3 and IV.B-4. Figure IV.B-5 shows that some of the heavier traffic access roads are routed through the central business district. For the same reasons as stated in IV.A.1.b, the traffic generated dust from these roads should contribute significantly to the particulate matter problem as measured in downtown Fairbanks.

Holty (Reference 40) describes possible mechanisms through which particulate matter may be generated by traffic. He indicates that:

"The result of human activities in the Fairbanks area is that dust is everywhere. Glacial silt and loess soil has been disturbed, uncovered and carried around by everything that moves over it . . . Even in the winter the same silt is on streets and parking areas. Often sand is added to minimize slippery conditions . . . During breakup and freezeup . . . the temperatures are close to freezing and moisture on the surface may be slush. Slush seems to provide the optimum condition to move particulate onto the streets."

IV.B.2. Effect on Air Quality

IV.B.2.a. Area Source Model

The area model estimation procedure (Reference 7) was used to convert the emission rates into air quality estimates, as was done in the Cook Inlet region (refer to section IV.A.2.a). The estimation is highly dependent on the choice of "urban area" on which the estimation is based. An area of 230 km^2 was used (this area is approximately that which is considered to be the "Fairbanks air shed", refer to Figure IV.B-5). The typical average wind speed was assumed as 2.3 meters per second (Reference 3). Using the above area estimation, an estimated particulate matter concentration from man-made sources (excluding traffic generated dust) was 60 micrograms per cubic meter. It should be emphasized that this method of determining area concentrations has a considerable number of short-comings as described in paragraph IV.A.2.a. (Refer to Appendix VII.6.)

IV.B.2.b. Air Quality Implications

The street paving and cleaning program in Fairbanks is very similar to that in Anchorage (refer to section IV.A.2.b). Because the particulate matter measurements were obtained in a densely traveled area, the Fairbanks central business district (and the sampler was located approximately 5 feet off the ground), the traffic generated dust is believed to contribute significantly to the measured particulate matter concentrations. Particulate matter measurements of approximately 400 micrograms per cubi meter have been measured during the summer months in Fairbanks, and can be attributed at least in part to the traffic generated dust. During the winter, monthly geometric means of 75 to 120 micrograms per cubic meter have been measured, which suggests that traffic generated dust may not be the only contributor to particulate matter. However, this measurement may be biased because the one monitoring station in Fairbanks may have been picking up gravel and/or cinders spread on the roads (which was then entrained in the air by traffic). Therefore, additional air quality measurements and evaluations must be done in the Fairbanks region in order to develop an adequate control strategy to abate particulate matter concentrations.

IV.B.3. Control Strategy

The following control strategy is proposed to reduce the particulate matter concentrations in the Fairbanks North Star Borough. This measure consists of applying reasonably available control technology to the existing industrial sources (the expected results of this measure are indicated in Table IV.B-1 and will result in a reduction of approximately 1500 tons per year of particulate matter) and initiating a program to reduce traffic generated dust and dust from other sources. A greater emphasis than in Anchorage will be placed on determining from where the particulate matter is coming, and to measure the effectiveness of the proposed control measures as they are developed.

The proposed control strategies which follow have been mutually developed by the State and Fairbanks Borough personnel. The Borough personnel will perform the necessary coordination with the various Borough departments and will monitor and evaluate the following strategies as they are developed.

1972

Coordinate with Borough Planning Department to obtain the definition of the current paving program in the Fairbanks area. This program will then be evaluated in light of the air quality data which will be obtained over the rest of 1972.

The oiling program currently in existence in the Fairbanks North Star Borough is not well defined. While it is true that such a program if judiciously developed will improve the air quality, it also could result in substantial water or land pollution if inappropriately applied. AS 46.03.740, OIL POLLUTION prohibits the discharge of petroleum products into or upon the waters or land of the State except as permitted by the Department. Therefore, the Department of Environmental Conservation will require that

prior written approval be obtained from the Department in order to oil any roads within the Borough. To provide a greater understanding of the extent and possible air quality effects of an oiling program, Borough personnel will obtain a definition of the current oiling program, where oiling is being done and on what frequency, how effective the program is and the criteria presently being used to determine where to oil.

Evaluate types, extent and location of construction projects throughout the Fairbanks area to determine the potential contribution of this type of activity to the particulate matter concentration.

Evaluate the need and capability for a planting program in the Fairbanks area. Establish the particulate matter monitoring network as proposed in sections III.B and III.E. Coordinate with the Borough Planning Department to define the extent and frequency of the present street cleaning program.

The above areas of evaluation should be completed and submitted as part of the State's first semi-annual report to the Environmental Protection Agency in 1973. The Fairbanks North Star Borough personnel will take primary responsibility for collecting data and evaluating it, and State personnel will assist as necessary.

1973

Based on the results of the evaluations from the previous year (especially the evaluation of the air quality data) an evaluation will be made concerning which possible control measures are most feasible. Borough personnel will coordinate and negotiate as necessary to implement those measures deemed to be most promising.

Air quality data will be continued to be collected and evaluated. If necessary, further evaluations than those specified in section III.F will be conducted to more adequately understand the particulate matter problem in Fairbanks.

Compliance schedules for all large staionary sources presently not in compliance with State regulations will be completed by the State as part of the permit requirements for these various sources.

1974

Evaluations conducted during the previous two years should be complete by this time. Additionally, the various control measures initiated in the previous two years should have been evaluated as to their effectiveness. By this time realistic control strategies necessary to obtain the Primary National Ambient Air Standard level for particulate matter will be defined and implemented.

1975

All stationary sources under permit and not originally in compliance with State regulations in 1972 will be in compliance with State regulations by this time.

Table IV.B-1 Characteristics of Major Emission Sources, Northern Alaska Air Quality Control Region

Source Number	Designation	Rated Capacity (million Btu/hr)	Annual Fuel Consumption (tons/yr)	Uncontrolled 1970 Emissions (tons/yr)		Actual 1970 Emissions (tons/yr)	1975 Emissions (tons/yr) with Present Controls	Allowable Particulate Emissions in 1975 with Reasonably Available Control Technology (tons/yr)
				CO	Particulates			
8	Eielson Air Force Base – Aircraft	Not Applicable	Not Applicable	50	58	58	Unknown	58
9	Eielson Air Force Base – Coal Burner	1200	150,000	150	8482	420	470	387
10	Fairbanks Municipal Airport – Aircraft	Not Applicable	Not Applicable	709	190	190	220	110*
11	Fairbanks Community Hospital – Coal Burner	6	2426	2	73	11	13	6
12	Fairbanks Municipal Incinerator		3200	1	48	48	56	7
13	Fairbanks Municipal Utilities – Coal Burner	200	82,369	41	4500	900	1040	215
14	Fairbanks Municipal Utilities – Coal Burner	37	16,044	8	880	176	200	42
19	Fort Greely – Open Burning	Not Applicable	4500	191	36	36	Unknown	10
20	Fort Wainwright – Coal Burner	135	15,000	15	1219	366	Unknown	38
21	Fort Wainwright – Coal Burner	175	18,297	18	1487	180	Unknown	46
22	Fort Wainwright – Coal Burner	1200	166,240	168	13,700	1650	Unknown	421
28	Golden Valley Electric – Healy – Coal Burner	250	103,274	103	6377	955	1070	270
38	NASA	Diesel	651 million gal	106	8	8	9	8
47	University of Alaska – Coal Burner	100	50,000	50	3250	520	600	131

*Estimated that the Federal proposed aircraft emissions standard for visibility will reduce particulate emissions by 50%.

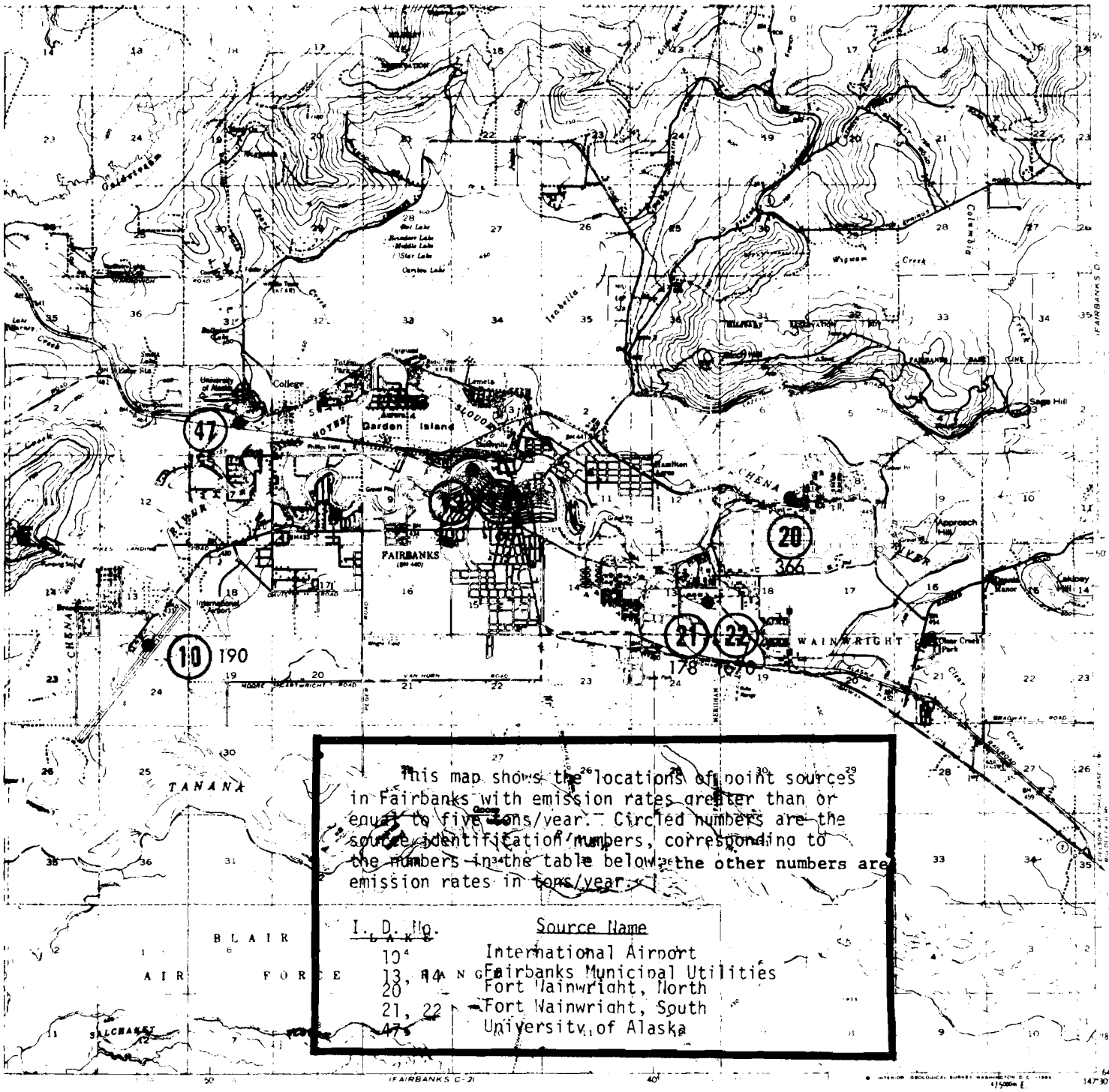


Figure IV.B-1 Fairbanks and Vicinity - Major Particulate Point Sources

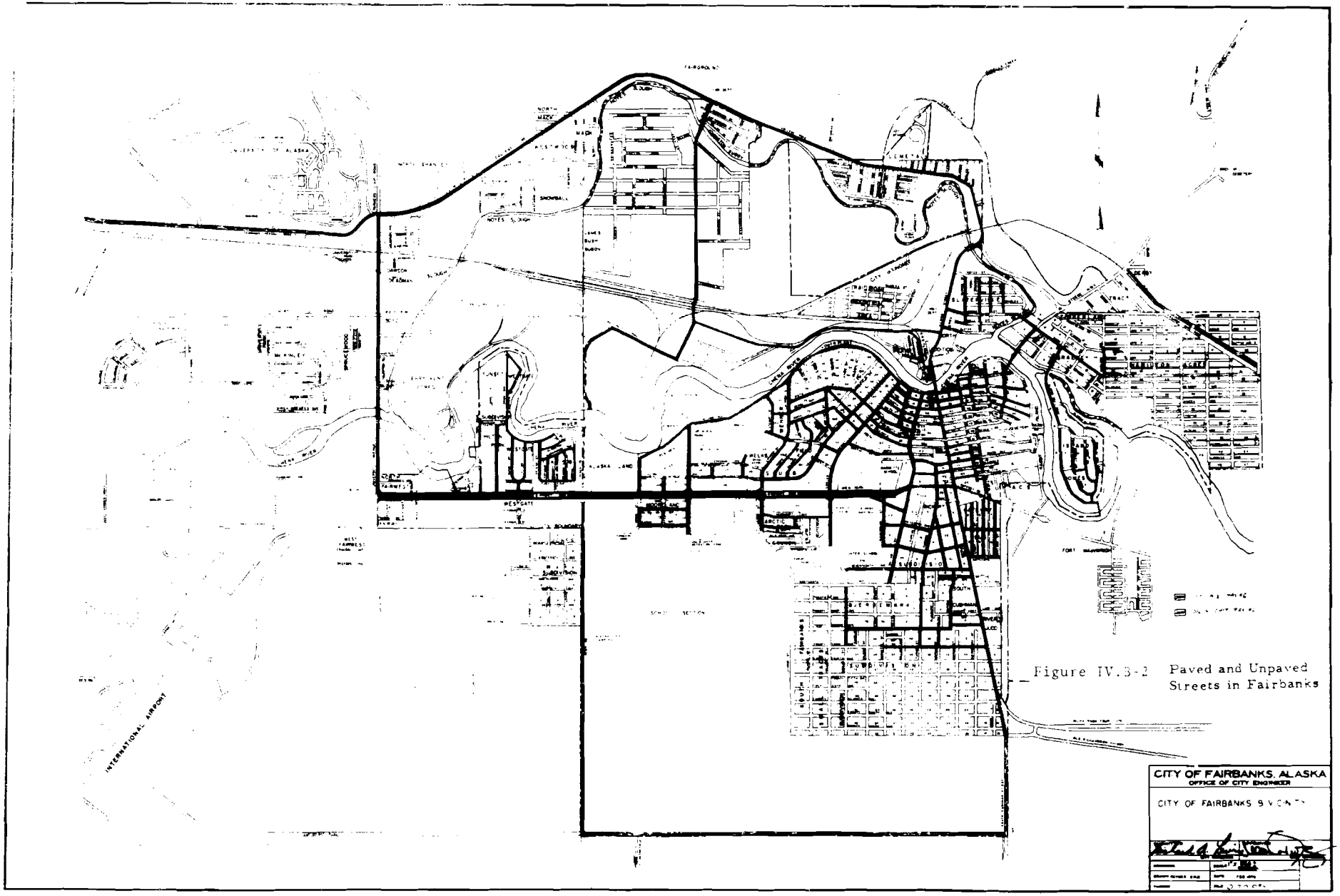


Figure IV.3-2 Paved and Unpaved Streets in Fairbanks

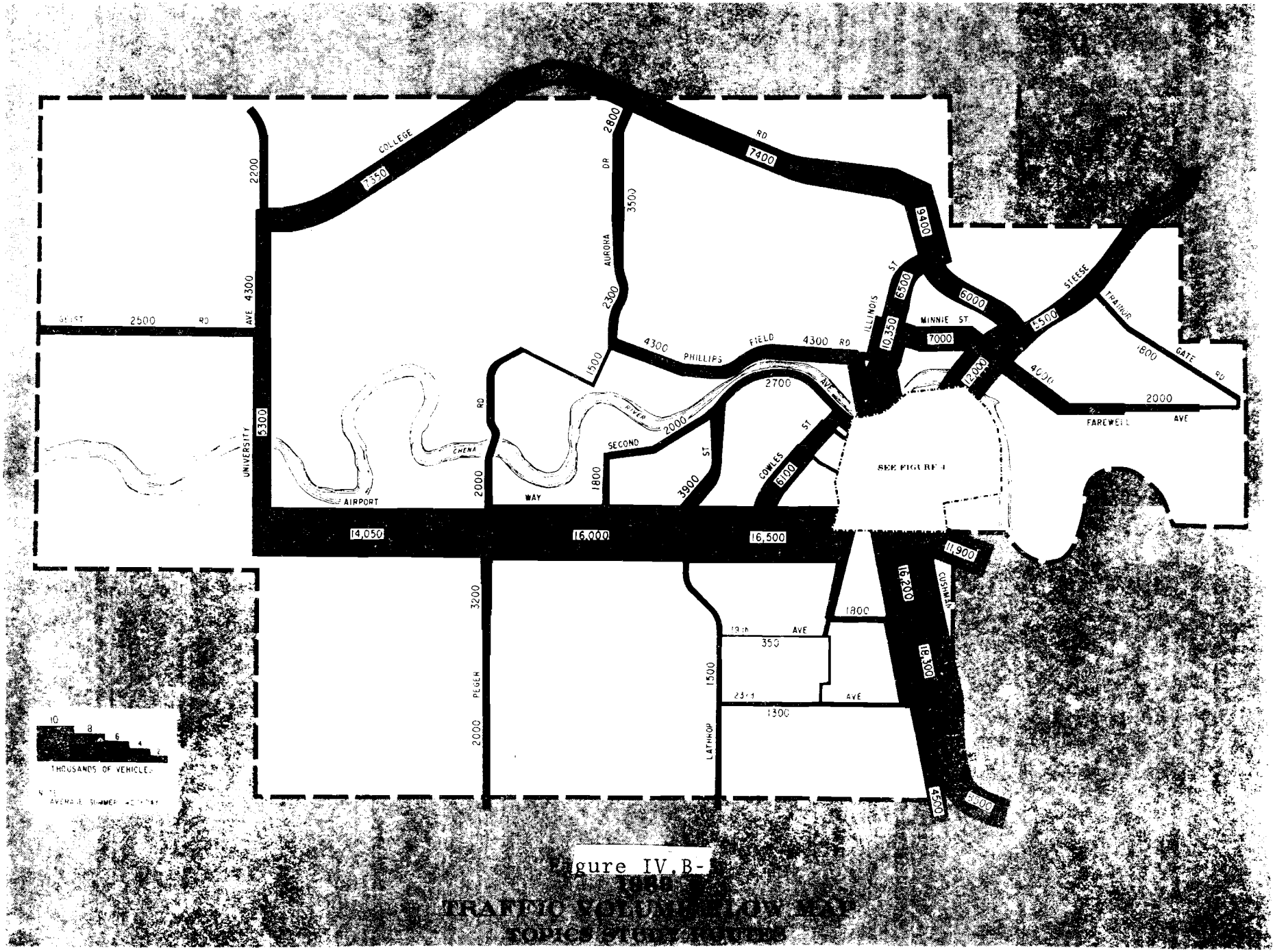
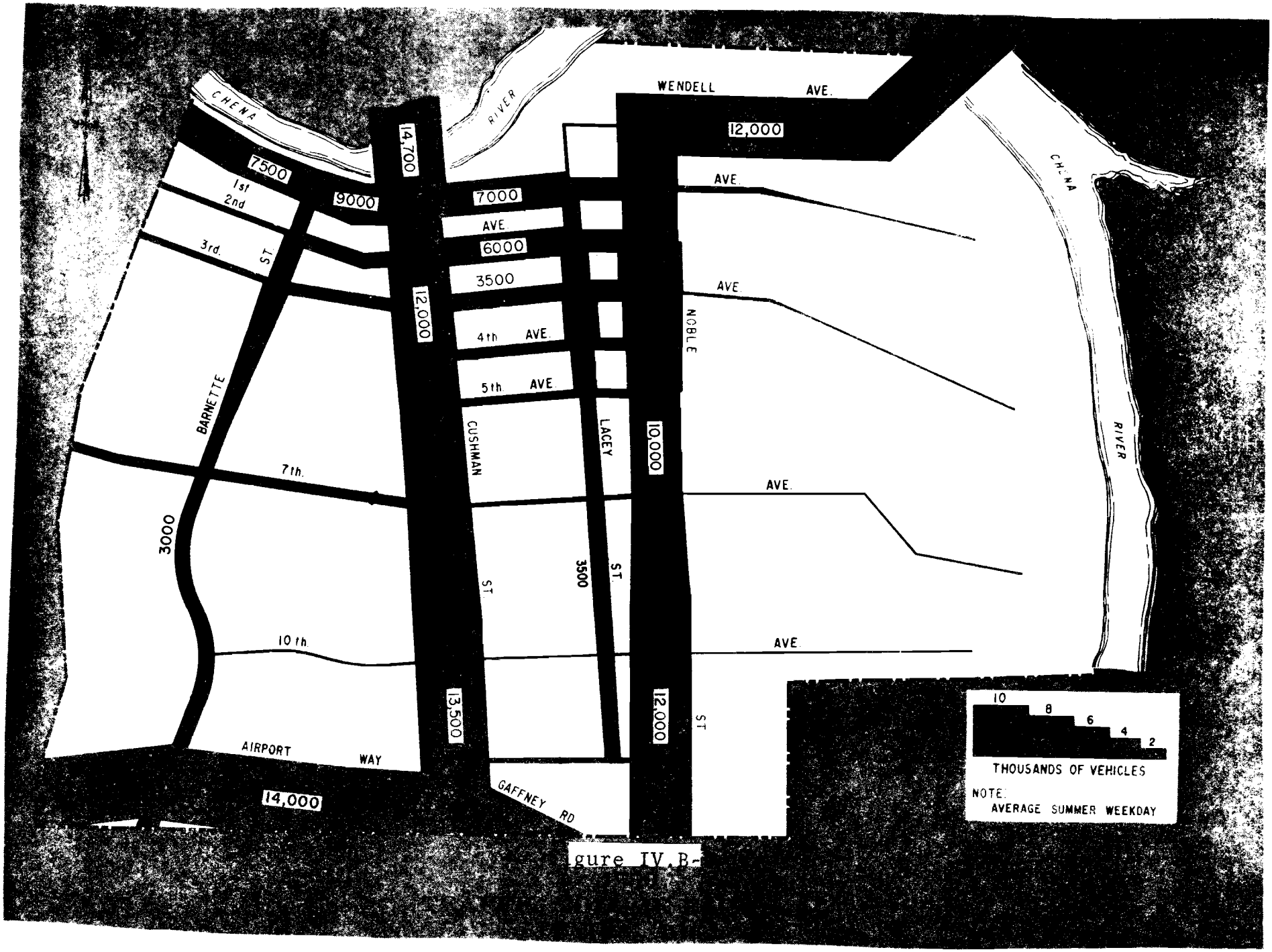


Figure IV.B-
1985
TRAFFIC VOLUME FLOW MAP
TOPICS FIGURE NUMBERS

(Reference 27)



gure IV.B-

(Reference 27)

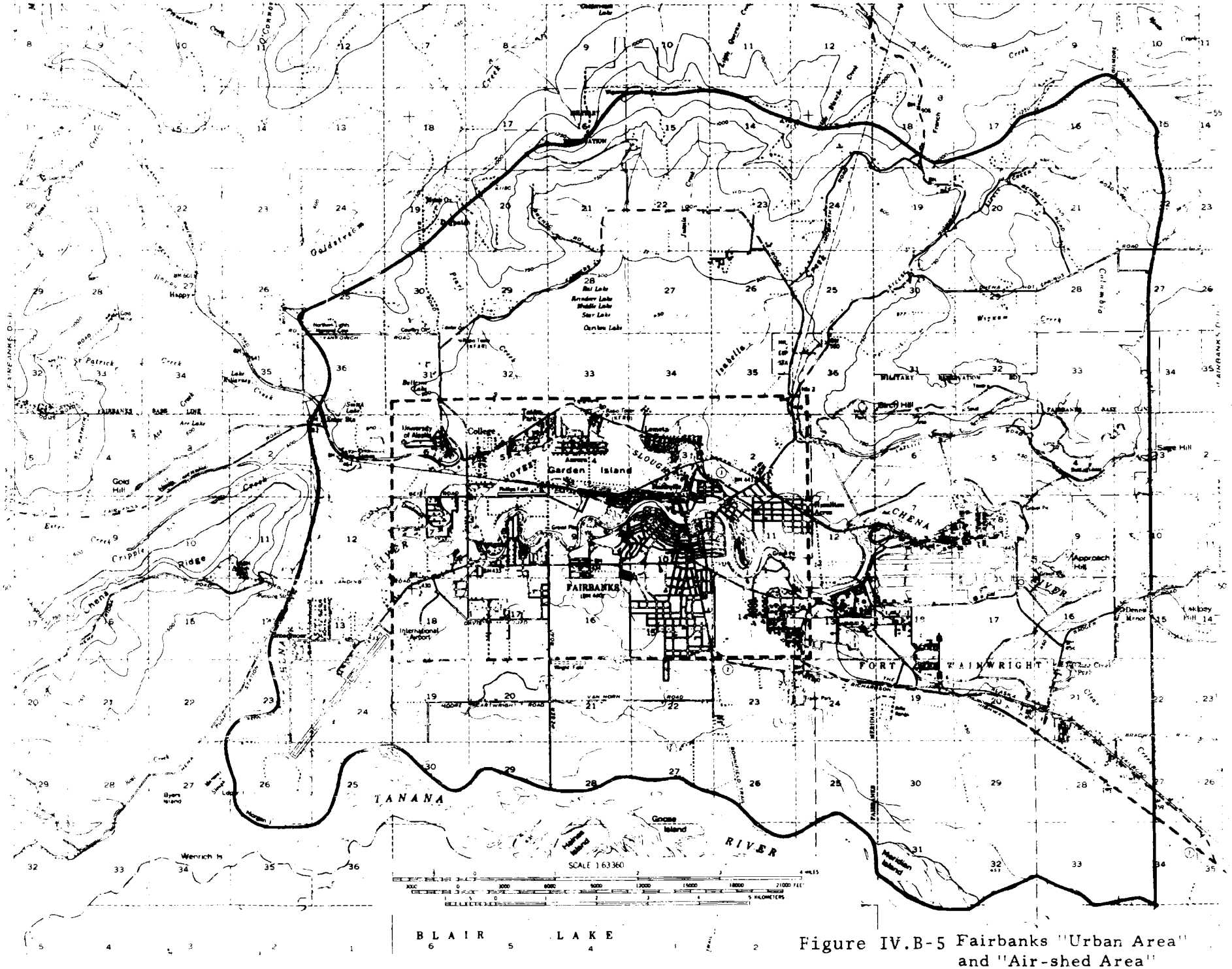


Figure IV.B-5 Fairbanks "Urban Area" and "Air-shed Area"

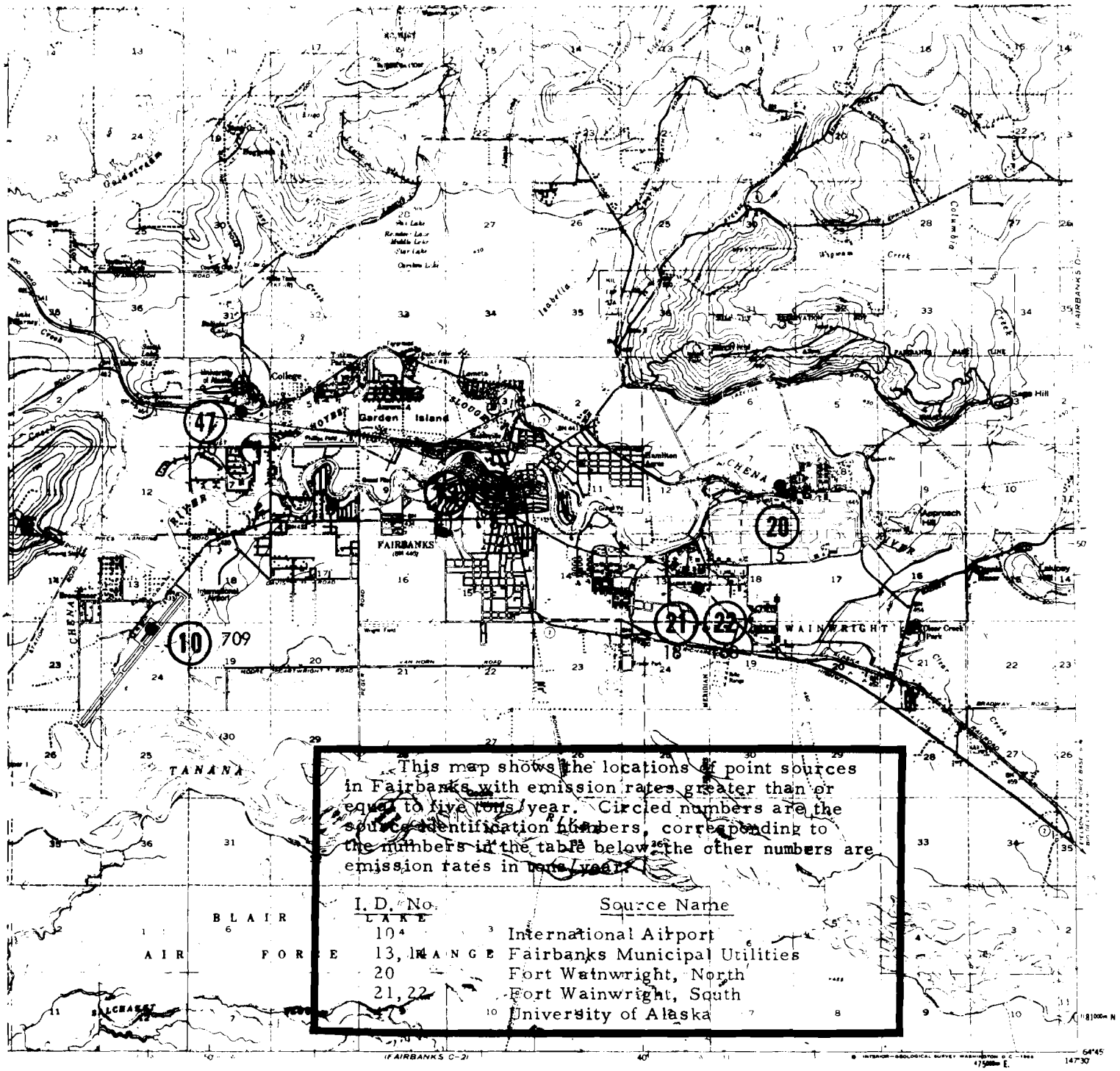


Figure IV.B-6 Fairbanks and Vicinity - Major CO Point Sources

IV.C. Carbon Monoxide

Very high ambient levels of carbon monoxide have been measured in the downtown Fairbanks area during winter stagnation conditions (for a full discussion of this data, refer to section III.B.1). Although the carbon monoxide measurements are relatively limited and related only to a traffic-dominated area of downtown Fairbanks, it does indicate that a carbon monoxide problem does exist, at least during strong inversion conditions in the winter. The maximum one-hour carbon monoxide concentration measured was 81 milligrams per cubic meter, whereas the one month average was 13.8 milligrams per cubic meter (refer to section III.C for a more complete discussion of measured values). These values compare with the Ambient Air Quality Standards of 40 milligrams per cubic meter (one-hour average) and 10 milligrams per cubic meter (eight-hour average).

This section will discuss the emission sources of carbon monoxide, their air quality implications, and the proposed control strategy for abating the carbon monoxide problem. Most of the discussion will be related to Fairbanks and the control strategy will be specifically oriented to abating the Fairbanks problem. However, the potential of such a problem in Anchorage also will be discussed.

IV.C.1. Emission Inventory

Carbon monoxide emissions in the Fairbanks Borough are 35,200 tons per year (reference section VI.B). Of this total, 23,300 tons per year are from gasoline motor vehicles and 2,250 tons per year are from diesel motor vehicles. Aircraft account for 3,800 tons per year of carbon monoxide, waste disposal (such as land clearing operations) accounts for 2,750 tons per year. Refer to Figure IV.B-6 for the locations of major carbon monoxide stationary sources in Fairbanks. Residential, commercial/institutional and industrial sources account for 2,300 tons per year. The remaining 1,000 tons per year are distributed over miscellaneous sources.

Carbon monoxide emissions in the Anchorage area are approximately three times higher than in Fairbanks. However, Anchorage does not appear to have the severity of topographical and meteorological constraints as Fairbanks. Therefore the potential for high levels of carbon monoxide does not appear to be nearly as great in Anchorage as it is in Fairbanks. 108,000 tons per year of carbon monoxide are estimated to be emitted in the Anchorage area. Of this, 89,000 tons per year is estimated to come from gasoline powered motor vehicles and 11,100 tons per year from diesel powered motor vehicles. Aircraft are estimated to generate 7,100 tons per year, and residential, commercial, institutional and industrial sources are estimated to contribute approximately 100 tons per year.

IV.C.2. Effect on Air Quality

Using the area model (as discussed and used in paragraph IV.A.2 and IV.B.2) and assuming an air shed area for Fairbanks of 230 square kilometers (refer to Figure IV.B-5) and an average wind speed of 2.3 meters per second, the estimated carbon monoxide concentration is 1.6 milligrams per cubic meter. This very low result (compared to the measured values) indicates that the assumptions made in using the model obviously do not fit the Fairbanks conditions. The major

reason for the model not adequately predicting concentrations appears to be the severity of the Fairbanks meteorology, and the sampling location where most of the measurements were taken appears to be very locally and strongly influenced by the traffic existing through the Second and Cushman Street intersection.

During typical winter temperature conditions in Fairbanks, the majority of the people often leave their automobiles idling while conducting business downtown. Appendix VII.7 shows calculations indicating that the amount of carbon monoxide generated by automobiles (on a yearly basis) during idling conditions is approximately equal to the percent of time which the Fairbanks motor vehicle population spends in idling. Although no good estimates are available on the percentage of time motor vehicles in Fairbanks are idling, it appears that the percentage is dependent on the ambient temperature and may be substantial at times during winter conditions. On a yearly basis, motor vehicles contribute approximately 72% of the total amount of carbon monoxide in the Fairbanks area. During summer stagnation conditions (for which no CO measurements have been made), idling of motor vehicles does not appear to be a major factor in CO emissions.

Because the emissions from motor vehicles also include water vapor, control strategies proposed for CO must also take into account the ice fog implications. Therefore control strategies which would alleviate the CO problem but aggrevate the ice fog problem in Fairbanks were not considered. Refer to section IV.E for a more complete discussion of ice fog.

IV.C.3. Air Quality Implications

The measured carbon monoxide levels in Fairbanks are approximately 50% above the ambient air quality standards. Referring to Appendix VII.7, the percent of CO emissions coming from idling or traffic flow operating modes appears to be in direct relation to the percent of time motor vehicles are in those modes. Because the amount of motor vehicle idling varies considerably during the winter in Fairbanks, it has been assumed for control strategy estimations that idling represents 25% of the total motor vehicle operating time in Fairbanks (Appendix VII shows emission calculations for 5% and 50% idling situations). The federal motor vehicle program objective to achieve a 90% reduction of all air contaminant emissions in motor vehicles should result in a reduction of the carbon monoxide levels experienced in Fairbanks. However, because of the severe stagnation conditions that Fairbanks experiences, the amount of reduction expected by the federal program has been adjusted by the following rationale:

1. A 45% reduction of emissions of carbon monoxide can be expected by 1977 from the federal motor vehicle program unadjusted to Fairbanks winter weather conditions (refer to the August 14, 1971 Federal Register, Appendix I).
2. Assuming that the federal motor vehicle program will not be as effective in Fairbanks winter conditions as it is expected in more moderate climates, a 35% reduction of carbon monoxide generation appears to be more realistic from the driving of motor vehicles in Fairbanks.
3. Therefore the percentage of carbon monoxide reduction which appears to be realistic in 1977 by the federal motor vehicle program (after adjustment for Fairbanks idling conditions) is (35%) x (.76) = 27% overall carbon monoxide emission reduction for downtown Fairbanks in the winter.

The reason for the above adjustment is that the federal motor vehicle strategy figures pertain to the average driver in the continental United States where the climate is relatively moderate. Because motor vehicles after 1975 are expected to rely heavily on "no-choke" driving conditions a 45% reduction appears to be too optimistic in considering the cold Fairbanks weather driving conditions. Making the adjustments by the above reasoning, a 27% overall carbon monoxide emission reduction appears to be more realistic as a result of the federal motor vehicle program.

Because of the very low results obtained in using the area model in section IV.C.2, and because of the carbon monoxide sampler location where most of the carbon monoxide data in Fairbanks was obtained (i.e., in the downtown region which is dominated by motor vehicle traffic and high-rise buildings) the carbon monoxide evaluation as discussed in section III.F.2 was initiated as soon as possible to obtain a better understanding of how extensive is the carbon monoxide in Fairbanks. Preliminary results of this study indicate that:

1. Levels of carbon monoxide existing at Second and Cushman Street intersection are approximately 2 to 5 times higher than those values indicated at sampling sites out of the central business district, but still in the Fairbanks metropolitan area.

2. Some of the sampling sites out of the central business district (which have considerably lower carbon monoxide levels than those measured at Second and Cushman) have had high traffic densities in the immediate area of the sampling site. However, the major difference between those sampling sites and the one at Second and Cushman appears to be the absence of high-rise (two to 10 story buildings) buildings.

Figure IV.C-1 compares carbon monoxide concentrations (on a four day average) at Second and Cushman (where the post office is located) and Ryan (see Figure IV.C-3 for sampling station locations). This comparison shows that the carbon monoxide concentrations at Second and Cushman are approximately 5 times higher than those at Ryan. Figure IV.C-2 compares carbon monoxide data from the University Park and Nordale School areas with that from the Post Office. These concentration patterns are slightly different and indicate some possibly interesting lag-time phenomena, but the results still are significantly lower than those determined at the Post Office (which are responsible for having the Fairbanks region designated as Priority I for carbon monoxide). The values are approximately three to five times lower (at least for eight-hour averages) than those indicated at the Post Office sampling location. Although the carbon monoxide evaluation was not able to get started during the very stable winter conditions earlier in the winter, relatively high values of carbon monoxide still were indicated at the Post Office location, and therefore the relative comparisons between that station and the other sampling locations should be valid even during the more stable winter conditions. This data strongly suggests that the high-rise buildings existing in the downtown Fairbanks region, combined with the very stable meteorological conditions existing in the winter and the motor vehicle traffic present, are the reasons that high carbon monoxide concentrations have been measured in downtown Fairbanks. Without the confining nature of the high-rise buildings, high CO levels have not been indicated.

The initial part of the carbon monoxide evaluation was started on March 17, 1972 and data collection will be completed by April 12, 1972 for this phase (refer to sections III.F.2 and IV.C.4).

IV.C.4. Control Strategy

The preliminary results from carbon monoxide evaluations are shown in Figures IV.C-1 and IV.C-2. Although this data covers only a very limited portion of the year, it does show that carbon monoxide concentrations normally were three to five times lower in other areas around Fairbanks than those concentrations measured in the downtown business district. This finding indicates the relatively high-rise buildings located downtown, combined with high traffic patterns (refer to Figure IV.E-4) and the severe meteorological conditions, are the major factors which result in high carbon monoxide concentrations in what otherwise is a relatively small metropolitan area. Preliminary data on the carbon monoxide evaluation further suggests that carbon monoxide concentrations will not reach high levels except where there are relatively high-rise buildings which allow little chance for dispersal of carbon monoxide generated from motor vehicles. Because the federal motor vehicle program by itself is not expected to attain the necessary carbon monoxide reduction to meet the ambient air quality standards (refer to section IV.C.3) additional action or solutions must be taken by State and Borough personnel to insure the ambient air quality standards are met in the region.

Referring to the preliminary data from the carbon monoxide evaluation shown on Figures IV.C-1 and IV.C-2, it appears that the high carbon monoxide concentration may be limited to the downtown central business area. The exact boundary of the area considered to be conducive to high carbon monoxide concentrations will be more fully evaluated and determined when all of the data obtained from the CO evaluation during March-April 1972 is collated and analyzed. This should be completed by June 1972. Although this carbon monoxide evaluation is to be continued throughout the summer by State and Borough personnel and during the coming winter there appears to be enough data available to show that:

1. Motor vehicle traffic is the source of carbon monoxide high concentrations being experienced in Fairbanks.
2. High levels of carbon monoxide concentrations are experienced only when relatively high-rise buildings are present with which to restrict the ability of the carbon monoxide to disperse.
3. High carbon monoxide concentrations above the ambient air quality standards appear to be present during winter and early spring, and possibly during summer conditions (summer stagnation conditions, which occur periodically, have not been evaluated).
4. The area within Fairbanks experiencing and conducive to the high carbon monoxide concentration levels appears to be limited to the central business area of downtown Fairbanks, which is a relatively small area.

In light of the above considerations it appears that any method to reduce the levels of carbon monoxide must be directed to reducing

motor vehicle traffic in the downtown Fairbanks business area whenever meteorological conditions become conducive to carbon monoxide buildup. A bypass roadway to be constructed sometime in 1972-73 from Gaffney Road to Farmer's Loop (refer to Figure IV.C-3) will assist in reducing the traffic presently required to go through the downtown area. This road project will develop a limited access road (refer to Alaska Department of Highways Project F-061-1(6)) and will connect the northeastern outskirts of Fairbanks with the southern Fairbanks area. It should provide for a very effective bypass of traffic around the central business district, although it is not known how much of a reduction in the central business district traffic (and hence in the amount of carbon monoxide emitted in the downtown area) will be attained. Other projects such as this should prove to be beneficial for a permanent reduction of carbon monoxide levels in downtown Fairbanks. The Fairbanks North Star Borough Planning Department presently is evaluating other means for improving traffic flow in the Fairbanks area. These proposals are in the process of development, and they should assist in attaining a reduction of carbon monoxide throughout Fairbanks.

Because the bypass roadway from Gaffney Road to Farmer's Loop and the federal motor vehicle program is not expected to result in enough CO reduction in carbon monoxide (even by 1977) to attain the ambient air quality standards, additional measures must be taken to insure that the ambient air quality levels are maintained in Fairbanks. Although the Fairbanks Borough personnel (Planning Department, in addition to the Environmental Services Department) apparently are working on other long-range solutions to the carbon monoxide problem, it is necessary that definite steps are taken now to insure that the ambient air quality standards will be achieved by 1975, and that in the interim high levels of carbon monoxide will not be reached. Because the initial results of the carbon monoxide evaluation strongly suggests that high levels of carbon monoxide are reached only in the downtown business area, and then probably only during the winter conditions (approximately 20% of the time by Borough personnel estimates) routing of traffic around the areas of suspected high carbon monoxide concentrations appears to be realistic and practical as a method to reduce carbon monoxide concentrations in Fairbanks to below the ambient air quality standards. Therefore this strategy will be implemented starting on September 1, 1972 by the Fairbanks North Star Borough program as the method by which the Borough will assure air quality at least equal to the ambient air quality standards. This strategy consists of the following three parts:

1. Starting on September 1, 1972, whenever ambient concentrations of carbon monoxide reach 17 milligrams per cubic meter averaged over eight hours, or when this level is predicted to be reached based on meteorological and traffic conditions and a minimum of two hours of sampling data for that day, motor vehicle traffic shall be routed around the area of suspected high carbon monoxide concentrations (with the exception of emergency vehicles) until the ambient level of carbon monoxide drops to below 10 milligrams per cubic meter averaged over eight hours.

Routing of traffic around the area of suspected high carbon monoxide concentrations (with the exception of emergency vehicles) will be initiated whenever a level of 17 milligrams per cubic meter of carbon monoxide is reached, averaged over one hour, if on the preceding day

an eight hour average at that level had been reached and meteorological and traffic conditions are predicted to be the same as on the preceding day.

If by September 1, 1975, ambient levels of carbon monoxide in excess of 10 milligrams per cubic meter averaged over eight hours are being exceeded more than once a year, then the actions stated in the preceding two paragraphs will be initiated at 10 milligrams per cubic meter of carbon monoxide.

2. The carbon monoxide evaluation discussed in sections III.F.2 and IV.C.3 will be continued during the summer of 1972 and the winter of 1972-73 as necessary to fully characterize the regional nature of the carbon monoxide problem in Fairbanks. In particular this evaluation will determine whether or not:

a. carbon monoxide problem exists during summer stagnation conditions
b. traffic routing strategy as described in (1) above results in a relocation of carbon monoxide problem to another area in Fairbanks.

Once a continuous measuring carbon monoxide instrument can be spared from the Fairbanks evaluations, that instrument will be used in Anchorage to evaluate carbon monoxide levels existing there. This evaluation appears that it can be initiated approximately December-February, 1973 if the Fairbanks evaluation is sufficiently completed.

3. The Department of Environmental Conservation will work with the Fairbanks North Star Borough to evaluate the practicality, economics and relative merits of various alternative solutions to the routing of traffic strategy. Based on the data to be obtained from the carbon monoxide evaluation already initiated, the Fairbanks North Star Borough personnel should be able to more fully evaluate other long-range solutions. The methods by which the Borough personnel intend to develop these alternative solutions will be described in detail as part of the Fairbanks Borough's federal air pollution control grant proposal to be submitted for fiscal year 1973 and as part of the first semi-annual report.

During the development of this air quality control plan, several other possible solutions to the carbon monoxide problem were considered but not selected as part of the Fairbanks CO control strategy for various reasons. These possibilities are discussed below. While they were not selected as part of the strategy at this time, they should not be ruled out as possible strategies in the future once more information relating to these strategies is available.

1. Minimization of Motor Vehicle Idling. During the winter a large number of people leave the car idling while attending to downtown shopping and/or business. If the emission estimates made in Appendix VII.7 are correct, this idling may be a large source of carbon monoxide emissions in various sections of the Fairbanks area. It would be anticipated that idling would be a factor in such areas

as parking lots and where a large volume of on-street parking exists and hence would be a relatively localized problem. A reduction in carbon monoxide levels for these areas should be attainable by insuring that idling of the vehicles is minimized. This might be done by providing for enforcement of the prohibition of idling regulations which presently exist for unattended vehicles (reference Appendix II.C for the existing Alaska Statute relating to motor vehicle idling regulations). However, such a control strategy appears to be impractical (and hence the major reason why it was not included as part of the overall State strategy for reducing carbon monoxide levels in Fairbanks) because the present existing Alaska Statutes relating to prohibition of idling unattended motor vehicles have not been enforced, even though they have been in force since December 31, 1969. Therefore there is some doubt that the capability of enforcing such regulations can be effectively developed on the State level. If a prohibition of idling provision does become part of the State carbon monoxide control strategy for Fairbanks then the enforcement of such a strategy by necessity would be expected to come from either the Borough or City governments.

2. Elimination of On-Street Parking. The advantages of eliminating on-street parking are that: 1) it provides for an additional lane of traffic which improves traffic flow, thereby reducing emissions; 2) it eliminates excessive circling of city blocks while motor vehicle drivers are looking for on-street parking spaces, thereby reducing emissions. The major disadvantages of such a strategy are 1) off-street parking should be available in order to provide for the parking requirements of people requiring access to the downtown city district; and 2) while improved downtown parking will reduce motor vehicle emissions, the combination of the stable meteorological conditions and the confining nature of the downtown buildings may be such that the traffic patterns should be revised to preclude traffic through the downtown area.

3. Bus System. A bus system for Fairbanks certainly appears to be a means by which a reduction in carbon monoxide and ice fog could be attained if developed in a proper manner. However, a bus system could not be projecte as part of the strategy because of inadequate information available.

Figure IV.C-2

CO Evaluation Data -
University Park and Nordale School Sites Vs. Post Office

Sampling Period: March 29-31, 1972 (1 Hour Averaging Time)

Instruments Used:

Post Office: 1 MSA nondispersive continuous IR unit

Ryan, University Park, Nordale School: 2 Beckman nondispersive continuous IR units (installed in mobile van within a heated box)

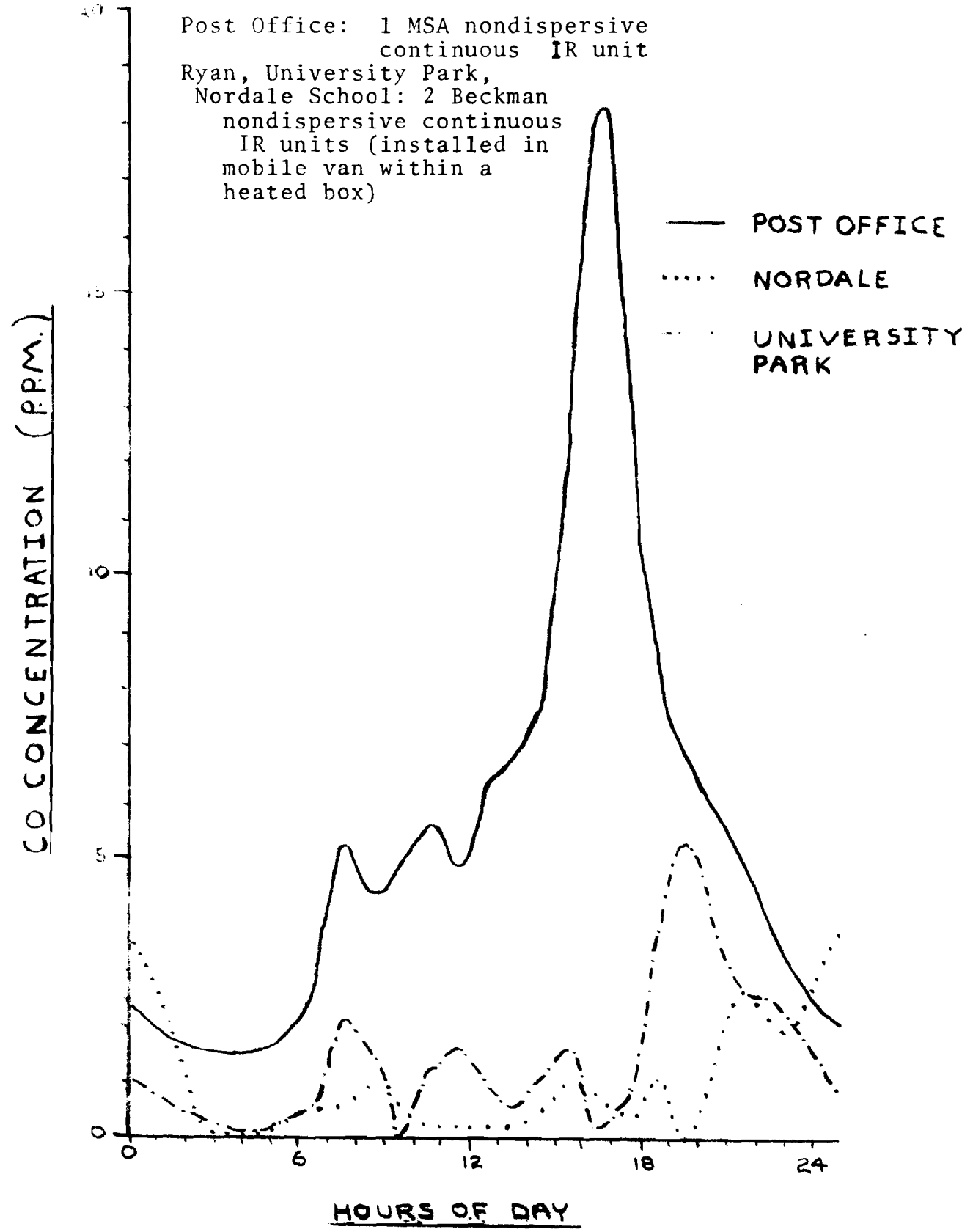
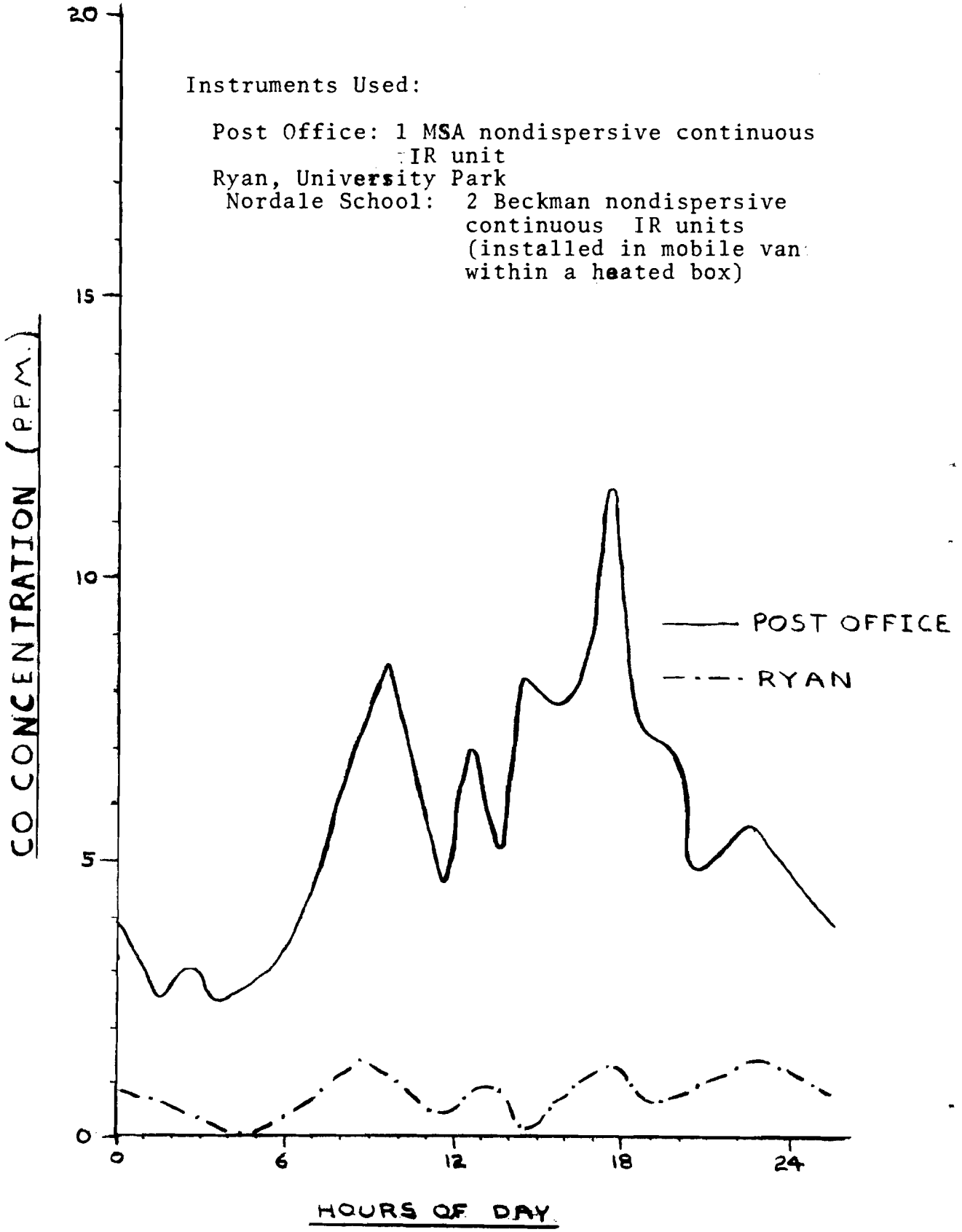
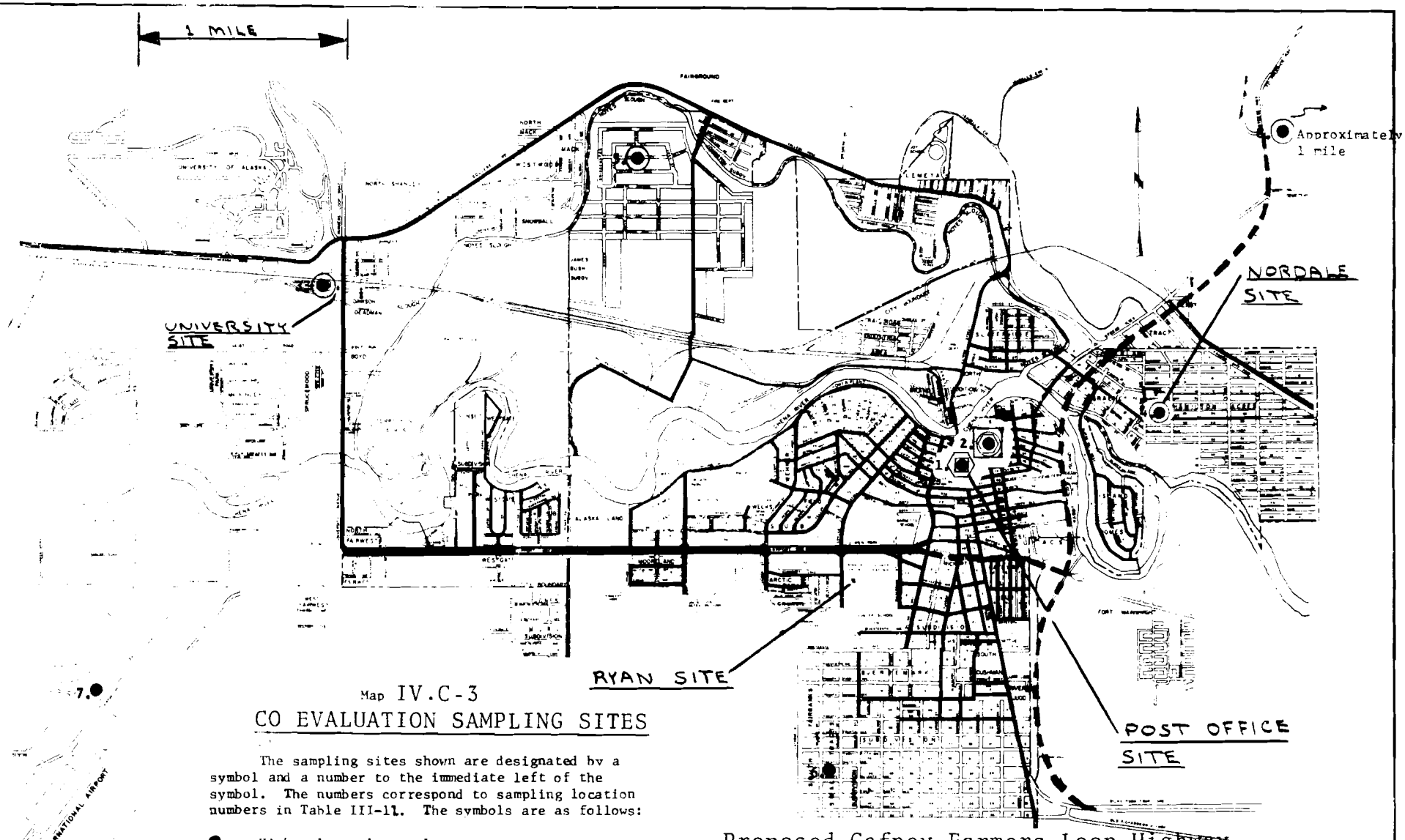


Figure IV.C-1

CO Evaluation Data - Ryan Site Vs. Post Office

4-1/2 Day Sampling Period: 8:00 PM 3-24-72
to
(1 Hour Averaging Time) 1:00 AM 3-29-72





Map IV.C-3

CO EVALUATION SAMPLING SITES

The sampling sites shown are designated by a symbol and a number to the immediate left of the symbol. The numbers correspond to sampling location numbers in Table III-11. The symbols are as follows:

- ● High volume air sampler
- ⬡ Tape sampler
- ○ Dustfall jar
- □ CO continuous analyzer
- □ NO_2 bubbler
- ⬡ SO_2 bubbler

– – – Proposed Gafney-Farmers Loop Highway

University Site - 20 feet from Univ. Ave.

Ryan Site - 300 feet from Airport Way, 80 feet from Cowles Street

Nordale Site - 15 feet from Hamilton Ave.

CITY OF FAIRBANKS, ALASKA
OFFICE OF CITY ENGINEER
CITY OF FAIRBANKS [illegible]

IV.D. Sulfur Dioxide - Southeast Region

There are two major sources of sulfur dioxide in the Southeastern Air Quality Control Region, both sulfite pulp mills. These are the Alaska Lumber and Pulp Company at Silver Bay near Sitka, and the Ketchikan Pulp Company at Ward Cove near Ketchikan. These mills are approximately 200 miles apart and therefore can be treated as individual point sources.

Because there is no air quality data for either particulate matter or sulfur dioxide in the vicinity of these mills, an estimation of the air quality effects from these mills has been made and is presented in this section.

IV.D.1. Emission Inventory

Alaska Lumber and Pulp Company is producing approximately 600 tons of pulp per day, as compared to 670 tons per day for the Ketchikan Pulp Company. An emission inventory questionnaire was completed by both pulp mills in September 1971, but detailed information on the air emissions from the pulp mills was not available. Consequently, an emission figure of 30 pounds of sulfur dioxide released per ton of pulp produced was estimated. Estimates obtained in this manner are comparable to calculations based on one pulp mill's estimation of the SO_2 stack concentration from the recovery furnaces being 400 ppm. An allowance was made for the fraction of waste liquor that is recovered from each mill (refer to Appendix VII.8 for detailed calculations) and emission factors were used for estimating the SO_2 contribution from the auxiliary power boilers (there boilers are fired by a combination of waste wood and oil):

	Alaska Lumber and Pulp Company (tons SO_2 emitted/year)	Ketchikan Pulp Co. (tons SO_2 emitted/ year)
Recovery furnaces	2,000	3,200
Auxilliary Power Boilers	2,000	2,100

IV.D.2. Effect on Air Quality

The Ketchikan Pulp Company presently is recovering approximately the percentage of chemicals in the recovery furnaces that is required under the State Industrial Waste Discharge Permit. Although Sitka presently is not burning as much as required under their Waste Discharge permit, by the time this mill complies with the permit it is anticipated that the Sitka mill SO_2 emissions will be comparable to those from the Ketchikan Pulp Company. Therefore, the Ketchikan mill emissions have been used to evaluate the effect on the ambient air quality of these pulp mills. Figure IV.D-1 presents the estimated 24-hour maximum concentration of sulfur dioxide as a function of downwind distance from the pulp mill. The estimated maximum values is 320 micrograms per cubic meter (the proposed Alaska Ambient Air Quality Standard is 260 micrograms per cubic meter). Refer to section VI.F for details of the calculations. It should be emphasized that these calculations were made assuming meteorological conditions expected to be typical in the pulp mill areas (low wind speed and overcast, neutral conditions). It should also be emphasized that these calculations are

very sensitive to the elevation at which emissions from the plant make contact with the ground or buildings. In reviewing a topographical map of the area, it appeared that homes in the near vicinity of the pulp mill are between 0 and 40 meters above sea level; therefore, an elevation of 20 meters was used as an approximation in calculating the values shown in Figure IV.D-1. Refer to Appendix VI.F for effect of receptor height on expected ground level concentrations of sulfur dioxide concentrations from the pulp mill.

IV.D.3. Control Strategy

Because of a lack of air quality data in the Ketchikan and Sitka areas, estimation have been made (based on the assumptions discussed in the preceeding section) of the emission level necessary to attain Alaska Ambient Air Quality Standards. The proposed standard for sulfite mill SO_2 emissions is 20 pounds per ton pulp produced (Oregon and Washington recently adopted the same standard). This figure was used to determine the expected ambient level of sulfur dioxide. The estimated sulfur dioxide concentration for 24-hour maximum SO_2 value based on the proposed standard downwind of the Ketchikan Pulp Company is 240 micrograms per cubic meter, which is below the Alaska Ambient Air Quality Standard. However, these estimates are very sensitive to the assumed ground elevation, (refer to section VI.F for calculations) and therefore, this standard appears to be justified in light of these calculations and that existing technology is available to obtain these levels in existing mills.

Calculations also were made to estimate expected ground level concentrations of particulate matter. Estimated particulate matter concentrations were relatively low and well within the proposed Alaska Ambient Air Quality Standards. However, particulate matter from these mills produces a very visible plume which may not meet the proposed plume opacity regulation of 20%. The following control strategy is proposed primarily based on the ambient air diffusion estimates discussed in the preceeding sections and also based on the knowledge that existing technology is available to comply with the emission levels of sulfur dioxide and particulate matter in the proposed Alaska regulations. The control strategy proposed for the sulfite pulp mills will be to:

1. Establish emission regulations for sulfite pulp mills (refer to section VI.C in the proposed 18 AAC 50.060) such that 20 pounds of sulfur oxides and two pounds of particulate matter per ton of pulp produced from all blow pits, washer vents, storage tanks, digester relief and recovery systems not be exceeded.

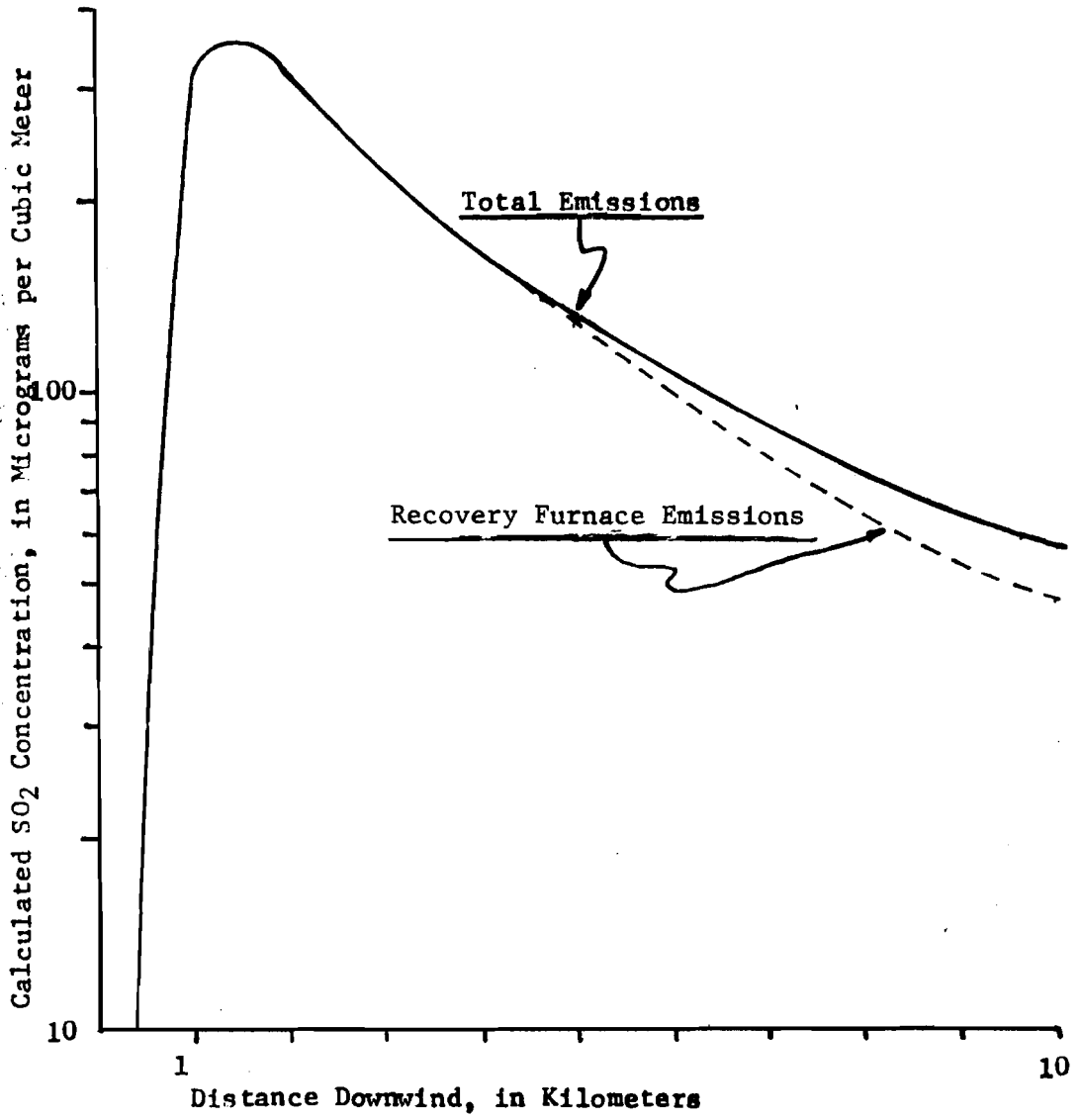
2. Require that continuous air emission monitoring and source tests (as required in the permit to operate) be conducted and the results submitted to the Department on a routine basis.

3. Establish the air surveillance network as described in section IV.C so that ambient air monitoring data for both particulate matter and sulfur oxides are obtained on a routine basis. Thie monitoring also is to provide an air episode warning system which will warn people of high levels of sulfur dioxide if they are reached (refer to section V).

The preceding control strategy is related only to sulfite pulp mills. In the event that kraft pulp mills eventually are built in Alaska, standards also are proposed in section 18 AAC 50.060 of the proposed air quality standards (refer to section VI.C). These standards are based on the Oregon and Washington standards for kraft pulp mills, which in turn are based on best existing air quality control technology. Application of such technology is expected to be necessary to comply with the proposed Alaska Ambient Air Quality Standards.

FIGURE IV-D.1

Calculated Maximum 24 Hour Average Concentration of SO_2 as a Function of Downwind Distance from the Ketchikan Pulp Co., Ward Cove, Alaska



Meteorological Assumptions:
- Stability Class "D"
- Wind of 1 meter/second

Net Effective Stack Heights:
- SWL Recovery, 60 meters
- Wood-Waste Boilers, 210 meters

SO_2 Emissions:
- SWL Recovery, 100 grams/second
- Wood-Waste Boilers, 64 grams/second

IV.E. Ice Fog

Ice fog is a form of air pollution which exists only in very cold climates, and is formed by water vapor being injected into atmospheres of below approximately -30° C. Because the ability of air to hold water vapor is decreased by three orders of magnitude when the temperature drops from 100° C. to 35° C. every combustion source located in areas where such cold temperatures exist become a source of ice fog. Also water evaporation from open bodies of water is a large source of ice fog. Unfortunately, Fairbanks as well as a large area of Alaska is subjected to temperatures of -30° C. quite often in the winter. Although there are natural sources of ice fog during these very low conditions, the major source of ice fog in populated regions is that from man-made fuel combustion.

One major effect of ice fog is to decrease visibility, often to the point of becoming a significant safety hazard as well as having psychological effects related to "cabin fever". Even though water vapor (and hence ice fog) is not classified as an air contaminant by the federal government, under the severe meteorological conditions of Alaska it certainly can become an air contaminant.

As mentioned in section IV.C, the control strategies and evaluations proposed for carbon monoxide should be directly beneficial to abating the ice fog problem. Major sources of ice fog are from power plants, cooling ponds, motor vehicles and home heating. On a tons per year basis, power plants and cooling ponds appear to be the major contributors to ice fog (Reference 6). However, motor vehicles perhaps are a significant contributor to ice fog visibility reductions, because traffic ice fog emissions occur at the very point where good visibility is necessary, (i.e., where people are congregating and traveling). Therefore, any control strategy for carbon monoxide should also be made applicable for reducing ice fog. This is a major reason that liquified natural gas or propane-powered motor vehicles were not proposed as a control strategy for carbon monoxide (even though it would be a very efficient solution for abating the carbon monoxide problem), because they would have produced approximately 50% or more moisture than present gasoline-drive motor vehicles.

Additional information is necessary to develop a meaningful control strategy to abate the ice fog problem. The data collected and evaluated during the carbon monoxide evaluations (refer to section III.F.2) should assist in evaluating the ice fog problem. Evaluation of the various alternative solutions for abating the carbon monoxide problem (refer to section IV.C.2) should also consider at least a qualitative analysis of the potential for reducing the ice fog problem in Fairbanks. In the interim, the proposed State regulation requiring combustion sources to be modified to reduce water emissions if there is a potential ice fog problem is proposed as a means of keeping large new stationary sources from adversely adding to the existing problem.

V. AIR EPISODE PLAN

The following section presents plans for abating air contaminant levels which potentially could have substantial adverse effects on the public health. Detailed plans have been developed for the applicable areas within the regions which have been designated as Priority I. These areas and the time schedule by which the episode plans are intended to go into effect for each area are:

Anchorage - particulate matter - to be in effect July 1972.
Fairbanks - particulate matter - goal to be in effect by July 1972, definitely to be in effect by May 1973.
- carbon monoxide - to be in effect by November 1, 1972. (This will be in time for covering the next winter conditions.)
Ketchikan - sulfur dioxide - goal to be in effect by November 1972, definitely to be in effect by May 1973.

The air episode plans which are presented in this section only pertain to the specific areas mentioned above, and not to the majority of Alaska. These plans have been mutually developed through the State by the Cook Inlet Air Resources Management District and the Fairbanks North Star Borough. These plans will be developed in further detail (which will be reported in the first semi-annual report, refer to section V.D) and implemented if necessary by local programs where they exist.

The episode plans which are described in this section have been developed as much as possible to consider local characteristics of the regions where these plans are to be used. The Alaska Administrative Code section 18 AAC 50.150 (refer to Appendix III.1) provides the levels at which "Alert", "Warning", "Emergency" stages are to be called.

Air quality conditions in the regions which will have air episode plans are such that specific air contaminant episodes are to be called instead of a general air contaminant episode (in which more than one contaminant is at a potentially dangerous level). Fairbanks is the only area in the State which will have more than one air episode plan.

Department of Environmental Conservation personnel are not intended to carry out any portions of these plans where local programs exist (with the exception of being notified and providing assistance if necessary) unless the plans described herein are not carried out when required by the local program.

V.A. Air Episode Situations

V.A.1. Particulate Matter

Fairbanks and Anchorage are the only areas which are known to have particulate matter air quality problems. Periodically they are subject to high gusty winds, and they have soil conditions in the area which are highly conducive to entrainment of dust during the summer. Therefore, the high particulate matter levels which are being measured in

both areas could conceiveably be caused by natural dust sources. Certainly motor vehicle traffic during these high wind conditions is additive to the problem, but it is suspected that natural phenomena are a large contributor to the high particulate matter concentrations, at least during high wind conditions. Furthermore, during these conditions much of the particulate matter is suspected of being much larger in size than that which is detrimental to health. Consequently the evaluation to be made regarding the characteristics of particulate matter (as discussed in section III.F.1) will provide reasonably detailed information of the particulate matter concentrations in both Anchorage and Fairbanks prior to the initiation of the air episode plans as described in this section. Two types of particulate matter air episode plans have been developed for Alaska, one for when high wind conditions exist, and the other for when stagnation weather conditions exist.

The high wind particulate matter episode condition appears to be the more likely one to occur in both Fairbanks and Anchorage. During this condition, natural dust sources are expected to be the major contributor to the high particulate matter levels. Because these sources are not readily amendable to control, the intent of the plan is to minimize public exposure to these concentrations by reducing urban activity in the applicable region. During these conditions, traffic generated dust and construction activities also may contribute significantly to the high particulate matter levels, and thus they also will be subject to curtailment action. A high wind particulate matter air episode is not expected to occur very frequently, if at all, in the Anchorage area, while the probability of such an episode in Fairbanks appears more likely.

Stagnation weather conditions are expected to occur both during summer and winter, but only summer conditions are expected to have particulate matter episode potential (refer to existing measured data discussed in section III). A stagnation particulate air episode does not appear very likely in Anchorage, while the likelihood of such an episode occurring in Fairbanks is more probable. Because tape sampling data is not present, no estimate of how probable a particulate matter air episode may be has been made.

V.A.2. Carbon Monoxide

Carbon monoxide episode conditions are expected only in the Fairbanks area under stagnant weather situations. These conditions are expected to occur only during winter conditions, although carbon monoxide monitoring will be continued throughout the year. The Fairbanks Pollution Control Commission estimates that levels of 17 milligrams per cubic meter of carbon monoxide exist approximately 20% of the time during winter conditions. Until more detailed information is available, the carbon monoxide episode plans as described in this section and in section IV.C may be expected to occur that percentage during the winter. The carbon monoxide regional evaluations which currently are being conducted in Fairbanks (refer to sections IV.C and III.F.2) suggest that the high carbon monoxide concentrations exist only in the downtown region where relatively high-rise buildings exist. In other areas of Fairbanks, very low levels are being recorded relative to those levels monitored downtown (at Second and Cushman).

Therefore the episode plan as it is discussed in this section will relate only to the downtown region. This region will be more quantitatively described once the carbon monoxide evaluation is more thoroughly evaluated (which should be initially accomplished by July 1972).

Of all the air episode plans formulated in this section, the Co abatement actions appear to be most likely to be implemented. Not only do stagnation weather conditions occur frequently in the winter (and are among the most severe in the world), the Arctic Health Laboratory data (refer to section III.B) indicates that the "alert" level for CO is exceeded approximately 20% of the time during the winter months. Referring to section IV.C.1, if land-clearing operations are neglected for winter conditions, approximately 80% of all CO emitted in the Fairbanks area comes from motor vehicles, while another 10% comes from aircraft operations. Consequently, air episode abatement actions have been oriented primarily to reducing the motor vehicle source.

V.A.3. Sulfur Dioxide

In contrast to particulate matter and carbon monoxide episode plans, the sulfur dioxide plan is related to only one point source, the Ketchikan pulp mill, near Ketchikan. Because its source is approximately five miles from the Ketchikan city area, the episode plan will consist of a monitoring and warning system whenever levels reach episode levels. In this way the plan will serve to warn people to stay out of the area of high concentrations. Presently not enough is known about the ambient air quality characteristics to know when high levels of sulfur dioxide may be expected.

V.B. Forecasting/Surveillance

The National Weather Service Forecast Office in Anchorage will generate weather information relating to air episode forecasts in the Cook Inlet Region. Local Office of the National Weather Service in Fairbanks and Annette will generate information for their respective areas. During routine operation, the Service will provide information on weather conditions to the local programs in Fairbanks and the Cook Inlet on request. Should an Air Episode Advisory occur at any time, the Service will notify the local program in the area automatically. As Episode Stages are called, the program implementing the abatement actions in that area will request that weather forecasts from the National Weather Service be submitted every 12 hours.

The air episode monitoring stations are discussed in section III and are the following:

Anchorage - Tape sampler for particulate matter at 527 E. 4th.
Fairbanks - Tape sampler for particulate matter downtown near the Borough office (to be definitely located by May, 1972).
- Continuous CO analyzer, located at 2nd and Cushman (location to be reevaluated based on the CO evaluation described in section III.F).
Ketchikan - Continuous SO_x analyzer to be located in the vicinity of the pulp mill (exact location to be determined by August, 1972).

If an air advisory is received by a local program, the monitoring of the episode instruments will be evaluated at least once a day and more if any level of an air episode is called. Otherwise, air episode monitoring stations will be evaluated on the regular schedule as described in section III. Refer to section III.E for a discussion of how the data is to be analyzed.

For CO episode monitoring, an extension of the CO evaluation (discussed in section III.F.2) will be conducted at the time that abatement actions are taken. One of the CO continuous monitoring instruments will be installed in a motor vehicle, and when traffic is routed from the area of suspected high CO concentration, this other instrument will monitor to insure that the high CO levels simply are not moved to another location (see section II.F.2 and IV.C.3).

V.C. Air Episode Abatement Actions

Each episode plan described in this section will have differing curtailment actions required because of the differing nature of the suspected emission sources. Much of the specific detail of how these plans will be carried out will be developed (by local programs for Fairbanks and Anchorage and by the State for Ketchikan) and included in the first semi-annual report. This section presents the overall actions to be taken during these episodes, if and when the various levels of air contaminants specified in the Alaska Administrative Code 18 AAC 50.150 are reached.

The legal authority for calling air episodes already exists in both of the local programs' regulations. For Fairbanks, Section 45.05.100, Emergency Procedure, provides the program with the necessary legal authority to take air episode abatement actions, while for the Cook Inlet, Section 3.17, Emergency Procedure, provides the necessary legal authority (refer to Appendix III for copies of the local program regulations).

V.C.1. Particulate Matter

As discussed in section V.A. above, particulate matter episodes can be of two types: that occurring during high wind conditions and that occurring during stagnation periods. Figure V-1 presents a diagram of the general actions to be undertaken whenever air quality data and/or National Weather Service advisories indicate the existence of potential episode air contaminant levels. The groups to be coordinated during actual episodes are shown in Figure V-2. These figures show communication links which are to be established during each of these conditions. The "coordinator" is to be the local program existing in the applicable area (the Cook Inlet Air Resources Management District and the Fairbanks North Star Borough for their areas). The "episode declaring authority" shown in the figures is the person or group responsible for administering the local program existing in the applicable area. An important concept is that the National Weather Services weather advisory is not a prerequisite for announcing episodes. Air quality data by itself is the major governing factor as to whether or not an air episode may or does exist. The below actions should not limit the coordinator's authority to implement any additional measures deemed necessary to reduce the particulate matter concentrations if other measures appear to be desirable.

V.C.1.a. High Wind

The following actions are to be undertaken when air episode levels of particulate matter exist during high wind conditions. The following actions for each stage (as defined in 18 AAC 50.150) are to be taken for each episode level.

Alert Stage. 1. A public announcement will be broadcast over the news media (paper and/or radio) describing the general

situation and advising the public to take the following actions:

A. Discontinue any open burning and/or solid waste incineration.
B. Minimize traffic movements to only that absolutely necessary.
C. Curtail dust-generating construction activities and land clearing operations to the maximum extent possible.

2. If the condition is predicted to worsen, the commercial and government office personnel are to be advised to consider curtailing work activities for the day so that personnel may return home before the higher levels are attained.

Warning Stage. 1. Curtailment of excavation, road work and construction activities will be advised until particulate matter concentrations are expected to decrease.

2. Announcement will be made to the public not to travel unless absolutely necessary, and if necessary to use paved roads if at all possible.

Emergency Stage. 1. If this stage is reached or is expected to be reached, all government and commercial offices will be advised to dismiss work activities for the day. Further details need to be worked out in order to insure that this can and will be carried out. If the emergency condition is not reached until the middle of the day it will be left to the coordinator's discretion as to whether offices should be advised as to whether to stay open until the end of the work day.

2. All traffic movement will be curtailed to the maximum extent possible, except for emergency vehicles.

V.C.1.b. Stagnation

Stagnation conditions are considered to be more lasting and hence more conducive to air contaminant buildup than high wind episodes as described above. The following actions are to be taken if and when particulate matter levels reach the following episode stages:

Alert Stage. 1. A public announcement over the news media will be made to inform the general public of the episode conditions. Voluntary cooperation will be requested of the general public for the following areas:

A. No open burning is to be done.
B. No incineration is to be done except that which is absolutely necessary.
C. Soot blowing or boiler lancing on fuel burning equipment (including ships in the harbor) will only be done during hours to be announced by the local program coordinator.
D. Industrial processes requiring a permit to operate or a Notice of Construction and Application for Approval will initiate whatever emission curtailment actions that are specified in the permit and application conditions.

2. Airports will be notified to prepare for the reduction of ground activity in the event that a warning stage level is reached.

Warning Stage. In addition to the steps taken under the alert level, the following steps will be initiated:

1. Industrial processes under permit to operate will initiate the steps required under a warning status episode level as required under the permit conditions.

2. There will be a request for voluntary curtailment of all unnecessary motor vehicle driving and to avoid as much as possible driving on unpaved roads.

3. The airports in the area will be requested to minimize the amount of ground activity in and around the airports.

Emergency Stage. In addition to the actions specified to be taken under the alert and warning status levels above, the following actions also will be taken:

1. Commercial and government offices will be requested to close until air quality conditions improve.

2. All incineration will be prohibited.

3. All industrial processes operating in the episode area will be requested to discontinue operation until air quality conditions improve.

4. Motor vehicle traffic, excluding emergency vehicles, will be minimized to the maximum extent possible.

5. All large point sources requiring a permit to operate or a Notice of Construction and Application for Approval will be required to initiate the maximum reduction steps possible as specified in the permit and application conditions.

6. Ground support activity at the airport will be minimized to the maximum extent possible as will sheduled flights into and out of the area.

V.C.2. Carbon Monoxide

The curtailment action specified in section IV.C.3 is to be taken at the "Alert stage" level for carbon monoxide. This action, which requires routing motor vehicle traffic around the area of expected high CO concentrations, is expected to be adequate to insure that warning and emergency levels of carbon monoxide are never reached. The point sources of carbon monoxide (the power plants) are not large CO producers and therefore are not expected to contribute significantly in a CO reduction for the area. However, emission reduction measures during CO episodes will be evaluated and included as part of their permit to operate conditions (details to be included in the first semi-annual report to the Environmental Protection Agency).

If "Warning" levels of carbon monoxide are reached, then the Fairbanks airports will be requested to curtail ground activity and engine run-ups to the maximum extent possible.

In the unlikely event that the warning level is reached - all unnecessary idling will be requested to be stopped, and this requirement will be enforced in the episode area (to be determined by the evaluation to be done as discussed in section III.F.2).

If the emergency level should be reached, then the episode area will be cleared of operating motor vehicles.

V.C.3. Sulfur Dioxide Episodes

The episode plan for sulfur dioxide relates primarily to Ketchikan and to a lesser degree Sitka, and consists of the following:

1. Establishment of air monitoring stations in the vicinity of both pulp mills (refer to section III).

2. The establishment of public announcement capability whenever episode levels of sulfur dioxide have been or are expected to be reached.

3. Establishment of the permit to operate for each of the pulp mills, within which will be whatever curtailment actions which will be undertaken. These curtailment actions are only anticipated in the event that emergency levels are reached.

The three steps mentioned above have not been specifically worked out, but are expected to be within the next year and will be summarized in the first semi-annual report to the Environmental Protection Agency.

V.D. Operational Procedures

The responsibility for generating weather information relating to forecasts of high wind or stagnation conditions lies with the National Weather Service forecast office, which has a main office in Anchorage and local offices in Fairbanks and Annette (near Ketchikan). During routine operation the weather service will provide information to the local programs whenever an advisory occurs. During advisory conditions, and especially during episode conditions, these weather advisories will be updated every twelve hours.

Section III describes the locations of the episode monitoring stations for the three areas (refer to Table III-6) for the Cook Inlet, Table III-11 for Fairbanks and to section III.D for the Southeast Region). The episode monitoring equipment is to be installed in the first year after approval of this plan. For particulate matter, monitoring will be done with both a tape sampler (to measure COH values) and high volume air samplers (which will measure suspended particulate matter mass concentrations). For Fairbanks a continuous carbon monoxide monitor will be used for carbon monoxide episodes. For Ketchikan, a continuous sulfur dioxide monitor will be used for sulfur dioxide episodes.

The Cook Inlet Air Resources Management District and Fairbanks North Star Borough program personnel are expected to carry out the air emission curtailment provisions for particulate matter and carbon monoxide, and to notify the Department of Environmental Conservation whenever these conditions are expected to exist or do exist. These programs will develop the necessary details of the plans (with assistance from the Department of Environmental Conservation where necessary) and these details will be reported in the first semi-annual report to the Environmental Protection Agency. These details will include, but are not necessarily limited to:

1. The methods by which air quality trends will be evaluated and monitored to provide information necessary for monitoring potential of emergency episodes.

2. A detailed listing of who is to be contacted during each phase of an episode if it should occur, and what will be included in these contacts.

3. A description of how public notices will be handled, what will be their content, and how the news media will be kept informed of developments.

4. A definition of who will be responsible for handling the responsibilities as described in Figures V-1 and V-2.

5. A definition of how sources under permits to operate will be contacted and inspected during episode conditions.

The Department of Environmental Conservation will develop the Ketchikan episode details, which will be summarized in the first semi-annual report to the Environmental Protection Agency.

The following organizations which will participate in air episode abatement actions have been identified thus far.

NATIONAL WEATHER SERVICE

The following offices are sources for meteorological data.

Fairbanks North Star Borough

The National Weather Service
Chief Meterologist, Telephone 452-3553

Cook Inlet Air Resources Management District

The National Weather Service - Anchorage
Fire Weather Supervisor, Telephone 272-5561 X-735

State of Alaska

The National Weather Service - Annette Island
Meteorologist-in-charge, Telephone 882-3241

POINT SOURCES

The following people have been designated as the contacts for point source curtailment:

Fairbanks North Star Borough

a. Golden Valley Electric
Illinois Street Plant
Superintendent of the Power Plant
Telephone 452-1151 X-259

b. Fairbanks Municipal Utilities
Superintendent of the Power Plant
Telephone 456-6678

c. Fort Wainwright
Telephone

d. University of Alaska
Air Quality Control Engineer
Department of Environmental Conservation
Fairbanks
Telephone 479-7351

e. Fairbanks Municipal Airport
Manager
Telephone 452-3209

f. Metro Field
Airport Manager
Telephone 452-3209

Southeastern Alaska

a. Ketchikan Pulp Mill - Ketchikan
Operational Interface
Telephone 225-2151

NEWS MEDIA

Fairbanks North Star Borough
Mr. Kear
Telephone 452-7125

Cook Inlet Air Resources Management District
Public Relations
Telephone 279-8686 X-316

Juneau
Department of Environmental Conservation
State of Alaska
Scientific Information Officer
Telephone 586-6721

STATE OF ALASKA

Department of Environmental Conservation
State of Alaska
Air Quality Control Engineer
Telephone 586-6721

PUBLIC SAFETY ORGANIZATIONS

Fairbanks
Civil Defense Director
Telephone 452-1529

Cook Inlet Air Resources Management District
Emergency Disaster Office - Anchorage
Duty Officer
Telephone 272-0594

Ketchikan Gateway Borough
Civil Defense Director/City Manager
Telephone 225-3111

ENVIRONMENTAL PROTECTION AGENCY

Anchorage Office
Federal Facilities Coordinator
Telephone 272-5561

Environmental Protection Agency
Region X
Seattle,Washington
Director of Air Pollution Control
Telephone 442-1226 Area Code 206

Environmental Protection Agency
Emergency Operations Control Center
Research Triangle Park, North Carolina
Telephone 688-8110 Area Code 919

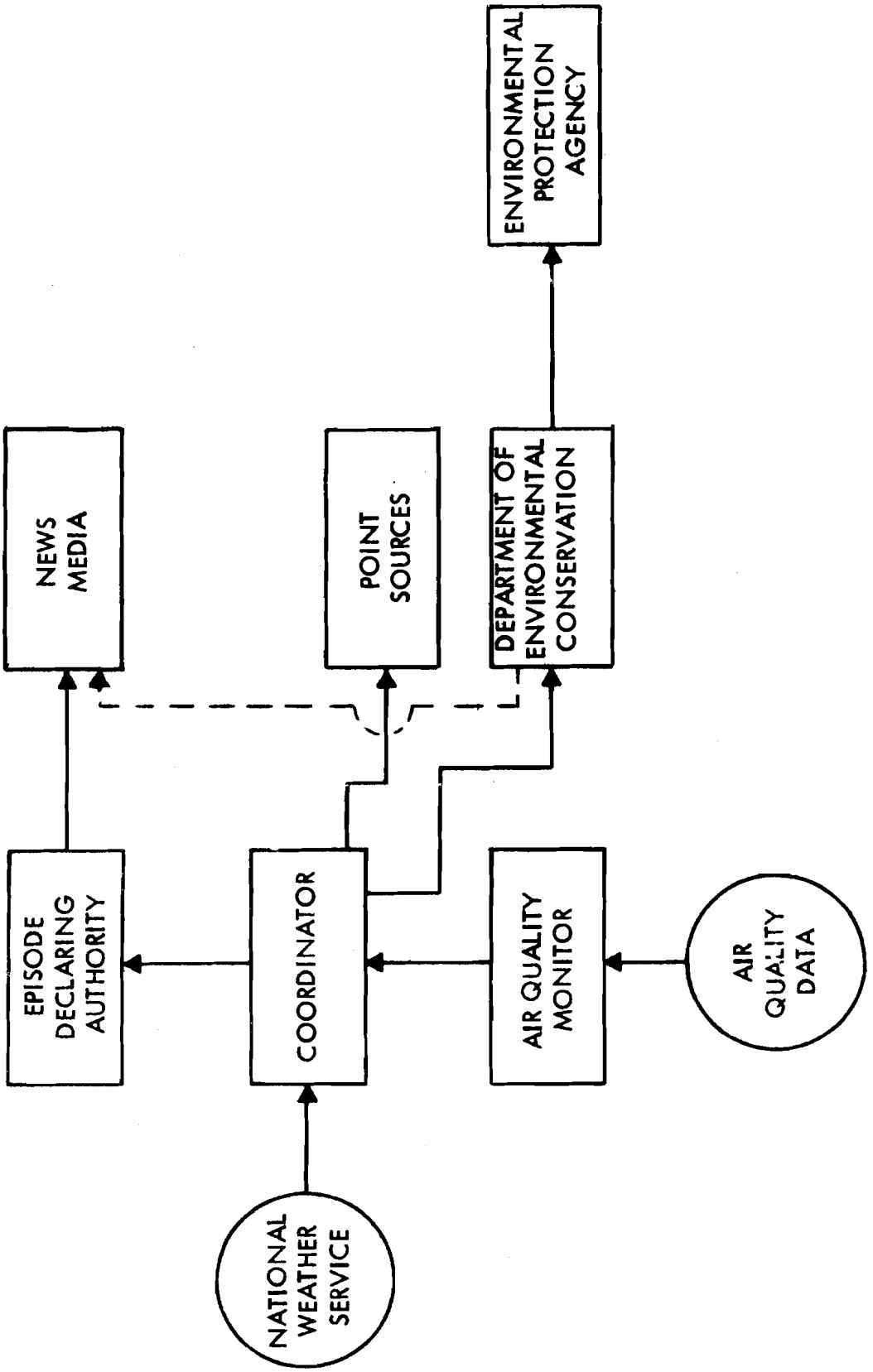


Figure V-1 Episode Watch Organization

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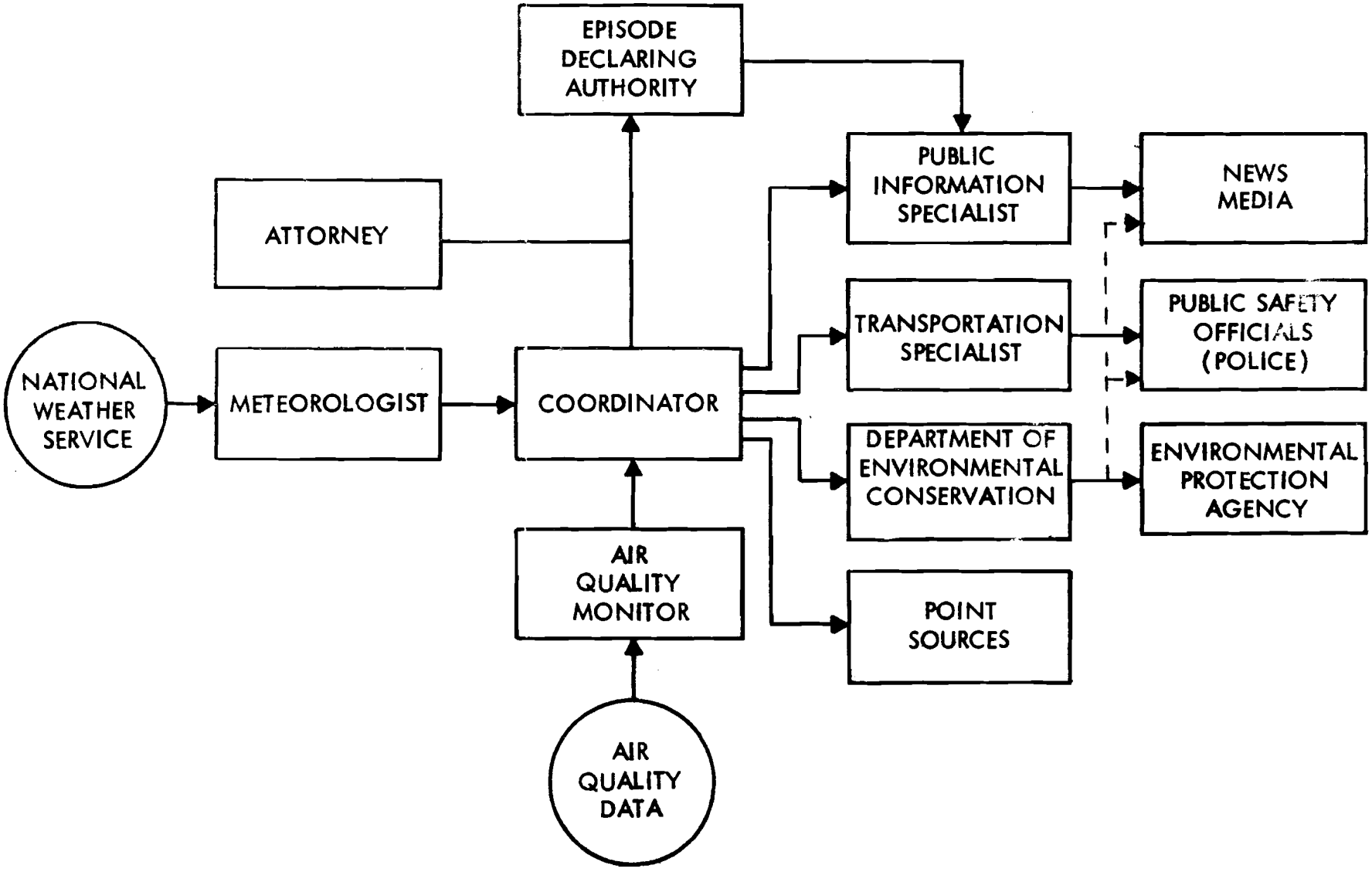

Figure V-2 Episode Action Organization

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AIR QUALITY CONTROL PLAN

VOLUME 2

Appendix

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

William A. Egan
Governor

Max C. Brewer
Commissioner

STATE OF ALASKA

AIR QUALITY CONTROL PLAN

VOLUME II

APPENDIX

April 21, 1972

State of Alaska

Department of Environmental Conservation

William A. Egan, Governor

Max C. Brewer, Commissioner

PREFACE

The complete State of Alaska Air Quality Control Plan is contained in two volumes. The first volume includes the plan without the appendices, and contains descriptions of State and local programs, air surveillance system control strategies, air episode plans and references. The second volume is the appendices of the plan which are referenced in the first volume. The appendices include detailed calculations, the State of Alaska enabling statutes, State air quality control regulations, local air quality control regulations, public hearing summary, and the State air emissions inventory.

TABLE OF CONTENTS

VOLUME I: PLAN

TABLE OF CONTENTS (CONT.)

VOLUME I: PLAN

TABLE OF CONTENTS (CONT.)

VOLUME I: PLAN

TABLE OF CONTENTS (CONT.)

VOLUME I: PLAN

TABLE OF CONTENTS

VOLUME II: APPENDIX

TABLE OF CONTENTS (CONT.)

VOLUME II: APPENDIX

LIST OF TABLES

VOLUME I

PLAN

LIST OF TABLES (CONT.)

VOLUME I: PLAN

LIST OF FIGURES/MAPS

VOLUME I

PLAN

APPENDIX I.

EMISSION INVENTORY

TABLE I.1

ALASKA

POLITICAL JURISDICTION CODE

A/Q Region	Political Jurisdiction	Printout Designation
008	Greater Anchorage	1
	Kenai	2
	Cook Inlet	
	Homer	
	Kasiloff	
	Seward	3
	Whittier	
	Palmer	4
	Matamska	
	Wasilla	
009	Barrow	1
	Fairbanks	2
	South East Fairbanks	
	Nenana	
	Kobuk	
	Delta Junction	
	Nome	3
	Yukon	4
	Koyokuk	5
010	Aleutian Islands	1
	Southerly Alaska Peninsula	
	Bethel - Kiskokwin	2
	Bristol	3
	Bristol Bay Borough	
	Dillingham	
	Naknek	
	Cordova - McCarthy	4
	Kodiak	5
	Valdez	6
	Tok	
	Chitina	
	Glenallen	
011	Haines	1
	Skagway	
	Yukatat	
	Ketchikan	2
	Outer Ketchikan	
	Juneau - Douglas	3
	Klawok	4
	Sitka - Angoon	5
	Wrangel - Petersburg	6

TABLE I.2 SUMMARY OF TOTAL ANNUAL EMISSIONS

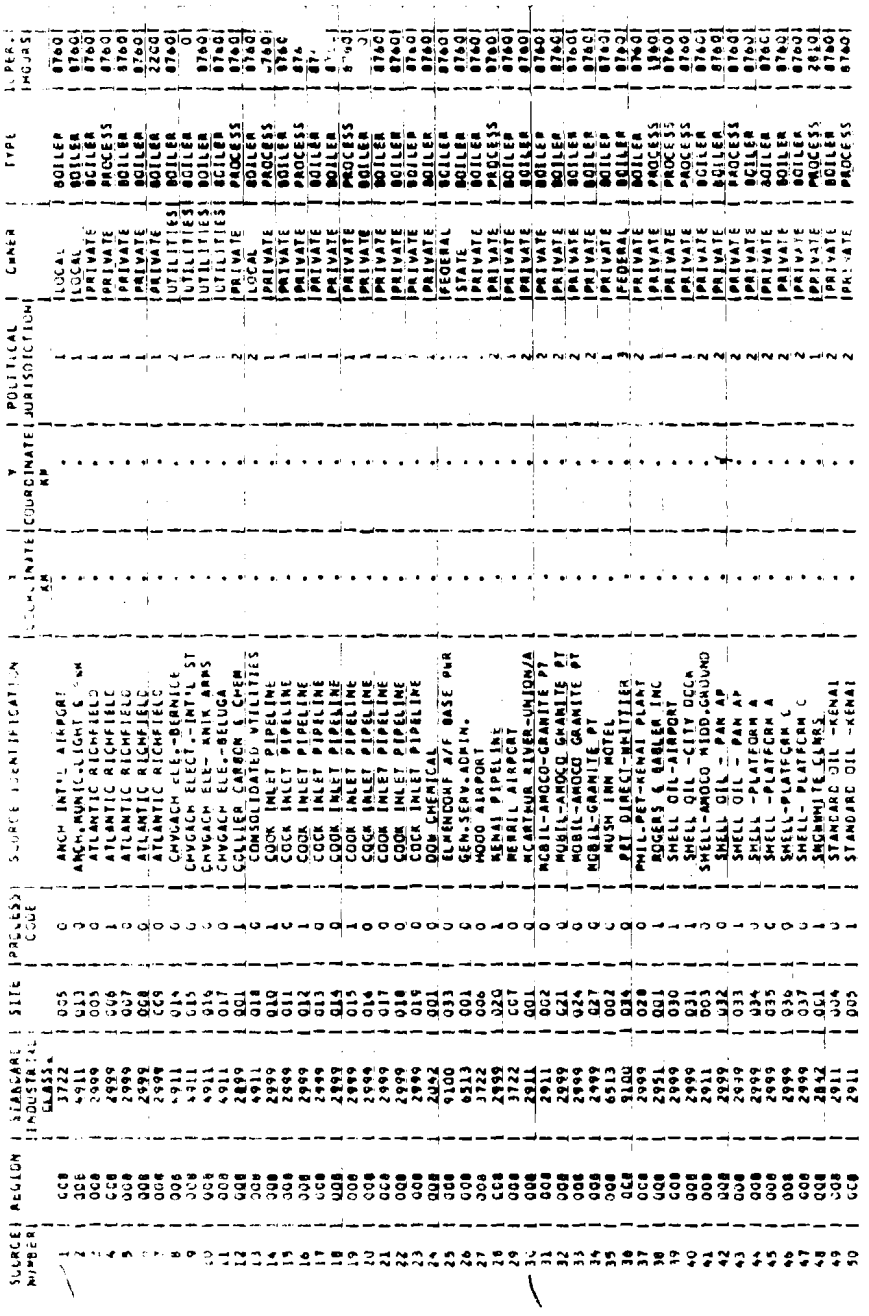
AIR QUALITY REGION	PARTICULATES TONS/YR	SOX TONS/YR	CO TONS/YR	HYDROCARBONS TONS/YR	NOX TONS/YR
ANCHORAGE	2626	3017	108,044	29,637	22,085
FAIRBANKS	14,925	5105	35,182	7451	14,335
008	3599	3517	120,157	50,271	77,475
009	52,143	7521	40,731	10,801	29,018
010	16,799	1867	17,523	4863	11,537
011	3891	6093	37,191	5827	5436
STATE TOTAL	76,432	18,998	215,602	71,762	123,466

NOTE: Numbers in this table include emissions from forest fires.

TABLE I.3 SUMMARY OF COMPONENT ANNUAL EMISSIONS BY AREA SOURCES

EMISSION SOURCE		ANCHORAGE	FAIRBANKS	AIR QUALITY REGION 008	AIR QUALITY REGION 009	AIR QUALITY REGION 010	AIR QUALITY REGION 011	STATE TOTAL
RESIDENTIAL FUEL	P	167	450	213	499	85	103	900
	SOX	185	437	235	504	123	162	[illegible]
	CO	113	752	143	779	45	51	1018
	HC	57	208	72	224	26	[illegible]	353
	NOX	343	252	436	327	112	123	998
COMMERCIAL & INSTITUTIONAL FUEL	P	134	384	160	386	24	33	603
	SOX	53	285	[illegible]	260	24	46	393
	CO	85	832	[illegible]	833	0	3	938
	HC	45	203	52	204	4	47	307
	NOX	521	151	626	161	92	127	1006
INDUSTRIAL FUEL	P	211	67	275	97	65	120	557
	SOX	127	42	165	62	45	75	347
	CO	[illegible]	0	3	1	0	1	[illegible]
	HC	31	9	40	14	10	18	[illegible]
	NOX	611	200	795	290	272	354	1641
FOREST FIRES	P	0	9837	0	46,727	15,576	0	[illegible]
	SOX	0	547	0	2,596	865	0	[illegible]
	CO	0	729	0	3,461	1,154	0	[illegible]
	HC	0	729	0	3,461	1,154	0	[illegible]
	NOX	0	3643	0	17,396	5,769	0	[illegible]
OPEN BURNING	P	0	474	0	604	142	373	[illegible]
	SOX	0	30	0	38	9	23	[illegible]
	CO	0	2519	0	3210	757	1983	5950
	HC	0	869	0	1133	267	[illegible]	2100
	NOX	0	176	0	227	53	140	420
INCINERATION	P	0	23	0	29	0	18	47
	SOX	0	5	0	6	0	4	[illegible]
	CO	[illegible]	33	0	42	0	26	[illegible]
	HC	[illegible]	10	0	13	0	9	[illegible]
	NOX	[illegible]	10	0	13	0	8	
SOLVENT EVAPORATION	HC	169	71	200	90	50	60	[illegible]
DIESEL VESSELS	P	10	0	20	3	128	79	233
	SOX	5	0	6	1	37	23	67
	CO	48	0	53	7	333	204	597
	HC	37	0	41	6	257	157	461
	NOX	54	0	59	8	374	233	671
[illegible] VESSELS	P	2	0	2	1	15	[illegible]	[illegible]
	SOX	[illegible]	0	1	1	9	[illegible]	[illegible]
	CO	499	0	[illegible]	346	3408	2026	[illegible]
	HC	74	0	41	52	513	305	[illegible]
	NOX	67	0	73	47	465	276	[illegible]
RAILROADS	P	12	18	18	18	0	3	[illegible]
	SOX	[illegible]	46	46	46	0	9	101
	CO	[illegible]	19	49	49	0	9	[illegible]
	HC	24	35	[illegible]	35	0	7	
	NOX	36	53	53	53	0	10	116
DIESEL MOTOR VEHICLES	P	[illegible]	123	982	177	105	195	[illegible]
	SOX	1536	312	1768	318	189	350	[illegible]
	CO	11097	2253	12768	2298	1363	2530	18959
	HC	2219	451	2554	460	273	506	[illegible]
	NOX	11609	2357	13357	2404	1426	2657	19834
GASOLINE MOTOR VEHICLES	P	222	59	246	60	16	30	352
	SOX	135	35	149	36	10	18	213
	CO	80972	• 23323	[illegible]	23870	6340	11966	140740
	HC	13276	3631	[illegible]	3696	982	1853	21791
	NOX	6314	[illegible]	6735	1694	450	[illegible]	[illegible]
SMALL AIRCRAFT	P	[illegible]	[illegible]	61	47	7	16	[illegible]
	SOX	552	372	614	465	68	165	[illegible]
	CO	3313	2233	3682	2792	407	988	7869
	HC	110	74	123	93	14	33	263
	NOX	55	37	61	47	7	16	131
GASOLINE MARKETING	HC	666	176	240	180	40	100	1060

TABLE I.4 Annual Point-Source Emissions Estimates for Sources Emitting More than 5 Tons per Year of Air Contaminants*



*Note: TABLE I.4 is continued for the next 25 pages.

SOURCE NUMBER	REGION	STANDARD INDUSTRIAL CLASS.	SITE	PROCESS CODE	SOURCE IDENTIFICATION	X COORDINATE KM	Y COORDINATE KM	POLITICAL JURISDICTION	OWNER	TYPE	OPER. HOURS
51	008	2999	044	0	STANDARD OIL	.	.	2	PRIVATE	BOILER	8760
52	008	2999	047	1	STANDARD OIL	.	.	2	PRIVATE	PROCESS	8760
53	008	2999	052	0	STANDARD OIL	.	.	2	PRIVATE	BOILER	8760
54	008	2999	053	1	STANDARD OIL	.	.	1	PRIVATE	PROCESS	8760
55	008	2999	083	1	TESCRO ALASKA PET-KENA	.	.	2	PRIVATE	PROCESS	8760
56	008	2999	084	0	TESORO ALASKA PET-KENA	.	.	2	PRIVATE	BOILER	8760
57	008	2999	085	1	TESCRC ALASKA PET-ANCH	.	.	1	PRIVATE	PROCESS	8760
58	008	2999	086	1	TEXACC-ANCHRG	.	.	1	PRIVATE	PROCESS	8760
59	008	2999	086	0	TEXACO-ANCHORAGE	.	.	1	PRIVATE	BOILER	8760
60	008	2999	087	0	TEXACC-TRADING BAY	.	.	1	PRIVATE	BOILER	8760
61	008	2911	007	0	UNION-ARCO TRADING BAY	.	.	2	PRIVATE	BOILER	8760
62	008	2999	088	1	UNION OIL -DOCK RD	.	.	1	PRIVATE	PROCESS	8760
63	008	2999	089	1	UNION CIL-KENAI	.	.	2	PRIVATE	PROCESS	8760
64	008	2999	090	1	UNION OIL- OCEAN DOCK	.	.	1	PRIVATE	PROCESS	8760
65	008	9100	035	0	WILDWCCC A/F STA	.	.	2	FEDERAL	BOILER	8760
66	008	2999	091	0	AMOCO-MID.GROUND SHOAL	.	.	2	PRIVATE	BOILER	8760
67	008	2999	093	0	AMOCO-MID.GROUND SHOAIL	.	.	2	PRIVATE	BOILER	8760
68	008	2999	095	0	AMOCO-F.FORELAND	.	.	2	PRIVATE	BOILER	8760
69	008	9100	036	0	ELMENDORF A/F BASE	.	.	1	FEDERAL	BOILER	8760
70	008	2899	002	0	COLLIER CARBON & CHEM	.	.	2	PRIVATE	BOILER	8760
71	008	2899	003	0	COLLIER CARBCN & CHEM.	.	.	2	PRIVATE	BOILER	8760
72	008	2871	001	1	COLLIER CARBON & CHEM	.	.	2	PRIVATE	PROCESS	8760
73	008	2999	096	0	ATLAN.RICH-GRANITE PNT	.	.	2	PRIVATE	BOILER	8760
74	008	2999	097	1	ATLAN.RICH-GRANITE PNT	.	.	2	PRIVATE	PROCESS	8760
75	008	2999	098	0	ATLAN.RICH-SPARK PLATFM	.	.	2	PRIVATE	BOILER	4600
76	008	2999	099	0	ATLAN RICH-SPARK PLATFM	.	.	2	PRIVATE	BOILER	4600
77	008	2999	100	0	ATLAN RICH-SPARK PLATFM	.	.	2	PRIVATE	BOILER	8760
78	008	2999	101	1	ATLAN RICH-KING SALMON	.	.	2	PRIVATE	PROCESS	0
79	008	2999	102	0	ATLAN RICH-KING SALMON	.	.	2	PRIVATE	BOILER	8760
80	008	2999	103	0	ATLAN RICH-KING.SALMON	.	.	2	PRIVATE	BOILER	8760
81	008	2999	104	0	ATLAN-RICH-KING SALMON	.	.	2	PRIVATE	BOILER	8760
82	008	2999	105	0	ATLAN.RICH-KING SALMON	.	.	2	PRIVATE	BOILER	8760
83	008	2999	106	3	ATLAN RICH-KING SALMON	.	.	2	PRIVATE	BOILER	43800
84	008	2999	107	0	PHIL PET KENAI PLANT	.	.	2	PRIVATE	BOILER	8760
85	008	2999	108	1	PHIL.PET.KENAI PLANT	.	.	2	PRIVATE	PROCESS	8760
86	008	2999	109	0	PHIL.PET-KENAI PLANT	.	.	2	PRIVATE	BOILER	8760
87	008	2999	110	0	PHIL.PET-TYONEK PLTFM	.	.	2	PRIVATE	BOILER	8760
88	008	2999	111	0	PHIL PET TYONEK PLTFM	.	.	2	PRIVATE	BOILER	8760
89	008	2999	112	0	PHIL.PET.-TYONEK PLTFM	.	.	2	PRIVATE	BOILER	8760
90	008	2999	113	0	UNION CIL-KENAI	.	.	2	PRIVATE	BOILER	8760
91	008	2999	114	0	UNION OIL-MONOPOD PLTFM	.	.	2	PRIVATE	BOILER	0
92	008	2999	115	0	UNION OIL-MONOPOD PLTFM	.	.	2	PRIVATE	BOILER	8760
93	008	2999	116	0	UNION CIL-MONOPOD PLTFM	.	.	2	PRIVATE	BOILER	8760
94	008	2999	117	0	UNION OIL-MONOPOD PLTFM	.	.	2	PRIVATE	BOILER	8760
95	008	2999	118	0	UNION CIL-GRAYLING PLTF	.	.	2	PRIVATE	BOILER	8760
96	008	2999	119	0	UNION CIL-GRAYLING PLTF	.	.	2	PRIVATE	BOILER	8760
97	008	2999	120	0	UNION OIL-GRAYLING PLTF	.	.	2	PRIVATE	BOILER	8760
98	008	2999	121	1	UNION CIL-GRAYLING PLTF	.	.	2	PRIVATE	PROCESS	8760
99	008	2999	122	1	UNION OIL-GRAYLING PLTF	.	.	11	FEDERAL	BOILER	8000

SOURCE NUMBER	SO2 EMISSIONS TONS/YEAR					PARTICULATE EMISSIONS TONS/YEAR					CONTROL EFFIENCY		DEVICE IDENTIFICAT.
	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	PART.	SO2	
1	0.	168.	168.	168.	0.	0.	550.	550.	550.	0.	0.0	0.0	
2	1.	0.	1.	1.	0.	24.	0.	24.	24.	0.	0.0	0.0	
3	0.	0.	0.	0.	0.	13.	0.	13.	13.	0.	0.0	0.0	
4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
5	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
6	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
7	0.	3.	3.	3.	0.	0.	1.	1.	1.	0.	0.0	0.0	
8	9.	0.	9.	9.	0.	49.	0.	49.	49.	0.	0.0	0.0	
9	0.	0.	0.	0.	0.	4.	0.	4.	4.	0.	0.0	0.0	
10	0.	0.	0.	0.	0.	6.	0.	6.	6.	0.	0.0	0.0	
11	1.	0.	1.	1.	0.	27.	0.	27.	27.	0.	0.0	0.0	
12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	REGENER
13	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
14	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
15	0.	5.	5.	5.	0.	0.	3.	3.	3.	0.	0.0	0.0	
16	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
17	1.	0.	1.	1.	0.	1.	0.	1.	1.	0.	0.0	0.0	
18	0.	3.	3.	3.	0.	0.	2.	2.	2.	0.	0.0	0.0	
19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
20	2.	0.	2.	2.	0.	3.	0.	3.	3.	0.	0.0	0.0	
21	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
22	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
23	0.	1.	1.	1.	0.	0.	1.	1.	1.	0.	0.0	0.0	DIESEL
24	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
25	2.	0.	2.	2.	0.	9.	0.	9.	9.	0.	0.0	0.0	
26	0.	3.	0.	0.	0.	11.	0.	11.	11.	0.	0.0	0.0	
27	0.	23.	23.	23.	0.	0.	2.	2.	2.	0.	0.0	0.0	
28	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
29	0.	130.	130.	130.	0.	0.	13.	13.	13.	0.	0.0	0.0	?
30	4.	0.	4.	4.	0.	129.	0.	129.	129.	0.	0.0	0.0	
31	3.	0.	3.	3.	0.	76.	0.	76.	76.	0.	0.0	0.0	
32	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
33	0.	0.	0.	0.	0.	3.	0.	3.	3.	0.	0.0	0.0	
34	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
35	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
36	2.	0.	2.	2.	0.	2.	0.	2.	2.	0.	0.0	0.0	
37	0.	0.	0.	0.	0.	8.	0.	8.	8.	0.	0.0	0.0	
38	0.	0.	0.	0.	0.	0.	16.	16.	16.	31.	0.0	0.0	002 SCRUBER
39	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
41	2.	0.	2.	2.	0.	45.	0.	45.	45.	0.	0.0	0.0	
42	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
43	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
44	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
45	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
46	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
47	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
48	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
49	0.	0.	0.	0.	0.	3.	0.	3.	3.	0.	0.0	0.0	
50	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	

SOURCE NUMBER	SO2 EMISSIONS TONS/YEAR COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	PARTICULATE EMISSIONS TONS/YEAR COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	CONTROL EFFIENCY PART.	SO2	DEVICE IDENTIFICAT.
51	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
52	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
53	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
54	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
55	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
56	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
57	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
58	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
59	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
60	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
61	2.	0.	2.	2.	0.	53.	0.	53.	53.	0.	0.0	0.0	
62	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
63	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
64	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
65	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
66	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
67	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
68	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
69	0.	52.	52.	52.	0.	0.	257.	257.	257.	0.	0.0	0.0	
70	3.	0.	3.	3.	0.	80.	0.	80.	80.	0.	0.0	0.0	
71	2.	0.	2.	2.	0.	64.	0.	64.	64.	0.	0.0	0.0	
72	0.	0.	0.	0.	0.	0.	201.	201.	201.	0.		0.0	
73	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
74	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
75	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
76	0.	30.	30.	30.	0.	0.	17.	17.	17.	0.	0.0	0.0	
77	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
78	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
79	0.	0.	0.	0.	0.	3.	0.	3.	3.	0.	0.0	0.0	
80	0.	0.	0.	0.	0.	3.	0.	3.	3.	0.	0.0	0.0	
81	0.	0.	0.	0.	0.	7.	0.	7.	7.	0.	0.0	0.0	
82	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
83	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
84	0.	0.	0.	0.	0.	7.	0.	7.	7.	0.	0.0	0.0	
85	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
86	0.	0.	0.	0.	0.	4.	0.	4.	4.	0.	0.0	0.0	
87	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
88	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
89	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
90	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
91	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
92	0.	0.	0.	0.	0.	6.	0.	6.	6.	0.	0.0	0.0	
93	2.	0.	2.	2.	0.	66.	0.	66.	66.	0.	0.0	0.0	
94	0.	10.	10.	10.	0.	0.	9.	9.	9.	0.	0.0	0.0	
95	0.	0.	0.	0.	0.	3.	0.	3.	3.	0.	0.0	0.0	
96	0.	3.	3.	3.	0.	0.	2.	2.	2.	0.	0.0	0.0	
97	0.	0.	0.	0.	0.	10.	0.	10.	10.	0.	0.0	0.0	
98	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
99	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	

SOURCE NUMBER	CO EMISSIONS TONS/YEAR			HYDROCARBON EMISSIONS TONS/YEAR			NO2 EMISSIONS TONS/YEAR		
	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED
1	0.	2310.	2310.	0.	1052.	1052.	0.	305.	305.
2	1.	0.	1.	65.	0.	65.	633.	0.	633.
3	0.	0.	0.	30.	0.	30.	130.	0.	130.
4	0.	0.	0.	0.	56.	56.	0.	0.	0.
5	0.	0.	0.	3.	0.	3.	13.	0.	13.
6	0.	0.	0.	3.	0.	3.	16.	0.	16.
7	0.	19.	19.	0.	4.	4.	0.	20.	20.
8	1.	0.	1.	10.	0.	10.	194.	0.	194.
9	0.	0.	0.	10.	0.	10.	52.	0.	52.
10	0.	0.	0.	16.	0.	16.	153.	0.	153.
11	1.	0.	1.	71.	0.	71.	691.	0.	691.
12	0.	0.	0.	0.	246.	246.	0.	0.	0.
13	0.	0.	0.	5.	0.	5.	44.	0.	44.
14	0.	0.	0.	0.	1262.	1262.	0.	0.	0.
15	0.	33.	33.	0.	7.	7.	0.	34.	34.
16	0.	0.	0.	0.	138.	138.	0.	0.	0.
17	0.	0.	0.	0.	0.	0.	3.	0.	3.
18	0.	24.	24.	0.	5.	5.	0.	25.	25.
19	0.	0.	0.	0.	1130.	1130.	0.	0.	0.
20	0.	0.	0.	0.	0.	0.	8.	0.	8.
21	0.	0.	0.	2.	0.	2.	12.	0.	12.
22	0.	0.	0.	1.	0.	1.	95.	0.	95.
23	0.	8.	8.	0.	2.	2.	0.	9.	9.
24	0.	0.	0.	4.	0.	4.	16.	0.	16.
25	0.	0.	0.	2.	0.	2.	36.	0.	36.
26	11.	0.	11.	4.	0.	4.	42.	0.	42.
27	0.	140.	140.	0.	4.	4.	0.	2.	2.
28	0.	0.	0.	0.	6640.	6640.	0.	0.	0.
29	0.	771.	771.	0.	27.	27.	0.	13.	13.
30	3.	0.	3.	287.	0.	287.	1254.	0.	1254.
31	2.	0.	2.	168.	0.	168.	736.	0.	736.
32	0.	0.	0.	5.	0.	5.	916.	0.	916.
33	0.	0.	0.	8.	0.	8.	41.	0.	41.
34	0.	0.	0.	0.	400.	400.	0.	0.	0.
35	1.	0.	1.	0.	0.	0.	3.	0.	3.
36	0.	0.	0.	0.	0.	0.	7.	0.	7.
37	0.	0.	0.	22.	0.	22.	110.	0.	110.
38	0.	0.	0.	0.	0.	0.	0.	0.	0.
39	0.	0.	0.	0.	347.	347.	0.	0.	0.
40	0.	0.	0.	0.	1312.	1312.	0.	0.	0.
41	1.	0.	1.	101.	0.	101.	442.	0.	442.
42	0.	0.	0.	2.	0.	2.	8.	0.	8.
43	0.	0.	0.	0.	60.	60.	0.	0.	0.
44	0.	0.	0.	1.	0.	1.	6.	0.	6.
45	0.	0.	0.	2.	0.	2.	420.	0.	420.
46	0.	0.	0.	5.	0.	5.	872.	0.	872.
47	0.	0.	0.	1.	0.	1.	6.	0.	6.
48	0.	0.	0.	0.	27.	27.	0.	0.	0.
49	0.	0.	0.	7.	0.	7.	33.	0.	33.
50	0.	0.	0.	0.	3673.	3673.	0.	0.	0.

SOURCE NUMBER	CO EMISSIONS TONS/YEAR			HYDROCARBON EMISSIONS TONS/YEAR			NO2 EMISSIONS TONS/YEAR		
	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED
51	0.	0.	0.	5.	0.	5.	975.	0.	975.
52	0.	0.	0.	0.	55.	55.	0.	0.	0.
53	0.	0.	0.	0.	0.	0.	33.	0.	33.
54	0.	0.	0.	0.	3380.	3380.	0.	0.	0.
55	0.	0.	0.	0.	2120.	2120.	0.	0.	0.
56	0.	0.	0.	2.	0.	2.	9.	0.	9.
57	0.	0.	0.	0.	1109.	1109.	0.	0.	0.
58	0.	0.	0.	0.	336.	336.	0.	0.	0.
59	0.	0.	0.	1.	0.	1.	6.	0.	6.
60	0.	0.	0.	2.	0.	2.	10.	0.	10.
61	1.	0.	1.	118.	0.	118.	517.	0.	517.
62	0.	0.	0.	0.	370.	370.	0.	0.	0.
63	0.	0.	0.	0.	560.	560.	0.	0.	0.
64	0.	0.	0.	0.	1123.	1123.	0.	0.	0.
65	0.	0.	0.	2.	0.	2.	23.	0.	23.
66	0.	0.	0.	5.	0.	5.	24.	0.	24.
67	0.	0.	0.	6.	0.	6.	1095.	0.	1095.
68	0.	0.	0.	0.	0.	0.	0.	0.	0.
69	0.	572.	572.	0.	521.	521.	0.	149.	149.
70	2.	0.	2.	214.	0.	214.	39066.	0.	39066.
71	1.	0.	1.	141.	0.	141.	618.	0.	618.
72	0.	0.	0.	0.	0.	0.	0.	0.	0.
73	0.	0.	0.	2.	0.	2.	10.	0.	10.
74	0.	0.	0.	0.	91.	91.	0.	0.	0.
75	0.	0.	0.	2.	0.	2.	7.	0.	7.
76	0.	216.	216.	0.	43.	43.	0.	226.	226.
77	0.	0.	0.	2.	0.	2.	8.	0.	8.
78	0.	0.	0.	0.	8.	8.	0.	0.	0.
79	0.	0.	0.	7.	0.	7.	31.	0.	31.
80	0.	44.	44.	0.	9.	9.	0.	46.	46.
81	0.	0.	0.	20.	0.	20.	100.	0.	100.
82	0.	0.	0.	3.	0.	3.	537.	0.	537.
83	0.	0.	0.	1.	0.	1.	4.	0.	4.
84	0.	0.	0.	15.	0.	15.	66.	0.	66.
85	0.	0.	0.	0.	7.	7.	0.	0.	0.
86	0.	0.	0.	8.	0.	8.	35.	0.	35.
87	0.	0.	0.	4.	0.	4.	15.	0.	15.
88	0.	0.	0.	1.	0.	1.	3.	0.	3.
89	0.	0.	0.	1.	0.	1.	234.	0.	234.
90	0.	0.	0.	1.	0.	1.	3.	0.	3.
91	0.	0.	0.	4.	0.	4.	22.	0.	22.
92	0.	0.	0.	16.	0.	16.	2876.	0.	2876.
93	1.	0.	1.	146.	0.	146.	639.	0.	639.
94	0.	71.	71.	0.	14.	14.	0.	74.	74.
95	0.	0.	0.	9.	0.	9.	44.	0.	44.
96	0.	21.	21.	0.	4.	4.	0.	22.	22.
97	0.	0.	0.	22.	0.	22.	96.	0.	96.
98	0.	0.	0.	0.	3323.	3323.	0.	0.	0.
99	0.	0.	0.	0.	10.	10.	0.	0.	0.

ALLOWABLE EMISSIONS BASED OF FEDERAL REGULATIONS AND COMMENTS

SOURCE NUMBER	PART EMISSIONS TONS/YEAR	SO2 EMISSIONS TONS/YEAR	
1			AIRCRAFT LTO'S
2			POWER PLANT
3			FLARING
4			STORAGE TANKS
5			BOILER
6			GAS TURBINE
7			POWER PLANT
8	00		TURBINE POWER PLANT
9			GAS TURBINES -PEAKING
10			POWER PLANT
11			POWER PLANT
12			AMMONIA PRODUCTION 547,000 T/Y - 46,987 T/Y N43 EMISSION
13			POWER PLANT
14			290MM GAL/YR TANK
15			1330HP CRUDE OIL DIESEL
16			32 MM GAL/YR TANK
17			CRUDE OIL BOILER
18			912HP CRUDE OIL DIESEL
19			270MM GAL/YR TANK
20			CRUDE OIL BOILER
21			GAS TURBINE
22			GAS ENGINE
23			
24			MEAT PROCESSING
25			POWER PLANT
26			OFFICE BLDG
27			AIRCRAFT LTO'S
28			FUEL STORAGE
29			AIRCRAFT CTO'S
30			OIL FIELD FLARE
31			OIL FIELD FLARE
32			GAS ENGINE COMPRS.
33			GAS TURBINES
34			CRUDE STORAGE
35			
36			BOILERS
37			GAS TURBINE
38	31		BATCH PLANT ,CYCLONE,WET SCRUBBER 160000T/Y
39			FUEL STORAGE
40			FUEL STORAGE
41			OIL FIELD FLARE
42			BOILER
43			FUEL STORAGE-CRUDE
44			TURBOPUMP
45		31	GAS FIRED ENGINES
46			4 GAS-FIRED COMPRESSORS
47			TURBOPUMP
48			CLEANER 16000 GAL/YR STODDARD SOLV.
49			VARIOUS BOILERS
50			FUEL STORAGE TANKS

ALLOWABLE EMISSIONS BASED OF FEDERAL REGULATIONS AND COMMENTS

SOURCE NUMBER	PART EMISSIONS TONS/YEAR	SO2 EMISSIONS TONS/YEAR	
51		3	-GAS ENGINES
52			CRUDE STORAGE
53			GAS ENGINE
54			FUEL STORAGE
55			FUEL STORAGE
56			GAS TURBINE
57			7 STORAGE TANKS
58			FUEL STORAGE
59			EMULSION TREATER
60			GAS TURBINE
61			OIL FIELD FLARE
62			FUEL STORAGE
63			FUEL STORAGE
64			FUEL STORAGE
65			POWER PLANT
66			GAS TURBINE
67			3 GAS ENGINES
68			HEATERS
69			AIRCRAFT LTO'S
70			GAS ENGINES
71			BOILERS/FURNACES
72			UREA- 335,000 T/Y - 335T/Y NH3 EMISSION
73			BOILERS
74			CRUDE OIL STORAGE
75			BOILER
76			DIESEL
77			FLARE
78			FUEL STORAGE
79			GAS FLARE
80			DIESEL
81			GAS TURBINE
82			GAS ENGINE
83			BOILER
84			FLARING
85			FUEL STORAGE
86			BOILER
87			BOILERS
88			FLARE
89			ENGINE
90			HEATERS
91			GAS TURBINE
92			GAS ENGINES
93			GAS FLARE
94			DIESEL ENGINE
95			GAS TURBINE
96			DIESEL
97			GAS FLARE
98			CRUDE OIL STORAGE TANK
99			STORAGE TANK

12

SOURCE NUMBER	REGION	STANDARD INDUSTRIAL CLASS.	SITE	PROCESS CODE	SOURCE IDENTIFICATION	X COORDINATE KM	Y COORDINATE KM	POLITICAL JURISDICTION	OWNER	TYPE	OPER. HOURS
1	009	8061	001	0	ALASKA NATIVE HOSPITAL	.	.	4	FEDERAL	BOILER	8760
2	009	9100	002	0	CAMPION AIF STA	.	.	5	FEDERAL	BOILER	0
3	009	9100	001	0	CAMPION A/F STA	.	.	5	FEDERAL	BOILER	8760
4	009	4953	003	2	CAMPION A/F STA.	.	.	5	FEDERAL	SOLID WASTE	0
5	009	9100	004	0	CAPE LISBURNE A/F STA	.	.	3	FEDERAL	BOILER	4380
6	009	9100	005	0	CAPE LISBURNE A/F STA	.	.	3	FEDERAL	BOILER	8760
7	009	4953	006	2	CAPE LISBURNE A/F STA	.	.	3	FEDERAL	SOLID WASTE	0
8	009	9100	007	0	EIELSON A/F BASE	.	.	2	FEDERAL	BOILER	0
9	009	9100	008	0	EIELSON A/F BASE PWR	.	.	2	FEDERAL	BOILER	8760
10	009	3722	001	0	FAIRBANKS AIRPORT	.	.	2	LOCAL	BOILER	8760
11	009	8061	002	10	FAIRBANKS COMM.HOSPITAL	.	.	2	LOCAL	BOILER	8760
12	009	4953	001	1	FAIRBANKS-CITY	.	.	2	LOCAL	SOLID WASTE	936
13	009	4911	001	60	FAIRBANKS MUNIC.UTIL.	.	.	2	LOCAL	LOCAL	8760
14	009	4911	002	70	FAIRBANKS MUNIC.UTIL.	.	.	2	UTILITIES	BOILER	8760
15	009	4911	003	0	FAIRBANKS MUNIC.UTIL.	.	.	2	UTILITIES	BOILER	8760
16	009	4911	004	0	FAIRBANKS MUNIC.UTIL.	.	.	2	UTILITIES	BOILER	8760
17	009	9100	009	0	FT GREELY	.	.	2	FEDERAL	BOILER	4380
18	009	9100	010	0	FT GREELY	.	.	2	FEDERAL	BOILER	4380
19	009	4953	011	2	FT GREELY	.	.	2	FEDERAL	SOLID WASTE	2400
20	009	9100	012	60	FT WAINRIGHT	.	.	2	FEDERAL	BOILER	8760
21	009	9100	013	60	FT WAINRIGHT	.	.	2	FEDERAL	BOILER	8760
22	009	9100	014	60	FT WAINRIGHT	.	.	2	FEDERAL	BOILER	8760
23	009	9100	015	0	FT YUKON A/F STA	.	.	4	FEDERAL	BOILER	8760
24	009	9100	016	0	GALENA AIRPORT	.	.	5	FEDERAL	BOILER	8760
25	009	9100	017	0	GALENA AIRPORT	.	.	5	FEDERAL	BOILER	4380
26	009	4953	018	2	GALENA AIRPORT	.	.	5	FEDERAL	SOLID WASTE	0
27	009	4911	005	0	GOLDEN VALLEY ELECTRIC	.	.	2	UTILITIES	BOILER	8760
28	009	4911	006	0	GOLDEN VALLEY ELECTRIC	.	.	2	UTILITIES	BOILER	8760
29	009	9100	019	0	INDIAN MT A/F STA	.	.	5	FEDERAL	BOILER	8760
30	009	9100	020	0	INDIAN MT A/F STA	.	.	5	FEDERAL	BOILER	8760
31	009	4953	021	2	INDIAN MT A/F STA	.	.	5	FEDERAL	SOLID WASTE	0
32	009	9100	022	0	KOTZEBUE AIR FORCE STA	.	.	5	FEDERAL	BOILER	8720
33	009	4953	023	2	KOTZEBUE AIR FORCE STA	.	.	5	FEDERAL	SOLID WASTE	0
34	009	4911	007	0	KOTZEBUE ELECTRIC	.	.	5	UTILITIES	BOILER	8760
35	009	9100	024	0	KOTZEBUE -FAA	.	.	5	FEDERAL	BOILER	8760
36	009	4953	002	2	KOTZEBUE MUNIC.UTIL.	.	.	3	LOCAL	SOLID WASTE	0
37	009	9100	025	0	MURPHY DOME A/F STA	.	.	2	FEDERAL	BOILER	8720
38	009	9100	026	0	NASA STAD STATION	.	.	2	FEDERAL	BOILER	8760
39	009	9100	027	0	PET DIN.-TOK	.	.	2	FEDERAL	BOILER	4380
40	009	9100	023	0	PET DIN.-TOK	.	.	2	FEDERAL	BOILER	4380
41	009	4953	029	2	PET.DIP.-TOK	.	.	2	FEDERAL	SOLID WASTE	480
42	009	4911	008	0	TANANA POWER	.	.	2	UTILITIES	BOILER	8760
43	009	9100	030	0	TIN CITY A/F STA	.	.	3	FEDERAL	BOILER	4380
44	009	9100	031	0	TIN CITY A/F STA	.	.	3	FEDERAL	BOILER	8760
45	009	4953	032	2	TIN CITY A/F STA	.	.	3	FEDERAL	SOLID WASTE	0
46	009	8061	003	0	USPHS NATIVE HOSPITAL	.	.	3	FEDERAL	BOILER	0
47	009	8221	001	60	UNIV.OF ALASKA	.	.	2	STATE	BOILER	8760

SOURCE NUMBER	BOILER CAPACITY MMBTU/HR	EMIS FACT	COAL TONS/YR.	EMIS FACT	RESIDUAL OIL M GAL/YR	EMIS FACT	DISTILLATE OIL M GAL/YR	EMIS FACT	NATURAL GAS MMCF/YR	HEAT CONTENT COAL MMB/T	HEAT CONTENT RESID M B/GA	HEAT CONTENT DISTIL M B/GA	HEAT CONTENT NAT GA BTU/CF	% ASH COAL	SULFUR CONTENT % COAL	SULFUR CONTENT % RESID	SULFUR CONTENT % DIST.	SULFUR CONTENT % IN. GAS
1	0.	0	0.	0	0.	0	50.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.07	0.0
2	11.	0	0.	0	0.	14	373.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
3	0.	0	0.	0	0.	0	335.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
4	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
5	15.	0	0.	0	0.	14	290.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
6	0.	0	0.	0	0.	0	387.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.0	0.0
7	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
8	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
9	310.	5	150000.	0	0.	0	0.	0	0.	17.2	0.0	0.0	0.	8.7	0.20	0.0	0.0	0.0
10	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
11	6.	6	2426.	0	0.	0	0.	0	0.	17.4	0.0	0.0	0.	12.0	0.15	0.0	0.0	0.0
12	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
13	200.	5	82369.	0	0.	0	0.	0	0.	17.4	0.0	0.0	0.	8.5	0.15	0.0	0.0	0.0
14	37.	5	16044.	0	0.	0	0.	0	0.	17.4	0.0	0.0	0.	8.5	0.15	0.0	0.0	0.0
15	3.	0	0.	0	0.	14	106.	0	0.	0.0	0.0	135.0	0.	0.0	0.0	0.0	0.02	0.0
16	0.	0	0.	0	0.	0	557.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.02	0.0
17	28.	0	0.	0	0.	14	508.	0	0.	0.0	0.0	142.0	0.	0.0	0.0	0.0	0.23	0.0
18	20.	0	0.	0	0.	14	925.	0	0.	0.0	0.0	142.0	0.	0.0	0.0	0.0	0.23	0.0
19	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
20	135.	5	15000.	0	0.	0	0.	0	0.	16.9	0.0	0.0	0.	12.5	0.20	0.0	0.0	0.0
21	175.	5	18297.	0	0.	0	0.	0	0.	16.9	0.0	0.0	0.	12.5	0.20	0.0	0.0	0.0
22	1200.	5	160240.	0	0.	0	0.	0	0.	16.9	0.0	0.0	0.	12.5	0.20	0.0	0.0	0.0
23	0.	0	0.	0	0.	0	465.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
24	0.	0	0.	0	0.	0	400.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
25	52.	0	0.	0	0.	14	930.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
26	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
27	0.	0	0.	0	0.	0	502.	0	0.	0.0	0.0	136.0	0.	0.0	0.0	0.0	0.07	0.0
28	250.	5	103274.	0	0.	0	0.	0	0.	17.4	0.0	0.0	0.	9.9	0.20	0.0	0.0	0.0
29	14.	0	0.	0	0.	14	480.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
30	0.	0	0.	0	0.	0	430.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.0	0.0
31	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
32	0.	0	0.	0	0.	0	458.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
33	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
34	0.	0	0.	0	0.	0	330.	0	0.	0.0	0.0	136.4	0.	0.0	0.0	0.0	0.02	0.0
35	2.	0	0.	0	0.	14	79.	0	0.	0.0	0.0	136.4	0.	0.0	0.0	0.0	0.07	0.0
36	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
37	15.	0	0.	0	0.	14	1320.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
38	0.	0	0.	0	0.	0	651.	0	0.	0.0	0.0	128.5	0.	0.0	0.0	0.0	0.15	0.0
39	15.	0	0.	0	0.	14	276.	0	0.	0.0	0.0	135.0	0.	0.0	0.0	0.0	0.15	0.0
40	0.	0	0.	0	0.	0	120.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.15	0.0
41	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
42	0.	0	0.	0	0.	0	90.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.02	0.0
43	14.	0	0.	0	0.	14	325.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
44	0.	0	0.	0	0.	0	350.	0	0.	0.0	0.0	137.4	0.	0.0	0.0	0.0	0.50	0.0
45	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
46	7.	0	0.	0	0.	14	260.	0	0.	0.0	0.0	145.0	0.	0.0	0.0	0.0	0.02	0.0
47	100.	5	50000.	0	0.	0	0.	0	0.	17.4	0.0	0.0	0.	10.0	1.50	0.0	0.0	0.0

14

SOURCE NUMBER	SO2 EMISSIONS TONS/YEAR					PARTICULATE EMISSIONS TONS/YEAR					CONTROL EFFIENCY		DEVICE IDENTIFICAT.
	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	PART.	SO2	
1	0.	1.	1.	1.	0.	0.	1.	1.	1.	0.	0.0	0.0	
2	13.	0.	13.	13.	0.	3.	0.	3.	3.	0.	0.0	0.0	
3	0.	8.	8.	8.	0.	0.	4.	4.	4.	0.	0.0	0.0	
4	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	100T/Y
5	10.	0.	10.	10.	0.	2.	0.	2.	2.	0.	0.0	0.0	
6	0.	9.	9.	9.	0.	0.	5.	5.	5.	0.	0.0	0.0	
7	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.0	0.0	29TT/Y
8	0.	12.	12.	12.	0.	0.	58.	58.	58.	0.	0.0	0.0	
9	570.	0.	570.	570.	0.	8482.	0.	8482.	424. ✓	0.	95.00	0.0	008 CYCLONE
10	0.	85.	85.	85.	0.	0.	190.	190.	190. ✓	0.	0.0	0.0	
11	7.	0.	7.	7.	0.	73.	0.	73.	73.	0.	0.0	0.0	
12	0.	2.	2.	2.	0.	0.	48.	48.	48.	0.	0.0	0.0	008 320QT/Y
13	235.	0.	235.	235.	0.		0.	4500.	900. ✓	0.	80.0	0.0	008 CYCLONE
14	46.	0.	46.	46.	0.		0.	880.	160. ✓	0.	80.0	0.0	008 CYCLONE
15	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
16	0.	13.	13.	13.	0.	0.	7.	7.	7.	0.	0.0	0.0	
17	8.	0.	8.	8.	0.	4.	0.	4.	4.	0.	0.0	0.0	
18	15.	0.	15.	15.	0.	7.	0.	7.	7.	0.	0.0	0.0	
19	0.	2.	2.	2.	0.	0.	36.	36.	36.	0.	0.0	0.0	450QT/Y
20	57.	0.	57.	57.	0.	1219.	0.	1219.	366. ✓	0.	70.00	0.0	008 CYCLONE
21	70.	0.	70.	70.	0.	1487.	0.	1487.	178. ✓	0.	88.00	0.0	008 CYCLONE
22	0.	0.	650.	650.	0.	0.	0.	13700.	1670.	0.	88.00	0.0	008 CYCLONE
23	0.	10.	10.	10.	0.	0.	6.	6.	6.	0.	0.0	0.0	
24	0.	9.	9.	9.	0.	0.	6.	6.	6.	0.	0.0	0.0	
25	33.	0.	33.	33.	0.	7.	0.	7.	7.	0.	0.0	0.0	
26	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	110T/Y
27	0.	11.	11.	11.	0.	0.	7.	7.	7.	0.	0.0	0.0	
28	392.	0.	392.	392.	0.	6377.	0.	6377.	957. ✓	0.	85.00	0.0	CYCLONE
29	17.	0.	17.	17.	0.	4.	0.	4.	4.	0.	0.0	0.0	
30	0.	10.	10.	10.	0.	0.	9.	9.	9.	0.	0.0	0.0	
31	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	183T/Y
32	0.	10.	10.	10.	0.	0.	6.	6.	6.	0.	0.0	0.0	
33	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	130T/Y
34	0.	8.	8.	8.	0.	0.	4.	4.	4.	0.	0.0	0.0	
35	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
36	0.	9.	9.	9.	0.	0.	14.	14.	14.	0.	0.0	0.0	180QT/Y
37	48.	0.	48.	48.	0.	10.	0.	10.	10.	0.	0.0	0.0	
38	0.	15.	15.	15.	0.	0.	8.	8.	8.	0.	0.0	0.0	
39	3.	0.	3.	3.	0.	2.	0.	2.	2.	0.	0.0	0.0	
40	0.	3.	3.	3.	0.	0.	2.	2.	2.	0.	0.0	0.0	
41	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	100T/Y
42	0.	2.	2.	2.	0.	0.	1.	1.	1.	0.	0.0	0.0	
43	12.	0.	12.	12.	0.	2.	0.	2.	2.	0.	0.0	0.0	
44	0.	8.	8.	8.	0.	0.	4.	4.	4.	0.	0.0	0.0	
45	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.0	0.0	252T/Y
46	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
47	1425.	0.	1425.	1425.	0.	3250.	0.	3250.	195. ✓	0.	94.00	0.0	007 CYCLONE

SOURCE NUMBER	CO EMISSIONS TONS/YEAR			HYDROCARBON EMISSIONS TONS/YEAR			NO2 EMISSIONS TONS/YEAR		
	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED
1	0.	8.	8.	0.	2.	2.	0.	9.	9.
2	0.	0.	0.	1.	0.	1.	11.	0.	11.
3	0.	54.	54.	0.	11.	11.	0.	57.	57.
4	0.	4.	4.	0.	2.	2.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	9.	0.	9.
6	0.	63.	63.	0.	13.	13.	0.	66.	66.
7	0.	13.	13.	0.	4.	4.	0.	1.	1.
8	0.	852.	852.	0.	220.	220.	0.	26.	26.
9	150.	0.	150.	75.	0.	75.	1125.	0.	1125.
10	0.	709.	709.	0.	443.	443.	0.	88.	88.
11	2.	0.	2.	1.	0.	1.	18.	0.	18.
12	0.	2.	2.	0.	2.	2.	0.	3.	3.
13	41.	0.	41.	12.	0.	12.	2265.	0.	2265.
14	8.	0.	8.	2.	0.	2.	441.	0.	441.
15	0.	0.	0.	0.	0.	0.	3.	0.	3.
16	0.	91.	91.	0.	18.	18.	0.	95.	95.
17	0.	0.	0.	1.	0.	1.	15.	0.	15.
18	0.	0.	0.	1.	0.	1.	28.	0.	28.
19	0.	191.	191.	0.	68.	68.	0.	14.	14.
20	15.	0.	15.	8.	0.	8.	113.	0.	113.
21	18.	0.	18.	9.	0.	9.	137.	0.	137.
22	0.	0.	168.	0.	0.	84.	0.	0.	1260.
23	0.	80.	80.	0.	15.	15.	0.	80.	80.
24	0.	66.	66.	0.	13.	13.	0.	66.	66.
25	0.	0.	0.	1.	0.	1.	28.	0.	28.
26	0.	5.	5.	0.	2.	2.	0.	0.	0.
27	0.	82.	82.	0.	16.	16.	0.	85.	85.
28	103.	0.	103.	52.	0.	52.	775.	0.	775.
29	0.	0.	0.	1.	0.	1.	14.	0.	14.
30	0.	70.	70.	0.	14.	14.	0.	73.	73.
31	0.	8.	8.	0.	3.	3.	0.	1.	1.
32	0.	74.	74.	0.	15.	15.	0.	78.	78.
33	0.	6.	6.	0.	2.	2.	0.	0.	0.
34	0.	58.	58.	0.	12.	12.	0.	61.	61.
35	0.	0.	0.	0.	0.	0.	2.	0.	2.
36	0.	8.	8.	0.	27.	27.	0.	5.	5.
37	0.	0.	0.	2.	0.	2.	40.	0.	40.
38	0.	106.	106.	0.	21.	21.	0.	111.	111.
39	0.	0.	0.	0.	0.	0.	8.	0.	8.
40	0.	19.	19.	0.	4.	4.	0.	20.	20.
41	0.	4.	4.	0.	2.	2.	0.	0.	0.
42	0.	15.	15.	0.	3.	3.	0.	15.	15.
43	0.	0.	0.	0.	0.	0.	10.	0.	10.
44	0.	57.	57.	0.	11.	11.	0.	60.	60.
45	0.	11.	11.	0.	4.	4.	0.	1.	1.
46	0.	0.	0.	0.	0.	0.	8.	0.	8.
47	50.	0.	50.	25.	0.	25.	375.	0.	375.

ALLOWABLE EMISSIONS BASED OF FEDERAL REGULATIONS AND COMMENTS

SOURCE NUMBER	PART EMISSIONS TONS/YEAR	SO2 EMISSIONS TONS/YEAR	
1			POWER PLANT
2			HEATING PLANT
3			POWER PLANT
4			OPEN BURNING
5			HEATING PLANT
6			POWER PLANT
7	0		OPEN BURNING
8	/		AIRCRAFT EMISSIONS
9	/	0	STEAM POWER PLANT
10	/		AIRCRAFT LTO'S
11			POWER PLANT 2 BOILERS ,SUBBITUMIOUS
12	3		MUNICIPAL INCINER.
13			POWER PLANT W/C FLYASH REINJ
14			POWER PLANT -SPREADER STOKER W/F/REINJ SUBBITUMINOUS
15			STEAM TURBINE
16			POWER PLANT
17			HEATING PLANT
18			POWER PLANT
19	5		OPEN BURNING
20			POWER PLANT 3UNIT TOTAL
21			POWER PLANT
22			POWER PLANT
23			POWER PLANT
24			POWER PLANT
25			HEATING PLANT
26	0		OPEN BURNING
27			POWER PLANTS
28			POWER PLANT 25000LB/HR,SUBBITUMINOUS
29			HEATING PLANT
30			POWER PLANT
31	0		OPEN BURNING
32			POWER PLANT 10@100KW EACH
33	0		OPEN BURNING
34			POWER PLANT UNITS 3&4&5 (1&2 INACTIVE
35			STEAM HEATERS
36	2		OPEN BURNING
37			3 BOILERS
38			POWER PLANT
39			HEATING PLANT
40			POWER PLANT
41	0		OPEN BURNING
42			POWER PLANT
43			HEATING PLANT
44			POWER PLANT
45	0		OPEN BURNING
46			BOILER
47			POWER PLANT TWO BOILERS,SUBBITUMINOUS

17

EMISSION FACTOR SET #	EMISSION FACTOR					
	PARTICULATE	SO2	CO	HYDROCARBON	NO2	
1	16.000	38.000	1.000	0.300	18.000	
2	13.000	38.000	1.000	0.300	30.000	
3	17.000	38.000	1.000	0.300	18.000	
4	2.000	38.000	1.000	0.300	55.000	
5	13.000	38.000	2.000	1.000	15.000	
6	9.000	38.000	2.000	1.000	15.000	
7	2.000	38.000	10.000	3.000	6.000	
8	2.000	38.000	90.000	20.000	1.000	
9	17.000	38.000	1.000	0.030	18.000	
10	2.000	38.000	5.000	0.200	10.000	
11	1.000	38.000	90.000	2.500	3.000	
12	8.000	159.000	0.040	5.000	105.000	
13	23.000	159.000	0.200	3.000	60.000	
14	15.000	144.000	0.200	3.000	60.000	
15	10.000	144.000	5.000	3.000	12.000	
16	19.000	0.600	0.400	40.000	390.000	
17	18.000	0.600	0.400	40.000	175.000	
18	19.000	0.600	20.000	8.000	75.000	
19	15.000	0.600	0.400	40.000	200.000	
20	15.000	0.600	0.400	40.000	7300.000	

18

SOURCE NUMBER	REGION	STANDARD INDUSTRIAL CLASS.	SITE	PROCESS CODE	SOURCE IDENTIFICATION	X COORDINATE KM	Y COORDINATE KM	POLITICAL JURISDICTION	OWNER	TYPE	OPER. HOURS
1	010	2032	002	0	BOB FISHERIES	.	.	5	PRIVATE	BOILER	4380
2	010	9100	037	0	CAPE NEWENHAM A/F STA	.	.	3	FEDERAL	BOILER	8760
3	010	9100	038	0	CAPE NEWENHAM A/F STA	.	.	3	FEDERAL	BOILER	4380
4	010	4953	039	2	CAPE NEWENHAM A/F STA	.	.	3	FEDERAL	SOLID WASTE	0
5	010	9100	040	0	CAPE ROMANZOF A/F STA	.	.	2	FEDERAL	BOILER	8760
6	010	9100	041	0	CAPE ROMANZOF A/F STA	.	.	2	FEDERAL	BOILER	4380
7	010	4953	042	2	CAPE ROMANZOF A/F STA	.	.	2	FEDERAL	SOLID WASTE	0
8	010	9100	043	0	COLD BAY A/F STA	.	.	1	FEDERAL	BOILER	8760
9	010	4953	044	2	COLD BAY A/F STA	.	.	1	FEDERAL	SOLID WASTE	0
10	010	9100	045	0	FAA - KING SALMON	.	.	1	FEDERAL	BOILER	8760
11	010	3722	008	0	KING SALMON AIRPORT	.	.	3	LOCAL	BOILER	0
12	010	9100	046	0	KING SALMON AIRPORT	.	.	3	FEDERAL	BOILER	8760
13	010	9100	047	0	KING SALMON AIRPORT	.	.	3	FEDERAL	BOILER	4380
14	010	4953	007	2	KODIAK DISPOSAL	.	.	5	PRIVATE	SOLID WASTE	0
15	010	4911	019	0	KODIAK ELECTRIC	.	.	5	UTILITIES	BOILER	8760
16	010	8061	004	0	KODIAK MENTAL HEALTH C	.	.	5	LOCAL	BOILER	4420
17	010	4911	020	0	NAKNEK ELECTRIC	.	.	3	UTILITIES	BOILER	8760
18	010	9100	048	0	NAVAL COMM.STA -ADAK	.	.	1	FEDERAL	BOILER	8760
19	010	4953	049	2	NAVAL COMM.STA-ADAK	.	.	1	FEDERAL	SOLID WASTE	800
20	010	9100	050	0	NAVAL STA -ADAK	.	.	1	FEDERAL	BOILER	8760
21	010	9100	051	0	NAVAL STA -ADAK	.	.	1	FEDERAL	BOILER	4380
22	010	9100	052	0	NAVAL STA-KODIAK	.	.	5	FEDERAL	BOILER	8760
23	010	9100	053	0	NAVAL STA-KODIAK	.	.	5	FEDERAL	BOILER	4380
24	010	4953	054	2	NAVAL STA-KODIAK	.	.	5	FEDERAL	SOLID WASTE	500
25	010	2032	003	0	PAN ALASKA FISHORIES	.	.	1	PRIVATE	BOILER	0
26	010	2032	004	0	PETER PAN SEAFOODS	.	.	1	PRIVATE	BOILER	1520
27	010	2032	005	0	POINT CHECHALIS PACKER	.	.	5	PRIVATE	BOILER	2400
28	010	9100	055	0	SHEMYA A/F STA	.	.	1	FEDERAL	BOILER	8760
29	010	9100	056	0	SHEMYA A/F STA	.	.	1	FEDERAL	BOILER	4380
30	010	4953	057	2	SHEMYA A/F STA	.	.	1	FEDERAL	SOLID WASTE	0
31	010	9100	058	0	SPARREVOHN A/F STA	.	.	2	FEDERAL	BOILER	8760
32	010	9100	059	0	SPARREVOHN A/F STA	.	.	2	FEDERAL	BOILER	4380
33	010	4953	060	2	SPARREVOHN A/F STA	.	.	2	FEDERAL	SOLID WASTE	0
34	010	9100	061	0	TATALINA A/F STA	.	.	2	FEDERAL	BOILER	8760
35	010	9100	062	0	TATALINA A/F STA	.	.	2	FEDERAL	BOILER	4380
36	010	4953	008	2	UNALASKA CITY	.	.	1	LOCAL	SOLID WASTE	2081
37	010	2999	123	1	UNION OIL OF CALIF	.	.	5	PRIVATE	PROCESS	8760

SOURCE NUMBER	BOILER CAPACITY MMBTU/HR	EMIS FACT	COAL TONS/YR	EMIS FACT	RESIDUAL OIL M GAL/YR	EMIS FACT	DISTILLATE OIL M GAL/YR	EMIS FACT	NATURAL GAS MMCF/YR	HEAT CONTENT COAL MMB/T	RESID M B/GA	DISTIL M B/GA	NAT GA BTU/CF	% ASH COAL	SULFUR CONTENT % COAL	RESID	DIST.	N. GAS
1	8.	0	0.	0	0.	14	252.	0	0.	0.00	100.00	137.4	0.	0.0	0.0	0.0	0.02	0.0
2	0.	0	0.	0	0.	0	330.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
3	9.	0	0.	0	0.	14	245.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
4	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
5	0.	0	0.	0	0.	0	281.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
6	12.	0	0.	0	0.	14	420.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
7	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
8	0.	0	0.	0	0.	0	209.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
9	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
10	3.	0	0.	0	0.	14	140.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.01	0.0
11	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
12	0.	0	0.	0	0.	0	584.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
13	27.	0	0.	0	0.	14	700.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
14	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
15	0.	0	0.	0	0.	0	2361.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.02	0.0
16	11.	0	0.	0	0.	14	325.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.02	0.0
17	0.	0	0.	0	0.	0	384.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.02	0.0
18	8.	0	0.	0	0.	14	409.	0	0.	0.00	0.00	127.0	0.	0.0	0.0	0.0	0.0	0.0
19	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
20	0.	0	0.	0	0.	0	4180.	0	0.	0.00	0.00	134.0	0.	0.0	0.0	0.0	0.01	0.0
21	90.	0	0.	0	0.	14	2680.	0	0.	0.00	0.00	152.0	0.	0.0	0.0	0.0	0.03	0.0
22	120.	0	0.	13	6782.	0	0.	0	0.	0.00	0.00	135.0	0.	0.0	0.0	0.0	3.50	0.0
23	35.	0	0.	0	0.	14	1138.	0	0.	0.00	0.00	135.0	0.	0.0	0.0	0.0	0.40	0.0
24	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
25	15.	0	0.	0	0.	14	200.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.0	0.0
26	20.	0	0.	0	0.	14	231.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.02	0.0
27	20.	0	0.	0	0.	14	344.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.02	0.0
28	0.	0	0.	0	0.	0	3000.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
29	40.	0	0.	0	0.	14	1255.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
30	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
31	0.	0	0.	0	0.	0	430.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
32	9.	0	0.	0	0.	14	360.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
33	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
34	0.	0	0.	0	0.	0	384.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
35	10.	0	0.	0	0.	14	320.	0	0.	0.00	0.00	137.4	0.	0.0	0.0	0.0	0.50	0.0
36	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0
37	0.	0	0.	0	0.	0	0.	0	0.	0.00	0.00	0.00	0.	0.0	0.0	0.0	0.0	0.0

SOURCE NUMBER	SO2 EMISSIONS TONS/YEAR					PARTICULATE EMISSIONS TONS/YEAR					CONTROL EFFIENCY		DEVICE IDENTIFICAT.
	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	PART.	SO2	
1	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
2	0.	7.	7.	7.	0.	0.	4.	4.	4.	0.	0.0	0.0	
3	9.	0.	9.	9.	0.	2.	0.	2.	2.	0.	0.0	0.0	
4	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.0	0.0	198T/Y
5	0.	6.	6.	6.	0.	0.	4.	4.	4.	0.	0.0	0.0	
6	15.	0.	15.	15.	0.	3.	0.	3.	0.	0.	0.0	0.0	
7	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.0	0.0	206T/Y
8	0.	9.	9.	9.	0.	0.	3.	3.	3.	0.	0.0	0.0	
9	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.0	0.0	270T/Y
10	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	0.0	0.0	
11	0.	41.	41.	41.	0.	0.	97.	97.	97.	0.	0.0	0.0	
12	0.	13.	13.	13.	0.	0.	7.	7.	7.	0.	0.0	0.0	
13	25.	0.	25.	25.	0.	5.	0.	5.	5.	0.	0.0	0.0	
14	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.0	0.0	260T/Y
15	0.	53.	53.	53.	0.	0.	30.	30.	30.	0.	0.0	0.0	
16	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
17	0.	9.	9.	9.	0.	0.	5.	5.	5.	0.	0.0	0.0	
18	0.	0.	20.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
19	0.	2.	2.	2.	0.	0.	29.	29.	29.	0.	0.0	0.0	3600T/Y
20	0.	94.	94.	94.	0.	0.	52.	52.	52.	0.	0.0	0.0	
21	0.	0.	196.	0.	0.	0.	0.	20.	20.	0.	0.0	0.0	
22	1880.	0.	1880.	0.	0.	78.	0.	78.	78.	0.	0.0	0.0	
23	33.	0.	33.	33.	0.	9.	0.	9.	9.	0.	0.0	0.0	
24	0.	12.	12.	12.	0.	0.	200.	200.	200.	0.	0.0	0.0	24900TY
25	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
26	0.	0.	0.	0.	0.	2.	0.	2.	2.	0.	0.0	0.0	
27	0.	0.	0.	0.	0.	3.	0.	3.	3.	0.	0.0	0.0	
28	0.	68.	68.	68.	0.	0.	38.	38.	38.	0.	0.0	0.0	
29	45.	0.	45.	45.	0.	9.	0.	9.	9.	0.	0.0	0.0	
30	0.	1.	1.	1.	0.	0.	23.	23.	23.	0.	0.0	0.0	2880T/Y
31	0.	10.	10.	10.	0.	0.	5.	5.	5.	0.	0.0	0.0	
32	13.	0.	13.	13.	0.	3.	0.	3.	3.	0.	0.0	0.0	
33	0.	0.	0.	0.	0.	0.	3.	3.	3.	0.	0.0	0.0	324T/Y
34	0.	9.	9.	9.	0.	0.	5.	5.	5.	0.	0.0	0.0	
35	12.	0.	12.	12.	0.	2.	0.	2.	2.	0.	0.0	0.0	
36	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	120T/Y
37	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	

SOURCE NUMBER	CO EMISSIONS TONS/YEAR			HYDROCARBON EMISSIONS TONS/YEAR			NO2 EMISSIONS TONS/YEAR		
	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED	COMPUTER CALCULATED	HAND CALCULATED	UNCONTROLLED
1	0.	0.	0.	0.	0.	0.	8.	0.	8.
2	0.	53.	53.	0.	11.	11.	0.	56.	56.
3	0.	0.	0.	0.	0.	0.	7.	0.	7.
4	0.	8.	8.	0.	3.	3.	0.	0.	0.
5	0.	46.	46.	0.	9.	9.	0.	48.	48.
6	0.	0.	0.	1.	0.	1.	13.	0.	13.
7	0.	9.	9.	0.	3.	3.	0.	0.	0.
8	0.	34.	34.	0.	7.	7.	0.	36.	36.
9	0.	11.	11.	0.	4.	4.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	4.	0.	4.
11	0.	350.	350.	0.	227.	227.	0.	45.	45.
12	0.	95.	95.	0.	19.	19.	0.	99.	99.
13	0.	0.	0.	1.	0.	1.	21.	0.	21.
14	0.	11.	11.	0.	4.	4.	0.	1.	1.
15	0.	384.	384.	0.	77.	77.	0.	401.	401.
16	0.	0.	0.	0.	0.	0.	10.	0.	10.
17	0.	62.	62.	0.	13.	13.	0.	65.	65.
18	0.	0.	0.	0.	0.	0.	0.	0.	18.
19	0.	153.	153.	0.	54.	54.	0.	11.	11.
20	0.	680.	680.	0.	140.	140.	0.	711.	711.
21	0.	0.	0.	0.	0.	0.	0.	0.	80.
22	1.	0.	1.	10.	0.	10.	203.	0.	203.
23	0.	0.	0.	2.	0.	2.	34.	0.	34.
24	0.	1058.	1058.	0.	373.	373.	0.	75.	75.
25	0.	0.	0.	0.	0.	0.	6.	0.	6.
26	0.	0.	0.	0.	0.	0.	7.	0.	7.
27	0.	0.	0.	1.	0.	1.	10.	0.	10.
28	0.	488.	488.	0.	98.	98.	0.	510.	510.
29	0.	0.	0.	2.	0.	2.	38.	0.	38.
30	0.	122.	122.	0.	43.	43.	0.	9.	9.
31	0.	70.	70.	0.	14.	14.	0.	73.	73.
32	0.	0.	0.	1.	0.	1.	11.	0.	11.
33	0.	14.	14.	0.	5.	5.	0.	1.	1.
34	0.	62.	62.	0.	12.	12.	0.	65.	65.
35	0.	0.	0.	0.	0.	0.	10.	0.	10.
36	0.	5.	5.	0.	2.	2.	0.	0.	0.
37	0.	0.	0.	0.	136.	136.	0.	0.	0.

ALLOWABLE EMISSIONS BASED OF FEDERAL REGULATIONS AND COMMENTS

SOURCE NUMBER	PART EMISSIONS TONS/YEAR	SO2 EMISSIONS TONS/YEAR	
1			FISH CANNERY
2			POWER PLANT
3	0		HEATING PLANT
4	0		OPEN BURNING
5			POWER PLANT
6			HEATING PLANT
7	0		OPEN BURNING
8			POWER PLANT
9	0		OPEN BURNING
10			POWER PLANT
11			AIRCRAFT LTG'S
12			POWER PLANT
13	0		HEATING PLANT
14	0		OPEN BURNING
15			POWER PLANT UNITS 1-9
16			HEATING PLANT
17			POWER PLANT
18			POWER/HEATING PLANT
19	4		OPEN BURNING
20			POWER PLANT
21			HEATING PLANT
22			POWER PLANT
23			HEATING PLANT
24	25		OPEN BURNING
25			FISH CANNERY
26			FISH CANNERY
27			FISH CANNERY
28			POWER PLANT
29			HEATING PLANT
30	3		OPEN BURNING
31			POWER PLANT
32			HEATING PLANT
33	0		OPEN BURNING
34			POWER PLANT
35			HEATING PLANT
36	0		OPEN BURNING
37			FUEL STORAGE

23

EMISSION FACTOR SET #	EMISSION FACTOR				
	PARTICULATE	SO2	CO	HYDROCARBON	NO2
1	16.000	38.000	1.000	0.300	18.000
2	13.000	38.000	1.000	0.300	30.000
3	17.000	38.000	1.000	0.300	18.000
4	2.000	38.000	1.000	0.300	55.000
5	13.000	38.000	2.000	1.000	15.000
6	5.000	38.000	2.000	1.000	15.000
7	2.000	38.000	10.000	3.000	6.000
8	2.000	38.000	90.000	20.000	3.000
9	17.000	38.000	1.000	0.030	18.000
10	2.000	38.000	5.000	0.200	10.000
11	1.000	36.000	90.000	2.500	3.000
12	8.000	159.000	0.040	5.000	105.000
13	23.000	159.000	0.200	3.000	60.000
14	19.000	144.000	0.200	3.000	60.000
15	10.000	144.000	5.000	3.000	12.000
16	15.000	0.400	0.400	40.000	390.000
17	18.000	0.400	0.400	40.000	175.000
18	19.000	0.400	20.000	8.000	75.000
19	15.000	0.400	0.400	40.000	200.000
20	15.000	0.400	0.400	40.000	7300.000

SOURCE NUMBER	REGION	STANDARD INDUSTRIAL CLASS.	SITE	PROCESS CODE	SOURCE IDENTIFICATION	X COORDINATE KM	Y COORDINATE KM	POLITICAL JURISDICTION	OWNER	TYPE	OPER. HOURS
1	011	4911	009	0	ALASKA ELECTRIC LIGHT	.	.	3	UTILITIES	BOILER	8760
2	011	4911	010	0	ALASKA ELECTRIC	.	.	3	UTILITIES	BOILER	8760
3	011	2499	001	4	ALASKA PRINCE TIMBER	.	.	6	PRIVATE	SOLID WASTE	1680
4	011	4953	002	6	ALASKA PRINCE TIMBER	.	.	6	PRIVATE	SOLID WASTE	1680
5	011	4953	003	6	ALASKA PRINCE TIMBER	.	.	6	PRIVATE	SOLID WASTE	1680
6	011	4953	004	6	ALASKA PRINCE TIMBER	.	.	6	PRIVATE	SOLID WASTE	1800
7	011	2499	009	0	ALASKA WOOD PRODUCTS	.	.	6	PRIVATE	BOILER	3950
8	011	4953	006	6	ALASKA WOOD PRODUCTS	.	.	6	PRIVATE	SOLID WASTE	3950
9	011	3722	003	0	ANNETTE AIRPORT	.	.	6	FEDERAL	BOILER	0
10	011	4953	003	2	BELARDI & SCHNEIDER	.	.	3	PRIVATE	SOLID WASTE	0
11	011	3722	004	0	JUNEAU AIRPORT	.	.	3	LOCAL	BOILER	8760
12	011	4911	011	0	KETCHIKAN CITY P.U.	.	.	2	LOCAL	BOILER	8760
13	011	4953	004	2	MARTIN'S SITKA DISPOSAL	.	.	5	PRIVATE	SOLID WASTE	0
14	011	4953	007	6	MITKOF LUMBER	.	.	6	PRIVATE	SOLID WASTE	1440
15	011	4953	009	2	PETERSBURG CITY	.	.	6	LOCAL	SOLID WASTE	0
16	011	2032	001	0	PETERSBURG FISHERIES	.	.	6	PRIVATE	BOILER	2500
17	011	2999	001	1	STANDARD OIL CALIF	.	.	1	PRIVATE	PROCESS	8760
18	011	2999	002	1	STANDARD OIL OF CALIF	.	.	5	PRIVATE	PROCESS	8760
19	011	2999	003	1	STANDARD OIL WRANGELL	.	.	6	PRIVATE	PROCESS	0
20	011	2999	004	1	UNION OIL CO	.	.	6	PRIVATE	PROCESS	8760
21	011	4953	006	2	WRANGELL-CITY	.	.	6	LOCAL	SOLID WASTE	0
22	011	4953	008	6	WRANGELL LUMBER	.	.	6	PRIVATE	SOLID WASTE	3950
23	011	2499	009	0	WRANGELL LUMBER	.	.	6	PRIVATE	BOILER	3950
24	011	9911	012	C	WRANGELL MUNIC.POWER	.	.	6	LOCAL	BOILER	8760
25	011	2621	001	1	ALASKA LUMBER & PULP	.	.	9	PRIVATE	PROCESS	8760
26	011	2653	001	1	KETCHIKAN PULP			2	PRIVATE	PROCESS	8760

SOURCE NUMBER	BOILER CAPACITY MMBTU/HR	EMIS FACT	COAL TONS/YR	EMIS FACT	RESIDUAL OIL M GAL/YR	EMIS FACT	DISTILLATE OIL M GAL/YR	EMIS FACT	NATURAL GAS MMCF/YR	HEAT CONTENT COAL MMB/T	HEAT CONTENT RESID M B/GA	HEAT CONTENT DISTIL M B/GA	HEAT CONTENT NAT GA BTU/CF	% ASH COAL	SULFUR CONTENT % COAL	SULFUR CONTENT % RESID	SULFUR CONTENT % DIST.	SULFUR CONTENT % N. GAS
1	0.	0	0.	0	0.	0	987.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.02	0.0
2	0.	0	0.	0	0.	0	109.	0	0.	0.0	0.0	137.6	0.	0.0	0.0	0.0	0.02	0.0
3	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
4	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
5	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
6	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
7	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
8	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
9	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
10	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
11	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
12	0.	0	0.	0	0.	0	971.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.01	0.0
13	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
14	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
15	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
16	40.	0	0.	0	0.	14	100.	0	0.	0.0	0.0	136.4	0.	0.0	0.0	0.0	0.02	0.0
17	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
18	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
19	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
20	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
21	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
22	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
23	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0
24	0.	0	0.	0	0.	0	600.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.50	0.0
25	0.	0	0.	0	0.	0	0.	0	0.	0.0	0.0	0.0	0.	0.0	0.0	0.0	0.0	0.0

SOURCE NUMBER	SO2 EMISSIONS TONS/YEAR					PARTICULATE EMISSIONS TONS/YEAR					CONTROL EFFICIENCY		DEVICE IDENTIFICAT.
	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	COMPUTER CALCS.	HAND CALCS.	UNCON-TROLLED	CON-TROLLED	ALLOWABLE	PART.	SO2	
1	0.	22.	22.	22.	0.	0.	12.	12.	12.	0.	0.0	0.0	
2	0.	2.	2.	2.	0.	0.	1.	1.	1.	0.	0.0	0.0	
3	0.	2.	2.	2.	0.	0.	18.	18.	18.	0.	0.0	0.0	2400T/Y
4	0.	0.	0.	0.	0.	0.	6.	6.	6.	0.	0.0	0.0	1640T/Y
5	0.	1.	1.	1.	0.	0.	8.	8.	8.	0.	0.0	0.0	760T/Y
6	0.	0.	0.	0.	0.	0.	8.	8.	8.	0.	0.0	0.0	2400T/Y
7	0.	89.	89.	89.	0.	0.	744.	744.	744.	0.	0.0	0.0	59327TY
8	0.	2.	2.	2.	0.	0.	107.	107.	107.	0.	0.0	0.0	30579TY
9	0.	22.	22.	22.	0.	0.	28.	28.	28.	0.	0.0	0.0	
10	0.	0.	0.	0.	0.	0.	1270.	1270.	1270.	0.	0.0	0.0	1900007
11	0.	29.	29.	29.	0.	0.	65.	65.	65.	0.	0.0	0.0	
12	0.	21.	21.	21.	0.	0.	12.	12.	12.	0.	0.0	0.0	
13	0.	0.	0.	0.	0.	0.	6.	6.	6.	0.	0.0	0.0	720T/Y
14	0.	0.	0.	0.	0.	0.	18.	18.	18.	0.	0.0	0.0	5000T/Y
15	0.	0.	0.	0.	0.	0.	1.	1.	1.	0.	0.0	0.0	150T/Y
16	0.	0.	0.	0.	0.	0.	0.	1.	1.	0.	0.0	0.0	
17	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
18	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
19	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.0	0.0	
21	0.	1.	1.	1.	0.	0.	20.	20.	20.	0.	0.0	0.0	2500T/Y
22	0.	6.	6.	6.	0.	0.	395.	395.	395.	0.	0.0	0.0	
23	0.	2.	2.	2.	0.	0.	143.	143.	143.	0.	0.0	0.0	40755TY
24	0.	14.	14.	14.	0.	0.	8.	8.	8.	0.	0.0	0.0	
25	0.	1600.	1600.	1600.	0.	0.			1000.	0.		0.0	
26		3400	3400	3400					2000				

ALLOWABLE EMISSIONS BASED OF FEDERAL REGULATIONS AND COMMENTS

SOURCE NUMBER	PART EMISSIONS TONS/YEAR	SO2 EMISSIONS TONS/YEAR	
1			POWER PLANT GOLD CREEK UNITS 1 THRU 5
2			LEMON CREEK UNITS 1&2
3	21		SINGLE CHAMBER INCINER.
4	21		WOOD WASTE BURNER W/SCREEN
5	11		MUNICIPAL REFUSE -BURNER W SCREEN
6	21		WOOD WASTE,BURNER W/SCREEN
7	60		WOOD PROD USED IN BOILER
8	31		WOOD WASTE,3MESH 14GA SCREEN
9			AIRCRAFT LTO'S
10	150		OPEN BURNING LOGS,STUMPS
11			AIRCRAFT LTO'S
12			POWER PLANT
13	11		OPEN BURNING
14	51		BURNER - WOOD PROD
15	91		OPEN BURNING
16			FI FISH CANNERY
17			FUEL STORAGE
18			FUEL STORAGE
19			FUEL STORAGE
20			FUEL STORAGE
21	31		OPEN BURNING
22	113		WOOD WASTE, 3MESH 14GA SCREEN 112,900T/Y
23	41		WOOD PROD USED IN BOILER
24			POWER PLANT
25			PULP PRODUCTION - EMISSION 45,000CFM @ 400PPM SOX TWO UNITS
26			PULP PRODUCTION -

APPENDIX II.

LEGAL

STATE OF ALASKA

WILLIAM A. EGAN, GOVERNOR

DEPARTMENT OF LAW

OFFICE OF THE ATTORNEY GENERAL

POUCH K — STATE CAPITOL
JUNEAU 99801

February 29, 1972

Mr. James A. Anderegg
Department of Environmental Conservation
Pouch O
Juneau, Alaska 99801

Dear Mr. Anderegg:

You have requested that I designate the provisions of the Alaska statutes which satisfy the legal authority requirement of the implementation plan required by the Clean Air Act. Those provisions are the following:

1. Authority to adopt emission standards and limitations and any other measures necessary for attainment and maintenance of national standards. (AS 46.03.020(10); AS 46.03.140)

2. Authority to enforce applicable laws, regulations, and standards, and seek injunctive relief. (AS 46.03.710; AS 46.03.760; AS 46.03.790; AS 46.03.810; AS 46.03.820; AS 46.03.890)

3. Authority to abate pollution emissions on an emergency basis to prevent substantial endangerment to the health of persons, i.e., authority comparable to that available to the Administrator under section 303 of the Clean Air Act. (AS 46.03.820)

4. Authority to prevent construction, modification, or operation of any stationary source at any location where emissions from such source will prevent the attainment or maintenance of a national standard. (AS 46.03.160)

5. Authority to obtain information necessary to determine whether air pollution sources are in compliance with applicable laws, regulations, and standards, including authority to require record keeping and to make inspections and conduct tests of air pollution sources. (AS 46.03.020(5), (6), (7); AS 46.03.150; AS 46.03.860)

6. Authority to require owners or operators of stationary sources to install, maintain, and use emission monitoring devices and to make periodic reports to the State or the nature and amounts of emissions from such stationary sources; also authority for the State to make such data available to the public as reported and as correlated with any applicable emission standards or limitations. (AS 46.03.020(10); AS 46.03.140; AS 46.03.150)

If I can be of further assistance please contact me.

Very truly yours,

JOHN E. HAVELOCK
ATTORNEY GENERAL

By: Ralph Stemp
Ralph Stemp
Assistant Attorney General

RS:fw

Alaska Statutes

Title 46. Water, Air and Environmental Conservation.

Chapter
03. Environmental Conservation (§§ 46.03.010—46.03.900)
05. Water Pollution Control Act (Repealed)
07. Village Safe Water Act (§§ 46.07.010—46.07.080)
10. Pollution as Nuisance (Repealed)
15. Water Use Act (§§ 46.15.010—46.15.270)
25. Alaska State Commission of Oceanography (Repealed)
26. Commission for Ocean Advancement Through Science and Technology (§§ 46.26.010—46.26.100)

Chapter 03. Environmental Conservation.

Article
1. Declaration of Policy (§46.03.010)
2. Department of Environmental Conservation (§§ 46.03.020—46.03.040)
3. Water Pollution Control (§§ 46.03.050—46.03.130)
4. Air Pollution Control (§§ 46.03.140—46.03.240)
5. Radiation Protection (§§ 46.03.250—46.03.310)
6. Pesticide Control (§§ 46.03.320—46.03.330)
7. Prohibited Acts and Penalties (§§ 46.03.710—46.03.840)
8. General Provisions (§§ 46.03.860—46.03.900)

Effective date of chapter. — Section 6, ch. 120, SLA 1971, provides: "This Act takes effect July 1, 1971."

Editor's note. — Section 5, ch. 120, SLA 1971, effective July 1, 1971, provides: "All litigation, hearings, investigations and other proceedings pending under any law amended or functions which may be transferred by this Act, continue in effect and may be continued and completed notwithstanding any such transfer or amendment provided for in this Act. Certificates, orders, rules or regulations issued or filed under authority of a law amended by this Act or functions which may be transferred by this Act, remain in effect for the term issued, unless or until revoked, vacated, or otherwise modified under the provisions of this Act. All contracts or other obligations created by any law amended by this Act or by virtue of functions which may be transferred by this Act, and in effect on July 1, 1971, remain in effect unless or until revoked, or modified under the provisions of this Act."

Legislative committee report. — For report on ch. 120, SLA 1971 (SB 75 am H), see 1971 House Journal, p. 1016.

Article 1. Declaration of Policy.

Section
10. Declaration of policy

Sec. 46.03.010. Declaration of policy. (a) It is the policy of the state to conserve, improve and protect its natural resources and environment and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.

1

(b) It is the policy of the state to improve and coordinate the environmental plans, functions, powers and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations and concerned individuals, and to develop and manage the basic resources of water, land and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations. (§ 3 ch 120 SLA 1971)

Am. Jur. references. — 25 Am. Jur., Health, § 24; 56 Am. Jur., Waters, § 412; 56 Am. Jur., Water Works, §§ 49 to 53, 74 to 86.

Article 2. Department of Environmental Conservation.

Sec. 46.03.020. Powers of the department. The department may

(1) enter into contracts necessary or convenient to carry out the functions, powers and duties of the department;

(2) review and appraise programs and activities of state departments and agencies in light of the policy set out in § 10 of this chapter for the purpose of determining the extent to which the programs and activities are contributing to the achievement of that policy and to make recommendations to the departments and agencies, including but not limited to, environmental guidelines;

(3) consult with and cooperate with

(A) officials and representatives of any nonprofit corporation or organization in the state;

(B) persons, organizations and groups, public and private, using, served by, interested in or concerned with the environment of the state;

(4) appear and participate in proceedings before any state or federal regulatory agency involving or affecting the purposes of the department;

(5) undertake studies, inquiries, surveys or analyses it may consider essential to the accomplishmeent of the purposes of the department; these activities may be carried out by the personnel of the department or in cooperation with public or private agencies, including educational, civic and research organizations, colleges, universities, institutes and foundations;

(6) at reasonable times enter and inspect with the consent of the owner or occupier any property or premises to investigate either actual or suspected sources of pollution or contamination or to ascertain compliance or noncompliance with a regulation which may be promulgated under §§ 20—40 of this chapter; information relating to secret processes or methods of manufacture discovered during investigation is confidential;

(7) conduct investigations and hold hearings and compel the attendance of witnesses and the production of accounts, books and documents by the issuance of a subpoena;

(8) advise and cooperate with municipal, regional and other local agencies and officials in the state, to carry out the purposes of this chapter;

(9) act as the official agency of the state in all matters affecting the purposes of the department under federal laws now or hereafter enacted;

(10) adopt regulations necessary to effectuate the purposes of this chapter, including, by way of example and not limitation, regulations providing for

(A) control, prevention and abatement of air, water, or land or subsurface land pollution;

(B) safeguard standards for petroleum and natural gas pipeline construction, operation, modification or alteration;

(C) protection of public water supplies by setting standards for the construction, improvement, and maintenance of public water supply systems;

(D) collection and disposal of sewage and industrial waste;

(E) collection and disposal of garbage, refuse, and other discarded solid materials from industrial, commercial, agricultural and community activities or operations;

(F) control of radiation sources to prohibit and prevent unnecessary radiation;

(G) control of pesticides;

(H) such other purposes as may be required for the implementation of the policy declared in § 10 of this chapter. (§ 3 ch 120 SLA 1971)

Revisor's note (1971). — In ch. 120, SLA 1971, AS 46.03.020(6) referred to "§§ 30—40 of this chapter." The engrossed version of the bill (SB 75 am H) referred to "this article," which includes § 20; therefore, the provision has been corrected here to refer to "§§ 20—40 of this chapter."

Sec. 46.03.030. Grants and loans for water supply and sewerage systems. (a) The department may pay, as funds are available, 25 per cent of the estimated reasonable cost, as determined by the Secretary of the Interior, of each waste treatment works project approved for a federal grant by the Federal Water Quality Administration or its predecessor, the Federal Water Pollution Control Administration, and on which construction was initiated after June 30, 1967. As funds are available, the department may lend on an interest-free basis for a project approved after June 30, 1970, any part of an anticipated federal grant. Money received from the Federal Water Quality Administration for the project after the loan is given must be used to repay the loan, but the loan need be repaid only to the extent of this federal assistance.

(b) The department may pay to a municipality, as funds are available, up to the lesser of 25 per cent of the estimated cost or 50 per

cent of the estimated cost not borne by the federal government, if there is federal assistance, of water systems, including collection and impounding facilities, and of those portions of sewerage systems not covered by (a) of this section. The estimated cost of any part of a system will be as determined by the federal agency which gives the most monetary assistance or, if none, by the department. Systems shall be constructed according to plans and specifications approved by the federal agency which gives the most monetary assistance or, if none, by the department.

(c) There is a water supply and sewerage systems fund created in the department to carry out the purposes of this section. (§ 3 ch 120 SLA 1971)

Sec. 46.03.040. Alaska environmental plan. (a) The department shall formulate and annually review and revise a statewide environmental plan for the management and protection of the quality of the environment and the natural resources of the state, in furtherance of the legislative policy and purposes expressed in this chapter.

(b) The department shall submit the first plan to the governor on or before January 1, 1972, and thereafter submit periodic revisions of the plan to the governor. The plan is effective upon approval by the governor and shall serve thereafter as a guide to the public, the state government and the political subdivisions of the state in the development of the environment and natural resources of the state.

(c) In formulating the plan and any revisions, the department may consult with persons, organizations and groups, public or private, interested in or concerned with the environment of the state, and with a department, division, board, commission or other agency of the state, with a political subdivision, or with any public authority as may be necessary to enable the department to carry out its responsibilities under this section. (§ 3 ch 120 SLA 1971)

Article 3. Water Pollution Control.

Sec. 46.03.050. Authority. The department has jurisdiction to prevent and abate the pollution of the waters of the state. (§ 3 ch 120 SLA 1971)

Sec. 46.03.060. Water pollution control plan. The department shall develop comprehensive plans for water pollution control in the state and conduct investigations it considers advisable and necessary for the discharge of its duties. (§ 3 ch 120 SLA 1971)

ALR references. — Health board's power to prescribe methods of keeping water free from impurities, 23 ALR 228.

Constitutionality and construction of statutes for protection of municipal water supply, 72 ALR 673.

Validity of prohibition or regulation of bathing, swimming, boating, fishing, etc., to protect public water supply, 56 ALR2d 790.

Sec. 46.03.070. Pollution standards. After public hearing, the department may adopt standards and make them public and determine what qualities and properties of water indicate a polluted condition actually or potentially deleterious, harmful, detrimental or injurious to the public health, safety or welfare, to terrestrial and aquatic life or their growth and propagation, or to the use of waters for domestic, commercial, industrial, agricultural, recreational, or other reasonable purposes. (§ 3 ch 120 SLA 1971)

Sec. 46.03.080. Quality and purity standards. After study and public hearings held upon due notice, the department may establish standards of quality and purity or group the designated waters of the state into classes as to minimum quality and purity, or both. The department shall classify waters in accordance with considerations of best usage in the interest of the public. The department may alter and modify classifications after hearing. (§ 3 ch 120 SLA 1971)

ALR references. — Statute prescribing standard of purity of water furnished for human consumption, 6 ALR 475.

Sec. 46.03.090. Plans for pollution disposal. The department may require the submission of plans for sewage and industrial waste disposal or treatment or both for a publicly or privately owned or operated industrial establishment, community, public or private property subdivision or development. (§ 3 ch 120 SLA 1971)

Sec. 46.03.100. Waste disposal permit. (a) A person who conducts a commercial or industrial operation which results in the disposal of solid or liquid waste material into the waters of the state must procure a permit from the department before disposing of the waste material. The permit must be obtained for direct disposal and for disposal into publicly operated sewerage systems.

(b) This section does not apply to a person discharging only domestic sewage into a sewerage system. (§ 3 ch 120 SLA 1971)

Sec. 46.03.110. Waste disposal permit procedure. (a) An application for a permit shall be made on forms prescribed by the department and shall contain the name and address of the applicant, a description of his operations, the quantity and type of waste material sought to be disposed of, the proposed method of disposal, and any other information considered necessary by the department. Application for permit shall

be made at least 60 days before commencement of a proposed discharge.

(b) Upon receipt of a proper application the department shall publish notice of the application in two separate publications of a newspaper of general circulation within the general area in which the disposal of waste material is proposed to be made. The notice may also be published in other appropriate information media. The notice shall include a statement that a person who wants to present his views to the department in regard to the application may do so in writing to the department within 30 days of the second publication of the notice. The written response entitles the writer to a copy of the application.

(c) When the department receives an application, the commissioner shall immediately send copies of the application to the commissioner of fish and game, the commissioner of natural resources, the commissioner of economic development and the commissioner of health and social services.

(d) The department may specify in a permit the terms and conditions under which waste material may be disposed of. The terms and conditions shall be directed to avoiding pollution and to otherwise carry out the policies of this chapter. No permit may be effective for a period in excess of five years from the date of issuance. (§ 3 ch 120 SLA 1971; am § 6 ch 104 SLA 1971)

Effect of amendment. — The 1971 amendment, effective July 1, 1971, substituted "commissioner of health and social services" for "commissioner of health and welfare" in subsection (c).

Sec. 46.03.120. Termination or modification of waste disposal permit. (a) The department may terminate a permit upon 30 days written notice if the department finds

(1) that the permit was procured by misrepresentation of material fact or by failure of the applicant to disclose fully the facts relating to its issuance;

(2) that there has been a violation of the conditions of the permit;

(3) that there has been a material change in the quantity or type of waste disposed of.

(b) The department may modify a permit if the department finds that a material change in the quality or classification of the waters of the state has occurred. (§ 3 ch 120 SLA 1971)

Sec. 46.03.130. Compliance order. (a) When, in the opinion of the department, a person is violating or is about to violate regulations and standards established under the provisions of §§ 60—100 of this chapter or any other regulations concerning water pollution, the department shall notify the person of its determination by certified mail. The determination and notice do not constitute an order under § 820 of this chapter.

(b) Within 15 days from the receipt of the notice, the recipient of the

determination must file with the department a report stating what measures have been and are being taken to control the conditions outlined in the notice from the department.

(c) Thereafter, the department may issue a compliance order in conformity with the authority of the department and the public policy declared in § 10 of this chapter. A copy of the compliance order shall be sent by certified mail to the person affected. A compliance order is effective upon receipt.

(d) Within 30 days of receipt, a person affected may make application for a hearing to review the compliance order. Failure to make application for hearing within 30 days of the receipt of a compliance order constitutes a waiver of the recipient's right of review.

(e) The department shall hold a hearing within 20 days of receipt of the application. After hearing, the department may rescind, modify or affirm the compliance order. (§ 3 ch 120 SLA 1971)

Article 4. Air Pollution Control.

Sec. 46.03.140. Emission control requirements. The department may establish air pollution control regulations which in its judgment are necessary to prevent, abate or control air pollution. These regulations may be for the state as a whole or may vary from area to area as may be appropriate to facilitate accomplishment of the purposes of this chapter and in order to take account of varying local conditions. (§ 3 ch 120 SLA 1971)

Sec. 46.03.150. Classification and reporting. (a) The department by regulation shall classify air contaminant sources, which in its judgment may cause or contribute to air pollution, according to levels and types of emissions and other characteristics which relate to air pollution, and may require reporting for the classifications. Classifications made under this subsection may be for application to the state as a whole or a designated area of the state and shall be made with special reference to effects on health, economic and social factors and physical effects on property.

(b) A person operating or responsible for the operation of air contaminant sources of a class for which the regulations of the department require reporting shall make reports containing the information required by the department concerning location, size and

height of contaminant outlets, processes employed, fuels used and the nature and time periods or duration of emissions, and other information relevant to air pollution and available or reasonably capable of being assembled. (§ 3 ch 120 SLA 1971)

Sec. 46.03.160. Additional contaminant control measures. (a) The department may require that notice be given to it before the undertaking of the construction, installation or establishment of particular types or classes of new air contaminant sources specified in its regulations. Within 15 days of its receipt of the notice, the department shall require, as a condition precedent to the undertaking, the submission of plans and other information it considers necessary in order to determine whether the proposed undertaking will be in accord with applicable regulations in force under §§ 140—150 of this chapter.

(b) Within 30 days of receipt of the plans and information for a proposed undertaking, the department shall either approve the undertaking and issue a permit, or if the department determines that the proposed undertaking will not meet the requirements of §§ 140—150 of this chapter and applicable regulations, it shall issue a prohibition order against the undertaking.

(c) A person subject to a prohibition order as prescribed in (b) of this section, upon written request in accordance with regulations of the department, is entitled to a hearing on the order. Following the hearing the order may be affirmed, modified or withdrawn.

(d) For the purposes of this chapter, addition to or enlargement or replacement of an air contaminant source, or a major alteration of one, shall be construed as an undertaking for the construction, installation or establishment of a new air contaminant source.

(e) Features, machines and devices constituting parts of or called for by plans or other information submitted under (a) of this section shall be maintained in good working order.

(f) Nothing in this section authorizes the department to require the use of machinery, devices or equipment from a particular supplier or produced by a particular manufacturer if the required performance standards may be met by machinery, devices or equipment available from other sources.

(g) The absence of or the department's failure to issue a regulation or order under this section does not relieve a person from compliance with emission control requirements or other provisions of law.

(h) The department may require the payment of a reasonable fee for the review of plans and information required to be submitted. No fee for a single review may exceed $25. (§ 3 ch 120 SLA 1971)

Sec. 46.03.170. Variances. (a) A person who owns or is in control of a plant, building, structure, establishment, process or equipment may apply to the department for a variance from applicable emission control

regulations. The department may grant the variance, but only after public hearing following due notice, if it finds that

(1) the emissions occurring or proposed to occur do not endanger human health or safety; and

(2) compliance with the rules or regulations from which variance is sought would produce severe hardship without benefits to the public.

(b) No variance may be granted under this section until the department has considered the relative interests of the applicant, other owners of property likely to be affected by the emissions and the general public.

(c) A variance granted under (a) of this section, shall be for periods and under conditions consistent with the reasons for it and within the following limitations:

(1) if the variance is granted on the ground that there is no practicable means known or available for the adequate prevention, abatement or control of the air pollution involved, it shall be only until the necessary means for prevention, abatement, or control become known and available, subject to the taking of substitute or alternate measures that the department may prescribe;

(2) if the variance is granted on the ground that complaince with the particular requirement from which variance is sought will necessitate the taking of measures which, because of their extent or cost, must be spread over a considerable period, it shall be for a period not to exceed the reasonable time which in the opinion of the department is necessary; a variance granted on this ground shall contain a timetable for taking action in an expeditious manner and shall be conditioned on adherence to the timetable and shall be for not more than five years;

(3) if the variance is granted on the ground that it is justified to relieve or prevent hardship of a kind other than that provided in (c)(1) and (2) of this section, it shall be for not more than one year.

(d) The department may upon application renew an existing variance on terms and conditions and for periods which would be appropriate on initial granting of a variance. If complaint is made to the department on account of the variance no renewal of it may be granted unless, after public hearing on the complaint following due notice, the department finds that renewal is justified. Application shall be made at least 60 days before the expiration of the variance. Immediately upon receipt of an application for renewal the department shall give public notice of it.

(e) A variance or renewal is not a right of the applicant but is in the discretion of the department.

(f) No variance or renewal granted under this section may be construed to prevent or limit the application of the emergency orders of the commissioner issued under § 820 of this chapter. (§ 3 ch 120 SLA 1971)

Sec. 46.03.180. Confidentiality of records. Records and information

in the possession of the department which relate to production or sales figures or to processes or production techniques of the owner or operator of an air contaminant source are considered confidential records of the department after application by the party and certification that their public disclosure would tend to adversely affect his competitive position. (§ 3 ch 120 SLA 1971)

Sec. 46.03.190. Motor vehicle pollution. (a) As the state of knowledge and technology relating to the control of emissions from motor vehicles may permit or make appropriate, and in furtherance of the purposes of this chapter, the department may provide by regulation for the control of these emissions. The regulations may prescribe requirements for the installation and use of equipment designed to reduce or eliminate emissions and for the proper maintenance of this equipment.

(b) Except as permitted by law, no person may fail to maintain in operation any equipment or feature constituting an operational element of the air pollution control system or mechanism of a motor vehicle if it is required by regulations of the department to be maintained in or on the vehicle. A failure to maintain this equipment in operation subjects the owner or operator to suspension or cancellation of the registration of the vehicle, and it is not again eligible for registration until this equipment is restored to operation.

(c) The department shall consult with the Department of Public Safety and furnish it with technical information, including testing techniques, standards and instructions for emission control features and equipment.

(d) When the department has issued regulations requiring the maintenance of features or equipment in or on motor vehicles for the purpose of controlling emission from the vehicles, no motor vehicle may be issued a certificate of inspection and approval if required, unless the required features or equipment have been inspected in accordance with the standards, testing techniques and instructions furnished by the department and have been found to meet those standards. (§ 3 ch 120 SLA 1971)

Sec. 46.03.200. Limitations. Sections 140—240 of this chapter do not

(1) grant to the department jurisdiction or authority with respect to air contamination existing solely within commercial and industrial plants, works or shops;

(2) affect the relations between employers and employees with respect to or arising out of a condition of air contamination or air pollution; or

(3) supersede or limit the applicability of a law or ordinance relating to sanitation, industrial health or safety. (§ 3 ch 120 SLA 1971)

Sec. 46.03.210. Local air pollution control programs. (a) A municipality with a population in excess of 1,000 may, within five years

from August 5, 1969, establish and administer within its jurisdiction an air pollution control program. Organized boroughs may establish an air pollution control program on an areawide basis, and the exercise of powers with respect to the program is not subject to the restrictions on acquiring additional areawide powers specified in AS 07.15.350. However, the weighted vote shall apply to the exercise of powers as provided in AS 07.20.070(d). Local programs shall

(1) provide by ordinance for requirements compatible with those imposed by the provisions of §§ 140 and 170 of this chapter and applicable regulations;

(2) provide for the enforcement of the requirements imposed through appropriate administrative and judicial processes;

(3) provide for a local administrative organization, staff, and other resources necessary to effectively carry out the purposes of the program; and

(4) be approved by the department as being satisfactory to meet the requirements of §§ 140—170 of this chapter and the applicable regulations.

(b) Municipalities other than those with a population of less than 1,000 may establish and administer local air pollution programs if the proposed programs meet the requirements of (a)(1)—(4) of this section.

(c) A municipality may administer all or a part of its air pollution control program in cooperation with one or more municipalities.

(d) If the department finds that the location, character, or extent of particular concentrations of population, air contaminant sources, the geographic, topographic or meteorological considerations or a combination of these factors make impracticable the maintenance of appropriate levels of air quality without an areawide air pollution control program, the department may determine the boundaries within which a program is necessary and direct that a program spanning those boundaries is the only acceptable alternative to direct state administration. (§ 3 ch 120 SLA 1971)

Sec. 46.03.220. Absence or inadequacy of local program. (a) If a municipality authorized to establish or participate in an air pollution control program under § 210(a) or (d) of this chapter fails to establish a program within the time specified, or if the department has reason to believe that an air pollution control program in force under that section is inadequate to prevent and control air pollution in the jurisdiction to which the program applies, or that the program is being administered in a manner inconsistent with the requirements of this chapter the department shall, following 45 days notice, conduct a hearing on the matter.

(b) If, after the hearing, the department determines that any of the deficiencies enumerated in (a) of this section exist, it shall require that necessary corrective action be taken within a reasonable period of time, not to exceed 90 days.

(c) If the municipality or the district set up under § 210(a) or (d) of this chapter fails to take the necessary corrective action within the time specified the department shall administer in the municipality or district all of the regulatory provisions of this chapter. The department's air pollution control program shall then supersede municipal air pollution ordinances. regulations, and requirements in the affected jurisdiction.

(d) If the department finds that the control of a particular class of air contaminant source, because of its complexity or magnitude is beyond the reasonable capability of the local air pollution control authorities or may be more efficiently and economically performed at the state level, it may assume and retain jurisdiction over the class of air contaminant source. Classifications under this subsection may be either on the basis of the nature of sources involved or on the basis of their relationship to the size of the communities in which they are located.

(e) A municipality in which the department administers the air pollution control program under this section may with the approval of the department establish or resume a municipal program which meets the requirements of § 210(a) or (d).

(f) The provisions of §§ 210—220 do not nullify a local air pollution program in operation on August 5, 1969, if the program meets the requirements of § 210(a) or (d) of this chapter within two years from that date. (§ 3 ch 120 SLA 1971)

Sec. 46.03.230. State and federal aid. (a) A local government unit with an air pollution program meeting the requirements of this chapter and the regulations issued under it may apply to the state for state aid equal to a maximum of 75 per cent of the locally funded annual operating cost of the program. For a joint or areawide program established under § 210(d) of this chapter, application may be made for state aid equal to a maximum of 75 per cent of the locally funded operating cost. In the case of a joint or areawide program the state aid may be based on the cost of the entire program or, if the department finds that one or more elements of separately administered programs are being carried on jointly in a way that materially increases the efficiency of the programs, it may aid the element carried on under the interlocal agreement at the rate applied to joint and areawide programs generally.

(b) Municipalities of the state and interlocal air pollution control agencies established under §§ 140—240 of this chapter may apply for, receive, administer and expend federal aid for the control of air pollution or the development and administration of programs related to that control, if the application is first submitted to and approved by the department. The department shall approve an application if it is consistent with §§ 140—240 of this chapter and other applicable requirements of law. (§ 3 ch 120 SLA 1971)

Sec. 46.03.240. Construction and implementation of § 230. (a) Section 230 of this chapter may not be construed so as to create a debt of the state.

(b) The air pollution control support account is established. Funds to carry out the provisions for state aid under § 230 of this chapter may be appropriated annually by the legislature to the account. If amounts in the account are insufficient for the purpose of the state aid authorized under § 230 of this chapter, such funds as are available shall be distributed pro rata among eligible local governments or air pollution control districts.

(c) Money in the air pollution control support account which, at the end of the fiscal year for which the money is appropriated, exceeds the amount required for the allocations authorized in §§ 140—240 of this chapter reverts to the general fund. (§ 3 ch 120 SLA 1971)

Article 5. Radiation Protection.

Sec. 46.03.250. Authority. (a) The department shall

(1) develop comprehensive policies and programs for the evaluation and determination of hazards associated with the use of radiation, radiation sources, and their amelioration;

(2) encourage, participate in and conduct studies, investigations, training, research and demonstrations relating to the control of radiation hazard, the measurement of radiation, the effects on health of exposure to radiation and related problems it considers necessary or advisable for the discharge of its duties;

(3) collect and disseminate health education information relating to radiation protection;

(4) review plans and specifications for radiation sources submitted under its regulations;

(5) inspect radiation sources, their shielding and immediate surroundings and records concerning their operation for the determination of possible radiation hazard.

(b) The department may keep confidential data obtained as a result of registration or investigation. (§ 3 ch 120 SLA 1971)

Sec. 46.03.260. Use of atomic radiation. Sources of radiation shall be shielded, transported, handled, used and kept to prevent users and persons within effective range from being exposed to unnecessary radiation in conformity with the department's regulations. (§ 3 ch 120 SLA 1971)

Sec. 46.03.270. Electronic product radiation. All electronic products capable or likely to be capable of emitting radiation shall be shielded, handled, used, and kept to prevent users and persons within the range of radiation from dangerous concentration of radiation in conformity with the department's regulations. (§ 3 ch 120 SLA 1971)

Sec. 46.03.280. Notification of violation and order of abatement. When the department finds, after inspection and examination of a source of radiation as constructed, operated or maintained, that there has been a violation of a provision of this chapter, it shall notify the person causing, allowing or permitting the violation, of the nature of the violation and order the person to cease and abate the violation. (§ 3 ch 120 SLA 1971)

Sec. 46.03.290. Authority of department in cases of emergency. When the department finds that an emergency exists requiring immediate action to protect the public health or welfare from radiation it may issue an order reciting the existence of an emergency and requiring that action be taken to meet the emergency. The order is effective immediately. A person to whom an order is directed shall comply with it immediately but on application to the department shall be given a hearing under the Administrative Procedure Act (AS 44.62). Thereafter the department may affirm, revoke or modify the order. (§ 3 ch 120 SLA 1971)

Sec. 46.03.300. Exceptions. Sections 260—270 of this chapter do not limit the intentional exposure of patients to radiation for the purpose of diagnosis or therapy, or medical research, as authorized by law. (§ 3 ch 120 SLA 1971)

Sec. 46.03.310. Conflicting laws. Sections 250—300 of this chapter may not be construed as repealing any laws of the state relating to radiation sources, exposures, radiation protection, and professional licensure, but shall be held and construed as auxiliary and supplementary to those laws, except to the extent that those laws are in conflict with §§ 250—300 of this chapter. Ordinances or regulations of any governing body of a municipality which are consistent with §§ 250—300 of this chapter are not superseded by §§ 250—300 of this chapter. (§ 3 ch 120 SLA 1971)

Article 6. Pesticide Control.

Section
320. Authority
330. Public pesticide programs

Sec. 46.03.320. Authority. (a) The department is authorized to

(1) regulate the transportation, testing, inspection, packaging,

labeling, handling and advertising of pesticides and broadcast chemicals offered for sale, or placed in commerce for use in the state;

(2) regulate and supervise the distribution, application or use of pesticides and broadcast chemicals in any state project or program, or by a public agency under the jurisdiction of the state;

(3) regulate or prohibit the use of pesticides and broadcast chemicals.

(b) The department may provide by regulation for the licensing of persons engaged in the custom, commercial or contract spraying or application of pesticides and broadcast chemicals including the requirement of a surety bond and liability insurance for the licensee. (§ 3 ch 120 SLA 1971)

Sec. 46.03.330. Public pesticide programs. (a) No officer, agent or employee of the state, or of a borough or city of any class, may direct, carry out, or participate in the spraying or application of a pesticide or broadcast chemical in any program or project involving funds, materials or equipment of the state, borough or city, except in accordance with regulations promulgated by the department under § 320 of this chapter.

(b) Before a public project that would affect lands owned separately by two or more persons is initiated, the person directing the program shall give public notice of the program in the manner required by regulations of the department. The department shall conduct a public hearing on the proposed program if a hearing is requested by the governing body of the affected borough or city, or by a petition signed by at least 50 residents. The requirement for public notice or public hearing may be waived if the commissioner determines that a public emergency exists.

(c) The provisions of this section apply to home rule municipalities. (§ 3 ch 120 SLA 1971)

Article 7. Prohibited Acts and Penalties.

Sec. 46.03.710. Pollution prohibited. No person may pollute or add to the pollution of the air, land, subsurface land or water of the state. (§ 3 ch 120 SLA 1971)

Sec. 46.03.720. Construction of certain facilities prohibited. No person may construct, extend, install or operate a sewage system or

treatment works, or any part of a sewage system or treatment works, until plans for it are submitted to the department for review, and the department approves them in writing and issues a written permit. The department may waive the requirement that plans be submitted to it. (§ 3 ch 120 SLA 1971)

Sec. 46.03.730. Pesticides. No person may spray or apply, or cause to be sprayed or applied dichloro - diphenyl - trichloro - ethane (DDT), dieldrin or other pesticide or broadcast chemical in a manner which may cause damage to or endanger the health, welfare or property of another person, or in such a manner as to be likely to pollute the air, soil or water of the state without prior authorization of the department. (§ 3 ch 120 SLA 1971)

Sec. 46.03.740. Oil pollution. No person may discharge, cause to be discharged, or permit the discharge of petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or a residuary product of petroleum, into, or upon the waters or land of the state except in quantities, and at times and locations or under circumstances and conditions as the department may by regulation permit or where permitted under art. IV of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended. (§ 3 ch 120 SLA 1971)

Sec. 46.03.750. Ballast water discharge. (a) No person may pollute or add to the pollution of waters of the state by discharging from any vessel ballast water, tank-cleaning waste water or other waste containing petroleum in excess of the maximum permitted by the water quality standards established under §§ 70 and 80 of this chapter and in no event may a vessel discharge ballast water, tank-cleaning waste water or other waste containing petroleum in excess of 50 parts per million of oil residue.

(b) Except as provided in (c) of this section, no vessel may take on petroleum or any petroleum product or by-product as cargo unless it arrives in ports in the state without having discharged ballast at sea during the period of time from departure of the vessel enroute to the state from a port outside the state to arrival at a port in the state or while in transit between ports in the state, and the master of the vessel certifies the fact on forms provided by the department.

(c) Vessels equipped with tanks used exclusively for ballast or capable of producing ballast with an oil content less than that provided for in (a) of this section may discharge that ballast at sea, including the waters of the state, if it meets the standards of (a) of this section and the master of the vessel certifies that fact on forms provided by the department.

(d) A person in charge of a sea-going vessel or of an onshore or off-

shore facility, as soon as he has knowledge of any discharge from the vessel or facility in violation of a provision of this chapter shall immediately notify the department of the discharge. (§ 3 ch 120 SLA 1971)

Revisor's note (1971). — In ch. 120, SLA 1971, AS 46.03.750(a) referred to "§§ 40 and 150 of this chapter." The context indicates that the reference was to AS 46.05.040 and 46.05.150, which were repealed by § 4, ch. 120, SLA 1971, and which now appear in virtually identical language as AS 46.03.070 and 46.03.080, respectively. These citations have been corrected accordingly.

AS 46.03.750 is based on former AS 46.05.173, enacted by ch. 244, SLA 1970. For legislative intent of that enactment, see 1970 Senate Journal, p. 1207.

Cross reference. — As to discharging ballast into navigable waters, see AS 11.65.010.

Sec. 46.03.760. Pollution penalties. (a) A person who violates §§ 710, 730, 740, or 750 of this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not more than $25,000, or by imprisonment for not more than one year, or by both. Each unlawful act constitutes a separate offense.

(b) In addition to the penalties provided in (a) of this section a person who violates §§ 740—750 of this chapter is liable, in a civil action, to the state for liquidated damages to be assessed by the court for an amount not less than $5,000 nor more than $100,000, depending on the severity of the violation.

(c) In addition to the penalties provided in (a) of this section, a person who violates a provision of § 750 of this chapter is liable to the state, in a civil action, in the case of a vessel, for damages in an amount not to exceed $100 per gross ton of the violating vessel or $14 million, whichever is less, and, in the case of an onshore or offshore facility, $100 for every $500 evaluation of the violating facility or $14 million, whichever is less. However, if the state shows that a violation of § 750 of this chapter was the result of wilful negligence or wilful misconduct on the part of the person charged with the violation, the person is liable to the state for the full amount of damages caused. In the case of wilful negligence or wilful misconduct, "damages," in this subsection, means costs associated with the abatement, containment or removal of a pollutant and reasonable restoration of the environment to its former state.

(d) A person who falsely certifies information required under § 750 of this chapter, upon conviction, is punishable by a fine of not more than $25,000, or by imprisonment for not more than one year, or by both. Each unlawful act constitutes a separate offense.

(e) Nothing in this section affects an individual's right to recover damages under other applicable statutes or the common law. (§ 3 ch 120 SLA 1971)

Revisor's note (1971).—AS 46.03.760 is based on former AS 46.05.210, amended by ch. 244, SLA 1970. For legislative intent of the 1970 amendments, see 1970 Senate Journal, p. 1207.

Sec. 46.03.770. Detention of vessel without warrant as security for damages. A vessel which is used in or in aid of a violation of §§ 740—750 of this chapter may be detained after a valid search by the department, an agent of the department, a peace officer of the state, or an authorized protection officer of the Department of Fish and Game. Upon judgment of the court having jurisdiction that the vessel was used in or the cause of a violation of §§ 740—750 of this chapter with knowledge of its owner or under circumstances indicating that the owner should reasonably have had this knowledge, the vessel may be held as security for payment to the state of the amount of damages assessed by the court under § 760(b) of this chapter, and if the damages so assessed are not paid within 30 days after judgment or final determination of an appeal, the vessel shall be sold at public auction, or as otherwise directed by the court, and the damages paid from the proceeds. The balance, if any, shall be paid by the court to the owner of the vessel. The court shall permit the release of the vessel upon posting of a bond set by the court in an amount not to exceed $100,000. The damages received under this section shall be transmitted to the proper state officer for deposit in the general fund. A vessel seized under this section shall be returned or the bond exonerated if no damages are assessed under § 760(b) of this chapter. (§ 3 ch 120 SLA 1971)

Sec. 46.03.780. Liability for restoration. (a) A person who violates a provision of this chapter, or who fails to perform a duty imposed by this chapter, or violates or disregards an order, permit, or other determination of the department made under the provisions of this chapter, and thereby causes the death of fish, animals, or vegetation or otherwise injures or degrades the environment of the state is liable to the state for damages.

(b) Liability for damages under (a) of this section includes an amount equal to the sum of money required to restock injured land or waters, to replenish a damaged or degraded resource, or to otherwise restore the environment of the state to its condition before the injury.

(c) Damages under (a) of this section shall be recovered by the attorney general on behalf of the state. (§ 3 ch 120 SLA 1971)

Sec. 46.03.790. Wilful violation. (a) A person found guilty of wilfully violating a provision of this chapter, or a regulation, written order or directive of the department or of a court made under this chapter is guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than $1,000 and costs of prosecution, or by imprisonment for not more than one year, or by both such fine, cost, and imprisonment at the discretion of the court.

(b) Each day upon which a wilful violation of the provisions of this chapter occurs may be considered a separate and additional violation. (§ 3 ch 120 SLA 1971)

Sec. 46.03.800. Water nuisances. (a) A person is guilty of creating or maintaining a nuisance if he puts a dead animal carcass, or part of one, excrement, or a putrid, nauseous, noisome, decaying, deleterious, or offensive substance into, or in any other manner befouls, pollutes, or impairs the quality of, a spring, brook, creek, branch, well, or pond of water which is or may be used for domestic purposes.

(b) A person who neglects or refuses to abate the nuisance upon order of the department is guilty of a misdemeanor and is punishable as provided in § 790 of this chapter. In addition to this punishment, the court shall assess damages against the defendant for the expenses of abating the nuisance. (§ 3 ch 120 SLA 1971)

Am. Jur. reference. — 56 Am. Jur., Waters, §§ 411, 432, 433.

Sec. 46.03.810. Air and land nuisances. (a) A person is guilty of creating or maintaining a nuisance if he

(1) places or deposits upon a lot, street, beach, premises or upon, or within 200 feet of a public highway, unless the highway abuts upon tidal water, any garbage, offal, dead animals, or any other matter or thing, which would be obnoxious or cause the spread of disease or in any way endanger the health of the community;

(2) allows to be placed or deposited upon any premises owned by him or under his control garbage, offal, dead animals, or any other matter or thing which would be obnoxious or offensive to the public or which would produce, aggravate, or cause the spread of disease or in any way endanger the health of the community.

(b) A person who neglects or refuses to abate the nuisance upon order of an officer of the Department of Environmental Conservation is guilty of a misdemeanor and is punishable as provided in § 790 of this chapter. In addition to this punishment, the court shall assess damages against the defendant for the expenses of abating the nuisance. (§ 3 ch 120 SLA 1971)

Sec. 46.03.820. Emergency powers. (a) When the department finds, after investigation, that a person is causing, engaging in or maintaining a condition or activity which, in the judgment of its commissioner presents an imminent or present danger to the health or welfare of the people of the state or would result in or be likely to result in irreversible or irreparable damage to the natural resources or environment, and it appears to be prejudicial to the interests of the people of the state to delay action until an opportunity for a hearing can be provided, the department may, without prior hearing, order that person by notice to discontinue, abate or alleviate the condition or activity. The proscribed condition or activity shall be immediately discontinued, abated or alleviated.

(b) Upon receipt of an order of the department made under (a) of this

section, the person affected has the right to be heard and to present proof to the department that the condition or activity does not constitute an actual or potential source of irreversible or irreparable damage to the natural resources or environment of the state, or that the order may constitute a substantial private hardship.

(c) In the commissioner's discretion or upon application made by the recipient of an order within 15 days of receipt of the order, the department shall schedule a hearing at the earliest possible time. The hearing shall be scheduled within five days of the receipt of the application. The submission of an application or the scheduling of a hearing does not stay the operation of the department's order made under (a) of this section.

(d) After a hearing the department may affirm, modify or set aside the order. An order affirmed, modified or set aside after hearing is subject to judicial review as provided in AS 44.62.560. The order is not stayed pending judicial review unless the commissioner so directs. If an order is not immediately complied with, the attorney general, upon request of the commissioner, shall seek enforcement of the order.

(e) The department may adopt additional regulations prescribing the procedure to be followed in the issuance of emergency orders. (§ 3 ch 120 SLA 1971)

Sec. 46.03.840. Radiation penalties. A person who violates §§ 260—280 of this chapter is, upon conviction, punishable by a fine of not more than $100, or by imprisonment for not more than six months, or by both. Each day upon which a violation occurs constitutes a separate offense. (§ 3 ch 120 SLA 1971)

Article 8. General Provisions.

Sec. 46.03.860. Inspection warrant. The department is authorized to seek search warrants for the purpose of investigating actual or suspected sources of pollution or contamination or to ascertain compliance or noncompliance with this chapter or a regulation promulgated under this chapter. (§ 3 ch 120 SLA 1971)

Sec. 46.03.870. Actionable rights. (a) The bases for proceedings or actions resulting from violations of this chapter or a regulation promulgated under this chapter inure solely to and are for the benefit of the state, and are not intended to in any way create new, or enlarge existing rights of persons or groups of persons in the state.

(b) A determination or order of the department creates no pre-

sumption of law or finding of fact inuring to or for the benefit of persons other than the state.

(c) This chapter does not estop the state, persons or political subdivisions of the state in the exercise of their rights to suppress nuisances, to seek damages, or to otherwise abate or recover for the effects of pollution or other environmental degradation. (§ 3 ch 120 SLA 1971)

Sec. 46.03.880. Applicability of the Administrative Procedure Act. Except as otherwise specifically provided in this chapter, the Administrative Procedure Act (AS 44.62) governs the activities and the proceedings of the department. (§ 3 ch 120 SLA 1971)

Sec. 46.03.890. Enforcement authority. The following persons are authorized to enforce this chapter:

(1) a state employee authorized by the commissioner;

(2) a police officer of the state. (§ 3 ch 120 SLA 1971)

Sec. 46.03.900. Definitions. In this chapter

(1) "air contaminant" means dust, fumes, mist, smoke, other particulate matter, vapor, gas, odorous substances or a combination of these;

(2) "air pollution" means the presence in the outdoor atmosphere of one or more air contaminants in quantities and duration that tend to be injurious to human health or welfare, animal or plant life or property or would unreasonably interfere with the enjoyment of life or property;

(3) "atomic radiation" means all ionizing radiation;

(4) "broadcast chemicals" means chemical substances which are released into the air or onto land or water for the purpose of preventing, destroying, repelling, stimulating or retarding plant or animal life, or chemical substances released for meteorological control, oil spill control or fire control;

(5) "commissioner" means the commissioner of environmental conservation;

(6) "department" means the Department of Environmental Conservation;

(7) "electronic product" means a manufactured product which

(A) when in operation, contains or acts as part of an electronic circuit and emits, or in the absence of effective shielding or other controls would emit, electronic product radiation; or

(B) is intended for use as a component, part, or accessory of a product described in (A) of this paragraph and which when in operation emits, or in the absence of effective shielding or other controls would emit, electronic product radiation;

(8) "electronic product radiation" means an atomic radiation or nonionizing, electro-magnetic or particulate radiation, or a sonic, infrasonic, or ultrasonic wave which is emitted from an electronic product as the result of the operation of an electronic circuit in the product;

(9) "industrial waste" means a liquid, gaseous, solid, or other waste substance or a combination of them resulting from process of industry, manufacturing trade or business, or from the development of natural resources; however, gravel, sand, mud, or earth taken from its original situs and put through sluice boxes, dredges, or other devices for the washing and recovery of the precious metal contained in them and redeposited in the same watershed from which it came is not industrial waste;

(10) "motor vehicle" has the same meaning as in AS 28.20.630;

(11) "municipality" means an organized borough or an incorporated city outside an organized borough, and includes all classes of boroughs and cities whether home rule or otherwise;

(12) "other wastes" means garbage, refuse, decayed wood, sawdust, shavings, bark, trimmings from logging operations, sand, lime cinders, ashes, offal, oil, tar, dyestuffs, acids, chemicals, and other substances not sewage or industrial waste which may cause or tend to cause pollution of the waters of the state;

(13) "person" means any individual, public or private corporation, political subdivision, government agency, municipality, industry, co-partnership, association, firm, trust, estate, or any other entity whatsoever;

(14) "pesticide" means any chemical or biological agent intended for preventing, destroying, repelling, or mitigating plant or animal life and any substance intended for use as a plant regulator, defoliant or desicant, including but not limited to insecticides, fungicides, rodenticides, herbicides, nematocides and biocides;

(15) "pollution" means the contamination or altering of waters, land or subsurface land of the state in a manner which creates a nuisance or makes waters, land or subsurface land unclean, or noxious, or impure, or unfit so that they are actually or potentially harmful or detrimental or injurious to public health, safety or welfare, to domestic, commercial, industrial, or recreational use, or to livestock, wild animals, bird, fish, or other aquatic life;

(16) "radiation" means all atomic and electronic product radiation;

(17) "radiation source" means any substance, machine, or electronic product which emits radiation;

(18) "sewage" means the water-carried human or animal wastes from residences, buildings, industrial establishments, or other places, together with ground water infiltration and surface water as may be present; the admixture with sewage of industrial wastes or other wastes is "sewage";

(19) "sewer system" or "sewerage system" means pipelines or conduits, pumping stations, and force mains, and all other appurtenant constructions, devices, and appliances used for conducting sewage, industrial waste, or other wastes to a point of ultimate disposal;

(20) "standard" means the measure of purity or quality for waters in

relation to their reasonable and necessary use as established by the department;

(21) "treatment works" means a plant, disposal field, lagoon, pumping station, constructed drainage ditch or surface water intercepting ditch, incinerator, area devoted to sanitary land fills, or other works installed for the purpose of treating, neutralizing, stabilizing or disposing of sewage, industrial waste, or other wastes;

(22) "waters" includes lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, straits, passages, canals, the Pacific Ocean, Gulf of Alaska, Bering Sea and Arctic Ocean, in the territorial limits of the state, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially in or bordering the state or under the jurisdiction of the state. (§ 3 ch 120 SLA 1971)

Chapter 05. Water Pollution Control Act.

Article
1. Functions of Department of Health and Social Services (Repealed)
2. Prohibited Acts and Penalties (Repealed)
3. General Provisions (Repealed)

Editor's note. — Section 5, ch. 120, SLA 1971, effective July 1, 1971, provides: "All litigation, hearings, investigations and other proceedings pending under any law amended or functions which may be transferred by this Act, continue in effect and may be continued and completed notwithstanding any such transfer or amendment provided for in this Act. Certificates, orders, rules or regulations issued or filed under authority of a law amended by this Act or functions which may be transferred by this Act, remain in effect for the term issued, unless or until revoked, vacated, or otherwise modified under the provisions of this Act. All contracts or other obligations created by any law amended by this Act or by virtue of functions which may be transferred by this Act, and in effect on July 1, 1971, remain in effect unless or until revoked, or modified under the provisions of this Act."

Legislative committee report. — For report on ch. 120, SLA 1971 (SB 75 am H), see 1971 House Journal, p. 1016.

Article 1. Functions of Department of Health and Social Services.

Section
10—155. [Repealed]

Secs. 46.05.010—46.05.155. Repealed by § 4 ch 120 SLA 1971, effective July 1, 1971.

Editor's note. — The repealed article derived from ch. 117, SLA 1949; ch. 129, SLA 1970.

STATE
of ALASKA

MEMORANDUM

TO: Tom Hanna
Department of Environmental
Conservation

DATE : March 21, 1972

FROM: Ralph Stemp
Assistant Attorney General

SUBJECT: Idling Motor Vehicles

I thought you may be interested in some provisions of the Alaska Administrative Code which concern the idling of unattended vehicles. They are 13 AAC 02.345; 13 AAC 02.480; and 13 AAC 02.550. The penalty provision is statutory and is contained in AS 28.35.230.

I am attaching copies of the regulations and statute for your convenience.

Attachment

RS:gb

registered owner, in [illegible]ase [illegible]tion by the officer shall be directed to that driver [illegible] before 7/28/59; am 12/15/61, reg. 3; am 8/10/66, reg. 22; 12/31/69, reg. 31; am 7/23/70, reg. 35)

Authority: AS 28.05.030

Cross Reference: 14 AAC 04.790(g) (parking at airports)

13 AAC 02.345. Officer authorized to remove illegally stopped vehicle. (a) When a police officer finds a vehicle illegally parked, stopped or standing upon or along a highway or on other state property, the officer may impound and remove the vehicle to the nearest garage or other place of safety or require the driver or other person in charge of the vehicle, if that person is present, to move the vehicle to a position or to a location where parking, stopping or standing is permitted.

(b) When a police officer finds an unattended vehicle parked, stopped or standing along or upon a highway, bridge, causeway or in a tunnel where the vehicle constitutes an obstruction or hazard to traffic, the officer shall impound and remove the vehicle to the nearest garage or other place of safety.

(c) When a vehicle, which is illegally parked, stopped, standing or for another reason provided by traffic regulations, ordinance or statute is impounded and removed from a highway or elsewhere at the direction of a police officer, the vehicle shall be removed to a place of safety. The owner or operator may claim the vehicle by securing a written release for it from the police officer or agency ordering its removal. A vehicle legally removed or impounded may not be released to the owner nor may the owner secure its use until the release for it is certified by the officer or agency directing its removal. All expense for the removal shall be paid by the owner or driver of the vehicle. (Eff. before 7/28/59; am 12/15/61, reg. 3; am 8/10/66, reg. 22; am 12/31/69, reg. 31)

Authority: AS 28.05.030

Cross Reference: AS 20.10.171(c), AS 28.10.515, AS 28.35.140 & 210, 13 AAC 06.030(c), 14 AAC 04.790k (at airports)

13 AAC 02.350. Custody of vehicle when operator is arrested. When a police officer arrests and detains the operator of a motor vehicle, the officer shall impound and remove the vehicle to a place of safety; however, the operator may elect to have another immediately available person who is legally licensed to operate a motor vehicle, drive or otherwise remove the vehicle as the operator directs. The operator may designate the nearest available garage or tow car operator of his choosing to remove the vehicle. If the operator does not so indicate, the officer shall make the arrangements necessary to remove the vehicle. (Eff. 12/31/69, reg. 31)

Authority: AS 28.05.030

flector on the rear cowling which shall be mounted and be visible as provided in 13 AAC 04.030(b).

(b) The lights required by (a) of this section and AS 05.30.080(2) shall be illuminated during the hours of darkness and shall be visible as provided by 13 AAC 04.080(a) and AS 05.30.080(2) when a snow vehicle is operated upon or along a highway. (Eff. 12/31/69, reg. 31)

Authority: AS 28.05.030

13 AAC 02.465. Speed restrictions. A snow vehicle operated upon or along a highway shall comply with all speed laws or regulations and posted limits. (Eff. 12/31/69, reg. 31)

Authority: AS 28.05.030

Note.—The penalty for violation of snow vehicle statutes (AS 05.30) or a regulation promulgated under authority of that chapter is provided by AS 05.30.110; however, penalty for violation of §§ 430-465 of this chapter is provided by AS 28.35.230.

Article 11. Miscellaneous Provisions

13 AAC 02.480. Unattended motor vehicle. A person operating or in charge of a motor vehicle may not leave it parked unattended without first stopping the engine, locking the ignition, removing the key, putting the transmission in gear or in park position and, if on an incline or grade, effectively setting the brake and, if facing downhill or uphill without curbs, turning the front wheels to the curb or side of the roadway or, if facing uphill with curbs, turning the front wheels away from the curb. (Eff. before 7/28/59; am 12/15/61, reg. 3; am 3/10/66, reg. 22; am 12/31/69, reg. 31)

Authority: AS 28.05.030

13 AAC 02.485. Limitation on backing. (a) A driver of a vehicle may not back the vehicle unless the movement can be made with safety and without interfering with other traffic.

(b) A driver of a vehicle may not back the vehicle upon a shoulder or roadway of a controlled access highway or freeway. (Eff. before 7/28/59; am 12/15/61, reg. 3; am 3/10/66, reg. 22; am 12/31/69, reg. 31)

Authority: AS 28.05.030

a highway or ferry facility in a manner or in quantities which may constitute a hazard to snow removal equipment or other traffic. (Eff. before 7/28/59; am 12/15/61, reg. 3; am 8/10/66, reg. 22; am 12/31/69, reg. 31)

Authority: AS 28.05.030

Cross Reference: AS 18.30.240, AS 18.35.060, AS 18.17.010, AS 11.20.590 (b), AS 41.15.070-080, AS 46.05.170, AS 46.10.010, 14 AAC 04.755 (1) (littering on airports)

13 AAC 02.535. Carrying or towing person on outside part of vehicle. (a) A person may not ride, nor may the operator of a vehicle allow another to ride, on the running board, fender, hood or other outside part of a vehicle; however, this section does not apply to an authorized emergency vehicle or to a vehicle used on road construction while operated at the work site or to a person riding in a parade or to a person riding in the open bed of a truck with sideboards, if he is seated on the bed or floor of the vehicle or upon a seat built below the level of the sideboards of the vehicle.

(b) An operator of a motor vehicle may not allow another person to be towed by the motor vehicle in any manner, except as the operator of a motor vehicle, other than a motorcycle or motor scooter, being towed or as provided by § 510 of this chapter, nor may a person attach himself, or a conveyance or device upon which he may ride or be towed, to a vehicle for the purpose of riding or being towed except as provided in this section. (Eff. 12/31/69, reg. 31)

Authority: AS 28.05.030

Cross Reference: 13 AAC 02.450

13 AAC 02.540. Embracing another while driving. A person may not operate a vehicle when he has in his embrace another person in a manner which prevents the free and unhampered operation of the vehicle. (Eff. 12/31/69, reg. 31)

Authority: AS 28.05.030

13 AAC 02.545. Drinking while driving. A person may not drink an intoxicating beverage while operating a motor vehicle. (Eff. 12/31/69, reg. 31; am 7/23/70, reg. 35)

Authority: AS 28.05.030

13 AAC 02.550. Leaving child unattended in standing vehicle with motor running. A person, while operating or in control of a motor vehicle, may not park or willfully allow the motor vehicle to stand with its motor running if a minor child under the age of 12 years is unattended in the vehicle. (Eff. 12/31/69, reg. 31)

Authority: AS 28.05.030

Sec. 28.35.200. Unlawful operation of vehicles. No person may operate or move, nor any owner cause or permit to be operated or moved upon any public highway a vehicle in violation of §§ 30—110, 130—260 of this chapter or AS 28.05.010—28.05.040, or 28.05.060, or a rule or regulation made under those sections. (§ 50-1-6 ACLA 1949)

Sec. 28.35.210. Seizure of unsafe or defectively equipped vehicles. A vehicle operating upon the public highways defective in equipment and unsafe for operation is an unlawful vehicle and may be prevented from operation until the defect in the equipment is corrected. A peace officer or an employee designated by the Department of Public Safety may impound the vehicle until it is placed in a condition satisfactory to the vehicle inspector. The owner of the vehicle shall pay the necessary cost of impounding it and the costs of storage. The impounding of a vehicle is in addition to all other penalties. This section does not prevent the operation of a defective vehicle to a place for the correction of a defect in the equipment in the manner directed by a peace officer. (§ 50-1-6 ACLA 1949)

Am. Jur. and C.J.S. references. — 5A Am. Jur., Automobiles and Highway Traffic, §§ 73, 74, 247 to 255, 701, 702.
60 C.J.S. Motor Vehicles § 26.

Sec. 28.35.220. Action by state for damages. The state has a right of action for damage caused by the violation of AS 28.05.-020(2) or of the rules and regulations adopted under that section. Damages recovered under this section shall be deposited in the general fund. (§ 50-1-5 ACLA 1949)

Sec. 28.35.230. Penalty for violations of law or regulations. A person who violates §§ 30—110, 130—260 of this chapter, or AS 28.05.010—28.05.040, or 28.05.060 or the rules and regulations adopted under those sections is guilty of a misdemeanor and upon conviction is punishable by a fine of not more than $200, or by imprisonment for not more than 90 days, or by both. In addition the privilege to drive may be suspended or revoked. (§ 50-1-8 ACLA 1949)

Violations of AS 28.35.050(a) are punishable under this section. Drahosh v. State, Sup. Ct. Op. No. 485 (File No. 849), 442 P.2d 44 (1968).

Sec. 28.35.240. Duty to obey school patrol.

Repealed by § 3 ch 68 SLA 1964.

Sec. 28.35.250. Application of law. Sections 30—110, 130—260 of this chapter, or AS 28.05.010—28.05.040, or 28.05.060, apply

APPENDIX II.4: PROPOSED AIR QUALITY CHANGES TO AS 46.03

Introduced: 3/21/72
Referred: Resources

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 749

IN THE LEGISLATURE OF THE STATE OF ALASKA

SEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to the Department of Environmental Conservation."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

Sections 1 - 8 of this bill do not deal directly with air quality control changes to AS 46.03, nor do Sections 13 - 22 and Sections 24 - 27. However, Sections 9, 10, 11, 12, and 23 all directly affect air quality control, and therefore are the only Sections shown in this appendix.

* Sec. 9. AS 46.03.140 is amended to read:

Sec. 46.03.140. EMISSION CONTROL REQUIREMENTS. The department may establish air pollution control regulations which in its judgment are necessary to prevent, abate or control air pollution. These regulations may be for the state as a whole or may vary from area to area as may be appropriate to facilitate accomplishment of the purposes of this chapter and in order to take account of varying local conditions. The department may require the owner or operator of stationary sources to install, maintain, and operate emission or ambient air monitoring devices, or both and to furnish the data collected to the department. The department may publish this data, including the source of the air contaminants.

* Sec. 10. AS 46.03.170(d) is amended to read:

(d) The department may upon application renew an existing variance on terms and conditions and for periods which would be appropriate on initial granting of a variance, however, no renewal period when added to the time periods of the original variance and preceding renewals, may exceed five years. If complaint is made to the department on account of the variance no renewal of it may be granted unless, after public hearing on the complaint following due notice, the department finds that renewal is justified. Application shall be made at least 60 days before the expiration of the variance. Immediately upon receipt of an application for renewal the department shall give public notice of it.

* Sec. 11. AS 46.03.180 is amended to read:

Sec. 46.03.180. CONFIDENTIALITY OF RECORDS. Records and information in the possession of the department which relate to production or sales figures or to processes or production techniques of the owner or

operator of an air contaminant source are considered confidential records of the department after application by the party and certification that their public disclosure would tend to adversely affect his competitive position. Confidentiality of records and information as established by this section does not apply to the types, amounts, or sources of air contaminants discharged.

* Sec. 12. AS 46.03.210(a) is amended to read:

(a) A municipality with a population in excess of 1,000 may, within five years from August 5, 1969, establish and administer within its jurisdiction an air pollution control program. Organized boroughs may establish an air pollution control program on an areawide basis, and the exercise of powers with respect to the program is not subject to the restrictions on acquiring additional areawide powers specified in AS 07.15.350. However, the weighted vote shall apply to the exercise of powers as provided in AS 07.20.070(d). Local programs shall

(1) provide by ordinance for requirements compatible with those imposed by the provisions of secs. 140 - 170 [140 AND 170] of this chapter and applicable regulations;

(2) provide for the enforcement of the requirements imposed through appropriate administrative and judicial processes;

(3) provide for a local administrative organization, staff, and other resources necessary to effectively carry out the purposes of the program; and

(4) be approved by the department as being satisfactory to meet the requirements of secs. 140 - 170 of this chapter and the applicable regulations.

* Sec. 13.

* Sec. 23. AS 46.03 is amended by adding a new section to read:

Sec. 46.03.850. COMPLIANCE ORDER. (a) When, in the opinion of the department, a person is violating or is about to violate regulations and standards established under the provisions of this chapter the department shall notify the person of its determination by certified mail. The determination and notice do not constitute an

order under sec. 820 of this chapter.

(b) Within 15 days from the receipt of the notice, the recipient of the determination must file with the department a report stating what measures have been and are being taken to control the conditions outlined in the notice from the department.

(c) Thereafter, the department may issue a compliance order in conformity with the authority of the department and the public policy declared in sec. 10 of this chapter. A copy of the compliance order shall be sent by certified mail to the person affected. A compliance order is effective upon receipt.

(d) Within 10 days of receipt, a person affected may make application for a hearing to review the compliance order. Failure to make application for hearing within 10 days of the receipt of a compliance order constitutes a waiver of the recipient's right of review.

(e) The department shall hold a hearing within 20 days of receipt of the application. After hearing, the department may rescind, modify or affirm the compliance order.

(f) The attorney general shall seek enforcement of a compliance order.

* Sec. 24.

APPENDIX III

Regulations

Section

18 AAC 50.010. APPLICABILITY OF LOCAL GOVERNMENT REGULATIONS. A local air quality control agency may establish the same or more stringent regulations, but not less stringent regulations as the applicable regulations specified in this chapter. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140

18 AAC 50.020. AMBIENT AIR QUALITY STANDARDS. (a) The State ambient air quality shall be maintained at the lowest practicable air contaminant concentrations. In no event shall these concentrations exceed the following levels corrected to standard conditions.

(1) Suspended particulate matter

(A) annual geometric mean; 60 micrograms per cubic meter

(B) 24-hour maximum not to be exceeded more than once a year; 150 micrograms per cubic meter

(2) Sulfur oxides (measured as sulfur dioxide)

(A) annual arithmetic mean; 60 micrograms per cubic meter

(B) 24-hour maximum not to be exceeded more than once a year; 260 micrograms per cubic meter

(C) 3-hour maximum not to be exceeded more than once a year; 1300 micrograms per cubic meter

(3) Carbon monoxide not to be exceeded more than once a year.

(A) 8-hour maximum; 10 milligrams per cubic meter

(B) 1-hour maximum; 40 milligrams per cubic meter

(4) Photochemical oxidants

1-hour maximum not to be exceeded more than once a year; 160 micrograms per cubic meter

(5) Nitrogen dioxide

annual geometric mean; 100 micrograms per cubic meter

(6) Hydrocarbons

3-hour maximum not to be exceeded more than once a year. 160 micrograms per cubic meter

(b) In areas where existing air quality is better than the ambient air quality standards specified in (a) above, the department shall enforce the air contaminant emission requirements as specified in this chapter so as to minimize degradation of the air quality. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.010
AS 46.03.020(10)(A)
AS 46.03.340

18 AAC 50.030. OPEN BURNING. (a) Within unified municipalities, incorporated cities, and service areas having refuse pickup:

(1) Open burning is permissible except that those materials which tend to result in the emission of black smoke

or odors, including but not limited to putrescible garbage, asphalt, rubber, oil wastes, and asphalt-impregnated materials, may not be burned in the open. Permissible open burning is further subject to the limitations of (d) and (e) of this section, and the exception of (c) of this section.

(2) The open burning of debris, trees and brush accumulated during land clearing operations shall be conducted, except as specified in (d) of this section, in such a way as to obtain maximum combustion efficiency throughout the burning period. Tires or similar organic matter may not be used to start or maintain the fire.

(b) For areas not covered by (a) of this section, open burning for the disposal of oils, oily wastes, asphalt and tars and similar waste materials is prohibited unless conducted pursuant to a permit from the department.

(c) Controlled fires for the purpose of training fire fighting personnel require prior written approval from the department. Controlled fires for disposing of demolition wastes require prior written approval from the department. After such fires have been conducted, summary reports shall be submitted to the department.

(d) No open burning shall be allowed if an air quality advisory is broadcast on a radio or television station in an area, stating that burning is not permitted for that day. This advisory shall be based on weather conditions being such that air ventilation in the affected area is inadequate to provide for maintenance of the ambient air quality standards specified in section 20 of this chapter.

(e) Open burning shall be regulated at landfill sites as specified in Title 18 AAC 60, SOLID WASTE MANAGEMENT. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140

18 AAC 50.040. INCINERATORS. (a) Visible emissions, excluding condensed water vapor, from incinerators may not result in a reduction of visibility through the exhaust effluent greater than:

(1) 20 percent for those incinerators installed on or after July 1, 1972;

(2) 40 percent for incinerators installed and operating prior to July 1, 1972. These incinerators shall comply with the requirements of (a)(1) of this section after July 1, 1975;

for a period or periods aggregating more than three minutes in any hour.

(b) Particulate matter emitted from incinerators installed on or after July 1, 1972, and from all incinerators after July 1, 1975, may not exceed, on the basis of a cubic foot of exhaust gas corrected to 12 percent CO_2 and standard conditions, and except as specified in (c) and (d) of this section:

(1) 0.3 grains for incinerators less than or equal to 200 pounds per hour rated capacity;

(2) 0.2 grains for incinerators larger than 200 but equal to or less than 1000 pounds per hour rated capacity;

(3) 0.1 grains for incinerators larger than 1000 pounds per hour rated capacity.

(c) Particulate matter emitted from tepee burners may not exceed, on the basis of a cubic foot of exhaust gas corrected to 12 percent CO_2 and standard conditions:

(1) 0.1 grains for those burners installed or modified on or after July 1, 1972;

(2) 0.2 grains for those burners in operation prior to July 1, 1972.

(d) Particulate matter emitted from air curtain incinerators may not result in a visible emission, excluding condensed water vapor, which causes a reduction in visibility of greater than 20 percent for a period or periods aggregating more than three minutes in any hour. No person may operate an air curtain incinerator, regardless of size, without prior written approval from the department. (Eff. 5/26/72, Reg. 42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.050. INDUSTRIAL PROCESSES AND FUEL BURNING EQUIPMENT. (a) Visible emissions, excluding condensed water vapor, from industrial processes or fuel burning equipment may not result in a reduction of visibility through the exhaust effluent of greater than 20 percent for a period or periods aggregating more than three minutes in any hour.

(b) Particulate matter emitted from industrial processes or fuel burning equipment may not exceed, on the basis of a cubic foot of exhaust gas corrected to standard conditions:

(1) 0.05 grains except as noted in (2) and (3) below;

(2) 0.1 grains for those sources in operation prior to July 1, 1972, and for fuel burning equipment using coal or municipal waste as fuel;

(3) 0.15 grains for fuel burning equipment using wood waste as fuel.

(c) Sulfur compound emissions from industrial processes or fuel burning equipment may not exceed 500 ppm expressed as SO_2.

(d) No person may cause or permit bulk materials to be handled, transported or stored without taking reasonable precautions to prevent particulate matter from becoming airborne. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.060. PULP MILLS. (a) Air contaminant emissions from pulp mills may not exceed, based on 24-hour averages and each ton of pulp produced:

(1) 20 pounds of sulfur oxides from sulfite pulp mills, expressed as SO_2, from all blow pits, washer vents, storage tanks, digester relief and recovery systems;

(2) two pounds of particulate matter from all blow pits, washer vents, storage tanks, digester relief and recovery systems in kraft or sulfite mills;

(3) five ppm of total reduced sulfur, expressed as H_2S on a dry basis, from each kraft pulp mill recovery furnace stack.

(b) Non-condensibles from kraft pulp mill digesters and multiple effect evaporators shall be treated to reduce emissions of total reduced sulfur to a level equal to that which would be obtained by the reduction achieved by thermal oxidation in a lime kiln.

(c) Operators shall maintain and operate continuous emission recording and ambient air monitoring devices as specified by the department. Data acquired shall be available for inspection by, and provided on a routine basis to, the department. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.070. MOTOR VEHICLE EMISSIONS. (a) Emissions from gasoline-powered motor vehicles may not be visible, excluding condensed water vapor.

(b) Visible emissions from diesel powered motor vehicles, excluding condensed water vapor, may not result in a reduction of visibility of greater than 40 percent through the exhaust effluent. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.080. CARBON MONOXIDE LIMITATIONS. All motor vehicle traffic, except emergency vehicles, shall be routed around areas where ambient air levels of carbon monoxide reach or are predicted to reach 17 milligrams per cubic meter on an eight hour average after July 1, 1972. This level shall be 10 milligrams per cubic meter after July 1, 1975. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.090. ICE FOG LIMITATIONS. The department may require any person proposing to build or operate an industrial process, fuel burning equipment or incinerator in areas of potential ice fog, to obtain a permit to operate and to reduce water emissions. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.100. MARINE VESSELS. Within three miles of the coastline of Alaska, visible emissions from any marine vessel, excluding water vapor, may not result in a reduction of visibility through the exhaust effluent of greater than 40 percent for a period or periods aggregating more than three minutes in any one hour. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150

18 AAC 50.110. AIR POLLUTION PROHIBITED. No person may permit any emission which is injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.710

18 AAC 50.120. PERMIT TO OPERATE. (a) A permit to operate is required if the facility is capable of emitting into the ambient air, regardless of whether air quality control equipment is operating, more than:

(1) 25 tons per year of sulfur dioxide or particulate matter.

(2) 100 tons per year of either nitrogen oxides, or carbon monoxide, or hydrocarbons.

(b) A permit to operate is required for all mercury retorts, regardless of size.

(c) A permit to operate is required for all fuel burning electric generating equipment greater than 250 kilowatts capacity if such equipment is put into operation after July 1, 1972.

(d) No person may operate or cause the operation of a source requiring a permit without applying for and obtaining a permit from the department. Application for a permit to operate shall be made by the owner or operator on forms provided by the department. All persons operating sources on the effective date of these regulations and requiring a permit shall apply for such permit on or before July 1, 1972.

(e) Submittal of emission data is required when the amount of hydrocarbons, carbon monoxide, nitrogen oxides, sulfur oxides, or particulate matter which can be emitted from a facility into the ambient air, regardless of whether air quality control equipment is operating, is greater than five tons per year. Data submittal is required every two years, starting on July 1, 1973, on forms provided by the department.

(f) No person may construct or modify a facility requiring a permit to operate until detailed plans and specifications are submitted to the department and approved. These plans and specifications shall include the following information:

(1) two sets of plans and specifications, clearly indicating the layout and the construction which will be undertaken;

(2) two sets of maps or aerial photographs indicating land use and zoning within one mile of the facility. The map or aerial photograph shall be of adequate scale to show all homes, industrial buildings, water courses, road and other applicable details and shall indicate the general topography;

(3) an engineering report outlining the proposed methods of operation, the quantity and source of material to be processed, the proposed use and distribution of the processed material and related process details, and a process flow diagram indicating the points of emission including estimated quantities and types of air contaminants to be emitted;

(4) a description and specifications of all air quality control devices;

(5) an evaluation of the effect on the surrounding ambient air of the emissions from the facility;

(6) plans for emission reduction procedures during an air episode.

(g) Approval to construct a new source may not be granted unless the applicant shows to the satisfaction of the department that:

(1) the new source will not prevent or interfere with the attainment or maintenance of any applicable ambient air quality standard specified in section 20 of this chapter;

(2) the new source will operate without causing a violation of applicable regulations established under AS 46.03.

(h) A compliance schedule is required as part of a permit to operate for facilities emitting air contaminants in excess of the limitations of this chapter. Those facilities in operation prior to July 1, 1972 and requiring a compliance schedule shall be in compliance with requirements of this chapter by July 1, 1975.

(i) A permit to operate may:

(1) not be transfered without the written consent of the department;

(2) not be issued for a period greater than five years after which the permit must be renewed for continued source operation. A permit requiring a compliance schedule must be reviewed and renewed every year of its duration;

(3) not be granted to a person under (h) of this section unless a compliance schedule approved by the department is included;

(4) require that specific emission reduction procedures be taken during an air episode.

(j) Upon notice to any person, such person operating facilities emitting air contaminants judged by the department to be highly toxic shall be required to obtain a permit to operate.

(k) The department may require an applicant for a permit to operate to install, use, and maintain monitoring equipment; to sample emissions in accordance with methods prescribed by the department, at locations, intervals and by procedures as may be specified; to provide source test ports, to provide emission data and information from analyses of any test samples, and to provide periodic reports on process emissions.

(l) If an application for a permit to operate is denied, the department shall notify the applicant in writing of the reasons. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.010
AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150
AS 46.03.160
AS 46.03.170

18 AAC 50.130. REVOCATION OR SUSPENSION OF PERMIT. A permit to operate may be revoked or suspended if the conditions of the permit or applicable laws or regulations are violated. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.160
AS 46.03.170

18 AAC 50.140. AIR EPISODES. An air episode shall be declared when in the opinion of the commissioner the concentration of air contaminants in the ambient air has reached or is predicted to reach any of the following levels:

(1) Air Alert:

(A)	sulfur dioxide	800 micrograms per cubic meter (24 hour average)
(B)	particulate matter	3.0 coefficient of haze units or 375 micrograms per cubic meter (24 hour average)
(C)	carbon monoxide	17 milligrams per cubic meter (8 hour average)

(2) Air Warning:

(A)	sulfur dioxide	1600 micrograms per cubic meter (24 hour average)
(B)	particulate matter	5.0 coefficient of haze units, or 625 micrograms per cubic meter (24 hour average)
(C)	carbon monoxide	34 milligrams per cubic meter (8 hour average)

(3) Air Emergency:

(A)	sulfur dioxide	2,100 micrograms per cubic meter (24 hour average)
(B)	particulate matter	7.0 coefficient of haze units, or 875 micrograms per cubic meter (24 hour average)
(C)	carbon monoxide	46 milligrams per cubic meter (8 hour average)

The commissioner shall prescribe and publicize curtailment actions when the above levels of air contaminants are, or are about to be, reached. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.820

18 AAC 50.150. SOURCE TESTING. (a) The department may conduct or have conducted source testing in order to determine compliance with this chapter.

(b) Testing to determine compliance with provisions of this chapter shall be by methods of measurement approved by the department and undertaken at such a point or points as to characterize the actual discharge into the ambient air.

(c) Particulate matter emission requirements specified in this chapter shall be measured by the methods comparable to those outlined in the American Society of Mechanical Engineers Power Test Code PTC 27-1957, entitled "Determining Dust Concentration in the Gas Stream", modified to include a high efficiency filter. A copy of this document is on file in the Lieutenant Governor's Office. Additional copies may be obtained from department offices in Juneau.

(d) Air contaminant emission tests shall be conducted at maximum rated burning or operating capacity of the unit, or such other rate as may be determined by the department to characterize the emissions from the unit. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140
AS 46.03.150(b)

18 AAC 50.160. CIRCUMVENTION. (a) The use of air for dilution of emission contaminants without affecting any total decrease in such contaminants shall not be permitted as a method to effect compliance with the requirements of this chapter.

(b) Any facility modified on or after July 1, 1972 shall meet the requirements applicable to new facilities installed on or after July 1, 1972.

(c) The total of the capacities for all process fuel burning or incinerator units in a facility shall be considered as the facility capacity for that type of unit.

(d) Persons owning or operating facilities emitting air contaminants subject to the limitations of this chapter shall be held responsible for insuring that those facilities are in compliance with this chapter. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140

18 AAC 50.170. AIR QUALITY CONTROL PLAN. The plan, established on July 1, 1972, for implementing and enforcing this chapter, is on file in the Office of the Lieutenant Governor and is incorporated by reference as part of this chapter. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140

18 AAC 50.180. PENALTIES. A person who violates any provision of this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not more than $5,000, or by imprisonment for not more than one year, or by both. Each day of violation constitutes a separate offense. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.710
AS 46.03.760

18 AAC 50.190. DEFINITIONS. Unless the content indicates otherwise, in this chapter

(1) "air contaminant" means dust, fumes, mist, smoke, fly ash, and other particulate matter, vapor, gas, odorous substances, or any combinations thereof.

(2) "air curtain incinerator" means an incinerator in which large quantities of combustible materials are burned in a rectangular container which is equipped with an overfire air system.

(3) "ambient air" means that portion of the surrounding atmosphere which may affect persons in the area.

(4) "commissioner" means Commissioner of the Department of Environmental Conservation.

(5) "department" means the Department of Environmental Conservation.

(6) "emission" means release of air contaminants into the environment.

(7) "facility" means a unit or muliple units built, installed or established to serve a particular purpose.

(8) "fuel burning equipment" means any combustion device or part thereof capable of emission, but excludes mobile internal combustion engines, incinerators, marine vessels, indoor fireplaces, backyard barbecues, and home cooking devices.

(9) "incinerator" means any equipment, device or contrivance, excluding indoor fireplaces, used for the thermal reduction of garbage or other wastes.

(10) "opacity" means the characteristic of a substance which renders it partially or wholly impervious to transmittance of light and causes obstruction of an observer's view.

(11) "open burning" means the burning of any material such that the products of combustion are emitted directly into the ambient air without passing through a stack or flare.

(12) "particulate matter" means any material, except water, which is, or has been, airborne and exists as a liquid or a solid at standard conditions.

(13) "ppm" means parts per million by volume.

(14) "person" means any individual, public or private corporation, political subdivison, government agency, munici-

pality, industry, copartnership, association, firm, trust, estate, or any other entity whatsoever.

(15) "putrescible garbage" means material capable of being decomposed with sufficient rapidity as to cause nuisance or obnoxious odors.

(16) "reduction of visibility" means the obscuration of an observer's vision, as determined by the method of observation described in the U. S. Bureau of Mines Information Circular No. 8333, dated May 1967, Department of the Interior, and modified to account for equivalent opacity. This document is on file in the Lieutenant Governor's Office. Additional copies of this document may be obtained from the department office in Juneau.

(17) "source" means anything which may emit air contaminants.

(18) "stack" means any chimney or conduit through which air or air contaminants are emitted into the environment.

(19) "standard conditions" means a dry gas at a temperature of 70 degrees Fahrenheit and a reference pressure of 14.7 pounds per square inch. (Eff. 5/26/72, Reg.42).

AUTHORITY: AS 46.03.020(10)(A)
AS 46.03.140

Summary of the Cook Inlet Air Resources Management District's Regulation I

The Regulation is comprised of five articles as follows:

Article I - Consists of definitions of terms found in the Regulation.

Article III - It is the enabling legislation passed by each of the three Borough assemblies. It establishes the Air Pollution Commission of the District and delegates certain authorities to the Commission. The Commission has the authority to establish ambient air quality standards, emission standards, adopt rules and regulations, hold public hearings, issue and enforce orders necessary to effecuate its regulations, require access to records, contract with other agencies, receive funds or property, and take emergency actions to abate high levels of air pollutant concentrations.

Article V - Establishes a requirement for the registration of air contaminant sources. The article also lists types of equipment which are exempted from registration. Sources exempted are those which would only add water vapor to the atmosphere or would add contaminants of a concentration, particle size, or amount which could not be considered detrimental to the areas air quality.

Article VII - Establishes the requirement for a Notice of Construction and Application for Approval before a new air contaminant source is constructed or before a new source is altered. The application must include sufficient information to enable the District staff to evaluate the emissions from the source and their degree of compliance with District emission regulations. Construction or alteration may not begin until after the application is approved. The article also establishes time limits for actions on notices and methods for appealing denials.

Article IX - Establishes definite emission regulations dealing with particulate material, certain gaseous pollutants, odors, and open burning. Particulate material emissions are dealt with using opacity, process weight, and grain loading standards.

Sources in existence prior to the effective date of the Regulation, Janauary 4, 1971, must not exceed Ringelmann #2 or 40% opacity for more than three minutes in any one hour. All sources installed after January 4, 1971, and all sources in existence after January 4, 1976, must not exceed Ringelmann #1 or 20% opacity for more than three minutes in any one hour.

Sources in existence prior to January 4, 1971, are required to comply with the process weight curve allowing a maximum particulate emission of 150 lbs./hr. at a process weight of 10 million lbs./hr. Sources installed after January 4, 1971, and all sources in existence after

January 4, 1976, must comply with the process weight curve allowing a maximum particulate emission of 40 lbs./hr. for a process weight of 60 thousand lbs. or more per hour.

All sources of particulate matter in the District must also comply with a grain loading standard of 0.3 grains of particulate material per standard foot of exhaust gas. Combustion processes must calculate their emissions to twelve per cent of carbon dioxide at standard conditions.

Sulfur dioxide is the only gaseous pollutant controlled and may not exceed 500 parts of SO_2 per million parts of exhaust gas.

Odor bearing gases or sources of odors must be controlled to keep odor emissions to a reasonable minimum.

Outdoor fires are regulated by areas. In the Kenai Peninsula and Matanuska-Susitna Boroughs only the burning of dumps and industrial waste are prohibited. In the Anchorage Borough all fires except land clearing fires (slash burning) and fires for social, pleasure, ceremonial, and safety purposes are allowed. Within the urban area of Anchorage, slash burning is also prohibited.

TRI-BOROUGH AIR RESOURCES MANAGEMENT DISTRICT

ARTICLE I

Section 1.01 SHORT TITLE

THIS REGULATION MAY BE KNOWN AND CITED AS REGULATION 1 OF THE TRI-BOROUGH AIR RESOURCES MANAGEMENT DISTRICT.

Section 1.03 GENERAL DEFINITIONS

a. "Air contaminant"--means dust, fumes, mist, smoke, other particulate matter, vapor, gas, odorous substance, or any combination thereof.

b. "Air Pollution"--means the presence in the outdoor atmosphere of one or more air contaminants in sufficient quantities and duration that tend to be injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life and property.

c. "Alteration"--means any addition to or enlargement or replacement of, or any major modification or change of the design, capacity, process or arrangement, or any increase in the connected loading of, equipment or control apparatus which will significantly increase or adversely affect the kind or amount of air contaminant emitted.

d. "Atmosphere" or "ambient air"--means the surrounding outside air.

e. "Commission"--means the Air Pollution Control Commission of the Tri-Borough Air Resources Management District.

f. "Director"--means the Director of the Air Pollution Control Commission or his authorized representative.

g. "District"--means the Tri-Borough Air Resources Management District, including the Greater Anchorage Area Borough, the Kenai Peninsula Borough, and the Matanuska Susitna Borough.

h. "Emission"--means a release into the outdoor atmosphere of air contaminants.

i. "Equipment"--means any stationary or portable device or any part thereof capable of causing the emission of any air contaminant into the atmosphere.

j. "Equipment used in a manufacturing process"--means equipment, as defined in Subsection 1.03 (i) in which some air contaminant emitted is caused by a manufacturing process.

k. "Excess air"--means the quantity of air which exceeds the theoretical quantity of air required for complete combustion.

l. "Fire Chief"--means a Borough Fire Marshal, City Fire Chief, Chief of each Borough Fire Protection District or his authorized representative.

m. "Incinerator"--means a furnace for the destruction of waste.

n. "Installation"--means the placement, assemblage or construction of equipment or control apparatus at the premises where the equipment or control apparatus will be used.

o. "Outdoor fire"--means the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the atmosphere without passing through an approved stack,duct, vent, or chimney.

p. "Owner"--includes the person who leases, supervises or operates the equipment or control apparatus.

q. "Particulate matter"--means any liquid other than water, or any solid which is so finely divided as to be capable of becoming wind-blown or being suspended into air or other gas vapor.

r. "Process weight"--means total weight of the materials consumed or charged in any specific process including solid fuels charged, but excluding liquid and gaseous fuels, and combustion air.

s. "Process weight per hour"--means process weight divided by the number of hours from the beginning of any specific process to the completion of the process, excluding any time during which the equipment used in the process is idle.

t. "Person"--means and includes any individual, firm, public or private corporation, association, partnership, political subdivision, municipality or governmental agency.

u. "Refuse burning equipment"--means equipment as defined in Subsection 1.03 (i), designed to burn waste material, scrap, or combustible remains.

v. "Regulation"--means any regulation or any subsequently adopted additions or amendments thereto of the Tri-Borough Air Resources Management District.

w. "Standard cubic foot of gas"--means that amount of the gas which would occupy a cube having dimensions of one foot on each side, if the gas were free of water vapor and at a pressure of 14.7 P.S.I.A. and a temperature of 60 degrees F.

x. "Waste (Industrial)"--is any material resulting from a production or manufacturing operation having no economic value to the source producing it.

ARTICLE III

AIR POLLUTION CONTROL COMMISSION

Section 3.01 AIR POLLUTION CONTROL COMMISSION

There is created the Air Pollution Control Commision of the Tri-Borough Air Resources Management District, hereinafter known as the District, the members of which shall be two members elected from each of the Borough Assemblies of the Matanuska Susitna, Kenai and Greater Anchorage Area Boroughs. The Commission shall appoint a director to act as an advisor, as Commission secretary, and to perform such other functions as provided in this chapter and as the Commission shall direct. The Commission shall select its own Chairman from among the voting members.

Section 3.03 TERM

The term of the members shall be for the duration of their service on the separate Borough Assemblies. When a vacancy occurs, the Borough Assembly, of which the vacating Commissioner was a member, shall elect a new member to the Commission. Members of the Commission shall receive a salary of $35 per meeting day and are entitled to per diem in the amount of $35 and travel expenses while attending Commission business.

Section 3.05 MEETINGS

The Commission shall hold at least six regular meetings each year and additional meetings which the Chairman considers desirable, at a place and time to be fixed by the Chairman. Special meetings shall be called by the Chairman upon the written request of four members. Four voting members shall constitute a quorum. The Commission may receive general administrative services from the Director.

Section 3.07 POWERS

A. The Commission shall have power to:

1. Establish ambient air quality standards for the District after public hearing.

2. Establish standards for or otherwise control emissions after public hearing.

3. Adopt such rules and regulations as may be necessary to achieve the objectives of the District after public hearing.

4. Hold such public hearings as it deems necessary for the administration and enforcement of its regulations and the State law and to compel the attendance of witnesses and production of evidence. In holding such hearings, the Commission shall establish such rules or procedures as it finds reasonable and necessary.

5. Issue such orders as may be necessary to effectuate the provisions of this article and enforce them by appropriate administrative judicial proceedings.

6. Require access to records relating to emissions which cause or contribute to air contamination, but in strict conformity with Section 3.21 of this article.

7. Sue or be sued in the name of the District in all actions and proceedings in courts of competent jurisdiction.

8. Establish and maintain such offices as the Commission may authorize

9. Contract with one or more Boroughs (Municipalities), the State, the Federal Government, or any agency of the State for the services of competent personnel.

10. Receive by grant, purchase, gift, lease, or other means, such real and personal property as may be necessary to carry on the purpose of this article.

    This shall include the right to dispose of such property whenever in the judgement of the Commission, such property is no longer needed by the District.

B. The Director shall have the power to:

1. Enforce the provisions of this article and all of the orders, regulations, and rules adopted by Commission pursuant to this article.
2. Enforce all variances and standards approved by the Commission
3. Perform such other duties as may be assigned by the Commission of required to administer this article.
4. Serve as a non-voting member and Secretary of the Commission.

Section 3.09 CLASSIFICATION, REPORTING, AND REGISTRATION

A. The Commission, by rules or regulations, may classify and require the registration of air contaminant sources, which in its judgment may cause or contribute t air pollution, according to levels and types of emissions and other characteristics which relate to air pollution, and may require reporting for the classifications. Classifications made under this subsection may be for application to the District as a whole or to a designated area of the District and shall be made with special reference to effects on health, economic, and social factors and physical effects on property.

B. A person operating or responsible for the operation of air contaminant sources of a class for which the rules and regulations of the Commission require registration shall make reports containing the information required by the

Commission or the Director concerning location, size and height of contaminant outlets, processes employed, fuels used and nature and time periods or duration of emissions; and other information relevant to air pollution and available or reasonably capable of being assembled.

Section 3.11 ADDITIONAL CONTAMINANT CONTROL MEASURES

A. The Commission may require that notice be given to it before the undertaking of the construction, installation, or establishment of particular types or classes of new air contaminant sources specified in its rules and regulations. Within fifteen (15) days of its receipt of the notice, the Commission may require, as a condition precedent to this undertaking, the submission of plans and other information it considers necessary in order to determine whether the proposed undertaking will be in accord with applicable rules and regulations in force under this article. If within thirty (30) days of receipt of these plans and information, the Commission determines that the proposed undertaking will not be in accord with the requirements of this article and applicable rules and regulations, it shall issue an order prohibiting the undertaking. Failure to issue the order within the time prescribed shall be considered as approval of the plans and information and the undertaking may proceed in accordance with them.

B. A person subject to an order or prohibition as prescribed in (A) of this section, upon written request in accordance with rules of the Commission, is entitled to a hearing before the Commission on the order. Following the hearing the order may be affirmed, modified or withdrawn.

C. For the purpose of this article, addition to or enlargement or replacement of an air contaminent source, or a major alteration of one, shall be construed as an undertaking for the construction, installation or establishment of a new air contaminant source.

D. Any features, machines, or devices constituting parts of, or called for by, plans or other information submitted under (A) of this section or which may affect emissions classified under Section 3.09, shall be maintained in good working order.

E. Nothing in this section may be construed to authorize the Commission to require the use of machinery, devices, or equipment from a particular supplier or produced by a particular manufacturer if the required performance standards may be met by machinery, devices or equipment available from other sources.

F. The absence of or Commission failure to issue a rule, regulation or order under this section, does not relieve a person from compliance with emission control requirements or other provisions of law.

G. The Commission may require the payment of a reasonable fee for the review of plans and information required to be submitted.

Section 3.13 INSPECTION

For the purpose of ascertaining the state of compliance with this article and appropriate rules and regulations, a duly authorized officer, employee or representative of the Commission may, at a reasonable time and upon presentation of a proper search warrant, if necessary, enter and inspect the property and premises where an air contaminant source is located or is being constructed. No person may refuse entry or access to an authorized representative of the Commission who requests entry for purposes of inspection and who presents appropriate credentials; nor may a person interfer with the inspection. The director shall give the owner or operator of the premises a report setting out all facts found which relate to compliance status.

Section 3.15 EMISSION CONTROL REQUIREMENTS

The Commission may establish emission control requirements which in its judgment are necessary to prevent, abate, or control air pollution. These requirements may be for the District as a whole or may vary from area to area as may be appropriate to facilitate accomplishment of the purposes of this article and in order to take account of varying local conditions.

Section 3.17 EMERGENCY PROCEDURE

A. If the Director finds that a generalized condition of air pollution exists and that it creates an emergency requiring immediate action to protect human health or safety, he shall, with concurrence of the Borough Chairman of the Borough in which the emergency arises, order persons causing or contributing to such air pollution to reduce or discontinue immediately the emission of such air contaminants. The order shall fix a place and time, not more than twenty-four (24) hours later for a hearing before the Commission. Within twenty-four (24) hours after commencement of the hearing and without adjournment of it, the Commission shall affirm, modify or set aside the order of the Director.

B. In the absense of a generalized condition of air pollution of the type referred to in (A) of this section, but if the Director finds that emissions from the operation of one or more contaminant source is causing imminent danger to human health or safety, he may order the person responsible for the operation in question to reduce or discontinue emissions immediately, without regard to Section 3.17 (A) of this article. If an order is issued, the hearing requirements of (A) of this section apply.

Section 3.19 VARIANCES

A. A person who owns or is in control of a plant, building, structure, establishment, process, or equipment, may apply to the Commission for a variance from rules or regulations. The Commission may grant the variance, but only after public hearing following due notice, if it finds that:

1. The emissions proposed to occur do not endanger human health or safety; and
2. Compliance with the rules or regulations from which the variance is sought would produce serious hardship without equal or greater benefits to the public.

B. No variance may be granted under this section until the Commission has considered the relative interests of the applicant, other owners of property likely to be affected by the emissions, and the general public.

C. A variance or its renewal, granted under (A) of this section, shall be for periods and under conditions consistent with the reasons for it and within the following limitations:

1. If the variance is granted on the grounds that there is no practicable means known or available for the adequate prevention, abatement or control of the air pollution involved, it shall apply only until the necessary means for prevention, abatement or control become known and available, subject to the taking of substitute or alternate measures that the Commission may prescribe.

2. If the variance is granted on the grounds that compliance with the particular requirement will necessitate the taking of measures which because of their complexity or cost will involve considerable hardship, it shall be for a period of time which in the opinion of the Commission is necessary and reasonable. A variance granted on this ground shall contain a timetable.
3. If the variance is granted on the grounds that it is justified to relieve or prevent hardship of any kind, including those provided in (C) (1) and (2) of this section, it shall be for not more than one year.

D. A variance granted under this section may be renewed on terms and conditions and for periods which would be appropriate on initial granting of a variance. If complaint is made to the Commission on account of the variance, no renewal of it shall be granted unless, after public hearing on the complaint following the notice, the Commission finds that renewal is justified. No renewal may be granted except upon application for it. This application shall be made at least sixty (60) days before the expiration of the variance. Immediately upon receipt of an application for renewal, the Commission shall give public notice of it.

E. A variance or renewal is not a right of the applicant but shall be in the descretion of the Commission. However, a person adversely affected by a variance or renewal granted by the Commission may obtain judicial review of the Commission order. Judicial review of the denial of a variance or renewal may be had only on the grounds that the denial was arbitrary or capricious.

F. No variance or renewal granted under this section may be construed to prevent or limit the emergency provisions of Section 3.17 of this article.

Section 3.21 CONFIDENTIALITY OF RECORDS

Unless the owner or operator expressly agrees to their publication or availability to the general public, records and information in the possession of the Commission concerning a contaminant source, which records and information relate to production or sales figures or to processes or production unique to the owner or operator and the publication of would tend to adversely affect his competitive position, as certified by him, shall be only for confidential use of the Commission on an incamera basis in the administration of this article. The Commission may, nevertheless, use these records and information in compiling analyses of summaries relating to the general condition of the outdoor atmosphere as long as the owner or operator is not identified and no information specified in the preceding sentence is revealed.

Section 3.23 LIMITATIONS

This article does not:

1. Grant to the Commission jurisdiction or authority with respect to air contamination existing solely within commercial and industrial plants, work or shops:
2. Affect the relations between employers and employees with respect to or arising out of a condition of air contamination or air pollution.
3. Supersede or limit the applicability of a law or ordinance relating to sanitation, industrial health or safety.
4. Preclude the right of judicial review of decisions of the Commission.

Section 3.25 ENFORCEMENT

A. When the Director has reason to believe that a violation of this article or rule or regulation issued under this article has occurred, the Director may serve written notice upon the suspected violator. The notice shall specify the provision believed to be violated and the facts believed to constitute the violation and may include an order that necessary corrective action be taken within a reasonable time. This order shall become final unless within fifteen (15) days after the notice and order are served the person named requests in writing a hearing before the Commission, which hearing shall be held within a reasonable time. In lieu of an order, the Director may require the suspected violator to appear before the Commission for a hearing at a time and place specified in the notice and answer the charges.

B. If, after a hearing held under (A) of this section, the Commission finds that a violation has occurred, it shall affirm or modify the order previously issued or issue an appropriate order for taking corrective action. If the Commission finds that no violation has occurred, it shall rescind the previous order, if any. An order issued as part of a notice or after a hearing may prescribe the date by which the violation shall cease and may prescribe timetables for necessary action in preventing, abating or controlling emissions.

C. The Commission or the Director may make efforts to obtain voluntary compliance through warning, conference or other appropriate means.

D. In connection with a hearing held under this section, the Commission shall have power and upon application by a party to the hearing it shall have the duty to compel the attendence of witnesses and the production of evidence on behalf of all parties.

Section 3.27 PENALTIES

A. In addition to procedures provided in Section 3.25 of this article a person who violates a provision of this article or a rule or regulation in force under it, upon conviction, is punishable by a fine not to exceed $300 and/or 30 days imprisonment. Each day of violation shall constitute a separate offense.

B. Conviction as specified in (A) of this section shall not be a bar to enforcement of this article and the rules, regulations and orders issued under it. The Commission shall have power to institute and maintain in the name of the three Boroughs all enforcement proceedings.

C. This article does not affect the right of a person to bring an action for damage or other relief because of an injury caused by air pollution.

ARTICLE V

REGISTRATION OF AIR POLLUTION SOURCES

Section 5.01 REGISTRATION REQUIRED

All air contaminant sources within the jurisdiction of the District shall be registered with the District within 90 days of the effective date of this regulation except any of the air contaminant sources which are listed in Exhibit "A", which is attached hereto and made part hereof, as now contained or as hereafter amended.

Section 5.03 GENERAL REQUIREMENTS FOR REGISTRATION

A. Registration of an installation shall be made by the owner or lessee of the source, or his agent, on forms furnished by the District. The owner of the source shall be responsible for registration and the correctness of the information submitted.

B. A separate registration shall be required for each source of contaminant, provided that, an owner has the option to register a process, with a detailed inventory of contaminant sources and emissions related to said process; provided further that an owner need not make a separate registration for identical units of equipment or control apparatus installed, altered or operated in an identical manner on the same premises.

C. Each registration shall be signed by the owner or lessee, or the agent for such owner or lessee.

EXHIBIT "A"

LIST OF EXCLUSIONS ADOPTED BY THE COMMISSION AND ATTACHED AS ADDENDUM

1. Air conditioning or ventilating systems not designed to remove contaminants generated by or released from equipment.
2. Blast cleaning equipment which uses a suspension of abrasive in liquid water.
3. Fuel burning equipment which has a BTU input of not more than 1,000,000 BTU per hour.
4. Fumigation vaults.
5. Insecticide spray equipment, not regularly used for hire.
6. Internal combustion engines, including gas turbine and jet engines, which can be considered mobile sources.
7. Laboratory equipment used exclusively for chemical or physical analyses.
8. Laundry driers, extractors or tumblers used exclusively for the removal of water from fabric.
9. Routing, turning, carving, cutting and drilling equipment used for metal, wood, plastics, rubber, leather or ceramics.
10. Portable equipment which is used within the District for less than 60 days.
11. Surface coating by use of aqueous solution or suspension.
12. Steam cleaning equipment used exclusively for that purpose.
13. Storage tanks, reservoirs, or containers:

a. Of a capacity of 6,000 gallons or less used for organic solvents, diluents or thinners.

b. Of a capacity of 40,000 gallons or less used for liquid fuels including gasoline, lubricating oil, tallow, vegetable oil or wax emulsions.

14. Vacuum cleaning systems used exclusively for industrial, commercial or residential housekeeping.

15. Vacuum producing devices used in laboratory operations and vacuum producing devices which do not remove or convey air contamination from or to another source.

16. Vents used exclusively for:

a. Sanitary or storm drainage systems; or

b. Safety valves; or

c. Storage tanks.

17. Washing or drying equipment used for products fabricated from metal or glass, if no volatile organic material is used in the process.

18. Water cooling towers and cooling ponds, except for barometric condensers.

19. Welding, brazing, or soldering equipment.

20. Marine installations not within the District for longer than 60 days per year.

21. Asphalt laying equipment.

22. Incidental fires for the disposal of trees and brush accumulated during land clearing operations.

ARTICLE VII

NOTICES OF CONSTRUCTION AND ORDERS OF APPROVAL

Section 7.01 NOTICE OF CONSTRUCTION - WHEN REQUIRED

A. No person shall construct, install or establish a new air contaminant source, except those sources excluded in Exhibit "A" of Section 5.01 of this Regulation, without first filing with the District a "Notice of Construction and Application for Approval" on forms prepared and furnished by the District and obtaining said approval; provided that, for the purposes of this Article alterations shall be construed as construction or installation or establishment of a new contaminant source.

B. A Notice of Construction and Application for Approval shall not be required to commence on alteration of equipment or control apparatus in the event of breakdown or if delaying the alteration may endanger life or have other serious consequences. The District shall be notified in writing of the alteration on the first working day after the alteration is commenced and a Notice of Construction and Application for Approval shall be filed within fourteen (14) days after the day the alteration is commenced.

C. A separate Notice of Construction and Application for Approval shall be submitted for each unit of equipment or control apparatus, unless indentical units of equipment or control apparatus are to be installed, constructed or established in an identical manner on the option to give notice and apply for approval of a process with a detailed inventory of contaminant sources and emissions related to said process.

Section 7.03 INFORMATION REQUIRED FOR NOTICE OF CONSTRUCTION AND APPLICATION FOR APPROVAL

A. Within fifteen (15) days of its receipt of a Notice of Construction and Application for Approval for the construction, installation, or establishment

of a new air contaminant source, as above described, the Director or the Commission may require that two sets of plans be submitted which show and describe in detail the following:

1. The equipment or control apparatus covered by the Notice and Application.
2. Any equipment, connected, attached to, or serving or served by the unit of equipment or control apparatus covered by the Notice and Application.
3. A plat plan, including the location and height of buildings within the area which may be adversely affected by the equipment to be installed.
4. The proposed means for the prevention or control of the emissions of air contaminants.
5. Any additional information, evidence or documentation required by the Director or the Commission to show that the proposed equipment or control apparatus will meet the emission standards.
6. Each Notice of Construction and Application for Approval shall be signed by the applicant or owner who may be required to submit evidence of his authority.

Section 7.05 ISSUANCE OF APPROVAL OR ORDER

A. Within thirty (30) days of receipt of Notice of Construction and Application for Approval, or the plans described in Subsection 7.03 (A), the Director or the Commission shall issue an Approval of Construction, or an order that the construction, installation or establishment of a new air contaminant source will not be in accord with the applicable emission standards as are in effect at the time of filing the Notice of Construction and Application for Approval.

B. No approval will be issued unless the information supplied as required by Subsection 7.03 (A) evidences to the Commission that:

1. The equipment is designed and will be installed to operate without causing a violation of the emission standards.

2. The equipment incorporates advances in the art of air pollution control developed for the kind and amount of air contaminant emitted by the equipment.

3. Equipment having a stack or duct three feet or more in diameter will be provided with:

   a. Sampling ports of a size, number and location as the Director or the Commission may require; and

   b. Safe access to each port; and

   c. Such other reasonable sampling and testing facilities as the Director or the Commission may require.

4. Fuel burning equipment and refuse burning equipment will achieve optimum combustion of the fuel or refuse material to be burned.

5. All parts of the equipment can be readily cleaned or repaired.

C. If the Director or the Commission determines that the construction, installation, or establishment of a new air contaminant source will not meet the emission standards, the Director or the Commission shall, within thirty (30) days of receipt of the Notice and Application or the plans described in Subsection 7.03 (A), issue an order for the prevention of the construction, installation or establishment of the air contaminant source or sources, and:

1. The order shall be in writing;

2. The order shall set forth objections in detail with reference to the emission standards that will not be met by the proposed construction, installation or establishment;

3. The order shall be signed by the Director or his authorized representative.

D. Any order issued pursuant to this section, shall become final unless, no later than fifteen (15) days after the order is served the owner or applicant petitions in writing for a reconsideration of the order with reasons for the reconsideration.

1. The Director or the Commission shall consider the petition and shall within thirty (30) days give written notice of approval or disapproval of the petition setting forth the reasons for disapproval.

2. If the petition of the owner or applicant be disapproved, the owner or applicant may petition the Commission for a hearing within fifteen (15) days of receipt of the notice of disapproval.

E. Failure to issue such an order or approval within the time prescribed herein shall be deemed a determination that the construction, installation or establishment may proceed, provided that it is in accordance with the plans, specifications or other information, if any, required to be submitted. Such failure, however, shall not relieve any person from his obligation to comply with any emission control requirement, or with any other provision of law.

Section 7.07 NOTICE OF COMPLETION - ORDER OF VIOLATION

A. The owner or applicant shall notify the Director or the Commission of the completion of construction, installation or establishment and the date upon which operation will commence. The Director or the Commission shall, within

thirty (30) days of receipt of notice of completion, inspect the construction, installation or establishment, and the Director or the Commission may issue an order of violation if he finds that the construction, installation or establishment is not in accord with the plans, specifications or other information submitted to the District, or will be in violation of the emission standards in existence at the date the order was issued.

B. Upon receipt of an Order of Violation, the owner may appeal said order in accordance with the procedures in Section 3.25 A of this regulation.

C. The issuance of approval as provided by this Article and Section 7.05, shall not relieve the owner of the obligation to comply with the emission standards as adopted by the Commission or prevent the Director or Commission from issuing such orders as provided by Section 3.25 A of this regulation.

Section 7.09 CONDITIONAL APPROVAL

The owner or applicant may request a conditional approval for an experimental installation, construction or establishment and said approval may be issued by the Director or the Commission if it appears to the Director or the Commission from all submitted information, that the installation, construction or establishment when completed, will satisfy the District's emission standards.

ARTICLE IX

EMISSION STANDARDS

Section 9.01 EMISSION OF AIR CONTAMINANTS: VISUAL STANDARD

A. It shall be unlawful for any person to cause or allow the emission of any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour, which is:

1. Darker in shade than that designated as No. 2 (40% density) on the Ringelmann Chart, as published by the United States Bureau of Mines; or
2. Of such opacity as to obscure an observer's view to a degree greater than does smoke described in Section 9.01 (A)(1).
3. Five (5) years after the effective date of the ordinance, all sources in the District shall comply with Section 9.01 B.

B. It shall be unlawful for any person to cause or allow the emission of any air contaminant from any equipment installed subsequent to the effective date of this regulation for a period or periods aggregating more than three (3) minutes in any one hour, which is:

1. Darker in shade than designated as No. 1 (20% density) on the Ringlemann Chart, as published by the United States Bureau of Mines; or
2. Of such opacity as to obscure an observer to a degree greater than does smoke described in Section 9.01 (B)(1).

C. The density or opacity of an air contaminant shall be measured at the point of emission, except when the point of emission cannot be readily observed, it may be measured at an observable point of the plume nearest the point of emission.

D. This section shall not apply when the presence of uncombined water is the only reason for failure of the emission to meet the requirements of this section.

E. This section shall not apply to motor vehicle or aircraft emissions.

Section 9.03 PARTICULATE MATTER

A. It shall be unlawful for any person to cause or allow the discharge of particulate matter which becomes deposited upon the real property of others, except as follows:

1. When emissions are in compliance with Section 9.01.
2. Temporarily due to breakdown of equipment, provided that repairs are promptly made.
3. During the time for compliance with the regulation fixed by the Director or the Commission.

Section 9.05 EMISSION OF PARTICULATE MATTER (GRAIN LOADING)

Except as otherwise provided in Section 9.07 and Section 9.09, a person shall not discharge into the atmosphere from any source, particulate matter in excess of 0.3 grain per standard cubic foot of exhaust gas.

Section 9.07 EMISSION OF PARTICULATE MATTER (PROCESS WEIGHT STANDARD)

A. A person shall not cause or allow the emission of particulate matter from any source whatsoever in excess of the amount shown in Table 2.

B. A person shall not cause or allow the emission of particulate matter from any source installed subsequent to the effective date of this regulation in excess of the amount of Table 1.

C. Five (5) years after the effective date of the ordinance, all sources in the District shall comply with Section 9.07 B.

Section 9.09 SPECIFIC CONTAMINANTS

A person shall not discharge into the atmosphere from any single source of emission whatsoever any one or more of the following contaminants, in any state or combination thereof, exceeding in concentration at the point of discharge:

A. Sulphur Compounds calculated as sulphur dioxide (SO_2) above 500 parts SO_2 per million parts of exhaust gas.

B. Combustion Contaminants: 0.3 grain per cubic foot of gas calculated to 12 per cent of carbon dioxide (CO_2) at standard conditions. In measuring the combustion contaminants from incinerators used to dispose of combustible refuse by burning, the carbon dioxide (CO_2) produced by combustion of any liquid or gaseous fuel shall be excluded from the caluculation to 12 per cent of carbon dioxide (CO_2).

TABLE I

PROCESS WEIGHT (lb./hr.)	MAXIMUM ALLOWABLE PARTICULATE MATTER (lb./hr.)
100	0.6
300	1.2
500	1.8
700	2.2
1000	2.8
2000	4.1
3000	5.4
4000	6.5
5000	7.6
6000	8.6
7000	9.5
8000	10.4
9000	11.2
10,000	12.0
15,000	15.0
20,000	19.2
30,000	25.2
40,000	30.5
50,000	36.0
60,000 or more	40.0

TABLE 2

PROCESS WEIGHT (lb./hr.)	MAXIMUM ALLOWABLE PARTICULATE EMISSION (lb./hr.)
100	0.6
300	1.2
500	1.8
700	2.2
1,000	2.8
2,000	4.1
3,000	5.4
4,000	6.5
5,000	7.6
6,000	8.6
7,000	9.5
8,000	10.4
9,000	11.2
10,000	12.0
15,000	15.8
20,000	19.2
30,000	25.2
40,000	30.5
50,000	36.0
60,000	40.0
80,000	48.0
100,000	55.0
140,000	65.0
180,000	73.0
220,000	78.0
260,000	83.0
300,000	85.0
400,000	92.0
800,000	109.0
1,000,000	114.0
2,000,000	127.0
4,000,000	138.0
6,000,000	143.0
8,000,000	147.0
10,000,000	150.0

Section 9.11 EMISSION OF AIR CONTAMINANT OR WATER VAPOR: DETRIMENT TO PERSON OR PROPERTY

A. It shall be unlawful for any person to cause or permit the emission of an air contaminant or water vapor including an air contaminant whose emission is not otherwise prohibited by this regulation, if the air contaminant or water vapor causes detriment to the health, safety, or welfare of any person, or causes damage to property or business.

B. Nothing in this regulation shall be construed to impair any cause of action or legal remedy therefore of any person, or the public for injury or damages arising from the emission of any air contaminant in such place, manner or concentration as to constitute air pollution or a common law nuisance.

Section 9.13 ODOR AND NUISANCE CONTROL MEASURES

A. Effective control apparatus and measures shall be installed and operated to reduce odor-bearing gases or particulate matter emitted into the atmosphere to a reasonable minimum.

B. The Commission may establish reasonable requirements that the building or equipment be closed and ventilated in such a way that all the air, gases, and particulate matter are effectively treated for removal or destruction of odorous matter or other air contaminants before emission to the atmosphere.

C. Odors caused by farm animals shall not be covered by these regulations.

Section 9.15 EMISSION OF AIR CONTAMINANT - CONCEALMENT AND MASKING RESTRICTED

A. It shall be unlawful for any person to wilfully cause or permit the installation or use of any device or use of any means which, without resulting in a reduction in the total amount of air contaminant emitted, conceals an emission of air contaminant which would otherwise violate these regulations.

B. It shall be unlawful for any person to cause or permit the installation or use of any device or use of any means designed to mask the emission of an air

contaminant which causes detriment to health, safety, or welfare of any person.

Section 9.17 PREVENTING PARTICULATE MATERIAL FROM BECOMING AIRBORNE

A. It shall be unlawful for any person to cause or permit particulate matter to be handled, transported or stored without taking reasonable precautions to prevent the particulate matter from becoming airborne.

B. Within the boundaries of the Greater Anchorage Area Borough:

1. It shall be unlawful for any person to cause or permit a building or its appurtenances or a road to be construed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne.

2. It shall be unlawful for any person to cause or permit untreated open areas including but not limited to roads, parking lots or construction sites located within a private or public lot or roadway, to be maintained without taking reasonable precautions to prevent particulate matter from becoming airborne.

Section 9.19 REPORT OF BREAKDOWN

A. Emissions exceeding any of the limits established by this regulation as a direct result of unavoidable upset conditions or unavoidable and unforseeable breakdown of equipment or control apparatus shall not be deemed in violation provided the following requirements are met

1. The upset or breakdown is reported to the Director or the Commission within twenty-four (24) hours.

2. The person responsible shall upon the request of the Director or the Commission submit a full report including a time table for the restoration of control, the known causes, and the preventative measures to be taken to minimize or eliminate a re-occurence.

3. The Director or the Commission shall review the report and determine the adequacy of measures taken to control the emissions.

Section 9.21 OUTDOOR FIRES

A. Within the boundaries of the Matanuska-Susitna Borough and the Kenai Penisula Borough:

1. It shall be unlawful for any person to cause or allow a fire for the burning of dumps or sanitary landfills or the burning of industrial waste material which does not comply with the emission control requirements of this ordinance.
2. All other outdoor fires shall be exempted from the regulations of the Commission.

B. Within the boundaries of the Greater Anchorage Area Borough it shall be unlawful for any person to cause or allow any outdoor fire except the following:

1. Fires for pleasure, religious, ceremonial, cooking, or like social purposes.
2. Fires from flares, torches, waste gas burners, incense burner and insect pots.
3. A fire authorized by the fire chief for the disposal of dangerous materials, provided no alternate means of disposal is reasonably available.
4. A fire authorized by the fire chief for instruction in the method of fighting fires or testing of fire resistive materials and fire
5. A fire for the disposal of trees and brush accumulated during land clearing provided that:

a. The fire shall only be allowed in the non-urban areas of the Greater Anchorage Area Borough as defined by the Borough Planning Office.

b. The person responsible for such fire shall obtain a proper permit for such fire and shall comply with all the laws and regulations of the Commission, the Fire Chief, and all other governmental agencies regarding such fires.

6. A fire for the disposal of household refuse in areas of the Greater Anchorage Area Borough where municipal or Public Service Commission sanctioned refuse collection service is not available.

C. It shall be prima facie evidence that the person who owns or controls property on which an outdoor fire occurs has caused or allowed said outdoor fire.

Section 9.23 SEPARABILITY

If a provision of this regulation is declared unconstitutional, or the application thereof to any person or circumstance is held invalid, the constitutionality or validity of every other provision of this regulation shall not be affected thereby.

Section 9.25 SCHEDULE FOR COMPLIANCE

All facilities in existence on or before the effective date of this regulation and not in compliance with the regulation, shall subit in writing to the Director or the Commission, a schedule for compliance with the regulation. The schedule shall include such information as the Director or the Commission shall require to determine whether or not compliance will be achieved in a reasonable time. If accepted by the Director or the Commission, it shall be the official compliance schedule for the facility.

42271

Summary of Fairbanks North Star Borough Air Pollution Control Ordinance (Effective January 1, 1972)

Section I provides a declaration of policy.

Section II defines the Pollution Control Commission which is made up of seven voting members. Each member has a three year term of office and must meet at least once each month. They may:

1. Make recommendations.
2. Propose ordinances or amendments to ordinances and hold public hearings on those proposals.
3. Propose that rules and regulations be promulgated. These rules and regulations then would require approval by the Borough Chairman and by the Borough Assembly.
4. Develop comprehensive plans for air pollution control.
5. Investigate nuisances, health hazards and other harmful effects of air pollution.

Section III describes the position of Pollution Control Officer. The officer is directly responsible to the Borough Chairman for the implementation of policies and programs under this ordinance. He has the power to investigate citizen complaints, conduct surveys and research, encourage voluntary cooperation for compliance of this order, and to issue citations.

Section IV defines the Emission Regulations, which include a general nuisance provision (not including water vapor), a visual emission regulation of 20% opacity limitation for stationary sources, a motor vehicle visual emission regulation of 40% opacity and a prohibition of open burning of garbage. There also is a provision to establish a permit system for open burning of land clearing debris for areas over half an acre. All existing equipment and facilities not presently in compliance with the above regulations are required to be so within 3 years after adoption of the ordinance. This section also establishes a variance procedure, in addition to emergency procedures which the officer (in concurrance with the Borough Chairman) can take to abate a generally high air contaminant concentration condition immediately.

Section V defines violations and fines. The maximum fine which may be levied is $300 for each violation.

By: John A. Carlson
Introduced: 3/11/71
Advanced: 3/11/71
Postponed: 3/25/71
Postponed: 4/8/71
Amended: 4/22/71
Amended: 5/18/71
Adopted: 5/18/71

ORDINANCE NO. 71-10

AN ORDINANCE FOR THE PREVENTION AND CONTROL OF AIR POLLUTION IN THE FAIRBANKS NORTH STAR BOROUGH.

BE IT ORDAINED by the Assembly of the Fairbanks North Star Borough:

Section 1. Classification. This ordinance is of a general and permanent nature and shall become a part of the Code of the Fairbanks North Star Borough.

Section 2. Adoption of Sections. The following annexed sections Section 45.05.010. through Section 45.05.140, all inclusive in Title 45 of the Fairbanks North Star Borough Code of Ordinances are hereby adopted as a part of this ordinance, which shall repeal and supersede existing sections Section 45.05.010 through Section 45.05.060, Title 45 of the Fairbanks North Star Borough Code of Ordinances.

Section 3. Effective Date. All provisions of such code shall be in full force and effect on January 1, 1972.

PASSED AND APPROVED THIS 18th DAY OF May, 1971.

John O Gustafson
Presiding Officer

ATTEST:

Clerk of the Assembly

TITLE 45. POLLUTION

CHAPTER 5. AIR POLLUTION CONTROL

Section 45.05.010. Title. This chapter shall be known as the Fairbanks North Star Borough Air Pollution Control Ordinance.

Section 45.05.020. Purpose. The declared purpose of this chapter is to preserve and maintain the purity of the air to a degree that will protect human health and safety, prevent injury to plant and animal life and property, safeguard the quality of the environment, maintain safe driving and flying visibility, and preserve the quality of life of the inhabitants of the Fairbanks North Star Borough.

Section 45.05.030. Definitions. Unless the context requires otherwise, in this chapter

(a) "air contaminant" means any particulate matter or any vapor or odorous substance or any gas or combination thereof, except that the non-radioactive nucleides of oxygen, nitrogen or the noble gases shall not constitute an air contaminant, nor shall concentrations of water vapor and carbon dioxide less than equal to the concentration in the ambient atmosphere constitute an air contaminant;

(b) "air pollution" means the presence in the outdoor atmosphere of one or more air contaminants in such quantitites, characteristics, or duration as to be injurious to human health or welfare, or animal or plant life or health ,or property, or would interfer with the enjoyment of life or property;

(c) "assembly" means Fairbanks North Star Borough Assembly;

(d) "borough" means Fairbanks North Star Borough;

(e) "commission" means Fairbanks North Star Borough Pollution Control Commission;

(f) "emission" means a release into the outdoor atmosphere of air contaminants;

(g) "garbage" means discarded animal or vegetable matter from a kitchen;

(h) "officer" means Pollution Control Officer of the Fairbanks North Star Borough;

(i) "open burning" means any combustion of material not completely enclosed within containing walls on all sides except for intake or charging ports and an exhaust port or flue (For the purposes of this chapter, use of a barrel with one end removed [burn barrel] for incineration constitutes "open burning". Use of a barrel stove, Franklin stove or Yukon stove does not constitute open burning);

(j) "person" means any individual, partnership, co-partnership, firm, company, public or private corporation, association, trust, estate, or any agency or board, department or bureau of the borough or the cities contained therein, or any other legal entity;

(k) "Ringelmann Chart" means a chart published by the United States Bureau of Mines used to measure the density or opacity of visible emissions of air contaminants;

(l) "temperature inversion" means an atmospheric condition in which the air temperature increases with an increase in altitude; and

(m) "untreated wood" means wood that has been modified from its natural condition only by cutting, breaking, drying or absorption of moisture (Wood or wood fiber that has been painted or artificially impregnated with volatile chemicals does not constitute untreated wood. For purposes of this chapter, plywood may be considered as untreated wood.)

Section 45.05.040. Pollution Control Commission. There is hereby created the Fairbanks North Star Borough Pollution Control Commission, which shall consist of nine (9) voting members. Such members shall be appointed by the Borough Chairman, subject to confirmation by the Assembly.

(a) Commission Members. The Commission members shall be borough residents and, insofar as practicable, shall include:

(1) a licensed physician;

(2) a professional engineer experienced in construction and air pollution control techniques, or a scientist with professional experience in local meteorological conditions and in the measurement and classification of air contaminants;

(3) a representative of industry who is familiar with air pollution control problems;

(4) a member of a local sportsmen's, conservation or civic group, who by his activities in such organization has demonstrated a personal concern for environmental quality;

(5) a representative of the agricultural community who is familiar with the air pollution problems;

(6) four members at large;

(b) Ex-officio Members. The following persons may sit as ex-officio members of the Commission:

(1) the Pollution Control Officer
(2) the Borough Chairman
(3) the Borough Planning Director
(4) the Chairman of the Borough Planning Commission
(5) the Borough Attorney

(c) Chairman and Vice Chairman. The Commission shall select its Chairman and Vice Chairman from its own voting members.

(d) Terms of Office of Commission Members. The term of a Commissioner shall be three (3) years, beginning on the first day of January. Terms shall be arranged so that at least two (2) members are appointed annually.

(e) Vacancies. When vacancies among voting members in the Commission occur through resignation, death, termination of residence in the borough, or removal for cause, the Borough Chairman shall appoint a member subject to confirmation by the Assembly to serve the remainder of the unexpired term.

(f) Removal for Cause. For good cause shown, the Borough Assembly may remove a voting member of the Commission by a two-thirds vote at a public meeting. Non-attendance at four successive meetings or hearings of the Commission may constitute good cause for the purposes of this section.

(g) Regular Meetings. This Commission shall meet at least once each month. So far as practicable, regular meetings shall be held on the same day of the week and at the same location each month.

(h) Special Meetings. Special meetings may be called upon two days notice to the members of the Commission; however, emergency meetings may be called on less than two days notice. Special meetings may be called by any two voting members, by the Commission Chairman or by the Borough Chairman.

(i) Quorum. A majority of the Commission shall constitute a quorum for the transaction of business and five affirmative votes shall be necessary to carry a question.

(j) Expenses and Salaries. No voting member of the Commission shall receive a salary for his services.

(k) Powers and Duties.

(1) The Commission shall be notified and may make recommendations for air pollution provisions in any proposed ordinance relating to building construction and/or relating to permits for building construction.

(2) The Commission shall, upon the issuance of an emergency order by the Officer pursuant to Section 45.03.107, hold a hearing within 24 hours of the issuance of the emergency order. Pursuant to the provisions of said section, the Commission may affirm, modify, or set aside the order of the Officer.

(3) The Commission may propose ordinances or amendments to ordinances for consideration by the Assembly that would serve to maintain and enhance the quality of the air within the Borough. Prior to the submission of proposed ordinances to the Assembly, the Commission shall hold public hearings for the purpose of receiving the testimony.

(4) The Commission may promulgate appropriate rules and regulations implementing this chapter that shall become effective after approval by the Borough Chairman and approval by the Assembly. Prior to the submission of the proposed regulations to the Assembly, the Commission shall hold public hearings for the purpose of receiving testimony.

(5) The Commission may fully investigate nuisances, health hazards and other harmful effects related to or caused by air pollution. Such investigations may be instituted by the Commission on its own motion, on information from the Officer, or upon complaints received from private persons within the borough.

(6) The Commission shall develop comprehensive plans for the prevention, abatement, and control of air pollution in the borough. Such plans may include recommendations on subjects including, but not limited to, zoning, taxation, research and public relations.

(l) Public Hearings.

(1) On those matters which require a public hearing, the Commission shall adopt such procedures as shall most effectively assure full participation by all interested persons. The time, place and agenda of the hearing shall be published in a newspaper of general circulation within the borough not less than five (5) days prior to the hearing. For the purposes of this section no hearing on any subject shall be held unless the subject has been included in the published agenda. This subsection shall not apply to emergency hearings held according to the provisions of Section 45.05.100.

(2) Any person who will be specifically affected or whose property will be specifically affected by action of the Commission at a hearing shall be given, whenever practicable:

(A) five days prior to the hearing, notice of the hearing date, time, and place;
(B) an opportunity to be heard at the hearing; and
(C) a written decision of the Commission with findings and conclusions respecting that person or his property.

Section 45.05.050. Pollution Control Officer. There is created the office of Pollution Control Officer. The Officer shall be directly responsible to the Borough Chairman for the implementation of policies and programs instituted pursuant to this chapter.

(a) Responsibilities.

(1) The Officer shall have the responsibility of investigation to further the purposes of this chapter including, but not limited to:

(A) investigation of citizen complaints;
(B) such investigation as the Commission or Borough Chairman may direct; and
(C) authority to inspect equipment, structures, and operations and to make measurements on private property at reasonable hours and with proper notice to the occupant of the premise.

(2) The Officer shall conduct such surveys and research as is necessary to assist the Commission in the drafting of regulations and ordinances.

(3) The Officer shall to the extent practicable encourage the voluntary cooperation by persons and affected groups to achieve the purposes of this chapter or regulations pursuant thereto.

(4) The Officer has the authority to issue citations to alleged violators of this chapter requiring the alleged violators to appear in a court of law.

(5) All zoning changes within the borough shall be brought to the attention of the Officer by the Borough Planning Director prior to the time notice is given for any public Planning Commission hearing. If the Officer feels that the proposed zoning change will affect the air quality of the borough, he shall issue a report to the Planning Commission and Pollution Control Commission. The report may recommend approval, modification or disapproval of the proposed zoning change in the interest of maintaining or enhancing the air quality of the borough.

(6) The Officer shall seek voluntary cooperation of citizens, but has the authority to secure judicial search warrants for conducting routine or area inspection with regard to air pollution of any particular place, dwelling, structure, premise, or vehicle.

Section 45.05.060. Violations.

(a) It shall be unlawful for any person to operate or maintain any structure, device, machinery, open fire, or other instrumentality that discharges any air contaminant into the atmosphere which results in the contamination of the air above public property or above the private property of another person that:

(1) causes irritation to eyes, to the respiratory tract, or any other organ system to such a degree as to be harmful to human beings; or
(2) presents a safety hazard by significantly restricting visibility for the operation of automobiles and aircraft. This subsection shall not apply when the presence of uncombined water vapor is the only reason for the failure of the emission to meet the requirements of this section.

(b) It shall be unlawful for any person to engage in the open burning of hydrocarbons or organic substances which is likely to result in the emission of dense black smoke or obnoxious vapors including, but not limited to, petroleum products, plastics, rubber, asphalt, and asphalt-impregnated materials, except as stipulated in Section 45.05.060 (d) or except as may be authorized by the Officer in a special permit issued to municipal, State or Federal agencies.

(c) It shall be unlawful for any person to engage in the open burning of garbage or other putrescible animal or vegetable matter. This section shall not apply to the disposal of refuse from a single family in areas where garbage collection services are unavailable. Nothing in this section shall be construed to limit the responsibility of compliance with the provisions of Section 45.05.060 (a).

(d) It shall be unlawful for any person to engage in the open burning of trees, grasses, slashings, brush, and stumps except by permit from the Officer or his authorized representative. This section shall not apply when burning results from land clearing operations from a land area aggregating less than ten (10) acres. The decision whether the permit will be granted or denied will be based on the location of the burning, the meteorological conditions at the time of the requested burning, the level of contaminants that may be expected to result from the burning and the benefits that would result from the burning. The Officer may also specify in the permit the manner in which the burning is to be carried out. For purposes of effecting a cleaner and more efficient fire, the permit issued by the Officer may grant an exemption to Section 45.05.060 (b).

(e) During periods in which a temperature inversion exists or is forecast to exist below an elevation of 2500 feet above sea level, and after the Officer issues a public order prohibiting all open burning, it shall be unlawful for any person to engage in open burning. For purposes of this section, the Officer shall have the discretion to issue a public order, and to designate specific regions of the borough within which the prohibition shall apply. The order shall be effective when broadcast on radio or television or when publication in a newspaper of general circulation in the borough. The order prohibiting open burning shall be withdrawn when the inversion below 2500 feet elevation above sea level dissipated and when it is not likely to become reestablished below 2500 feet elevation above sea level within the next twenty-four (24) hours.

Section 45.05.070. Emission Limitations. It shall be unlawful for any person to maintain or operate a single source of emission whatsoever that discharges into the atmosphere any contaminant darker in shade or of such opacity to obscure an observer's view to a degree equal to or greater than that designated on the Ringelmann Chart, U.S. Bureau of Mines, as specified herein.

No person shall discharge in excess of No. 1 on the Ringelmann Chart except:

(a) emission not to exceed No. 3 (on said chart) for a period aggregating not more than five minutes out of each hour nor more than forty (40) minutes in a twenty-four (24) hour period is permitted;

(b) when the presence of uncombined water vapor is the only reason for the failure of the emission to meet the limitations of this section;

(c) when a permit has been obtained from the Officer to exceed the limits of this section for purposes of plant startup (No permit shall be valid for a length of time in excess of forty-eight [48] hours nor shall a permit be granted for any single source more than four [4] times each year. The permit shall establish upper limits of emissions for the period in which the permit is in effect.);

(d) vehicular emissions not to exceed No. 2 (on said chart) for a period not to exceed five (5) seconds are permitted;

(e) hot mix asphalt plants may discharge up to Ringelmann No. 3 for a period not to exceed four (4) minutes during startup and shutdown; and

(f) smoke that results from the burning of untreated wood for purposes of cooking food or heating of a dwelling.

Section 45.05.080. Existing Equipment or Devices Currently in Operation or Under Construction. Any equipment or device which is in operation or under construction prior to the date of adoption of this chapter or regulations pursuant thereto, and which equipment does not meet the provisions of this chapter or regulations pursuant thereto, shall be modified in a manner to bring said equipment into compliance within three years of the effective date of this chapter or regulations pursuant thereto.

(a) The Commission may upon petition grant for good cause shown, but only after public hearing following due notice, an exemption from the provisions of this chapter and the regulations pursuant thereto, for a period of time the Commission deems necessary for the equipment to be brought into compliance with the provisions of this chapter and regulations pursuant thereto. No extension may be granted to persons who are not, at the time of filing of the petition, making efforts in good faith to bring their devices or operations into compliance with the provisions of this chapter or regulations pursuant thereto.

(b) The Commission may modify or terminate said exemption.

Section 45.05.090. Variances.

(a) A persons who owns or is in control of a plant, building, structure, establishment, process or equipment may apply to the Commission for a variance from rules or regulations. The Commission may grant the variance, but only after public hearing following due notice, if it finds that

(1) the emissions occurring or proposed to occur do not endanger human health or safety; and
(2) compliance with the rules or regulations from which variance is sought would produce serious hardship without equal or greater benefits to the public.

(b) No variance may be granted under this section until the Commission has considered the relative interests of the applicant, other owners of property likely to be affected by the emissions and the general public.

(c) A variance or its renewal, granted under (a) of this section, shall be for periods and under conditions consistent with the reasons for it and within the following limitations:

(1) If the variance is granted on the ground that there is no practicable means known or available for the adequate prevention, abatement or control of the air pollution involved, it shall be only until the necessary means for prevention, abatement or control become known and available, subject to

the taking of substitute or alternate measures that the Commission may prescribe;

(2) if the variance is granted on the ground that compliance with the particular requirement from which variance is sought will necessitate the taking of measures which, because of their extent or cost must be spread over a considerable period, it shall be for a period not to exceed the reasonable time which, in opinion of the Commission, is necessary. A variance granted on this ground shall contain a timetable for taking action in an expeditious manner and shall be conditioned on adherence to the timetable; and

(3) if the variance is granted on the ground that it is justified to relieve or prevent hardship of a kind other than that provided in (c), (1), and (2) of this section, it shall be for not more than one year.

(d) A variance granted under this section may be renewed on terms and conditions and for periods which would be appropriate on initial granting of a variance. If complaint is made to the Commission on account of the variance no renewal of it shall be granted unless, after public hearing on the complaint following due notice, the Commission finds that renewal is justified. No renewal may be granted except upon application for it. This application shall be made at least 60 days before the expiration of the variance. Immediately upon receipt of an application for renewal the Commission shall give public notice of it.

(e) A variance or renewal shall not be a right of the applicant but shall be in the discretion of the Commission. However, a person adversely affected by a variance or renewal granted by the Commission may seek review de novo in the Superior Court of the State of Alaska. Judicial review of the denial of a variance or renewal may be had only on the ground that the denial was arbitrary or capricious.

(f) No variance or renewal granted under this section may be construed to prevent or limit the application of the emergency provisions of Section 45.05.100.

Section 45.05.100. Emergency Procedure. If the Officer finds that a generalized condition of air pollution exists and that it creates, or is in imminent danger of creating, an emergency requiring immediate action to protect human health or safety, he shall, with the concurrence of the Borough Chairman, order the person or persons causing or contributing to the air pollution to reduce or discontinue immediately the emission of air contaminants. The order shall fix a place and time, not more than 24 hours later, for a hearing to be held before the Commission. Within 24 hours after the commencement of the hearing, and without adjournment of it, the Commission in a written decision with findings of fact and conclusion may affirm, modify or set aside the order of the Officer. A person aggrieved by a decision reached pursuant to this section by the Commission may appeal to the Assembly for review de novo.

Section 45.05.110. Injunctive Relief. In the name of the borough, the Borough Attorney may with the concurrence of the Commission seek an injunction to enjoin any person who operates or maintains any structure, device, machinery, open fire or other instrumentality that discharges into the atmosphere any air contaminant which results in the contamination of the air above public property or above three or more separately-owned parcels of real property which:

(a) is offensive, obnoxious, odoriferous, or opaque to the extent that substantial reduction in the value of adjacent property occurs, or is reasonably expected to occur;

(b) renders adjacent property uninhabitable;

(c) causes detectable aggravation or exacerbation of respiratory, circulatory, or skin diseases, or other disease states of human beings;

(d) damages the health of domestic livestock or damage vegetation to such a degree as to render it unmarketable, or to cause a substantial reduction in its value, or in any other manner renders its production more costly;

(e) damages wildlife or indigeneous vegetation to such a degree as to measurably reduce the carrying capacity of the land for wildlife;

(f) Impairs the value of properties, whether public or private, for recreational purposes; or

(g) causes noticeable or measurable damage to buildings, materials, paint surfaces, fabrics, and textile pigments.

Section 45.05.120. Enforcement.

(a) Fines and Punishments. Any person found in violation of the provisions of this chapter is punishable upon conviction by a fine of not more than $300 for each violation. In the case of continuing violation, each day of violation shall constitute a separate offense.

(b) Violation. For the purposes of this section, a violation is:

(1) any act or omission declared to be unlawful in this chapter;
(2) the knowing maintenance of an emission or pollution condition prohibited by this chapter;
(3) the failure of any person to comply with an order issued, or regulation promulgated pursuant to this chapter.

(c) Violation by Corporate Person. All orders hereunder directed to a corporate person shall be issued to the president of such corporation or to his duly authorized agent. In the event of prosecution under Section 45.05.120 (a), the corporate treasury and assets shall be liable for payment of fines, and the president of such corporation, or such other person who as officer or agent thereof is authorized to decide and direct compliance, shall be criminally liable thereunder.

(d) Civil Remedies. An action may be brought in the name of the borough to employ any or all of the remedies available under the statutes of the State of Alaska, the Common Law and the General Equity principles to prevent, restrain, enjoin, terminate, and punish violations of this chapter.

(e) Proceedings in Emergency. In the event of an emergency declaration under Section 45.05.100. hereof, the Officer shall, immediately after the emergency session of the Commission, issue and direct the personal service of such pleadings, orders and notices as the Commission may require. If preventative or corrective measures are not immediately taken in accordance with any emergency order of the Officer or Commission after he or they find that a generalized condition of air pollution exists affecting human health and safety, the Borough Attorney may institute proceedings in a court of competent jurisdiction for any injunctive relief to enforce this act or rules or regulations or orders pursuant thereto. Such injunctive relief may include both temporary and permanent injunctions.

(f) Remedies Cumulative with State Remedies. No provision of this section shall be construed as pre-emptive of remedies available to the State under AS 18.30.230, its successor or substitute, or other state enactment. The Borough Attorney shall notify the District Attorney for the Fourth Judicial District of all violations and alleged violations hereunder, except those alleged violations which are plainly insubstantial, and shall cooperate fully with the District Attorney in any state prosecution.

(g) Civil Remedies by Private Parties Unaffected. This chapter does not affect the right of a person to bring an action for damages or other relief, because of an injury caused by air pollution.

Section 45.05.130. Confidentiality of Records. Any records or other information furnished to the Officer or the Commission concerning one or more air contaminant sources, which records or information, as certified by the owner or operator, relate to production or sales figures or to processes or production unique to the owner or operator or which tend to affect adversely the competitive position of such owner or operator, shall be only for the confidential use of the Officer or the Commission in the administration of this title, unless such owner or operator shall expressly agree to their publication or availability to the general public or unless the disclosure of such information is required for the prosecution of a violation of this title or regulations thereunder. Nothing herein shall be construed to prevent the use of such records or information by the Officer or the Commission in compiling or publishing analyses or summaries relating to the general condition of the outdoor atmosphere; provided that such analyses or summaries do not identify any owner or operator or reveal any information otherwise confidential under this section.

Section 45.05.140. Severability. Should any section, paragraph, sentence, clause or phrase of this chapter be declared invalid or unconstitutional for any reason, the remainder of said chapter shall not be affected thereby.

APPENDIX IV

Air Quality Control Public Hearings: 2/25/72-3/2/72

Air Quality Control Public Hearings: 2/25/72-3/2/72

This Appendix presents a complete summary of the air quality control public hearings which were held between February 25, 1972 and March 2, 1972. Section IV.1 presents a summary of how the hearings were conducted, including summaries of the oral and written testimony received by the Department of Environmental Conservation and a listing of the persons/organizations submitting testimony. Section IV.2 presents a summary of the changes which were made in the plan as a result of the public hearing testimony. Section IV.3 presents the hearing officer's Summary and Recommendations, and Section IV.4 presents the Notice of Public Hearing which was published in the major Alaska newspapers on January 25, 1972.

IV.1. Summary of Public Hearings on the Proposed State of Alaska Air Quality Control Plan

The Alaska State Department of Environmental Conservation held four public hearings throughout the State on the first comprehensive proposed State air quality control plan (including proposed regulations) from February 25, 1972 to March 2, 1972. An informative summary of the plan and a complete copy of the proposed regulations were announced in the major Ketchikan, Juneau, Anchorage and Fairbanks newspapers on January 25, 1972, thereby providing the public with 31 days notice prior to the first public hearings. Notices of public hearing were sent out to all legislators, all State departments, and approximately 100 persons, organizations and industries for their comments and review. Additionally, approximately 60 copies of the complete plan were sent to various individuals and organizations and industries. All written requests for the complete plan and the summary were honored. The public hearings were held in Fairbanks, Anchorage, Juneau and Ketchikan at the below locations.

City	Location	Date	Time
Fairbanks	Alaskaland Theater	2/25/72	10:00am, 7:30pm
Anchorage	Anchorage Westward Hotel	2/26/72	10:00am
Juneau	Room 117, Federal Building	2/29/72	2:00pm, 7:30pm
Ketchikan	Elks Club	3/02/72	2:30pm, 7:30pm

Originally the public hearings for Fairbanks, Juneau and Ketchikan were scheduled only for the morning or afternoon times. To allow the general public to have more time to provide comments in these locations, these hearings were reconvened (and the public so notified) at 7:30 in the evening at each location. Also, the deadline for accepting written comments on the proposed plan and regulations was extended from March 9, 1972 to March 20, 1972 to allow the general public more time in which to provide comments on the proposed plan.

The hearing officer for all four hearings was Mr. Amos J. Alter, who was assisted by Thomas R. Hanna and Jerry Reinwand of the Department of Environmental Conservation. Each hearing was convened at the scheduled time by Mr. Alter, who then invited all those wishing to make oral testimony on the proposed plan and regulations to do so in the following order:

1. Persons representing federal organizations.
2. Persons representing state organizations.
3. Persons representing local organizations.
4. Persons representing themselves.

Each person giving oral testimony was requested to state whether he was for or against the plan and then state his reasons. Persons wishing to give testimony were encouraged to sign up on a list at the door. Also, all persons in attendence were requested to sign in on the list maintained at the door. Local representatives of the Department of Environmental Conservation were on hand at the door to

encourage persons attending and wishing to give oral testimony to sign the lists. At all hearings Mr. Alter read into the record the official announcement of public hearing that appeared in the local newspapers. Each public hearing remained open for public testimony until all persons wishing to provide testimony had been heard. The evening sessions for Fairbanks, Juneau and Ketchikan were convened at that time regardless of when the morning or afternoon sessions were completed.

A total attendence of 262 was recorded as participating in all hearings. Total registration was greatest at Fairbanks with 109 registrants, followed by 77 persons in Anchorage and 38 each in Juneau and Ketchikan. A total of 85 oral presentations were made at all hearings: 30 of these presentations were in general support of the plan and 8 were in opposition. Of the remaining 48 presentations, none specifically approved or opposed the plan but generally were critical of it. The majority of these 48 presentations called the plan too weak, while the remainder called the plan too strong. Those presentations which were for or against the plan are broken down as follows:

City	For	Against
Fairbanks	14	4
Anchorage	8	2
Juneau	5	0
Ketchikan	3	1

In addition to the 85 oral presentations of testimony, 28 persons/organizations submitted written testimony on or before March 20, 1972 for incorporation into the public hearing record. Summaries of the oral and written testimony are presented in the following subsections.

IV.1.1 Oral Testimony

The following is a summary of all oral testimony presented at each of the public hearings on the proposed air quality control plan:

IV.1.1.1. Fairbanks Public Hearing

MORNING SESSION

1. Dr. Max C. Brewer (Commissioner, Department of Environmental Conservation)

Dr. Brewer welcomed all those wishing to make oral or written testimony on the Department's proposed air quality control plan to do so. He stated that their testimony would be thoroughly reviewed by the Department for possible incorporation into the plan. He reviewed the history of what had occurred in the previous year relating to the formation of the plan (and submittal of that plan to the Environmental Protection Agency). He stated that the plan is a statewide implementation plan and that the State strongly supports local air quality control agencies, encourages their formation and provides financial enticements including both per capita revenue sharing and outright grants to local agencies which have air quality control programs. He stated that local agencies can and are encouraged to establish (by local ordinance) more stringent air quality control regulations than those of the State, but that they cannot establish less stringent requirements. He stated that the Department cannot delegate the authority to operate the proposed statewide air quality control permit system. He stated that the Department recognizes the controversy of ice fog being an air pollutant and therefore the various air pollutants existing have been separated into their various components, including carbon monoxide, particulate matter, sulfur dioxide, and ice fog.

2. Lieutenant Christopher Powers (Eielson Air Force Base)

Lieutenant Powers stated general agreement with the adoption of the air pollution control standards. He stated that the policy of the Base - "shall comply as much as possible with applicable State and local ordinances". He emphasized, however, that there must be time to allow construction funds to be available. He stated that the major problem was in regard to the particulate matter ambient standard and that natural sources in the Base area will make compliance with the proposed standards exceedingly difficult. He requested a clarification of whether or not federal facilities would be required to come under a permit to operate. He stated that ice fog should be considered as a pollutant and that it has a direct effect on health. He recommended that cooling ponds be considered totally and technically feasible to control and that it was primarily a matter of economics.

3. Jim Movius (MUS General Manager)

He stated his support unequivocally for the regulations as proposed. He further stated that the cost can and will be passed on to the consumer and that the increase in rates by the time the standards

are totally complied with will be in the range of 15% to 25%. He stated that a three to four year time period would be required to comply with these requirements and variances would be required during that period.

4. Ken MacKenzie (Fairbanks North Star Borough)

In general, the Borough is in support of the plan, in particular the general philosophy. He supports local autonomy and endorses the ideals as stated in the Clean Air Act. He stated that local involvement in the State plan is ill-defined and that the Borough would be glad to rework these sections as necessary to provide an adequate and acceptable plan. In particular he took exception to the routing of traffic as impractical and indicated that prohibition of idling may be in order during the Borough's reworking of the applicable sections. He is looking to the Department to provide resources and technical assistance to the Borough as their program develops. He stated that the general State plan should have local ideas so that it will be practical and implementable and acceptable to the public.

5. Joe Holty (Fairbanks North Star Borough Commission)

The Commission generally is in favor of the Plan, but is looking for local authority to be a vital concept within the plan. He requested assistance from the Department in providing revenue sharing, legal assistance, and technical assistance in enhancing and further developing the local program. He indicated that the control strategies for Fairbanks should explicitly refer to local control, and that details regarding local envolvement should be included. He further explained that the episode plan was vague, and the CO strategy does not show that the problem will be resolved, but will simply be moved to another area. He went on to say that the State plan should consider and discuss zoning and potential future revisions of the plan in the final document.

6. Tom Scarborough (Representing himself, but a member of the Borough Commission)

He stated he generally is in favor of what the State is doing and that CO and ice fog are different problems (therefore a control strategy for one will not necessarily be a control strategy for the other). He further stated that the particles from motor vehicle exhausts may be considerably more important than what their mass concentration contributions may indicate, because of the size of the particles and the chemical reactivity. He further stated that the ice fog limitation regulation should state how much of a water vapor emission reduction will be required. He proposed an 80% reduction to be included in the regulations. He stated that routing of traffic as proposed in the plan simply moves the sources to other areas. He further stated that idling prohibitions would be unenforceable and other solutions must be taken into account, such as increased traffic flow and modification of traffic patterns within the central business district. He stated that research is necessary to determine the effectiveness of control devices in cold temperature climates like Fairbanks for motor vehicles.

7. Rosemarie Davis (Member League of Women Voters, but speaking as a private citizen)

She supports the State Plan and commends the State for including ice fog as a pollutant. She stated that local control and their place in the State Plan should be emphasized and described within the final plan. She also stated that routing of traffic is impractical and that we should be looking at better traffic flow off-street parking be proposed for a solution to the CO pro blem in Fairbanks. She suggested we authorize the local program to control air pollution and that the proposed permit system be a joint effort between State and local programs and the local planning department.

8. Virginia Gauss (Member League of Women Voters, but speaking as a private citizen)

She commends the State for going directly to the secondary standards and stated that the TRW contract was unfortunate. She wished to know the financing of the local programs, and wanted the details put in the final plan. She thought that the permit system as described was taking too much initiative away from local agencies. She also stated that the amount of projected manpower was extremely low, both on the State and local levels. She wished to know what UpJohn CP Ore Division was emitting as air pollutants and what type of system and pollution control devices they had.

9. Clare Russel (Speaking as an individual but a member of MUS)

He is in favor of the Plan and the proposed regulations, but wonders why we went directly to the secondary ambient air quality standard. He suggested that perhaps a variable regulation on ambient standards be considered (a more lenient standard, for example, outside of town). He also requested that the breakdown of equipment exemption that we proposed for marine vessels be deleted or be added to the industrial process and incinerator proposed regulations. He commended the permit to operate proposal as an effective way of enforcement. He also recommended that local control be established for the permit sytem and he does not recommend the formation of two different permit sytems. He requested that the emission inventory for particulate matter be critically reviewed as to particulate matter sizes, composition and what are the natural background values. He indicated that many actions in the air episode plan appear to be premature and need more study. He also stated that it did not appear possible to reroute traffic and it was simply moving the problem to another area. He felt that ice fog should be subject to local control and should require a very careful evaluation.

10. Charles Winegarden (Chief Engineer, GVEA)

He is in favor of reasonable air pollution control and would do his utmost to comply with any established regulations. He feels the regulations require more thought on our part and their part, and had specific questions relating to continuous monitoring and peaking unit diesels. He suggested that the proposed standards for power plants be written similar to the proposed federal standards, such as amount-of-particulate-matter created per input fuel. He also requested that for the CO strategy emergency vehicles be allowed

within the blocked-off City area and that their utility vehicles be designated as emergency vehicles. He felt the proposed regulation on ice fog was inappropriate because of impracticalities. He suggested that testing, monitoring and reporting procedures for the permit be spelled out in detail in the regulations. He also suggested that power plants not be lumped in with industrial processes for regulation, and closed by indicating that GVEA does not wish to become a research organization (such as determining which is the best method for monitoring, etc.).

11. Bob Parsons (City Council Assembly)

He is in favor of the plan with qualifications. He suggest a modification and clarification of certain sections which are necessary before implementation. He stated that the North Star Borough is in favor of the plan.

12. Marty Decker (Member of Borough Commission)

He stated that he is in favor of the proposed Plan but that there should be some additional details in certain sections. He suggested that for air episode actions that the alert level prohibition of idling be required, and if a warning level is reached then a rerouting of traffic is required. If an emergency level is reached, then a banning of all vehicle traffic should be accomplished plus a closing of all business and other activities. He also recommended the installation of plug-ins, large parking areas (perhaps financed by bonding) and proposed that a shuttle bus system from parking lots to downtown areas be evaluated.

EVENING SESSION

13. Gary Young (Environmental Protection Agency)

He indicated a generally favorable reaction to the Plan. However, certain aspects of the Plan require additional detail and modification in order to obtain approval by EPA. He stated that EPA does not feel the CO strategy will provide for the maintainance of the ambient air standards, that it will not reduce emissions and transfer the problem to another area. He also stated that there is no action beyond alert level for carbon monoxide air episode plan and that the responsibilities of local government were not clearly identified in terms of the implementation and carrying out of the plan. He stated that there is no schedule of a practical solution for CO given.

14. Joe Voegler (Private Citizen)

He stated that he is against the Plan (it is a result of a mass hysteria) which is being jammed down the citizens' throats. He stated, however, that there is a problem and he doubted if he could live in downtown Fairbanks. He also would like to have a condensed copy of the Clean Air Act. He stated that carbon monoxide poisoning appears to be one of the nicest ways to die, as opposed to death by emphysema.

15. Les Murphy (Private Citizen)

He stated that he is against the Plan and that the carbon monoxide strategy does not appear to be justified because it was only a 20-day problem of the year. He stated his constitutional rights were being denied and that a virtual police state was being established. He stated public education is necessary to bring about an adequate practical solution to the problem.

16. Dan Peger (Private Citizen)

He stated that he is somewhat in favor of the plan and that you must have citizen participation and acceptance before you have a practical plan. He stated that he would like to see prohibition of idling, especially Department of Highways vehicles.

17. Pat Rower (Private Citizen)

He stated that clean air could not be legislated and indicated that he was for a prohibition of idling. He requested that the State give the Borough some police hours in enforcing regulations and further indicated that he did not feel routing of traffic to be a very practical solution.

18. Larry Hoppel (Fairbanks Environmental Center)

He stated that he is against the Plan and that its main fault was that the public has not had much opportunity to review the plan prior to public hearing. He indicated that there should be an alternative to the motor vehicle in order to have an adequate solution to the CO problem.

19. Gail Mayo (League of Women Voters)

She stated she was for the Plan and she is pleased that the secondary standards were being proposed. She requested that additional local personnel be put in the plan and that the local program position be clarified. She also stated that monitoring data should be readily available (I think she means the air surveillance data although it may also be the permit data). She questioned the lack of NOX and hydrocarbon standards for motor vehicles and recommended that inspections be required for older cars. She requested an anti-idling regulation and indicated that rerouting of traffic for abatement of carbon monoxide high levels is a poor strategy. She stressed the importance of including zoning as a carbon monoxide control measure. She complained that nine copies of the proposed Plan throughout the State were simply not enough to provide adequate review capability for the public.

20. Ernest Mueller (Alaska Conservation Society - Vice-President)

He stated that he agreed substantially with the criticisms in the Geophysical Institute critique. He recommended the use of metric units throughout, and that the Borough be encouraged to develop its program and be given veto authority over the State permit system. He recommended comprehensive long-term planning as a prerequisite for adequate air quality control and that significant research be begun immediately. He recommended providing for an updating/ammending

of the plan and stated that the advisory board to the Department should be mentioned as carrying out a role and was not consulted throughout the forumlation of this plan. He further recommended variable standards dependent on population zoning. He objected to the use of a visible standard for incinerators and industrial processes, considering it to be old fashioned. He further indicated that there should be no reason for requiring different standards for different sizes of incinerators. He proposed that existing incinerators be required to comply with new regulations by July 1974. He recommended that the 0.05 grains per scf requirement be applied to all sources, regardless of size, type or age. He further recommended that all large sources be required to monitor and that this data be made available to the public. He concluded by stating that the standards for motor vehicles should include other pollutants and regulations than just visible pollutants.

21. Helen Burgess (Private Citizen)

She protested of the unavailability of the plan and recommended that the obvious solution to the carbon monoxide problem was a public transportation system.

22. James Burgess (Private Citizen)

He seemed concerned that the public would not have another opportunity in providing comments on the plan.

23. Jim Lomalco (Private Citizen)

He favors more stringent regulations and stated that the air is bad in Fairbanks.

24. June Weinstock (Private Citizen)

She favors the most stringent of regulations and stated that the carbon monoxide problem is more than just a 20-day per year problem. She favors the prohitibion of idling motor vehicles and the prohibition of trash burning.

25. Glen Shaw (Geophysical Institute)

He entered into the record the Geophysical Institute's critique.

26. Dave Anderson (Students for Environmental Action)

He supports the plan and also the Geophysical Institute's critique. He stated that emergencies must be prevented and that the Department should consider public transportation and the prohibition of idling in long-range solutions to the CO problem. He also favors regulations on other gaseous emissions and carbon monoxide.

27. Jim Bruce (Attorney for the Borough)

He stated that the plan does not appear to be entirely adequate for Fairbanks and that the public had very little opportunity to review and make comments because of the plan's unavailability. He also stated that there should be more local program involvement than presently appears to be the case in the plan and that our Attorney General should review the regulations prior to their being finalized.

28. Mrs. Gloria Desrochers (Private Citizen)

She would like to see a very strong control program and stated that plug-ins do not appear to be the full solution. She stated that we must get down to the root of the problem and that a double fuel system in automobiles may be a possible solution.

29. Fred Klingener (Borough Engineer)

He is against the plan as it presently is written. He feels that there should be cost effectiveness (or at least gross economic effects) relating to the regulations and control strategies. He recommended that the high wind particulate matter episode plan be deleted because there was no health hazard relating to naturally occurring dust. He felt that the calculations presented in Section VI.F.7 were incorrect and did not compare to similar calculations he made on stoichiometry of gasoline for motor vehicles.

30. Ken MacKenzie (Fairbanks Pollution Control Officer)

He complained about not getting enough copies of the plan. He indicated that the Borough wishes to enforce State regulations and is going to propose to the legislators to change the Statutes so that this can occur. He objected to the carbon monoxide rerouting strategy and indicated that it simply will move the problem to another area. He indicated that the answer to the carbon monoxide problem is going to lie with something other than motor vehicles for transportation. He closed by stating that he was sorry that the State did not meet its federal deadlines.

31. Doug Lowery (ADEC Regional Engineer)

Mr. Lowery stated that the League of Women Voters and two other citizens came into his office to obtain copies of the regulations, and that he had only one request, which was honored, to look at the complete plan.

32. Joanne Rivard (Private Citizen)

She favors strong regulations

33. Tom Scarborough (Member of the Commission)

He stated that the Borough and the City needs to be stressed and that thus far the City has had no input into the plan. He further stated that the permit system should be a cooperative effort between State and local programs. He stated that zoning and land use planning must be major parts of any long-range plan for carbon monoxide. He also stated that a thorough legal review of the document is necessary.

34. Dan Peger (Private Citzen)

He stressed the importance of public acceptance of the plan in order to make it practicable and workable. He further stated that Fairbanks is one sorry mess.

35. Ernie Mueller (Conservation Society)

He suggested that we obtain the BLM mail list and provide people with copies of the public hearing testimony and any other eventual regulations or important documents which may be coming out of the Department. He suggested that there should be provision for class actions or citizen suits in the event that State or local officials do not do their job.

36. Carol Gustofson (Private Citzen)

She spoke in favor of strong air quality control regulations.

37. Glen Shaw (Private Citizen)

He was impressed with the plan and the efforts which were made in compiling it. He spoke in favor of the plan.

38. Mike Kelly (Administrative Assistant for GVEA)

He petitioned for an extension of time before the plan is finalized, even if it means holding another public hearing on it. He indicated that the Healy Plant may require a $500,000 expense to comply with the present regulations, and he felt that it was a special situation. He would like to include more clarifying comments in the plan regarding the permit system, monitoring and reporting of data. He would also like to have clarified the role of local programs versus State programs in enforcing and administering permits.

IV.1.1.1.2 Anchorage Public Hearing - February 26, 1972

1. Dr. Max C. Brewer (Commissioner, Department of Environmental Conservation)

Dr. Brewer welcomed all those wishing to make oral or written testimony on the Department's proposed air quality control plan to do so. He stated that their testimony would be thoroughly reviewed by the Department for possible incorporation into the plan. He reviewed the history of what had occurred in the previous year relating to the formation of the plan (and submittal of that plan to the Environmental Protection Agency). He stated that the plan is a statewide implementation plan and that the State strongly supports local air quality control agencies, encourages their formation and provides financial enticements including both per capita revenue sharing and outright grants to local agencies which have air quality control programs. He stated that local agencies can and are encouraged to establish (by local ordinance) more stringent air quality control regulations than those of the State, but that they cannot establish less stringent requirements. He stated that the Department cannot delegate the authority to operate the proposed statewide air quality control permit system.

2. Gary Young (Environmental Protection Agency)

He congratulated the State effort and outlined provisions of the Clean Air Act. He stated that the particulate matter strategy for Anchorage does not adequately provide for the attainment of

the ambient air quality standards by 1975. He also stated that although the Cook Inlet District responsibilities were generally described, they should be far more specific. He concluded by stating that EPA wished to help develop a good and practical program for Alaska.

3. Cliff Judkins (Greater Anchorage Area Borough)

He stated that his testimony would be provided in writing.

4. Dick Mikkelsen (Cook Inlet District)

He stated that the conditional permit proposed in the plan may prove to be more of a burden than the Department intended. He stated that approximately fifty sources will require these types of permits and questioned whether the State Department realized what it was doing, in that it has less than 10 months to hold and conduct hearings and to finalize these permits. He requested that Table II.F-5 show that share of money that the State is providing to the Cook Inlet District, and that the State establish a suggested level of State funding for local programs. He objected to the plan not showing any federal matching for the Fairbanks program, and to the regulations indicating that only the Commissioner of the Department can call an air episode. He indicated that the permit system proposed by the State will eclipse theirs, will require industry to obtain two permits, and generally is in conflict with the "legal permit system" as specified in the Statutes (he stated that the Cook Inlet system of Authority-to-Construct and variance is that described in the Statutes). He recommended that we re-evaluate the advisability of prohibiting the burning of garbage. He stated that he felt that it was putting extreme hardship on rural areas where no garbage collection presently is available and that burning presently is the only way to get rid of the garbage. He stated that issuing of air advisories over the whole State will be impossible to enforce and therefore this requirement is impractical. He also stated that the 40% opacity requirement for marine vessels is entirely too lenient.

5. Byrl Getman (Kenai Borough Assemblyman - Commission Member)

He stated that local programs originally were encouraged in all previous bills passed by the State legislature and that his interpretation of the present Alaska Statutes does the same. He also stated that the present Alaska Statutes specify a specific type of permit system, which is what the Cook Inlet District has at the present. He further stated that the Department has not abided by the mandate of Chapter 46, and that we are superseding our authority in proposing a strong State program which will be involved in controlling air quality in their jurisdiction. He further stated that the State does not have the authority to establish any other type of permit system than that specified in AS 46 (in effect saying that we do not have the authority to require that all existing large sources of air contaminants obtain a permit to operate). He stated that the Cook Inlet program should be allowed to continue to operate as they presently are set up and that the imposition of the proposed State regulations and permit system on the District would severely hamper their present actions and administration. He further stated that the open burning pro-

posed regulations would create hardships in outlying areas if garbage and rubber materials (such as tires) could not be burned.

6. Leo Kaye (Tuberculosis Association)

He indicated that he was the recipient of an EPA contract to promote citizen involvement in the proposed plan, and that he sent out 84 notices for establishing a coalition from which he received 40 responses. He indicated citizen participation was encouraged and that they had negotiated for and received the Geophysical Institute's critique on the plan. He recommended that we stress the importance of zoning and land use planning as a mechanism to develop control measures for various pollutants. He also stressed the need for additional research (this appears to be a direct result of the Geophysical Institute's critique) and he recommended an increase in the budget resources and manpower which are projected in the plan. He endorses the plan as the beginning of statewide air quality control.

7. Llewelyn Johnson (Alaska Center for the Environment)

He stated that the proposed plan is a good beginning and a reasonable system for controlling air quality throughout the State. He commended the State for going directly to the secondary standards and recommended certain unique Alaska standards such as for ice fog. He stressed providing for land use planning and zoning and effective methods of preventing air pollution, and indicated that the proposed permit system cannot accomplish the same thing as zoning and land use planning can (although it will assist). He indicated the budget and staff that is proposed in the document should be increased to be at least a minimum of $500,000 by 1974, which would incorporate 15 persons on the State level (his proposal is based on an anticipated boom-time). He further stated that the Department is being looked on as the "trustee of the environment" and he expects the Department to live up to that. He recommended that we work closely with the Department of Natural Resources and Department of Economic Development to insure that the proposed industrial sites be properly selected. He recommended more research on the motor vehicles especially in terms of plug-ins, usage of leaded gas and the prohibition of excessive idling. He proposed that the Department obtain its own attorney under contract from the Attorney General in order to insure that proper enforcement is obtained for the Department. He recommended that marine vessels be required to meet a 20% opacity requirement and that the public nuisance provision follow the same language as the State law. He recommended that the maximum penalties should be scaled up to $5,000 per day, depending on the severity of the violations. He also recommended deletion of the "due to unintentional breakdown" section in the marine vessel regulation.

8. Don Liston (Anchorage Youth Counsel)

He is in favor of the proposed plan and indicates that he feels it is a great start for controlling air quality in the State. He indicated that air pollution affects the people in the downtown regions drastically and offers their help and assistance in the community in controlling air quality. He recommends strong enforcement and suggests that something be done about smoking in public places. He also recommended an increase in the budget and resources projected for the air effort.

9. Charles Konigsberg (Upper Cook Inlet Chapter of Conservation Society and Alaska Chapter of Sierra Club)

He recommends a greatly strengthened plan than is proposed, in addition to a non-degradation statement of air quality. He proposed that the most stringent standards developed anywhere should be applied to Alaska because of its relatively undeveloped nature. He stated that the relationship between State and local agencies needs to be clarified. He also stated that zoning must be used as a mechanism to achieve air quality and that an emission standard cannot be justified simply on the grounds that it represents "the state of the art". He stated that there is no technical solution to the problem because the solution to the problem is a political one. He recommended that "adequate" funding and staffing be provided so that enforcement actually can be accomplished.

10. Keith Arnold (Secretary of Alaska Oil and Gas Association)

He supports the plan with qualifications. He stated he is vitally concerned but that there are areas which need to be improved in the plan.

11. Bill Howard (Speaking for Alaska Oil and Gas Association - Division Manager of Marathon Oil)

Mr. Howard gave very long detailed speech and also submitted written testimony (I will only summarize in brief the major points of his speech here). He supports effective and fair regulations. He also supports air pollution control programs as having significant authority and indicated that the Cook Inlet District has been very effective since its ordinance went into effect. He recommends local autonomy. He cautions against overlapping control - this being confusing to industry. He recommends that gas flares presently existing be allowed to come under the 40% opacity visible regulation instead of the proposed 20% requirement. He proposes the marine vessel regulation also be included in 040, 050, and 060. He proposes a 40% opacity requirement for existing industrial sources, instead of the proposed 20% requirement. He questioned the ice fog regulation. He had a number of questions regarding the permit system such as "in any circumstances" should be replaced with "operating levels". He recommended that the requirement to submit emission data every two years was unnecessary and recommended deleting it. He also felt that the requirement for registered engineers being the only ones allowed to submit plans an unnecessary burden for industry. He recommended that the penalties section should only pertain to willful violations (or Alaska Statutes 46.03.790 instead of AS 46.03.760). He objected to the word "modified" in section 170 and suggested that it be changed to "if the air contaminant emission is altered". He recommended that section 180 be deleted so that the plan may be changed administratively instead of being required to be submitted to public hearing for each change (his reasoning was that the plan by its very nature would require periodic little and minor changes, whereas the regulations would be considerably more permanent).

12. Sue Green (League of Women Voters)

She is pleased that the plan was approached basically from a preventive standpoint. She felt that there should be explicit emphasis on a non-degradation statement and regulation. She felt more research and staff was needed and that chemistry of low temperature air pollution be studied. She questioned that the proposed study effort proposed in the plan should be spread out over a four year period. She also recommended that there should be alternatives to the present transportation system.

13. James Boudreaux (Anchorage Jaycees)

He stated that his organization was a participating member of the Alaska coalition committee (organized by Leo Kaye) and that he supports the plan and the critique made by the Geophysical Institute.

14. Jerry McClutchen (Anchorage Chamber of Commerce Environmental Committee)

He compared the air program with the present Department water program, and indicated that he did not feel that the plan would be enforced or carried out. He proposed that a non-degradation clause be included in the plan and that more work is required for point source regulations.

15. Yvonne Merrill (League of Women Voters)

She questioned that the plan is basically preventive in nature and also was concerned about the amount of testing or monitoring that has been done and questioned how clean is the air. She recommended that we establish a standard for "settleable" particulate matter (she referenced the fact that our standard for particulate matter is for "suspended" particulate matter). She stated that the control strategy for Anchorage was meager and should include other Departmental assistance. She recommended that we evaluate different types of abrasive material to be used on icy roads in the winter (primarily relating to their effect on contributing to particulate matter being measured in the air). She is concerned that when we define suspended particulate (such as, consisting of those particles less than 10 microns in diameter) that we will define the particulate matter problem out of existence. She was concerned about the potential Anchorage carbon monoxide problem and wished to see considerably speeded-up action on evaluating this potential problem. She proposed that a non-degradation standard be applied and then revised after we have adequately evaluated what is the ambient air quality in Anchorage. She stated that the local versus State responsibility and involvement should be defined and recommended that local standards be updated by a specific deadline. She stated that the proposed State permit system is considerably superior to the present Cook Inlet system and proposed that the local program change their system to agree with that of the State. She was concerned about responsibilities for calling and implementing air episodes in Anchorage. She proposed that prohibitions for excessive car idling be initiated and that plug-ins be considered for Fairbanks. She also proposed that we include a regulation covering odors. She recommended that vehicle inspections be made in the future when this program becomes possible. She recommended that a standard for light aircraft particulate matter emissions be included and strongly

recommended an increase budgetary allotment for carrying out the plan and evaluating the unique problems of Alaska. She finished by indicating that a dialogue between the responsible agencies and the public is necessary to carry out an adequate program.

16. E. G. Burton (Prospect Heights Association)

He indicated that he is part of the Air Quality Coalition (organized by Leo Kaye). He proposed that an automobile regulation be included which would require that autos originally equipped with anti-pollution devices not be allowed to disconnect them. He proposed that large emission sources not in compliance with present regulations be required to come into compliance in the shortest reasonable and possible time. He stated that preemption of local government should never come about and that local government should be able to enforce State regulations. He proposed a single joint state-local permit system.

17. Mrs. Odette Foster (Private Citzen)

She stated that the federal policy for motor vehicles is not adequate and that additional controls such as zoning or land use planning be considered. She questioned the visible emission standard as to whether or not it would accomplish anything, and also questioned the routing of traffic proposal for Fairbanks as being a viable solution. She indicated that the permit system should also include area sources such as motor vehicles, etc. (presently it only includes large emission sources). She recommended establishing a prohibition against excessive idling and to establish an inspection system for air pollution control devices on automobiles. She proposed that we look at staggered work shifts as a possible control method, and that we work with the Departmelnt of Highways on their overall transportation plans (such as having an environmental impact statement for State plans).

18. Charles Konigsberg (Alaska Sierra Club, Cook Inlet Chapter of the Conservation Society)

He objected to the Alaska Oil and Gas Association's statement (refer to Mr. Huffman's statement) and indicated that detailed speech language of "statutes" and "specific requirements" are simply hiding the overall intent of the plan and regulations. He criticized technical people as being too good at microanalysis while at the same time being extremely poor at macroanalysis of the overall problem. He indicated that the mode of thinking determines the behavior and that we must revise our methods of looking at the problem.

19. Michelle Robert (High School Student)

She stated that it was extremely unclear as to what the local program would be doing and that she would like to see this clarified.

20. Albert Comiskey(Private Citzen)

He indicated that he would like to see regulations on noise pollution and would like to know whether or not we were considering these at this time.

21. Jerry McCutcheon (Private Citzen)

He stated that he doubted the Department of Environmental Conservation would enforce their proposed air quality regulations.

22. Llewelyn Johnson (Alaska Center for the Environment)

He requested that an official mailing list be made up and that summaries of the public hearings be sent out to each person on the mailing list.

23. Kitty Johnson (Matanuska-Susitna Borough Private Citizen)

She indicated that a representative of Matanuska-Susitna (herself) was at the hearing and was interested in air quality control.

24. E.G.Burton (Attorney)

He recommended that we establish a mailing list so that each person attending the hearing could obtain at least a summary of the testimony. He also stated that he hoped adequate finances would be obtained to develop the necessary enforcement of the plan and that if the finances do become inadequate that the public would be able to know in time to assist in obtaining the necessary resources.

IV.1.1.1.3 Juneau Public Hearing - February 29, 1972

1. Dr. Max C. Brewer (Commission, Department of Environmental Conservation)

Dr. Brewer presented approximately the same testimony as in the previous two hearings.

2. Gary Young (Environmental Protection Agency)

Mr. Young presented the same testimony that he presented in the previous two hearings, with an additional emphasis on acquiring the legal authorities which presently do not appear to be completely covered in the AS 46.03. He referenced the letter that the regional EPA attorney general submitted to the State of Alaska indicating that specific authority for installation of monitoring devices and reporting requirements be specified and that the confidentiality provision be changed so it is more specific on what information can be made available. He indicated that to his knowledge there were pending legal changes to be submitted to the legislature and that if they were incorporated, EPA's concerns probably would be satisfied. He also mentioned that through EPA the required legal authority which is felt to be less than adequate presently could be delegated. This would be one way of satisfying EPA's requirements. He also stressed that the general responsibility of local programs is not clear in the plan and that this should be rectified.

3. Joan Pelto (League of Women Voters of Alaska and of Juneau)

She stated that an anti-degradation statement should be included in the regulations and that she compliments many sections of the plan

as being adequate for the State of Alaska. She is pleased to see isopleth maps for particulate matter will be used for land use planning. She stated that adequate personnel and equipment was absolutely necessary, and found it hard to believe that research and monitoring is spread over a four-year period. She recommended the use of air curtain incinerators for land clearing operations. She recommended the requirement for multi-chambered incinerators equipped with scrubbers, and proposed a prohibition of gas flaring to assist the Department of Natural Resources in enforcing their prohibition. She suggested that we use the federal guideline of 9 pounds of SOX produced as our standard for pulp mills when the technology exists. She suggested that we look into mass transportation as a solution to the carbon monoxide problem in Fairbanks and that we try and find a method to measure visible emissions instead of "reading" them. She recommended a sulfur content limitation for marine vessel fuel and suggested that applicants for permits be required to monitor their emissions. She recommended that there be a provision to update the plan and that the plan or regulations should not be able to be updated without a public hearing.

4. Mr. Russ Gibson (Greater Juneau Chamber of Commerce)

He supports the plan and is convinced that the plan will protect our environment, while allowing for orderly development. He will work with the Juneau Borough to implement a local program. He recommended that our mechanical breakdown provision for marine vessels be included on the other regulations.

5. Bill Hagevig (Alaska Department of Education)

He requested an exemption in the proposed regulations 030(2)(b) so that he could continue his statewide program for training fire fighters. In particular he noted the Kenai three day fire program they annually conduct, in which open pit spill fires are deliberately started for training purposes. Eventually he would like to see this program expanded so that there would be localized schools on a smaller scale in areas such as Juneau.

6. Wallace Dawson (State Fire Marshal)

He supports Mr. Hagevig's statements regarding the allowance of fire fighting. He stated that fire fighting training is a necessity and referred to the training done on the various Armed Forces bases.

7. Sharon Lobaugh (Private Citizen)

She stated that air is one of the most lightly regarded environmental quantities, and perhaps one of the most complex to understand. She objected to having only two weeks to review the document and objected to the possibility that the standard could be changed without notice by the Commissioner. She questioned whether the plan truly was a preventive plan, and recommended having a non-degradation statement included for the ambient air standards. She criticized the lack of monitoring done to date throughout the State, and she questioned that the input from the public hearings will be put to use. She stated that the secondary ambient air quality standards appeared to be a compromise for Alaska and she appeared to be unhappy about the control

strategy for Fairbanks (she referred to the rerouting of traffic strategy as "laughable"). She requested a clearing up of local versus State program interrelationships, and criticized the lack of funding for the Fairbanks program. She stated that the permit system was not clear because of the lack of criteria specified. Her concern appeared to be one that the permit could easily be controlled by industry. She stated that controls for flaring operations were inadequate and she did not see why we did not go to a standard for the sulfite mills of 9 pounds of SOX per ton of pulp produced as stated in the federal guidelines. She also objected to the emphasis that we had in the carbon monoxide strategy of keeping people away from the sources instead of reducing the sources.

8. Dave Argetsinger (Project Manager, Green Construction)

He indicated that the Alaska Juneau Contractors will submit written testimony and was generally pleased that action is finally happening in Alaska for air quality control. He indicated that significant problems in Alaska for air quality control were not covered such as the controlling of volcanoes, forest fires, and wind blown silt. He objected to the wording in the permit regulation of "under any circumstances" for determining whether or not the source is required to obtain a permit. He suggested that this be changed to "under probable or current operational levels". He stated that the regulations should take into consideration portable batching plants and their location. He suggested that these plants be required to meet stringent regulations when they are large or located in areas where there is a dense population, and be allowed to meet less stringent regulations in other circumstances. He indicated that a typical batch plant operation in Alaska has a low energy wet scrubber which results in a 0.73 grains per scf particulate matter emission. He also indicated that it does not appear to be advisable to make the plan part of the regulations because of the numerous and frequent small changes expected to be made in the plan as we implement it.

9. William Corbus (Alaska Light and Power Co.)

He supports the regulations and indicated that he would do everything he can to meet the standards. He indicated that he felt they were fair and were something that could be lived with.

IV.1.1.1.4 Ketchikan Public Hearing - March 2, 1972

1. Max C. Brewer (Commissioner, Department of Environmental Conservation)

A statement by Dr. Brewer was read into the public record and was essentially the same as was presented in the three previous public hearings.

2. Gary Young (Environmental Protection Agency)

Mr. Young made a statement which was similar to those he had made in previous public hearings.

3. R. E. Hopson (Vice-President, Ketchikan Pulp Company)

He indicated that the Ketchikan Pulp Company is a magnesium base sulfite mill which has been in operation since 1954. He also indicated that the process incorporates full chemical recovery and has an absorption system which washes the gas effluent four times prior to allowing it to be admitted into the air. He stated that in 1970 the Company began burning the wood wastes from the Ketchikan Lumber Company so that the teepee burner downtown could be phased out. He also indicated that the spruce mill boilers eventually will be shut down, thereby eliminating an additional air pollution source in Ketchikan.

4. Don Benson (Executive Secretary, Northwest Pulp and Paper Association)

He indicated that the ultimate goal of the regulations is to comply with the ambient standards. He proposed that the emission standards proposed in the plan be modified to be interpreted as guidelines until adequate ambient air data is generated such that there is a legitimate ambient air basis for setting an emission standard. He recommended that we further define what we mean by "ppm" and "standard conditions". He recommended that the 0.1 grains per scf requirement for power boilers burning wood wastes be relaxed to 0.2 grains per scf. He also proposed a 2% sulfur content limitation for fuel rather than the 500 ppm emission requirement (he objected to the 500 ppm requirement as severely limiting the sulfur content as fuel. He questioned whether this really was necessary and desirable for Alaska). He requested that the proposed regulation of 2 pounds of particulate matter allowable per ton of pulp produced be changed to four pounds per ton. He recommended that the requirement for a map to be provided as part of an application for a permit to operate is not necessary. He requested that modified facilities be defined as those changes to a facility which result in "substantial change to the air emissions". He indicated that he will provide more detailed written comments.

5. Oren Mason (Technical Director, Alaska Lumber and Pulp)

He requested that the ambient air quality standard for particulate matter be revised to 75 micrograms per cubic meter (or that level which is the primary ambient air quality standard). He also recommended that our sulfur oxides standard for pulp mills be changed to a "tentative guidelines" interpretation, until such time as we have obtained adequate ambient air quality data to justify that level or some other level of emission standard. He indicated that there is a significant problem in getting a valid sample and eliminating interferences for continuously monitoring sulfur dioxide. He requested that the proposed standard for power boilers burning wood wastes be revised from 0.1 grains per scf to 0.2 grains per scf of particulate matter. He also recommended that the proposed regulation of 2 pounds of particulate matter per ton of pulp produced be changed to 4 pounds per ton of pulp produced to agree with the Washington and Oregon standards.

6. Bill Krepps (Wrangell Home Owner)

He stated that he has been living next to a poorly run teepee burner in Wrangell for the past 12 years and that the situation there is extremely bad. He is pleased to see that something is finally getting done for controlling that sources.

7. Hazel Krepps (Representing Wrangell Home Owners)

She indicated that she has been living in Shoemaker Bay for the past 22 years and that 12 years ago the sawmill was built right next to their place. She stated that the fallout from the teepee burners is so bad that she has not hung clothes out for four years. She also indicated that within 36 hours she has witnessed an inch and a half of soot buildup on the roof. She further indicated that the strawberries growing near her property line by the teepee burner are inedible even though there is a large crop, and that the shrubbery that she planted some time ago is all dead. She indicated that written comments would be coming and that she was pleased to see that something is going to be done about the situation.

8. Sandy Griffith (Private Citizen)

He indicated that we should take a far-reaching viewpoint of air quality.

9. Ben Fleenor (Operator, Herring Bay Lumber)

He requested assistance from the State to make available technical information for controlling air pollution from teepee burners. He seemed generally receptive to regulations but would like somebody to explain and interpret what the regulations mean and how can he comply with them.

10. Roland Stanton (Representative of those who do not smoke)

He submitted a petition signed by 124 people stating that they were against smoking in public places. He stated that frequently the atmosphere inside a building exceed the primary ambient air quality standard and that he wishes to protest against smoking in public places.

11. Dixie Baade (Tongas Conservation Society)

She indicated that she will file a written statement later. She stated that standards for existing equipment should be the same as for new but that a reasonable amount of time be given for the existing sources to comply. She requested that standards for particulate matter be stated in micrograms per cubic meter, and that standards for the pulp mills be based on the total amount of sulfur dioxide released in the atmosphere over twenty-four hours. She recommended that the State provide for ambient monitoring in addition to that provided by pulp mill personnel.

12. Dick Woodbury (Private Citizen)

He is against the proposed plan and program. He stated that area emission sources such as motor vehicles are not given enough treatment and that many pollutant problems do not have solutions. He indicated that there is not enough resources in the budget to carry out the continuous enforcement and he does not like the amount and cost of the equipment and resources which would be necessary to carry out a complete air quality program. He stated that the standards needed upgrading such that they will not be necessary to upgrade in the future. He recommends that open burning at dump sites be allowed to continue so that the leachate problems related to many solid waste landfill operations in southeast Alaska can be minimized (he referenced the present sorry state of affairs at the Ketchikan landfill).

13. Mr. Malcom Doiron (Tongass Conservation Society)

He stated he is in favor of the plan and stated that for the past three years there has been an increase in the reduction of visibility due to the pulp mill air emissions. He then proceeded to show approximately 12 to 15 slides relating to the pulp mill air emissions.

14. Dixie Baade (Tongas Conservation Society)

She wanted to know if any particulate matter monitoring had been done in southeast Alaska.

15. Robert Baade (Marine Vessel Operator)

He asked who was responsible for marine vessel accidents resulting from the visibility obstructions from the pulp mill effluents.

IV.1.2 Written Testimony

The following is a summary of all written testimony received by the Department of Environmental Conservation on or before March 20, 1972, on the proposed State Air Quality Control Plan and Regulations.

1. Mr. McCutcheon (Greater Anchorage Chamber of Commerce)

He wanted to know how much effort Anchorage wants to spend to get how much better quality air. He stated that the people of the area should have a choice about their standards. He also stated that there should be a balancing of economic growth with the quality of the air, and that quality's effect on the health and property of the citizens. He wanted to generally aim for the time the population reaches 1,000,000 in the Cook Inlet Basin with the air quality no different than now, except for lower particulate matter counts. He stated that they would need to adopt standards and a monitoring system, and that the State point sources regulations will need restudy with projected development in mind. The growth factor and possibility of present equipment becoming inadequate for increased standards should be considered. The public should have a choice of cutting industry or air regulations if they become incompatible.

2. Mr. Hagevig (Fire Training Service Supervisor, Department of Education)

He stated that section 18 AAC 50.120 needs a provision for oil/gas firefighting schools to operate.

3. John Carlson (Borough Chairman, Fairbanks North Star Borough)

He stated that the Fairbanks Borough has an environmental control officer and a seven man commission drawing up regulations to meet State and federal guidelines. He believes more time should be taken to gain experience before developing regulations. He also stated that there should be regulations permitting open burning for isolated families. He believes implementation and enforcement should be by the local government. He stated that they will need financial support from the State.

4. R. F. Ballard (Environmental Control Officer - Phillips Petroleum Company)

He stated that Section 50.050, 500 ppm, be applied only if 50.020 cannot be met because of additive effects of several sources. He suggested that Section 50.070 incorporate a time limit on visible emissions from motor vehicles. He also suggested that Section V.B.1, Item 4 be modified to require industrial processes in episode areas to reduce emissions of particulates by predetermined action established for the emergency state; not shut down, which could cause more emissions in the start up process.

5. Mrs. Hoveland (Anchorage)

She stated that the air regulations "appear superfluous and the control strategy demonstrates partiality by accomodating existing sources of

air pollutants and giving the full weight of air quality control measures to future sources". She also stated that the Section PUBLIC NUISANCE lacks clarity. She also pointed out that lower levels of plant groups need consideration; that lichens are indicators of air pollution and that .05 ppm of SO_2 could be critical to lichens.

6. Ken Sheppard (Consulting Engineer, Anchorage)

He wondered whether we had considered the possibility of accepting the federal plan. He stated that then administrative costs would be reimbursed by federal funds. He also stated that we need to consider topographical and population differences in the State; and that we don't want to scare off industries and job opportunity.

7. Dave Argetsinger (Green Construction Company, Anchorage)

He questions the strictness of 0.05 grains per standard cubic foot; only one out of 5 hot-mix plants in Seattle has a low of .11 grains. He suggested that Section 18•AAC 50.120 needs clarification, because as it reads now a plant with a control device is not subject to as strict control as one without, regardless of the production capacity.

8. B. A. Campbell (Commissioner, Department of Highways)

He stated that highway closures could be done only with concurrence of the Commissioner of Highways and the Commissioner of Public Safety. He suggested an alternative to highway closure was restricting or suspending operation of industrial, commercial and governmental activities within the pollution area; that this would reduce the amount of auto entry. He suggested more variable standards for temporary installations such as rock crushers, paving plants on road sides. He also suggested that if a person lives within one mile that stringent standards be imposed; with less stringent standards imposed for zones of 1-2 miles, 2-5 miles and 5-10 miles from the nearest people, and operations 10+ miles from permanent human habitation could run with minimal or no restrictions. He believes thus the dust would be controlled near people and that it wouldn't hurt anything miles in the bush.

9. Tom Hamilton (Consulting Geologist, Fairbanks)

He stated that the air quality control regulations must include provision for STATE OF EMERGENCY when the temperature remains low (-40°) for several days. He suggests that mass transportation by the city should be pressed into service and automobiles should be prohibited from downtown Fairbanks.

10. Ron Usher (City and Borough Manager of Juneau)

He stated that in section 50.030 there is not at the present time any upper air testing for ventilation quality on a particular day, and that the present method (averaging Yakutat and Annette) is unreliable. He also stated that the City and Borough feel this regulation is faced with numerous court charges and possible exclusion. He pointed out that the population of Juneau is 15,260 or 13,556, not 13,500; and that Juneau employment is 61% government service.

11. Odette Foster (Anchorage)

She stated that the number of automobiles, even with control devices, might undermine efforts at air quality control, and that the automobile will probably be Anchorage's greatest pollution problem in years to come. Concerning section 50.070, she stated that invisible emissions are as dangerous as the visible. In reference to section 50.080: re-routing traffic doesn't control automobile pollution. Usually the whole area of an affected city lies within the basin subject to inversion. She stated that in section 50.090, automobiles need restrictions too! She suggested the following:

1. Stop car idling/plug-in facilities.
2. Require air pollution control devices on all cars in the State.
3. Provide for inspection of these devices.
4. Certify service stations and mechanics to install emission control devices.
5. Limit the number of cars that can be in the central business district at one time. Require major employers to stagger work hours.

She also urges the Department to support: a Department of Transportation which could plan alternate and less polluting means of transportation in large urban areas; an environmental impact statement for the entire AMATS plan for Anchorage; and greenbelts and non-vehicular forms of travel like walking, skiing and biking.

12. Charles Lucier (Anchorage)

He pointed out that dust and sand is blown off of barren cuts which are left open after the space was cleared of trees and vegetation for building purposes. He suggests that the smog developing over Anchorage is due to : jets at the International Airport, cars, and smokestacks. He suggests taxation on tax credits to encourage 1) retention of native cover, or the speedy revegetation of disturbed soils (he suggests that those who expose the public to dust pollution be subject to prosecution and fines); 2) that private and commercial vehicles should be subject to graduated tax based on their horsepower size or their relative cleanliness in terms of harmful emissions; 3) public agencies at all levels should not be allowed to have disturbed soils unvegetated, and that government vehicles should lead the way as examples of low emissions; 4) that State operated airports should levy a graduated tax sufficient to encourage the adoption of less polluting jet engines; and 5) that urban standards should mirror the greater needs of the highly populated area in relation to special circumstances of meteorology such as occurs at Fairbanks and Anchorage, but that rural standards should be of a meaningful kind.

13. James Knudsen (Department of Ecology - Washington)

He suggests that a cutoff of the pound per ton of emission limits for the mills that handle 1,000+ tons per day be instated. He stated that Oregon was lowering limits to 5 ppm (.15 lbs./ton) as new low odor furnaces can achieve those goals.

14. Sharon Lobaugh (Juneau - In Addition)

She suggested that smoking should be banned from public places. She stated that the federal government assumes responsibility for air control of marine vessels and that a) the Coast Guard can enforce it; b) without uniform control vessels can slip from port to port without jurisdiction en-route; c) federal regulations would provide greater incentive for shipbuilders to design less pollutant ships; and d) Alaska stands to suffer the worst since it has such a vast coastline.

15. Anchorage Youth Council, East High Conservation Club, East Environmental Education Classes

They stated that "the responsibility for enforcement of control should lie with the State. This is stressed because someone should be answerable to the people." They also stated that the proposed plan must be strong and feasible and that they would like it to result in the best control program possible. They stated that the plan needs strengthening in the areas of auto exhaust, air surveillance, moving sources of emissions, zoning and the checking of emission sources. They stated that the personnel projected for air quality control should be increased to have complete coverage of air emissions and they stated that more research on air pollution and its effects should be accomplished in the State and that an information air data and research bank should be developed. They stated that they felt the proposed plan is workable.

16. Jane Church (Anchorage)

She wants separate places at lunch counters, cafes, and public places for non-smokers and smokers; and smoking rooms.

17. Mrs. D. Baade (Tongass Conservation Society - Ketchikan)

She questions the Priority III rating for particulate emissions in Ketchikan and Wrangell, and doesn't feel that it reflects the existing conditions. She feels that a problem is also developing in Metlakatla and intermittantly exists near Haines. She feels that no more assigning of priorities for particulate matter should be made in areas of sawmills and "cant" mill operations until the air monitoring has been done. She enclosed pictures of Tongass Narrows and Ward Cove.

18. O. A. Mason (Alaska Lumber and Pulp Company)

He believes that the magnesia base process is cleaner than the ammonia base, which is impractical. He believes that a 9 lb./ton SO_2 is not attainable with their equipment and requests that there be no reduction of the allowable SO_2 process emissions for pulp mills below the proposed level in the Alaska air quality control plan.

19. Mr. J. L. White (Mobile Oil - Anchorage)

He stated that Mobile Oil Corporation supports the testimony previously given by Alaska Oil and Gas Association, and an effective plan for air quality control in Alaska. He recommended a revision in the open burning regulation so that under certain circumstances

open burning of substances causing black smoke may be allowed. He recommended that process weight codes be similar to those proposed by EPA in the November 25, 1971 Federal Register be included in lieu of the emission standards proposed in section 18 AAC 050. He also recommended that the size of a facility requiring a permit to operate be judged on its "normal operating emission rate", not on its potential emission rate. He further stated that the State should provide adequate information so that an operator of a facility may be able to make the necessary emission calculations to provide the required information. He requested that the size of sources requiring to submit data be increased. He requested that the concept of "Conditional Permit" be revised to "Compliance Schedule" so that it is not tied to the "variance" requirements of AS 46.03.170. He also pointed out several apparent errors in the emission inventory relating to some of his air contaminant emission sources and requested that they be reviewed for errors.

20. Badger Construction Company (L. Wright - Fairbanks)

He wanted to be sure that controls for air pollution of future oil refineries and power plants be included in the plan.

21. William Krepps (Wrangell)

He stated that the pulp mill is a general nuisance because of the soot, smoke, noise, the killing of crabs and clams, vibrations that shake utensils off shelves, and the bark, chips and metal bands that are spread along the beaches. He enclosed a 33 signature petition of local residents showing concern to Wrangell air, water and wildlife. He also enclosed four color photographs of soot from the mill.

22. Claire Banks (Greater Anchorage Chamber of Commerce)

He stated that the Anchorage Chamber of Commerce supports the proposed plan and regulations as a necessary initial step to achieve acceptable air quality in Alaska. He stated that the plan must provide for an extremely diverse range of environmental conditions and that unities such as Anchorage and Fairbanks "will naturally require more comprehensive standards than areas with low populations and little or no industry". He requested that the plan be more specific toward implementation and enforcement through the local air pollution control program, such as for plans to standardize permit systems, revenue sharing programs, and coordinated efforts to obtain more effective monitoring and data gathering systems. He stated that there must be a reasonable length of time allowed for industry to comply with standards and that without good air quality data there is no real basis for establishing specific emission standards. Consequently there should be provisions made to allow for revision of the State plan as new data are developed.

23. Lars Eide (Mitkof Lumber Company)

He stated that the concentrations of the pollutant in question should be considered where it affects the general public then at the point of emission, and that the Department should take into consideration the concentration of population and industry in the

area concerned. He stated that Mitkof Lumber Company was relatively small but employed approximately 12 to 16 people. He stated that his mill could not se l or even give away its refuse to other companies that could utilize it and therefore complete utilization of the waste products is economically unfeasible. Consequently the only solution that Mitkof has is to burn the waste. At the present time, he sees no practical way in which he could purchase a "smoke-less" burner.

24. Malcolm Darion (Chairman Tongass Conservation Society)

He submitted slides of the Ketchikan pulp mill air contaminant emissions. He indicated that the "smog" is extending further and exists on more days per month than before and that it presents a hazard to boat travel in the Tongass Narrows and to highway travel north of the mill. He stated that he would like to see something done to alleviate this situation.

25. David Argetsinger (Green Construction Company)

He stated that his company is pleased to see the development of a comprehensive State air quality control plan and stated that it is "an absolute necessity for our industry" in planning for obtaining the necessary equipment to comply with the regulations. He was pleased with the recommendation for a continued road paving program in the urban areas to control particulate matter. He requested that those facilities requiring a permit to operate be required to do so based on their "existing or planned operating levels" instead of possible emission levels "under any circumstances". He requested that the size of facilities required to submit emission data be changed from five tons per year to 15 or 20 tons per year and that the data be submitted on an annual rather than bi-annual basis. He questioned that the 0.05 grains per SCF regulation for industrial sources was achievable for batching plants and he felt that this lower standard was not justified based on the air quality results it would achieve. He also suggested that the plan, which would be expected to be revised from time to time, not be included in the regulations.

26. Robert S. Burd (Director, Air and Water Program Division - EPA Region X)

He submitted detailed comments on the proposed air quality control plan, including the testimony which EPA submitted at each of the public hearings, general comments on the proposed plan, and comments on the proposed regulations. He stated that the plan must provide for attainment of both primary and secondary ambient air quality standards and thus must establish a date for attainment of both secondary standards. He suggested that the State Attorney General review the confidentiality and "submittal of emission data" requirements as specified in AS 46.03 to insure that they are adequate. He stated that the adequacy of the proposed control strategies for particulate matter and carbon monoxide does not sufficiently demonstrate that the ambient air quality standards will be attained. He stated that a long-range solution to the carbon monoxide problem in Fairbanks must be presented in the plan. He stated that additional details must be provided for the design of the air episode abatement plans described in section V, and that the plan must have legally enforceable compliance schedules for those stationary sources presently not

in compliance with regulations. He requested additional detailed information relating to the air surveillance system and for surveillance of stationary sources. He stated that the role which local programs are to play in the State plan should be more specifically outlined, including the authority under which local programs may operate. He expressed doubt that the resources projected for carrying out the air quality control plan (including both State and local program levels) are adequate.

27. John J. Shaffer (Christian Social Relations - Alaska Council of Churches)

He requested that we incorporate into the air quality control regulations a requirement that there be smoke-free areas in public places so that people may avoid the "severe pollution" which may exist as a result of other people's smoking.

28. Pollution Control Commission - Pollution Control Officer (Fairbanks North Star Borough)

They felt the information presented in the proposed plan was difficult to follow because of its structure. They indicated that a socio-economic review of the impact that the regulations will have on Alaska should be made, and that the regulations should be reviewed in this light before being established. They stated that they intend to request an amendment to AS 46.03 which would allow local police and pollution control offices to enforce State air quality regulations. They objected to the possibility that the State would enforce in their jurisdiction. They recommended that additional resources be projected for their program. They stated that the only review that the State should be making as to whether or not their program is acceptable for State and Federal funding, is whether their program is operating "in line with current State authorizing statutes." They questioned the detail in which air surveillance stations had been located, and the detail of the spacial evaluations (to understand the pollution problems in Fairbanks). They were critical of the particulate matter and carbon monoxide control strategies proposed in the plan and felt the particulate matter strategy was not adequately evaluated. They questioned the carbon monoxide air quality calculations and stated that both traffic flow and idling needed to be part of the overall control strategy and traffic rerouting should not be included in the strategy unless it improves traffic flow. They suggested that the "entire idea of rerouting should be deleted as impractical." They suggested that carbon monoxide strategy be formulated only after the carbon monoxide spacial evaluation is complete (this study is being conducted). They stated that the time schedule for carbon monoxide evaluation should be lengthened, because it does not appear to provide adequate time to obtain quantitative data. They stated that a complete carbon monoxide strategy for Fairbanks will be developed locally once the carbon monoxide study is completed. They questioned the ambient air quality standards and the air episode levels for carbon monoxide; stating that they appear to be very low, especially in light of the values being recorded in downtown Fairbanks. They also had numerous questions/objections to the proposed State air quality control regulations.

FAIRBANKS PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - MORNING SESSION ATTENDENCE - FEB. 25, 1972

Name	Representation	Mailing Address
G. Haydon	Facilities Engr. - Power Plants	Fort Wainwright
B. G. Howard	Marathon Oil Company	731 "I" St., Anchorage, Alaska
Ralph D. Mathis	Marathon Oil Company	" " " " "
B.R.T. Smith	B P Alaska, Inc.	121 W. Fireweed Ln., Anchorage, AK
Dan Sala	National Weather Service	Fairbanks, Alaska
Keith Arnold	Alaska Oil & Gas Assn.	First Nat'l Building, Anchorage, Ak
R. H. Casperson, Sr.		25 Mi. Richardson Hwy, Fairbanks,
James R. Beaty	Environmental Protection Agency	Region X, 1200 6th Ave., Seattle
Gerald England	University of Alaska	College, Alaska
Les Fortune	State Division of Lands	602 Barnette St., Fairbanks, Ak.
Royal Hanson	State Division of Lands	" " " " "
Michael Campbell	Career Extension Center	
Steve Darby	" " "	
Joy Smith	" " "	
David Bruce	City Sanitarian, City of Frbks.	800 Airport Rd., Fairbanks, Alaska
Chuck Winegarden	Chief Engr.Golden Valley Elec.	Box 1249, Fairbanks, Alaska
A. W. Baker	Prod.Supt., Golden Valley Elec.	" " " "
E. M. Roluts (Roberts?)	Dames & Moore/GVE	2810 C. Street (D&M), Anchorage, Ak
Ed Clarke	Hydro - North	Box 80921, College, Alaska
Viginia Gauss	League of Women Voters and Private Citizen	228 Slater Dr., Fairbanks, Alaska
Rosemarie Davis	Citizen	Box 5432, College, Ak.
Clare Russel	Citizen - NABAPCC	98 Craig, Fairbanks, Alaska
Jim Movius	Public Utility Manager, Fbks.	Box 2215, Fairbanks, Alaska
W. T. Geiger	Stearns-Roger Inc.	Box 5888, Denver, Colorado
Christopher Powers	USAF Eielson AFB	5010th Civil Engr. Sq.APO Seattle
Staples Brown	University of Alaska	Box 5546, College, Alaska
William Karabilnikoff	Facilities Engr.	Fort Wainwright
Thomas N. Scarborough	Himself	1150 Ivy Drive, Fairbanks, Ak.
Mark Fryer	University of Alaska	U of A - Planning, Fairbanks, Ak.
Mike Kelly	GVEA	Box 1249, Fairbanks, Alaska
Mrs. To Whitbeck	Nordale 6th Grade	29 Students - Nordale School, Frbnks
Marty Decker	North Star Air Pollution Control Commission	Box 1073, Fairbanks, Alaska
Ron Lummers	Career Extenion Center	
Wayne Telfer	Career Extension Center	
Environmental Quality, League of Women Voters		Box 1974, Fairbanks, Ak. 99707

FAIRBANKS PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - MORNING SESSION ATTENDENCE CONTINUED:

Name	Representation	Mailing Address
Ken MacKenzie	Fairbanks North Star Borough	Box 1267, Fairbanks, Alaska 99701
Joseph G. Holty	North Star Borough Pollution Control Commission	
Mrs. Morgan Reed, Jr.	Herself	Box 785, Fairbanks, Alaska
Judy A. Scarborough	Herself	1150 Ivy Drive, Fairbanks, Alaska
Bob Parsons	Fairbanks North Star Borough & Fairbanks City Council	Box 1267, Fairbanks, Alaska
Tom Hanna	ADEC	Pouch O, Juneau, Alaska 99801
Jerry Reinwand	"	" " " " "
Amos J. Alter	"	P. O. Box 1601, Fairbanks, Alaska
John Janssen	"	" " " " "
Jerry Hok	"	" " " " "

FAIRBANKS PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - EVENING SESSION ATTENDENCE - FEB. 25, 1972

Name	Representation	Address
L. Murphy	Citizen	Box 5-8 7, College, Alaska
J. Vogler	Citizen	Box 7, Fairbanks Skyline Drive
Tim Gilmore	ADEC	Pouch O, Juneau, Alaska
A. W. Baker	G. V. E. A.	P. O. Box 1249, Fairbanks, Alaska
Harriet Burgess		1178 Nenana Street
James H. Burgess		" " "
James Lomalco	Citizen	Box 81163, College, Alaska
Jane Hanchett	University of Ak. Student	Box 81438, College, Alaska
Bill Waugaman, Jr.	Self	Box 80-589, College, Alaska
Patricia Raivert	Self	Box 222, Fairbanks, Alaska
Mr. & Mrs. Lon R. McDermott	Burgess Construction Company	P. O. Box 1410, Fairbanks, Alaska
Joane Rivard	Citizen	Box 81163, College, Fairbanks
Barbara Matthews	Self/AAUW	2 1/2 Mile McGrath Road, Fairbanks
Frank Glass	Self	510 2nd Street, #226, Fairbanks
Ken MacKenzie	North Star Borough	Box 1267, Fairbanks, Alaska
Ernest W. Mueller	Alaska Conservation Society	Box 81730, College, Alaska
Dan Peger	Everybody	Peger Road
Ruth Peger		Peger Road
Harold O. Duahom		3 1/2 Mile Goldstream Rd., Fairbanks
Royal Bidwell	Yukon Supply Company	1533 Eielson Street, Fairbanks
W. H. Doolittle	Self	317 E. Bentley Drive, Fairbanks
Tom Hering	Self	524 Baranof, Fairbanks, Alaska
Sid Heidersdorf	Self	Box 81355, Fairbanks, Alaska
Tom Buhite	Self	McGrath Road, Fairbanks, Alaska(1Mi)
Ralph J. H. Liljelund	Self	Box 5-708, College, Alaska
Gail Mayo	Fairbanks League of Women Voters	1 Mi. Shipwreck Road, Fairbanks
Scott Grundy	Self	5 1/2 Mi. Steese Hwy., Fairbanks
Carol H. Gustofson	Self	900 15th Ave., #7, Fairbanks, Ak.
Ed Hole	Self	3483 Rewar Drive, Fairbanks
Jan Palmer	Self	1201 Coppet Street, Fairbanks
Tom Karabelnikoff	Self	812 Smythe, Fairbanks, Alaska
Al & Shirley Belon	Selves	1143 Sunset Drive
June Weinstock	Self	Box 81382, College, Alaska
Marley Klingener	Self	Box 80684, College, Alaska
Jim Bruce	Self and NSB	Box 1267, Fairbanks, Alaska
J. F. Klingener	Self	Box 80684, College, Alaska
Fred Pratt	Daily News Minor	Box 72981, Fairbanks, Alaska

FAIRBANKS PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - EVENING SESSION ATTENDENCE CONTINUED

Name	Representing	Mailing Address
John E. Wright	North Pole	3 1/2 Mi. Rich. Hwy., North Pole, Ak.
Don Nelson	North Pole (Gen. Man. KJNP Radio)	Mission Road
Edward Andrews	North Pole	
H. Laurence Hoppel	Fairbanks Environmental Center	525 5th Avenue
Doris L. Vogler	Self	Box 7, Fairbanks, Alaska
Wm. & Ann Harrison	Selves	
Pat Egan	KTUF-TV	P. O. Box 950, Fairbanks, Alaska
H. Burd		General Delivery, College, Alaska
C. Clements	Self	Box 81157, College, Alaska
David Anderson	Students for Environmental Action	1429 Willow Street, Fairbanks, Alaska
Russ Holmes	Fairbanks	940 Farewll, Fairbanks, Alaska
Mrs. Gloria Desrochers	Self	113 Cowles, Fairbanks, Alaska
Glenn Shaw	Self	%Geophysical Institute, UofA, College
Pete Garber	Self	Box 81807, College, Alaska
Carl Benson	Self	6 Mi., Farmers Loop Road, Fairbanks
Gary Young	EPA	Region X, 1200 6th, Seattle, Washington
A. J. Alter	ADEC	P. O. Box 1601, Fairbanks, Alaska
Jerry Reinwand	"	Pouch O, Juneau, Alaska
Tom Hanna	"	" " " "
Jerry Hok	"	P. O. Box 1601, Fairbanks, Alaska
Doug Lowery	"	" " " " "
Tom Scarborough	Self	1150 Ivy Drive, Fairbanks, Alaska
Mike Kelly	GVEA	Box 1249, Fairbanks, Alaska

ANCHORAGE PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - ATTENDENCE ON FEBRUARY 26, 1972

Name	Representation	Address (Mailing)
Kyle J. Cherry	ADEC	338 Denali St., MacKay Bldg, Anchorage
Gary L. Ostby	"	" " " " " "
T. Wilson	Sun Oil Company	645 G. Street, Anchorage, Alaska
C. Brockel	Kenai	Soldotna, Alaska
James Boudreaux	Anchorage Jaycees	411 DeBarr Avenue, Anchorage, Alaska
Stan Brust	Anchorage	605 Fourth Ave., Anchorage, Alaska
Donna Matthews	Anchorage	
Al Swalling	Anchorage	2601 Marston Drive, Anchorage, Alaska
K. W. Stanley	Anchorage	7003 Mink Pl., Anchorage, Alaska
H. N. Ohau	Kenai	
L. Green	Chem & Geo Labs	641 N. Klevin, Anchorage, Alaska 2603 Arctic Blvd. (Labs address)
G. M. Chilton	Anchorage	501 N. Park, Anchorage, Alaska
Jack Miller		7706 Brentwood Circle, Anchorage, Ak.
Sally Brownesberger	Anchorage	3036 Madison Way, Anchorage, Alaska
Nancy Edward	Anchorage	
Bill G. Howard	Marathon Oil Co. of Alaska	731 "I" Street, Anchorage, Alaska
Ralph O. Mathis	" " " " "	" " " " "
Leo C. Kaye	Alaska Tuberculosis and Respiratory Disease Assoc.	406 G. St. Anchorage, Alaska
Rosemary Slurolora	Anchorage Times	820 W. 4th Avenue, Anchorage, Alaska
Stanley Oslund		
S. H. Glotfelty	City of Kenai City Manager	Kenai, Alaska
Robert L. McCollom	Greater Anchorage Chamber of Commerce	612 F. Street, Anchorage, Alaska
C. P. Judkins	Greater Anchorage Area Borough - D.E.Q.	104 W. Northern Lights Blvd, Anchorage
N. R. Schoenhoester	Chugack Electric Assn.	731 Gambell, Anchorage, Alaska
J. D. Lewis	Standard Oil of California	Div. Off. 1689 C. St., Anchorage, Ak.
Mary P. Brudie	Anchorage	805 W. 5th Avenue, Anchorage, Alaska
Heidi Ely	Anchorage	
E. G. Burton	Prospect Heights Association	825 W. 8th Avenue, Anchorage, Alaska
Leon Ole Johnson	(KEA)Kodiak Electric Assn.	Tagura Road, Kodiak, Alaska
A. V. Barnett	Movile Oil Corp. - Anchorage	430 W. 7th Avenue, Anchorage, Alaska
A. L. Comiskey	National Weather Service	
J. P. Llanos	R. W. Rutherford Association	
H. C. Swenson	Roger & Babler, Inc.	4607 Tudor Road, Anchorage, Alaska

ANCHORAGE PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - ATTENDENCE ON FEB. 26, 1972 CONTINUED

Name	Representation	Mailing Address
Stuart Bigler	National Weather Service	Anchorage, Alaska
Frank Wisecarver	Fire Dept., City of Kenai	Kenai, Alaska
Bob Higgins	Ketchikan Pulp Co.	Ketchikan, Alaska
Roland Stanton	" " "	" "
Leo McCann	Texaco Inc. - Anchorage	1601 Tidewater Road, Anchorage, Alaska
Oscar E. Dickason	EPA- Anchorage	
Dale P. Tubbs	State Division of Lands	323 E. 4th, Anchorage, Alaska
Frankland Smith	Anchorage Municipal Light & Power	1200 E. 1st Avenue, Anchorage, Alaska
Harold Schmids	Anchorage Nat'l Gas	3000 Spenard Road, Anchorage, Alaska
Owen D. Tibbetts	Marathon Oil Company	731 "I" Street, Anchorage, Alaska
E. M. Roberts	Dames & Moore	2810 C. Street, Anchorage, Alaska
J. R. Hendershot	Alaska Public Utilities Commission	Anchorage, Alaska
David Argetsinger	Green Construction Company	125 W. 5th Avenue, Anchoarge, Alaska
Mike Phillips	City of Anchorage	4300 Arctic Boulevard, Anchorage, Ak.
W. C. Rhodes	Homer Electric Assn.	Homer, Alaska
C. Winegarden	Golden Valley Electric	Box 1249, Fairbanks, Alaska
Conrad Frank	GHEMM Co. of Fairbanks	Van Horn Road, Fairbanks, Alaska
Sue Greene	League of Women Voters	Anchorage, Alaska
Jack Stern	Alaska Public Utilities Commission	Anchorage, Alaska
B. L. Faulk	Shell Oil Company	430 W. 7th Avenue, Anchorage, Alaska
Waldo E. Coyle	Kenai	Kenai, Alaska
James C. Emerson	Cook Inlet Air Resources Management District	Anchorage, Alaska (3500 Tudor Road)
Ralph D. Mathis	Marathon Oil Company	731 "I" Street, Anchorage, Alaska
Richard Keller	Union Oil Company	909 W. 9th Street, Anchorage, Alaska
Robert Paulus	Ak. Dept. of Fish and Game	1018 W. International Airport Road, Anch.
Howard Seltuck		2701 Valley Forge Camp 99002
Elinore Seltuck		" " " " "
Michelle Robert		2020 Salem Ct., Anchorage, Alaska
Max Brewer	ADEC Commissioner	Pouch O, Juneau
Gary Young	Environmental Protection Agency	Region X, 1200 6th Ave., Seattle, Wn.
Jerry Reinwand	ADEC	Pouch O, Juneau, Alaska
Tom Hanna	ADEC	" " " "
A. J. Alter	ADEC	P. O. Box 1601, Fairbanks, Alaska

ANCHORAGE PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - ATTENDENCE ON FEB. 26, 1972, CONTINUED

Name	Representation	Mailing Address
Dick Mikkelsen	Cook Inlet Air Resources Management District	3500 Tudor Road, Anchorage, Alaska
B. Gettman	" " " " " " "	3500 Tudor Road, Anchorage, Alaska
Don Liston		1700 Stratford, Anchorage, Alaska
C. Konigsberg	Sierra Club, Conservation Society	
K. Arnold	Alaska Oil and Gas Association	First Nat'l. Building, Anchorage, Ak.
B. Coger		2970 Princeton Way, Anchorage, Ak.
J. McCutcheon	Greater Anch. Chamber of Commerce	
Y. Merrill	League of Women Voters	1815 Bunker, Anchorage, Alaska
O. Foster		2631 W. 34th, Anchorage, Alaska
Kitty Johnson	Matanuska-Susitna Borough Citizen	

JUNEAU PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - FEBRUARY 29, 1972 ATTENDENCE

Name	Representation	Mailing Address
Bill Parker	Green Construction Company	9 Mile Glacier Highway, Juneau, Ak.
Richard A. Stokes	ADEC	Pouch O, Juneau, Alaska
William A. Hagevig	St. Dept. of Education	Pouch F, Juneau, Alaska
Wallace W. Dawson	Division of Fire Prevention	Pouch N, Juneau, Alaska
R. L. Mikkelsen	Cook Inlet Air Resources Management District	3500 Tudor Road, Anchorage, Ak.
Bryl Gettman	Cook Inlet Air Resources Management District	3500 Tudor Road, Anchorage, Ak.
D. W. Hopkins	Self	Anchorage
J. Van Hoesen	Chilkat Valley News	General Delivery, Haines
Ray Menaker	" " "	Box 118, Haines, Alaska
Oren Mason	Alaska Lumber and Pulp Co.	Sitka, Alaska
John J. Simpson	Self and FHWA	709 W. 9th Ave.(FHWA), Juneau, Alas
Gerry Schauwekcer	U. S. Forest Service	709 W. 9th Ave., Juneau, Alaska
Peter Neyhart	" " "	" " " " " "
Robert E. Howe	Nat'l. Park Service	" " " " " "
Les Paul	U. S. Forest Service	" " " " " "
Wm. R. Macomber	Chamber of Commerce	235 Front Street, Juneau, Alaska
Jon Scribner	ADEC	Pouch O, Juneau, Alaska
C. C. Livingston	"	" " "
M. C. Brewer	ADEC Commissioner	" " "
J. A. Anderegg	ADEC	" " "
M. A. Menzies	R&M Engineering	Box 1786, Juneau, Alaska
Ralph Stemp	Dept. of Law	428 Capitol, Juneau, Alaska
Dale Duval	Burgess Company	Box 1727, Juneau, Alaska
Joe I. Smith	Gastineau Contractors	Box 409, Juneau, Alaska
W. G. Ruddy	Alaska Lumber & Pulp Co.	Box 1211, Juneau, Alaska
Joan Pelto	League of Women Voters	529 East St., Juneau, Alaska
J. R. Gibson	Greater Juneau Chamber of Commerce	235 Front Street, Juneau, Alaska
Gary D. Young	EPA	Region X, 1200 6th Ave., Seattle
Kathleen Hanna	Self	Box 5874, Juneau, Alaska
Mr. and Mrs. D. Argetslinger	Green Construction	Box 969, Juneau, Alaska
Sharon Lobaugh	Self	Rt. 3, Box 3552, Juneau, Alaska
Jack Hession	Self	119 Seward Street, #1, Juneau, Ak.
Tom Hanna	ADEC	Pouch O, Juneau, Alaska
John Vaughn	"	" " " "
Jerry Reinwand	"	" " " "
A. J. Alter	"	P. O. Box 1601, Fairbanks, Alaska
William Corbus		326 4th Ave., Juneau, Alaska

KETCHIKAN PUBLIC HEARING ON THE AIR QUALITY CONTROL PLAN - AFTERNOON SESSION - MARCH 2, 1972

Name	Representation	Mailing Address
Gary D. Young	Environmental Protection Agency	1200 6th Ave., Seattle, Wash.
Ben C. Ensebia	" " "	" " " " "
Jane T. Church	Self	2512 3rd Ave., Ketchikan, Ak.
Ben H. Fleenor	Herring Bay Lumber	Mi. 8 S. Tongass, Ketchikan
S. W. Griffith	Ketchikan	2509 4th Ave., Ketchikan, Ak.
R. W. Higgins	Ketchikan Pulp Company	Ketchikan, Alaska
Hazel C. Krepps	Home Owners	Box 733, Wrangell, Alaska
John A. Smith	Alaska Lumber and Pulp	Sitka, Alaska (Box 1050)
Elzie Isley	Home Owner	Box 942, Ward Cove, Alaska
Lance Ingle	Wrangell Lumber Company	Wrangell, Alaska
Lars Eide	Mitkof Lumber Company	Petersburg, Alaska (Box 89)
Charles Pool	Engr. Association of S. E. Alaska	222 Carlanna, Ketchikan, Alaska
Roger Lackman	City of Ketchikan Engineer	P. O. Box 110, Ketchikan, Ak.
Oren Mason	Alaska Lumber and Pulp	Sitka, Alaska
B. Krepps		Box 733, Wrangell, Alaska
R. E. Hopson		
Don Benson		
Roland Stanton		Rt. 1, Box 911, Ketchikan, Alaska

EVENING SESSION - MARCH 2, 1972

Dixie M. Baade	Tongass Conservation Society	P. O. Box 2391, Ketchikan, Alaska
Robert T. Baade	Clean Environment	" " " " "
Ralph Gregory		P. O. Box 1853, Ketchiakn, Alaska
Dick Woodbury	Self	P. O. Box 902, Ketchikan, Alaska
Orvel Holum		730 Park Avenue, Ketchikan, Alaska
Carmen Holum		" " " " "
Malcolm Doiron	Tongass Conser. Society (Box 2282, Ketchikan)	P. O. Box 725, Ward Cove, Alaska
George Woodbury	Citizen	811 Monroe, Ketchikan, Alaska
Richard Woodbury	Self	P. O. Box 902, Ketchikan, Ak.
Alaire E. Stanton	Self	Rt. 1, Box 911, Ketchikan, Ak.
Roland J. Stanton	Self	" " " " " "
Dan Eiswerth	Self	3832 Evergreen Avenue, Ketchikan
Oren Mason	Alaska Lumber and Pulp Co.	Sitka, Alaska
Don Benson		
Jerry Reinwand	ADEC	Pouch O, Juneau, Alaska
Tom Hanna	ADEC	" " " "
A. J. Alter	ADEC	P. O. Box 1601, Fairbanks, Alaska

PERSONS/ORGANIZATIONS SUBMITTING WRITTEN TESTIMONY

Alaska Oil and Gas Association
550 First National Building
425 G. Street
Anchorage, Alaska 99501

Mitkof Lumber Company, Inc.
Box 89
Petersburg, Alaska 99833

William R. Krepps
Box 733
Wrangell, Alaska

Alaska Lumber and Pulp Co.
P. O. Box 1050
Sitka, Alaska 99835

Anchorage Youth Council
East High Conservation Club
East Environmental Education Classes
(Gary Drummond
Kathy Hamilton
Wendy Rader
Michell Robert)
Anchorage, Alaska

Badger Construction Co., Inc.
12 Mile Badger Road
Fairbanks, Alaska

Mobile Oil Corporation
Post Office Pouch 7-003
Anchorage, Alaska 99501

Dixie M. Baade
Tongass Conservation Society
Box 2282

Jane Church
2512 3rd Avenue
Ketchikan, Alaska 99901

Golden Valley Electric, Assn., Inc.
Box 1249
Fairbanks, Alaska 99701

John A. Carlson, Chairman
Fairbanks North Star Borough
Box 1267
Fairbanks, Alaska 99701

Geophysical Institute
University of Alaska
College, Alaska 99701

Mrs. Sharron Lobaugh
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Juneau, Alaska 99801

James C. Knudson
Central Operations Division
State of Washington
Department of Ecology

James E. Fisher
President
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Kenai Peninsula Chapter
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Soldotna, Alaska 99669

Charles V. Lucier
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Anchorage, Alaska 99502

Mrs. Odette Foster
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Anchorage, Alaska 99503

City and Borough of Juneau
Ronald L. Usher,
City-Borough Manager
155 South Seward Street
Juneau, Alaska 99801

Thomas D. Hamilton
Consulting Geologist
11 Wolf Run
Fairbanks, Alaska 99701

B. A. Campbell
Commissioner of Highways
Box 1467
Juneau, Alaska 99801

Ken Sheppard
Consulting Engineer
Box 97
Anchorage, Alaska 99501

PERSONS/ORGANIZATIONS SUBMITTING WRITTEN TESTIMONY (Cont.)

Mrs. Aurora S. Hovland
110 East 11th Avenue
Anchorage, Alaska 99501

B. F. Ballard, Manager
Environmental Control
Phillips Petroleum Company
Bartlesville, Oklahoma

Gerald R. Brookman
1220 F. Street
Anchorage, Alaska 99501

William A. Hagevig
Supervisor
Fire Service Training
Department of Education
Pouch F
Juneau, Alaska 99801

Robert S. Burd, Director
Air & Water Programs Division
U.S. Environmental Protection
Agency, Region X
1200 Sixth Avenue
Seattle, Washington 98101

Pollution Control Commission/
Pollution Control Officer
Fairbanks North Star Borough
Box 1267
Fairbanks, Alaska 99701

John J. Shaffer, Chairman
Christian Social Relations
Alaska Council of Churches
527 West 11th Street
Juneau, Alaska 99801

IV.2 Summary of Changes Made in the State Air Quality Control Control Plan After Public Hearings

As a result of the varied, and for the most part constructive, oral and written testimony from the four recently held public hearings on the statewide air quality control plan, numerous changes have been made in the air quality control plan. Most of these changes describe in greater depth what originally was intended in the proposed document as it was submitted to public hearing, and for the most part the public hearing testimony simply pointed out those areas which were not as clear as they should be. As indicated in Mr. Amos J. Alter's Recommendations to the Commissioner (reference section 3 of this Appendix) the response to the plan generally was favorable, and the majority of those giving testimony desired to see a more detailed plan and one which was stronger than that proposed at public hearing. This section summarizes the major areas which were revised as a result of public hearing:

1. A paragraph was added in Section I of the plan to explain how the plan would be revised as it is implemented. As the plan is implemented minor changes will be discussed and made in the semi-annual reports to the Environmental Protection Agency (which are reports of progress made during the previous six months in achieving the goals of the plan). Changes in the regulations (for 18 AAC 50 see Appendix III) by State law must be submitted to public hearing prior to any changes being made. Also in Section I, a brief description of how the air quality control program will interrelate with the rest of the Department is discussed. This section also presents an organization chart of the Department as it presently is developed.

2. The role that the local air quality control programs (which exist in the Cook Inlet and the Fairbanks North Star Borough) is explicitly described in Section II.E. This section was not fully described when submitted to public hearing, even though at that time local programs were expected to carry out a major portions of the plan as it affected their jurisdiction. In general, local programs are expected to develop and maintain an air surveillance network, evaluate air quality data, develop, monitor and implement control strategies as they affect their jurisdiction, develop administrative and enforcement capability (field enforcement is to be carried out primarily, if not completely, by the local agency within the jurisdiction), and assist in developing and implementing a statewide permit system as it affects their jurisdiction.

3. The statewide permit to operate system as defined in 18 AAC 50.120 (refer to Appendix III) is more explicitly described. Most of the questions, concerns and comments received relating to the permit to operate system were of the following type:

   a. What is the role of local programs in implementing or in enforcing statewide permit system (the plan as it has been finalized describes how the permit system is to operate and describes how the local program may develop this system in conjunction with the State. In so doing, the local program would have review and approval/disapproval authority over whether a permit is issued prior to review by the State for subsequent State approval. In this way duplication of permit

systems is avoided and local and State programs both may have their review and approval authority).

b. It was unclear as to which sources would be required to obtain a permit (this was clarified by defining the size of source requiring a permit to operate as being based on its emissions "regardless of whether air quality control devices are operable." This was the original intent in the plan as it was submitted to public hearing).

c. It was unclear as to what exactly was expected of those sources requiring a permit to operate (this was clarified by including a considerably more detailed description, both in section II.D.1 and in 18 AAC 50.120 of Appendix III, of how the permit to operate was to function and what were the requirements of facilities requiring such permits. Additionally, a sample application form, compliance schedule and instructions for a permit to operate applicant are included in Appendix VI).

4. There was criticism that not enough resources were projected for the Fairbanks North Star Borough program. Consequently additional resources have been projected, to be increased from the present $34,000 operating level to a projected $100,000 operating level in fiscal year 1973 (which includes a three professional personnel staff). Also, a federal grant is projected for the Fairbanks program.

5. There was some controversy relating to the practicality of the routing-of-traffic control strategy for abating the high carbon monoxide levels experienced in Fairbanks. Since the public hearing was conducted, the Department has been able to purchase two continuous nondispersive infrared carbon monoxide analyzers. These instruments have been installed in motor vehicles and data regarding carbon monoxide levels in various portions of the Fairbanks area have been obtained and preliminarily analyzed. This data is presented in sections IV.C.3 and IV.C.4, and it indicates that the high carbon monoxide concentrations appear to be extremely localized to the downtown business area (where the one previous CO monitor is located). All other sampling locations have indicated carbon monoxide concentrations approximately three to five times lower than those measured downtown (all measurements compared were obtained simultaneously during March 1972). This data, even though it is of a limited nature (a considerably larger body of data has been taken since that time and is now being evaluated), strongly indicates that routing of traffic around the suspected area of high CO concentrations should be a practical way to abate the high Fairbanks CO levels in the absence of alternative solutions. Additionally, this data indicates that this routing of traffic will not simply move the problem to another location in the Fairbanks area.

6. Some controversy was raised relating to the Departmental intent in establishing air quality standards. 18 AAC 50.020(b) was added to clarify Departmental philosophy. In effect, where the quality of the ambient air is better than that of the ambient air quality standards in 18 AAC 50.020, the Department will enforce the stringent emission regulations in the rest of 18 AAC 50 (refer to Appendix III) to minimize degradation of the air quality in those areas.

7. Several questions related to the practicality of the original proposed open burning regulation were raised. As a result, changes were made in the open burning regulation (18 AAC 50.030, see Appendix III) such that the burning of putrescible wastes and tires would not be prohibited within organized boroughs but outside of service areas having refuse pickup. In addition, fires for the purpose of training fire fighting personnel and for open burning demolition debris would be allowed but would require written permission from the Department.

8. The particulate matter emission standard for power generating facilities burning wood waste as fuel was revised from 0.1 grains per scf to 0.15 grains per scf of particulate matter. This change was made because existing technology was not available such that the 0.1 grains per scf requirement could be achieved without causing water pollution control problems (this requirement would have meant that such sources would have required wet scrubber devices which would result in large quantities of highly acidic water to be disposed of). Consequently the 0.15 grains per scf requirement was established, which is the best that has been obtained through dry mechanical collection methods. This standard still is expected to achieve a nearly invisible plume from such sources, and represents a very high level of particulate matter control from these sources.

9. A reduction of the reduced sulfur compounds standard for kraft pulp mills was made from 17.5 ppm to 5 ppm of H_2S. This revision was made on the basis of results being obtained from newly installed kraft mills in other states, and represents the "state of the art" that presently is being achieved. Because there are no kraft pulp mills in Alaska presently, this standard appears to be justifiable for insuring that "clean" kraft pulp mills will be designed and constructed in Alaska.

Section IV of this Appendix includes the summary of the air quality plan and complete copy of the regulations as they were proposed for public hearing. These regulations can be compared section by section with the finalized regulations which are included in Appendix III.

IV.3

STATE OF ALASKA

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

TO: Dr. Max C. Brewer, Commissioner
Department of Environmental Conservation
Juneau

DATE: March 17, 1972

FROM: Amos J. Alter
Environmental Research Engineer
ORAC
Fairbanks

SUBJECT: Summary and Recommendations after Public Hearings on the Proposed State of Alaska Air Quality Control Plan

This summary discusses metnodology, participation and response at the hearings as well as my conclusions. Although the hearing is to remain open until 4:30 p.m. Juneau time March 20, 1972, I am enclosing my recommendation at this time, based solely on my interpretation of testimony presented in public hearings as follows:

City	Location	Date	Time
Fairbanks	Alaskaland Theater	February 25, 1972	10:00 a.m.
"	" "	" " "	7:30 p.m.
Anchorage	Anchorage-Westward Hotel	February 26, 1972	10:00 a.m.
Juneau	Room 117, Federal Bldg.	February 29, 1972	2:00 p.m.
"	" " " "	" " "	7:30 p.m.
Ketchikan	Elks Club	March 2, 1972	2:30 p.m.
"	" "	" " "	7:30 p.m.

METHODOLOGY

Jerry Reinwand and Tom Hanna helped me conduct all hearings and I acknowledge their helpful assistance with appreciation. I asked Jerry Reinwand to make a continuous tape record of all testimony and tie the footage identification on the tape with the person presenting the testimony. In this way we can find and replay the presentation of the individuals with a minimum of effort. I also asked Jerry Reinwand to make brief comments on each persons testimony - which he did. Tom Hanna was asked to briefly note and summarize the thrust of each persons presentation and have it typed for my study. I also asked Tom Hanna to keep me informed of persons wishing to testify so that there might be an acceptable order for presentation.

Local office staff helped me at Fairbanks, Anchorage and Juneau and I acknowledge and appreciate the assistance given by Doug Lowery, Jerry Hok, John Janssen, Kyle Cherry and John Vaughn. Local staff was given the job of keeping the attendance register and assisting in establishing the register of those persons wishing to testify.

I also kept a record of persons presenting testimony and kept personal notes on each presentation. With the above assistance and copies of all papers filed at the time testimony was presented, I have drawn my conclusions and recommendations.

Jerry Reinwand has the original tapes and I have the original copies of material submitted in written form at the hearings. A copy of all of the original material was placed in a notebook and left with Mrs. Marie Garcia for your interim use as needed.

PARTICIPATION

A total attendance of 262 was recorded for participation in all hearings and all sessions. This includes registrations for Jerry Reinwand, Tom Hanna and I as well as others who attended more than one hearing session. Some persons who appeared in Fairbanks also appeared in Anchorage and some who appeared in Anchorage also appeared in Juneau, etc. Mr. Gary Young, EPA, appeared and presented testimony at all geographic hearing sites. Total registration was greatest at Fairbanks with 109 registrants. A total of 77 persons registered in Anchorage and 38 each in Juneau and Ketchikan.

A total of 85 presentations of testimony was recorded for all hearings. Some persons appeared more than once. Ten persons spoke twice and one person spoke four times (Gary Young) in the total of 85 presentations. By rules at the outset of each hearing, all were told we were there to listen and receive suggestions, comments, questions, etc. No person was allowed to speak a second time until all who had signed to testify had spoken.

RESPONSE

Out of the total of 85 presentations made at all hearings, 30 presentations were in general support of the plan and 7 presentions were in opposition to the plan. Of the remaining 48 presentations none specifically approved or opposed the plan but were generally critical of it. The majority of these 48 presentations called the plan too weak while the remainder called the plan too strong. Of the 30 presentations in support of the plan, 14 were given in Fairbanks, 8 in Anchorage, 5 in Juneau and 3 in Ketchikan. Of the 7 presentations in opposition, 4 were given in Fairbanks,2 in Anchorage, none in Juneau and 1 in Ketchikan. Several persons stated that further written testimony would be presented before the closure date of March 20, 1972.

As would be expected, industry generally called the proposals too stiff and made specific suggestions for relaxation or suggested guideline status rather than regulation while citizen groups called for strengthening of the proposals.

Testimony presented by some groups reflected a great amount of homework, e. g., prepared statements by the Geophysical Institute of the University of Alaska, Alaska Oil and Gas Association, League of Women Voters, Alaska Conservation Society, The Alaska Tuberculosis Association, etc. One petition containing over a hundred signatures and relating to smoking and air quality inside of buildings was filed as a part of a presentation by an employee of the Ketchikan Pulp mill.

Most audiences were very attentive, interested and there was little if any display of emotionalism on the part of the audience or persons presenting testimony. An air of constructive and meaningful participation would characterize almost all sessions. I had the feeling that most participants felt they were getting their "money's-worth" and due mileage out of the hearings.

There were several requests for a copy of the proceedings of the hearings to be mailed to participants. Several persons expressed dissatisfaction with availability of information on the plan prior to the hearings and several suggestions were made for improving dissemination of information in a manner other than by official publication as was done properly for each hearing.

CONCLUSIONS

1. A monumental as well as commendable work has been done by you and your staff in developing the proposed air quality control plan.

2. Although I have been involved in conduct of similar hearings on environmental topics at various times over the last several years in Alaska, these hearings elicited greater interest and participation than previous hearings.

3. The Alaska public is ready and wants effective air resource management.

4. The majority of persons testifying would favor more stringent action than is proposed.

5. All future transportation studies in the state should not be limited to locked in position - highways, etc., but should be expanded to clearly state all objectives, etc., including environmental, economy, climatic and geographic as well as terrain features, etc.

6. Immediate action is needed to develop an overall state of Alaska energy plan in conformity with current and growth needs, environmental factors, and peculiar needs of an energy starved sub-polar environment. Such planning is essential to long-term achievment of environmental quality and equally essential to competitive and economic survival in this low temperature area. It must be carried out and steps taken to implement it before total committments are made for export of known reserves. This action would impinge upon individuals, industry, economic development and assure environmental excellence.

7. Environmental quality regulation and natural resource development regulation goals and procedures should be conformed and supportive of each other, e.g., joint regulations on gas flaring and burning of waste materials.

8. Ice fog control and suppression must be further researched and objectives clearly stated. Perhaps the plan should include guidelines on process design and modification with tentative limits suggested for vapor emission control.

9. Permit issuance and revocation must be a team function with participation by federal, state and local entities. The only coordinating point at the present time is at the state level but specific functions and duties as well as provision for recommendations for action should be defined for each level of government. There appears to be no other method for getting at proper control of federal installations with adequate state input and for full stimulation and assumption of responsibility at the local level.

10. Assurances should be given to EPA that adequate authority now exists in the Department or is being requested from the legislature.

11. The plan should include information on procedures for up-dating and maintaining it in current and effective condition.

12. Research is needed in the methodology and meaning of air quality standards under low temperature conditions including development of proper instrumentation and sample collection techniques.

13. Provisions of the plan need to be better conformed with requirements for research and training activities such as those of the state fire marshall.

14. A synthesis of the apparent anti-degradation policy set forth in the statute creating the Department would be helpful in proposed regulations.

15. Baseline monitoring objectives need to be identified with more specificity.

16. Distinction needs to be made in the plan to focus attention on the differences in short term or acute problems and management solutions and long term and objective approaches to long term or chronic needs, e.g., traffic rerouting vs. reduction of emmissions.

17. Objectives and methodology for long term control such as control of windblown silt, land use planning and land development, etc. are not treated adequately in the plan.

18. There is some question as to the validity of including a general policy and desirable alternatives as a part of legal regulations by including such alternatives and probable actions as part of a specific regulatory code by simple reference. If the referenced material were completely definitive there would be less question.

19. It appears common to assume that all air quality improvements and control must result in a directly proportional rise in the costs of doing business and living. This is not necessarily true. There is a need to convey thoughts on the advantages of process change and improvement to achieve better air quality often at less and certainly no greater cost than those costs for lack of control and inordinate disregard for conservation of resources.

20. Local autonomy was often referred to as though it were a substitute for joint responsibility and the advantages of cooperative effort.

21. It appears to be unclear to many what specific inter-relationships are to be employed for financial, legal, technical and similar support among state and local governments and to a degree the same thing holds for federal state inter-relationships.

22. Currently conceived devices for reduction of motor vehicle exhaust emmissions should be evaluated and modified for acceptable use under low temperature conditions.

23. Several persons questioned (a) lack of conformity in standards for old and new installations (b) breakdown of certain facilities being exempt and apparent inconsistencies. They suggest uniform standards and allowing flexibility in ultimate compliance dates and imposition of a uniform relationship among imposed limits, rate of discharge and cumulative discharges over extended periods of time. Perhaps non-uniform treatment could be declared capricious and discriminatory.

24. Greater effort must be devoted to definition of background conditions both in reference to quantitative as well as qualitative aspects and a real extent.

25. Possibly certain vehicles should be exempted when rerouting of traffic occurs, such as emergency vehicles.

26. There appears to be need for clarification of palliative interim measures such as vehicle plug-ins, prevention of vehicle idling, etc., in contrast to long term solutions. Local responsibility above and beyond that of the state should be encouraged in identifying as well as seeking courses of both short-term and long-term effort.

27. Some persons feel metric units should be used throughout the report and further cleanup of wording and legal review are indicated.

28. The role of the Advisory Board for the Department was questioned and probably should be defined in the plan.

RECOMMENDATIONS

1. The regulations and plan should be adopted with clarification of the following topics:

Governmental inter-relationships, permitting and cooperative effort
Editing in a manner to strengthen the plan as the numerous and detailed line item changes are incorporated
Statement of non-degradation policy
Long range and short range objectives
Method for updating the plan
Zoning and land use and planning regulation
Proposed legislative effort to further define Departmental powers
Inadequacies of research effort and vital need for cold region information
Efforts indicated in development of concepts compatible with cold regions
Relationships with training and emergency needs as well as regulations and responsibilities of other governmental entities in air management

2. The plan should be edited to clarify and take positive position on the points enumerated in the conclusions listed above.

3. A summary of the hearings should be mailed to all participants in the hearings as well as related executive departments, the legislature, local governments and the principal industries as well as citizen action groups in the state. The summary should include a list of participants as well as issues raised and proposed actions on them.

4. Arrangements should be made to discuss the proposed report of hearings summary with EPA officials to sound them out prior to mailings.

5. The inconsistencies of regulation in cold regions prior to obtainment of information on standards, control procedures, etc., should be pointed out to EPA with a strong letter decrying the lack of research effort to meet the need and urging immediate action to meet the problem.

NOTICE OF PUBLIC HEARINGS
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR QUALITY CONTROL PLAN AND REGULATIONS

NOTICE IS HEREBY GIVEN that the Department of Environmental Conservation, under authority vested by AS 46.03.020 (10) (A), AS 46.03.140, AS 46.03.150, AS 46.03.160, AS 46. 03.170, AS 46.03.190, AS 46.03.820 (e), proposes to adopt a comprehensive air quality control plan and adopt regulations which implement, interpret, and make specific the air quality provisions of Chapter 3, Title 46, Alaska Statutes.

PLAN

Copies of the comprehensive air quality control plan are available for public inspection at the following locations:

City	Location
Juneau:	Department of Environmental Conservation (St. Ann's Center), 586-6721 419 6th Street
Juneau:	Public Library 114 W. 4th Street
Anchorage:	Regional Office (Kyle Cherry) Department of Environmental Conservation (279-5588) Mackay Building
Anchorage:	Tri-Borough Air Resources Management District (279-8686) 3500 Tudor Road
Fairbanks:	Regional Office (Douglas Lowery) Department of Environmental Conservation State Court and Office Building, Room 137 604 Burnette
Fairbanks:	Fairbanks North Star Borough Lathrop Building 514 2nd
Ketchikan:	Ketchikan Public Library 629 Dock
Sitka:	Kettelson Memorial Library
Valdez:	Valdez Public Library

More detailed information regarding the plan can be obtained by writing or contacting the Commissioner, Department of Environmental Conservation, Pouch O, Juneau, Alaska 99801, (907-586-6721). An informative summary of the proposed air quality control plan is as follows:

STATE AND LOCAL PROGRAMS

The air quality control plan proposed by the Department of Environmental Conservation is based on establishing a preventive program for State air quality control. Where air quality control problems are known or suspected to exist, control strategies are proposed to abate these problems.

The State air quality control program presently has two professional personnel, with one more expected this fiscal year. The function of the State program will be to enforce the State regulations, provide technical assistance and equipment when necessary to local programs, monitor the air quality throughout the State to provide the basis of a preventive air quality program, and to coordinate the local programs into the overall State program. Presently two local programs are operating within the State, and other local programs are being investigated by the Department. The function of these local programs and the required resources will be coordinated by the State program to: 1) ensure maximum utilization of State resources for control of air quality, and 2) ensure that the State air quality control plan is carried out.

The Tri-Borough Air Resources Management District in the Cook Inlet Air Quality Control Region was established in 1968, and has regulations in effect and a professional staff of four. This program is expected to carry out a major portion of the plan in the Cook Inlet region, such as maintaining and operating the regional air surveillance network, enforcing local regulations, carrying out and evaluating control strategies for particulate matter, and developing the capability of carrying out emergency abatement procedures for particulate matter if required.

The Fairbanks North Star Borough air quality control program has just started with the recent acquisition of one engineer. Assistance from the State will be provided to the Borough in establishing its air surveillance network (and obtaining the necessary equipment) and in conducting measurements to more adequately evaluate and control the particulate matter, carbon monoxide and ice fog problems in Fairbanks. The Fairbanks program is expected to assume major responsibility in establishing and maintaining its air surveillance network, enforcing local regulations and developing and carrying out emergency abatement procedures for particulate matter and carbon monoxide if required. As a part of the proposed State air quality control permit system, emission sources may be required to have water emission controls in areas where ice fog conditions are likely to occur.

Enforcement of open burning and visual regulations certainly are most efficiently carried out at the local level. Juneau recently has held several public meetings on a proposed municipal air quality control regulation and it is anticipated that they will adopt a local program in the near future.

Present projections of necessary manpower and resources to adequately carry out the proposed State air quality control plan are:

STATE PROGRAM

Personnel consists of two engineers with a third budgeted for this fiscal year. Personnel are projected to increase to five in fiscal year 1973. This number is to be evaluated in 1974 in light of State program developments. Otherwise, five professional personnel are intended to be the stablizing level for the State program.

TRI-BOROUGH DISTRICT

The Tri-Borough District has four professional personnel. This level is projected to be maintained in the foreseeable future.

FAIRBANKS BOROUGH

Personnel consists of one engineer, with an additional technician projected to be acquired for fiscal year 1973 and a reevaluation of manpower requirements in 1974 in light of program developments.

State regulations and control strategies will be enforced through two mechanisms: a statewide permit system, and a periodic visual inspection schedule. The permit system is outlined in the regulations and requires all large air contaminant emission sources to be registered in order to operate. The periodic scheduled inspections are intended to enforce particulate matter visual emission regulations. Regulations associated with air contaminants other than particulate matter are to be handled primarily by the permit system (and are related primarily to large sources). Local air quality control agencies will be expected to enforce at least visual regulations and restrictions on open burning, although they may wish to take on additional capabilities (such as is the case for the Tri-Borough District and the Fairbanks North Star Borough Agencies).

AIR SURVEILLANCE SYSTEM.

The State air quality surveillance network is intended to:

1. Provide the basis of a preventive air quality program by defining the existing air quality and relating it

to the time of year, meteorological and topographical conditions, and emission sources;
2. Judge the effectiveness of control strategies and evaluate the progress being made towards the achievement of ambient air standards or the maintenance of existing air quality;
3. Provide for the activation of emergency control measures;
4. Indicate trends in regional air quality which may be related to industrial development, urbanization, agricultural development or other activities;
5. Provide an air quality data base to evaluate and direct regional land use planning.

To date, good air quality data in the State is minimal. Some air data are available for the Fairbanks and Anchorage areas, but it is insufficient to adequately evaluate the existing air quality problems. However, it has provided an indication that problems do exist in these areas. Ambient air surveillance will be confined primarily to population centers of the State.

Both Fairbanks and Anchorage are designated Priority I (based on Federal criteria) for particulate matter. These areas will have particulate matter monitoring networks established. Particulate matter also is to be measured at Valdez, Juneau, Sitka, Ketchikan and Wrangell. Initially, carbon monoxide is to be measured only in Fairbanks where a problem is known to exist. However, a second carbon monoxide analyzing instrument is to be obtained and used to evaluate the carbon monoxide concentrations existing in other areas of the State. Sulfur dioxide is to be monitored at Ketchikan, Sitka, Valdez, Anchorage, and Fairbanks on a routine basis. Evaluations are expected to be conducted periodically for nitrogen oxides, photochemical oxidants, and possibly for hazardous air contaminants such as mercury.

CONTROL STRATEGY

For the most part, the State air quality program is preventive. This basis appears warranted because:

1. Present air quality is good throughout most of the State.

2. There are relatively few industries thus far in Alaska, and air quality control considerations can be more readily and economically built into new plants.

3. Meteorological and topographical constraints are severe throughout most of Alaska. Any industrial development that takes place, therefore, should be designed with air quality control considerations in the initial concept of the plant.

Enforcement of the proposed State regulations are intended to be through the permit system and periodic inspections, thereby maintaining the present good air quality. However, presently several areas in the State are known or suspected to have air quality problems, and for these areas the following control measures are proposed:

Particulate Matter. An annual geometric mean of 104 micrograms of particulate matter per cubic meter has been measured at a sampling location in Anchorage, whereas the National Primary Ambient Air Quality Standard (based on health) is 75 micrograms per cubic meter (mean). The major contribution to the particulate matter concentrations appears to be coming from reentrained material from unpaved roads, and from paved roads where dust has been carried in from outlying areas. Consequently, the major effort in the control strategy is directed to motor vehicle traffic and the conditions of the road system throughout the Greater Anchorage area, and a control strategy has been developed with the Tri-Borough Air Resources Management District which will:

1. Encourage the continuance of the present road paving program in the Anchorage area.

2. Encourage an increase in the street cleaning program in the downtown Anchorage area.

3. Evaluate more completely the nature and origin of the particulate matter problem.

4. Update the control strategy as necessary based on the results of the evaluations to be conducted.

The particulate matter problem existing in the Fairbanks area appears to be somewhat similar to that in the Greater Anchorage area, except that it is much worse. Particulate matter concentrations measured in 1970 were 175 micrograms per cubic meter annual geometric mean (while the National Primary Ambient Air Quality Standard is 75 micrograms per cubic meter). The same type of control strategy that is projected for Anchorage is also intended for Fairbanks.

Carbon Monoxide - Fairbanks. During the winter months, Fairbanks is subjected to meteorologically stagnant conditions during which there is very little wind and extremely strong inversion conditions prevail. These two conditions, combined with the topographical features of the Fairbanks region, form a very effective trap for any pollutants generated. Concentrations of carbon monoxide have been measured as great as 81 milligrams per cubic meter for a one hour average (this compares with the National Primary Ambient Air Quality Standard of 40 milligrams per cubic meter). Because these values were measured in an area where motor vehicles were the predominant air emission source, the control strategy is basically motor-vehicle-oriented and consists of three parts:

1. Whenever levels of carbon monoxide reach 17 milligrams per cubic meter, motor vehicle traffic will be routed around the area of suspected high carbon monoxide concentration. If, by 1975, levels exceeding 10 milligrams per cubic meter are still being exceeded more than once a year, then traffic will be routed around the Fairbanks central business district whenever carbon monoxide values exceed 10 milligrams per cubic meter (8 hour average).

2. Measurements will be conducted during the winter of 1972 and continued as necessary to determine the regional nature of the carbon monoxide problem in Fairbanks. These measurements will be obtained by the State with assistance from the Fairbanks North Star Borough.

3. The Department of Environmental Conservation will work with the Fairbanks North Star Borough to evaluate the practicality, economics, and relative merits of various alternative solutions.

Sulfur Dioxide. No air quality data are available from the Ketchikan area, nor is detailed air emission data available from the Ketchikan Pulp Mill. However, diffusion calculations indicate that 24-hour levels of 310 micrograms per cubic meter of sulfur dioxide may be reached in the vicinity of the pulp mill (this compares with the National Secondary Ambient Air Quality Standard and the proposed State ambient air quality standard of 260 micrograms per cubic meter). Consequently, there appears to be a reduction in sulfur dioxide concentrations necessary to meet this standard. The same situation may arise at Sitka once the additional recovery furnaces are installed. Therefore, the control strategy proposed for these pulp mills will be to:

1. Establish emission regulations which require best existing technology and operation procedures to be followed at these pulp mills.

2. Require that continuous air emission monitoring be conducted of the plant emissions.

The proposed regulations for sulfite pulp mills are patterned after the Oregon standards. The continuous monitoring program to be established at the sulfite mills will provide a mechanism by which degree of compliance will be determined.

PROPOSED REGULATIONS

The proposed air quality control regulations are as follows:

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.010
CHAPTER 50. AIR QUALITY CONTROL 18 AAC 50.020

Section

18 AAC 50.010. APPLICABILITY OF LOCAL GOVERNMENT REGULATIONS. A local air quality control program may not establish regulations or standards less stringent than the applicable state regulations. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.020. AMBIENT AIR QUALITY STANDARDS. The state ambient air quality shall be maintained at the lowest practicable air contaminant concentrations. These concentrations shall not exceed the following levels:

(1) Suspended particulate matter

(A) annual geometric mean; 60 $\mu g/m^3$

(B) 24-hour maximum not to be exceeded more than once a year; 150 $\mu g/m^3$

(2) Sulfur oxides

(A) annual arithmetic mean; 60 $\mu g/m^3$

(B) 24-hour maximum not to be exceeded more than once a year; 260 $\mu g/m^3$

(3) Carbon monoxide not to be exceeded more than once a year.

(A) 8-hour maximum; 10 $\mu g/m^3$

(B) 1-hour maximum 40 $\mu g/m^3$

(4) Photochemical oxidants

(A) 1-hour maximum not to be exceeded more than once a year; 160 $\mu g/m^3$

(5) Nitrogen oxides

(A) annual geometric mean; 100 $\mu g/m^3$

(6) Hydrocarbons

(A) 3-hour maximum not to be exceeded more than once a year. 160 $\mu g/m^3$
(Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.030. OPEN BURNING. (a) Within organized boroughs, unified municipalities, and incorporated cities,

(1) open burning is permissible, except that putrescible waste or organic substances which result or tend to result in the emission of black smoke, including but not limited to garbage, asphalt, rubber, oil wastes, and asphalt-impregnated materials, may not be burned in the open.

(2) the open burning of debris, trees and brush accumulated during land clearing operations is not permitted when an air quality advisory is broadcast on a radio or television station covering the affected area, stating that burning is not permitted for that day. This advisory shall be based on weather conditions being such that air ventilation in the affected area is inadequate to provide for maintenance of the ambient air quality standards specified in section 020 of this chapter. The burning shall be maintained in such a way as to obtain maximum combustion efficiency throughout the burning period. Automobile tires or similar organic matter may not be used to start or maintain the fire.

(b) For areas not covered by (a) above, open burning for the disposal of oils, oily wastes, asphalt and tars and similar waste materials is prohibited unless conducted pursuant to a permit from the department.

(c) Open burning is prohibited at landfill sites regulated under title 18 AAC 60. (Eff. / / , Reg.).

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.030
18 AAC 50.040

AUTHORITY: AS 46.03.140

18 AAC 50.040. INCINERATORS. (a) No person may permit visible emissions, excluding condensed water vapor, from incinerators which result in a reduction of visibility through the exhaust effluent of greater than

(1) 20 percent for those incinerators installed on or after July 1, 1972;

(2) 40 percent for those incinerators installed prior to July 1, 1972;

for a period or periods aggregating more than three minutes in any hour.

(b) Particulate matter emitted from incinerators installed on or after July 1, 1972, may not exceed, except as noted in (d) of this section, on the basis of a standard cubic foot of exhaust gas corrected to 12 percent CO_2,

(1) 0.3 grains for incinerators less than or equal to 200 pounds per hour rated capacity;

(2) 0.2 grains for incinerators larger than 200 but less than 1000 pounds per hour rated capacity;

(3) 0.1 grains for incinerators larger than 1000 pounds per hour rated capacity, except as provided in (d) of this section.

(c) Particulate matter emitted from tepee burners may not exceed, on the basis of a standard cubic foot of exhaust gas corrected to 12 percent CO_2,

(1) 0.1 grains for those burners installed or modified on or after July 1, 1972;

(2) 0.2 grains for those burners in operation prior to July 1, 1972.

(d) Particulate matter emitted from air curtain incinerators may not exceed 0.3 grains per standard foot of exhaust gas corrected to 12 percent CO_2. No person may operate an air curtain incinerator, regardless of size, without prior written approval from the department. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.020
(10) (A)
AS 46.03.140

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.050
18 AAC 50.060

18 AAC 50.050. INDUSTRIAL PROCESSES AND FUEL BURNING EQUIPMENT. (a) No person may permit visible emissions, excluding condensed water vapor, from industrial processes or fuel burning equipment which result in a reduction of visibility through the exhaust effluent of greater than 20 percent for a period or periods aggregating more than three minutes in any hour.

(b) Industrial processes or fuel burning equipment requiring a permit to operate pursuant to section 130(b) shall not emit, on the basis of a standard cubic foot of exhaust gas, particulate matter in excess of:

(1) 0.05 grains except as noted in (2) and (3) below;

(2) 0.1 grain for those sources in operation prior to July 1, 1972;

(3) 0.1 grain for fuel burning equipment using coal, wood or municipal waste as fuel.

(c) Industrial processes or fuel burning equipment shall not emit no more than 500 ppm of sulfur compounds, expressed as SO_2. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.060 PULP MILLS. (a) Pulp mills may not exceed, based on 24-hour averages and each ton of pulp produced:

(1) 20 pounds of sulfur oxides from sulfite pulp mills, expressed as SO_2, from all blow pits, washer vents, storage tanks, digester relief and recovery systems;

(2) two pounds of particulate matter from all blow pits, washer vents, storage tanks, digester relief and recovery systems in kraft or sulfite mills;

(3) 17.5 ppm of total reduced sulfur, expressed as H_2S on a dry basis, from each kraft pulp mill recovery furnace stack.

(b) Non-condensibles from kraft pulp mill digesters and multiple effect evaporators shall be treated to reduce emission of total reduced sulfur to a level equal to that which would be obtained by the reduction achieved by thermal oxidation in a lime kiln.

(c) Operators shall maintain and operate continuous emission recording and ambient air monitoring devices as required in the permit to operate. Data acquired shall be

available for inspection and provided on a routine basis to the department. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.070. MOTOR VEHICLE EMISSIONS. (a) Gasoline-powered motor vehicles may not emit visible emissions, excluding condensed water vapor.

(b) Diesel powered motor vehicles may not emit visible emissions, excluding condensed water vapor, which results in a reduction of visibility of greater than 40 percent through the exhaust effluent. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.080. CARBON MONOXIDE LIMITATIONS. The department has found that ambient air levels of carbon monoxide in downtown Fairbanks can be twice those determined to be detrimental to public health, and that motor vehicles are the major cause of these excessive levels. Because similar conditions may exist in Anchorage or other areas of the State, all traffic shall be routed around areas where ambient air levels of carbon monoxide reach or are predicted to reach 17 milligrams per cubic meter on an eight hour average on or after July 1, 1972. This level will be reduced to 10 milligrams per cubic meter on or after July 1, 1975. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.090. ICE FOG LIMITATIONS. The department may require any person proposing to build or operate an industrial process, fuel burning equipment or incinerator in areas of potential ice fog problems, to obtain a permit to operate and to modify the facility to reduce water emissions. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.100 MARINE VESSELS. (a) Within three miles of any populated area, no person may permit visible emissions from any marine vessel which result in a reduction of visibility, excluding condensed water vapor, though the exhaust effluent of greater than 40 percent for a period or periods aggregating more than three minutes in any one hour.

(b) Emissions exceeding the requirements in (a) of this section as a direct result of unavoidable upset conditions or unavoidable and unforeseeable breakdown of equipment or control apparatus shall not be deemed a violation of this section provided the person responsible immediately notifies the depart-

ment of the upset of breakdown conditions and submits a full report to the department. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.110 PUBLIC NUISANCE. No person may permit any emission which is or tends to be detrimental to the health, safety, or welfare of any person, or adversely affects plant or animal life or property. (Eff. / / , Reg.).

AUTHORITY AS 46.03.140

18 AAC 50.120 PERMIT TO OPERATE. (a) A permit to operate is required if the facility is capable, under any circumstances, of emitting more than:

(1) 25 tons per year of sulfur dioxide or particulate matter;

(2) 100 tons per year of nitrogen oxides, carbon monoxide and hydrocarbons combined.

(b) Submittal of emission data is required when the total amount of hydrocarbons, carbon monoxide, nitrogen oxides, sulfur oxides, and particulate matter which can be emitted from a facility under any circumstances, exceeds five tons per year. Data submittal is required every two years, starting on July 1, 1973, on forms provided by the department.

(c) No person may construct or modify a facility requiring a permit to operate until detailed plans and specifications, prepared by a professional engineer registered to practice in the State of Alaska are submitted to the department and approved. The plans and specifications shall include the following information:

(1) two sets of plans and specifications, clearly indicating the layout and the construction which will be undertaken;

(2) two sets of maps or aerial photographs indicating land use and zoning within one mile of the facility. The map or aerial photograph shall be of adequate scale to show all homes, industrial buildings, water courses, roads and other applicable details and shall indicate the general topography.

(3) an engineering report outlining the proposed methods of operation, the quantity and source of material to be processed, the proposed use and distribution of the processed material and related process details, and a process flow diagram indicating the points of emission including esti-

mated quantities and types of air contaminants to be emitted.

(4) a description and specifications of all air quality control devices;

(5) an evaluation of the effect on the surrounding ambient air of the emissions from the facility;

(6) plans for emission reduction procedures during an air episode.

(d) A permit to operate may not be transferred without the written consent of the department.

(e) No person may permit the operation of any mercury retort without a permit to operate.

(f) Persons operating facilities emitting air contaminants judged by the department to be highly toxic may be required to obtain a permit to operate.

(g) A permit to operate may not be issued for periods greater than five years.

(h) The department may require an applicant for a permit to operate to install, use, and maintain monitoring equipment; to sample emissions in accordance with methods prescribed by the department, at locations, intervals and procedures as may be specified; to provide source test ports, and to provide emission data and information from analyses of any test samples.

(i) A conditional permit may be granted to:

(1) facilities emitting air contaminants and in operation prior to the adoption of this chapter:

(2) facilities emitting air contaminants not in compliance with the requirements of this chapter due to unintentional equipment breakdown;

(j) A conditional permit may not be granted to any person under conditions defined in (i) unless a schedule of compliance with this chapter is included.

(k) A conditional permit may not be issued for a period exceeding two years.

(l) If an application for a permit to operate is denied, the department shall notify the applicant in writing of the reasons. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140
AS 46.03.160
AS 46.03.170

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.120
18 AAC 50.150

18 AAC 50.130. REVOCATION OF PERMIT. A permit to operate or a conditional permit may be revoked if the conditions of the permit are violated or if any state law or regulation is violated. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140
AS 46.03.160
AS 46.03.170

18 AAC 50.140. PENALTIES. A person who violates any provision of this chapter is guilty of a misdemeanor and upon conviction is punishable by a fine of not more than $1,000, or by imprisonment for not more than one year, or both. Each day of violation constitutes a separate offense. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.760

18 AAC 50.150 AIR EPISODES. An air episode shall be declared when in the opinion of the commissioner the concentration of air contaminants in the ambient air have reached the following levels:

(1) Air Alert:

(A)	sulfur dioxide	800 $\mu g/m^3$ (24 hour average)
(B)	particulate matter	3.0 COHs, or 375 $\mu g/m^3$ (24 hour average)
(C)	carbon monoxide	17 mg/m^3 (8 hour average)

(2) Air warning:

(A)	sulfur dioxide	1,000 $\mu g/m^3$ (24 hour average)
(B)	particulate matter	6.0 COHs, or 750 $\mu g/m^3$ (24 hour average)
(C)	carbon monoxide	34 mg/m^3 (8 hour average)

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.150
18 AAC 50.180

(3) Air emergency:

(A)	sulfur dioxide	2,100 $\mu g/m^3$ (24 hour average)
(B)	particulate matter	8.0 COHs, or 1,000 $\mu g/m^3$ (24 hour average)
(C)	carbon monoxide	46 mg/m^3 (8 hour average)

The commissioner shall prescribe and publicize curtailment actions if and when the above levels of air contaminants are reached. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.820

18 AAC 50.160. SOURCE TESTING. (a) The department may conduct or have conducted source testing in order to determine compliance with this chapter.

(b) Testing to determine compliance with provisions of this chapter shall be by methods of measurement approved by the department and undertaken at such a point or points as to characterize the actual discharge into the ambient air. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140
AS 46.03.150(b)

18 AAC 50.170. CIRCUMVENTION. (a) Air which is not specifically needed for an industrial process, and is used solely to decrease emissions in order to comply with requirements of this chapter, is not permitted.

(b) Any facility modified on or after July 1,1972 shall meet the requirements applicable to new facilities constructed on or after July 1, 1972. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.140

18 AAC 50.180. AIR QUALITY CONTROL PLAN. The plan, established on_____1972, for implementing and enforcing this chapter, is on file in the office of the Lieutenant Governor and is incorporated by reference as part of this chapter. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.020
AS 46.03.140

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.190

18 AAC 50.190. DEFINITIONS.

(1) "air contaminant" means dust, fumes, mist, smoke, fly ash, and other particulate matter, vapor, gas, odorous substances, or any combinations thereof.

(2) "air curtain incinerator" means an incinerator in which large quantities of combustible materials are burned in a rectangular container which is equipped with an overfire air system.

(3) "ambient air" means that portion of the surrounding atmosphere which may affect the persons in the area.

(4) "commissioner" means commissioner of the Department of Environmental Conservation.

(5) "department" means Department of Environmental Conservation.

(6) "emission" means release of air contaminants into the environment.

(7) "facility" means a unit or multiple units built, installed or established to serve a particular purpose.

(8) "fuel burning equipment" means any combustion device or part thereof capable of emission and which is used principally for the production of heat or power, but excludes mobile internal combustion engines, marine vessels, indoor fireplaces, backyard barbecues, and home cooking devices.

(9) "incinerator" means any equipment, device or contrivance, excluding indoor fireplaces, used for the thermal reduction of garbage or other wastes.

(10) "opacity" means the characteristic of a substance which renders it partially or wholly impervious to transmittance of light.

(11) "open burning" means the burning of any material such that the products of combustion are emitted directly into the ambient air without passing through a stack or flare.

(12) "particulate matter" means any material, except water, which is, or has been, airborne and exists as a liquid or a solid

(13) "ppm" means parts per million.

TITLE 18. ENVIRONMENTAL CONSERVATION 18 AAC 50.190

(14) "person" means any individual, public or private corporation, political subdivision, government agency, municipality, industry, copartnership, association, firm, trust, estate, or any other entity whatsoever;

(15) "putrescible waste" means material capable of being decomposed with sufficient rapidity as to cause nuisance or obnoxious odors, e.g. garbage;

(16) "reduction of visibility" means the obscuration of an observer's vision, as determined by the method of observation described in the U. S. Bureau of Mines Information Circular no. 8333 and modified to account for equivalent opacity;

(17) "source" means anything which may emit air contaminants;

(18) "stack" means any chimney or conduit through which air or air contaminants are emitted to the atmosphere. (Eff. / / , Reg.).

AUTHORITY: AS 46.03.020(10)

Additional copies of the proposed air quality control regulations may be obtained upon request by writing to the Commissioner, Department of Environmental Conservation, Pouch 0, Juneau, Alaska 99801.

NOTICE IS ALSO GIVEN that any person interested may present oral or written statements or arguments relevant to the action proposed at hearings continuing until all interested persons have been heard at the following locations:

City	Location	Date	Time
Fairbanks	Alaskaland Theater	2/25/72	10:00 a.m.
Anchorage	Anchorage Westward, Commodore Rm.	2/26/72	10:00 a.m.
Juneau	Room 117, Federal Building	2/29/72	2:00 p.m.
Ketchikan	Elks Club	3/2/72	2:30 p.m.

or may mail written comments to the Commissioner, Department of Environmental Conservation, Pouch 0, Juneau, Alaska 99801, if received before 4:30 p.m., March 9 , 1972. The Department of Environmental Conservation, upon its own motion or at the motion of any interested person, may thereafter adopt, amend, reject, or take no action relative to the proposals set out above without further notice.

Dated at Juneau, Alaska this 14th day of January, 1972

Max C. Brewer

Max C. Brewer, Commissioner
Department of Environmental Conservation

Publish January 25, 1972

APPENDIX V.

RESOURCES

V.1 ESTIMATED WORK BREAKDOWN FOR STATE AIR QUALITY PERSONNEL - FISCAL YEAR 1976

	Personnel (% of time)					
	Sanitary Engr. FY 71*	Air Quality Engr. FY 72*	Air Quality Engr. FY 72*	Air Quality Engr. FY 73*	Technician FY 73*	Clerical
Administration	60	5	15	20	5	30
Planning	15	1	2	2	-	
Departmental Coordination	15	-	-	1	-	
Reports	8	1	3	10	2	
Public Relations	10	-	3	1	-	
Training	10	2	5	5	2	
Processing of Misc. Mail, Timesheets	2	1	1	1	1	
Enforcement	25	10	75	75	10	35
Permit System	20	-	70	10	-	
Complaints and Field Patrol	3	5	3	55	3	
Source Testing	2	4	-	5	5	
Reports	-	1	2	5	2	
Air Surveillance	15	85	10	5	85	35
Network Development and Operation	5	15	-	-	30	
Instrument Calibration and Maintenance	-	5	-	-	10	
Control Strategy Evaluations	6	20	10	5	5	
Data Processing	-	5	-	-	10	
Data Evaluation, Reports	3	30	-	-	15	
Laboratory Operations	1	10	-	-	15	

*Fiscal year in which the position is projected to be filled.

Table V.2

STATE AIR QUALITY CONTROL

ESTIMATED PROGRAM COST

(All costs in $1,000 increments)

FUNCTION	PRESENT	1973	1974	1975	1976
ADMINISTRATION					
Operating Funds	50	33	29	30	32
Capital Funds	-	-	-	-	-
Contract Funds	-	1	1	1	1
ENFORCEMENT					
Operating Funds	2	33	44	60	62
Capital Funds	-	1	5	1	1
Contract Funds	-	-	-	-	-
AIR SURVEILLANCE					
Operating Funds	24	66	71	60	62
Capital Funds	22	11	10	11	4
Contract Funds	-	-	-	-	-
TOTAL	98	145	160	163	162

Table V.3

ESTIMATED WORK BREAKDOWN FOR

TRI-BOROUGH AIR RESOURCES MANAGEMENT DISTRICT

	Personnel (% of Time)				
	Engineer	Air Resources Specialist	Technician I	Technician II	Clerical
Administration	.5	.35	.1	.05	.30
Planning	.2	.05	-	-	
Departmental Coordination	.05	-	-	-	
Reports	.15	.1	-	-	
Public Relations	.05	.1	.05	.05	
Training	.05	.1	.05	-	
Processing of Misc. Mail, Timesheets	.03	-	-	-	
Enforcement	.3	.5	.4	.25	.35
Permit System	.2	.2	.05	.05	
Complaints and Field Patrol	-	.1	.2	.1	
Source Testing	.05	.1	.05	.05	
Reports	.05	.1	.1	.05	
Air Surveillance	.2	.15	.5	.7	.35
Network Development and Operation	.05	.05	.15	.25	
Instrument Calibration and Maintenance	-	-	.1	.1	
Control Strategy Evaluations	.1	.05	.05	.05	
Data Processing	-	-	.05	.15	
Data Evaluation, Reports	.05	.05	.05	-	
Laboratory Operations	-	-	.1	.15	

Table V.4

TRI-BOROUGH AIR RESOURCES MANAGEMENT DISTRICT

ESTIMATED PROGRAM COST

(All costs in $1,000 increments)

FUNCTION	PRESENT	1973	1974	1975	1976
ADMINISTRATION					
Operating Funds	47	51	53	56	58
Capital Funds	-	-	-	-	-
Contract Funds	-	-	-	-	-
ENFORCEMENT					
Operating Funds	33	40	40	42	45
Capital Funds	4	1	1	1	1
Contract Funds	2	2	2	2	2
AIR SURVEILLANCE					
Operating Funds	18	27	28	29	31
Capital Funds	8	2	2	2	2
Contract Funds	-	-	-	-	-
TOTAL	112	121	126	132	139

Table V.5

Fairbanks North Star Borough

Estimated Program Cost

(All costs in $1,000 increments)

FUNCTION	PRESENT	1973	1974	1975	1976
Administration					
Operating Funds	19	22	24	29	37
Capital Funds	2	4	-	-	-
Contract Funds	-	-	-	-	-
Enforcement					
Operating Funds	1	16	24	22	23
Capital Funds	-	-	-	-	-
Contract Funds	-	-	-	-	-
Air Surveillance					
Operating Funds	12	45	47	45	41
Capital Funds	-	12	8	4	2
Contract Funds	-	2	2	2	2
TOTAL	34	101	103	103	105

APPENDIX VI

Permit

AIR QUALITY DATA SUBMITTAL FORM

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Official Use Only

Date Received _____
Logged by _____
Reviewed by _____
Inspected by _____

Firm Name _____ Address _____ Phone Number _____

Legal Owner _____ Address _____ Phone Number _____

Company Representative on Air Quality Matters _____ Title _____

Nature of Business Operation _____

Signature _____ Date _____

FUEL BURNING EQUIPMENT

Unit #	Type	Rated Capacity (BTU/hr)	Fuel Used (All fuels used in each burner)	Quantity Per Hour (Indicate Units)		% Sulfur	% Ash	Heat Content (Indicate Units)	Heat Usage %			Normal Operating Schedule (Circle Appropriate Days and Months) S M T W T F S J F M A M J J A S O N D			
				Average	Max.				Process Heat	Space Heat	Power Gen.	Days/year	Hrs/shift 12-8	8-4	4-12

FUEL BURNING EQUIPMENT (CONT.)

Unit #	Stack Parameters					Emission Control					Total Estimated Emissions (If Known) Indicate Basis of Estimate: 1; emission factors - 2; material balance - 3; source test					
	HEIGHT (FT.)	DIA (IN.)	EXIT TEMP. (°F)	LOCATION (Use UTM coordinates or Provide Map Showing Locations)		Types of Control Equipment (also list make, model, and contaminant controlled)		Capacity (scfm)	Control Efficiency %		PART T/Y	SOX T/Y	CO T/Y	HC T/Y	NOX T/Y	H_2O T/Y
						Existing	Proposed		Actual	Design						

PROCESS EQUIPMENT

Unit #	Type of Operation	lb/hr Production (Indicate Product)		Normal Operating Schedule (Circle Appropriate Days and Months) S M T W T F S J F M A M J J A S O N D				Stack Parameters					
		Average	Maximum	Days/year	Hrs/shift 12-8	8-4	4-12	HEIGHT (FT.)	DIA (IN.)	EXIT TEMP. (°F)	EXIT VEL. (FT./SEC.)	LOCATION (Use UTM coordinates or Provide Map Showing Locations) N-S	E-W

PROCESS EQUIPMENT (CONT.)

Unit #	Emission Control					Total Estimated Emissions (If Known) Indicate Basis of Estimate: 1; emission factors - 2; material balance - 3; source test						
	Types of Control Equipment (list also make, model, and contaminant controlled)		Capacity (scfm)	Control Efficiency %		PART T/Y	SOX T/Y	CO T/Y	HC T/Y	NOX T/Y	H_2O T/Y	
	Existing	Proposed		Actual	Design							

VI-4

BULK MATERIAL STORAGE AND HANDLING
(Those Units Having Air Emissions)

Unit #	Material Type	Storage Volume (Indicate Units)	Throughput (Indicate Units)		Emissions			
			Maximum hourly	Average yearly	Control Employed	Efficiency of Control	Estimated Amount per Year (Indicate Basis of Estimate)	

WASTE INCINERATION

Unit #	Method of Incineration	Type of Material Incinerated	Amount Incinerated		Auxiliary Fuel Used Type and Yearly Amount Used	Normal Operating Schedule (Circle Appropriate Days and Months) S M T W T F S J F M A M J J A S O N D				Stack Parameters HT (FT.)	DIA (IN.)	EXIT TEMP. (°F)	LOCATION (Use UTM Coordinates or Provide Map Showing Locations)	
			Maximum Hourly	Average Yearly		Days/year	Hrs./shift 12-8	8-4	4-12				N-S	E-W

WASTE INCINERATION (CONT.)

Unit #	Emission Control: Types of Control Equipment (list also make, model, and contaminant controlled) Existing	Proposed	Capacity (scfm)	Control Efficiency % Actual	Design	Total Estimated Emissions (If Known) Indicate Basis of Estimate: 1; emission factors - 2; material balance - 3; source test: PART T/Y	SOX T/Y	CO T/Y	HC T/Y	NOX T/Y	H_2O T/Y

AIR QUALITY CONTROL

PERMIT TO OPERATE

Alaska Department of Environmental Conservation

Information and Instructions

WHO IS REQUIRED TO OBTAIN AN AIR QUALITY CONTROL PERMIT.

Under authority of Alaska Statutes 46.03 and Alaska Administrative Code 18 AAC 50, an air quality control Permit to Operate is required if a facility is capable of emitting into the ambient air, regardless of whether air quality control equipment is operating, more than:

(1) 25 tons per year of sulfur dioxide or particulate matter, or

(2) 100 tons per year of nitrogen oxide, carbon monoxide or hydrocarbons.

Also required to obtain a Permit to Operate are:

(1) mercury retort operations regardless of size, and

(2) diesel powered electric generating equipment greater than 250 kilowatts capacity.

Tables I and II are attached to serve as guides for determining which sizes of typical processes require Permit to Operate. The Department should be consulted if any questions arise in the interpretation of this information.

Any person proposing to construct or modify a facility requiring a Permit to Operate may not do so until the Permit is obtained from the Department. All persons requiring a Permit shall apply to the Department for such Permits on the attached form.

INFORMATION TO BE SUBMITTED WITH PERMIT APPLICATION.

The information required to be submitted with a Permit application is the following:

1. Two sets of plans and specifications (if new construction) clearly indicating the layout and construction which will be undertaken

2. Two sets of maps or aerial photographs indicating land use and zoning within one mile of the facility. The map or aerial photograph shall be of adequate scale to show all homes, industrial buildings, water course, roads and other applicable details and shall indicate the general topography. Generally a USGS map should suffice for supplying this information.

3. An engineering report outlining the methods of operation, the quantity and source of material processed, the proposed use and distribution of the processed materials (if a proposed facility) and a process flow diagram indicating all points of air contaminant emissions (including estimated quantities and types of air contaminants being emitted).

4. A description and specifications of all air quality control devices.

5. An evaluation of the effect on the surrounding ambient air of the emissions from the facility, if required from the Department.

6. Plans for emission reduction procedures during an air episode, if required by the Department.

7. Information indicated on the Permit Application form (see attached form).

REQUIREMENTS OF PERMIT.

The purpose of the air quality control Permit to Operate is to insure that the ambient air quality and emission regulations as specified in the Alaska Administrative Code 18 AAC 50 are met by air contaminant stationary emission sources. Requirements for a Permit are:

1. A Permit may not be transfered without the written consent of the Department.

2. A Permit may not be issued for periods greater than five years, at which time the Permit must be renewed.

3. The Department may require that monitoring equipment be installed, used and maintained according to prescribed procedures. This requirement is to insure that the State air quality control regulations of 18 AAC 50 will be complied with. This requirement will not be specified where there is reasonable assurance that regulations will be complied with without emission monitoring.

4. The Department may require source tests at intervals and with procedures as may be specified, to provide test ports, and to provide emission data and information from analysis of any test samples.

5. Routine reporting to the Department of information relating to air contaminant emissions shall be required at a minimum of every six months. However, reports may be required, depending on the special circumstances of the facility in question, as often as once every month. These reports will include an evaluation of the air emissions and/or process information (to be specified in depth as a condition of the Permit) during the reporting period.

6. A Conditional Permit to Operate may be issued to:

   1. Facilities emitting air contaminants and in operation prior to the adoption of 18 AAC 50.

   2. Facilities emitting air contaminants not in compliance with the requirements of this chapter due to unintentional equipment breakdown.

   Operators of facilities requiring a Conditional Permit must negotiate with the Department a compliance schedule by which they agree to come into compliance with the regulations. This schedule will include a specific timetable of action which shall be included as part of the Permit. A Conditional Permit may not be issued for a period exceeding three years.

7. A Permit Application will be reviewed to insure that water quality and solid waste considerations are in compliance with the applicable regulations.

APPLICATION PROCEDURE FOR PERMIT.

It is the responsibility of the operator of any facility requiring a Permit to Operate to apply for a Permit from the Department of Environmental Conservation. The application and approval/disapproval procedure will take the following steps:

1. Permit application made to the Department.

2. The Department will review the application to determine compliance with the applicable regulations under 18 AAC 50. If additional information is required, the Department will request such information in writing from the Permit applicant.

3. Each Permit application will be reviewed and approved, conditionally approved or disapproved within thirty days after the receipt of all requested information. Conditional approval will be given only under special conditions (such as, if source tests are required and cannot be made for a specified time). However, such special conditions will be specified in the conditional approval of the Permit.

4. If the modifications to the facility appear necessary to comply with the requirements of 18 AAC 50, the applicant will be notified in writing and necessary changes will be negotiated.

5. All air quality control Permit applications will be evaluated to insure compatibility with water quality and solid waste regulations of 18 AAC 70 and 18 AAC 60.

6. Air quality control Permit applications will be denied in the following cases:

   a. the proposed facility cannot be built in the geographical area indicated without degrading the air quality to above the ambient air quality standards of 18 AAC 50.020.

b. the emission control systems are inadequate.

c. the air episode plan provisions are inadequate.

d. stack sampling equipment, air monitoring equipment or sampling parts are inadequate.

f. the submitted information is not adequate or is not in an acceptable format to be evaluated.

7. If a Permit to Operate is denied, the Department shall notify the person if its determination by certified mail. Included in the notification will be a description of why the Permit application was denied and what is required in order that the application may be reconsidered.

8. If a Permit application is denied it may be modified and resubmitted for additional review, or within 30 days of the receipt of the Department's determination the applicant may make written request for a hearing to review the Department's denial. Upon receipt of such request the Department shall hold a hearing within 20 days and after such hearing will rescind, modify or affirm the denial.

Northern Regional Office (NRO)
P. O. Box 1601 (Mailing Address)
604 Barnette Street (Location)
Fairbanks, Alaska 99707
452-1714 & 452-1715

Southcentral Regional Office (SCRO)
338 Denali Street
MacKay Building
Anchorage, Alaska 99501
277-5588

Southeastern Regional and Home Offices (SERO)
Pouch "O" (Mailing Address)
419 6th Street (Location)
Juneau, Alaska 99801
586-6721

Date received _____

APPLICATION Logged by _____

AIR QUALITY CONTROL

PERMIT TO OPERATE

Alaska Department of Environmental Conservation

I.

Firm Name _____

Address _____

_____ Telephone No. _____

Legal Owner _____

Address _____

_____ Telephone No. _____

II.

Nature of Business (Include type of produce, size of plant, history of plan, and major units having air contaminant emissions):

III.

The following information is to be submitted to the Department of Environmental Conservation (Pouch C, Juneau, Alaska 99801) for review and evaluation with the Application for an Air Quality Permit to Operate:

(1) Facility Description and Layout

(2) Engineering report of process details, including an evaluation of air contaminant emissions (The Air Quality Data Submittal Form may be used as part of this report) and a process flow diagram indicating points of emissions.

IV.

Subsequent to initial permit application, the Department may, if necessary, require that the applicant provide:

(1) An evaluation of the effect on the surrounding ambient air of the emissions from the facility.

(2) Plans for emission reduction procedures during an air episode.

(3) A compliance schedule, if the facility is found, or is suspected, to be in non-compliance with the applicable regulations.

Mail Application to:

Department of Environmental Conservation
Pouch "O"
Juneau, Alaska 99801

Signature _____ Date _____

STATE OF ALASKA

SAMPLE COMPLIANCE SCHEDULE

AS PART OF _____ PERMIT TO OPERATE

	1972												1973												1974												1975								
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
Application for Permit																																															
Evaluation of Control Methods																																															
Evaluation of Present Emissions																																														
Source Tests																																														
Evaluation of Control Methods																																														
Engineering, Procurement, Installation																																														
Selection of Vendor																																														
Control Equipment Design Complete																																														
Equipment Ordered																																														
Installation																																														
Initial Startup																																														
Full Operation																																														
Evaluation of Control Efficiency																																														
Air Emission Monitoring																																														
Evaluation of Monitoring Equipment																																														
Selection																																														
Equipment Ordered																																														
Installation																																														
Monitoring																																														
Reports to Department																																														

APPENDIX VII.

CONTROL STRATEGIES

APPENDIX VII.1

VARIATIONS IN PARTICULATE CONCENTRATIONS WITH WIND, RAIN AND TEMPERATURE IN ANCHORAGE

Tables VII.1.1&VII.1.2 summarize the effects of precipitation and wind direction on mean particulate concentrations at each of eight local stations. TableVII.1.1consists of directional analysis of dry data (48 hours, no precipitation). No particular correlation is evident in the directional data. TableVII.1.2consists of a directional analysis of all wet days (measureable precipitation or trace precipitation over more than 12 of 24 hours, or trace precipitation on a day following 2 or more days of heavy precipitation.). Again no correlation is evident in the directional data shown here. However, the influence of a correlation between wind strength and direction may be needed to complete the analysis.

A comparison of the sample means for wet days versus dry days definitely indicates a higher particulate concentration on dry days. Table VII.1.3 summarizes the effects of precipitation and wind direction on mean particulate concentrations at the NASN station. Although there are far fewer total samples, a strong correlation is evident. The NASN site and the City Fire Station site are both in downtown Anchorage. The wet/dry geometric means are:

	Mean, dry days	Mean, wet days	Dry/Wet
NASN, $\mu g/m^3$	82	66	1.28
City Fire Station, $\mu g/m^3$	124	53	2.34

The mean suspended particulate concentration for wet days is similar for the two sites, while the mean suspended particulate concentration for dry days is markedly higher at the City Fire Station. This difference is attributed to reentrained street dust, which will influence the City Fire Station sampler (elevation: 5 feet) much more strongly than the NASN sampler (elevation: 26 feet).

TABLE VII.1.1 **Measurement of Total Suspended Particulates (TSP)**

Anchorage Local Data
(March 1969 - March 1971)
Dry Days

Station and Sampling Period		Sample Total	Direction (Resultant) 00	33-05	06-14	15-23	24-32
Muldoon Fire Station	$\bar{x}_g$	102		81	155	115	106
3/19/69 to 3/19/70	σ_g	2.24		2.75	2.33	1.78	1.74
3/21/70 to 3/5/71	n	100		37	5	38	20
Nikiski Station	$\bar{x}_g$	22		19	----	24	32
1/13/70 to 1/12/71	σ_g	1.55		1.51	----	1.33	1.97
	n	19		11	----	5	3
Matanuska Valley	$\bar{x}_g$	65		123	54	66	36
1/20/70 to 1/8/71	σ_g	3.10		3.34	1.99	3.12	4.74
	n	19		4	3	9	3
Palmer Agriculture	$\bar{x}_g$	75		29	48	188	37
Building	σ_g	3.93		1.84	2.18	4.75	2.99
1/20/70 to 1/8/71	n	18		4	3	8	3
Kenai Borough Office	$\bar{x}_g$	104		98	----	98	140
1/13/70 to 1/12/71	σ_g	1.87		2.09	----	1.74	1.45
	n	18		10	----	5	3
Tudor Fire Station	$\bar{x}_g$	83		62	88	101	99
3/21/70 to 3/15/71	σ_g	1.72		2.00	1.89	1.37	1.31
	n	54		21	2	20	11
Sand Lake Station	$\bar{x}_g$	141		93	66	166	218
3/25-69 to 8/21/70	σ_g	2.71		2.85	2.94	2.29	2.48
	n	90		23	8	34	25
City Fire Station	$\bar{x}_g$	124		109	140	144	124
3/25/69 to 3/19/70	σ_g	1.76		1.92	1.92	1.60	1.59
3/21/70 to 3/15/71	n	118		46	8	38	26

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

TABLE VII.1.2 **Measurement of Total Suspended Particulates (TSP)**

Wet Days
Anchorage Local Data
(March 1969 - March 1971)

Station and Sampling Period		Sample Total	Direction (Resultant) 00	33-05	06-14	15-23	24-32
Muldoon Fire Station	$\bar{x}_g$	30		23	73	36	21
3/19/69 to 3/19/70	σ_g	2.12		1.98	2.10	1.95	2.49
3/21/70 to 3/5/71	n	43		16	3	22	2
Nikiski Station	$\bar{x}_g$	16		17	24	14	----
1/13/70 to 1/12/71	σ_g	1.61		1.64	----	1.62	----
	n	7		2	1	4	----
Matanuska Valley	$\bar{x}_g$	24		11	37	29	----
1/20/70 to 1/8/71	σ_g	3.19		4.06	3.44	3.08	----
	n	10		2	3	5	----
Palmer Agriculture	$\bar{x}_g$	42		14	42	49	162
Building	σ_g	4.74		2.58	5.82	5.74	----
1/20/70 to 1/8/71	n	11		2	2	6	1
Kenai Borough Office	$\bar{x}_g$	20		26	----	17	----
1/13/70 to 1/12/71	σ_g	2.24		3.00	----	2.01	----
	n	6		2	----	4	----
Tudor Fire Station	$\bar{x}_g$	37		28	50	46	----
3/21/70 to 3/15/71	σ_g	1.70		1.51	1.24	1.80	----
	n	26		9	2	15	----
Sand Lake Station	$\bar{x}_g$	46		33	66	52	38
3/25/69 to 8/21/70	σ_g	2.21		1.73	2.42	2.65	----
	n	34		9	2	22	1
City Fire Station	$\bar{x}_g$	53		53	35	56	54
3/25/69 to 3/19/70	σ_g	1.73		1.75	1.56	1.81	1.41
3/21/70 to 3/15/71	n	38		14	3	19	2

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

TABLE VII.1.3 Measurement of Total Suspended Particulates (TSP) As A Function Of Wind Direction

Anchorage NASN Data
(1969-1970)

		Direction (Resultant)			
		33-05	06-14	15-23	24-32
Dry Days	$\bar{x}_g$	64	48	118	72
	σ_g	2.49	1.86	1.82	2.93
	n	12	3	13	3
Wet Days	$\bar{x}_g$	60	48	77	70
	σ_g	2.38	1.95	1.28	3.68
	n	7	2	8	2
All Dry Days	$\bar{x}_g$	82			
	σ_g	2.26			
	n	31			
All Wet Days	$\bar{x}_g$	66			
	σ_g	1.91			
	n	19			

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)
σ_g = geometric standard deviation
n = number of samples

The variation in particulate concentration with temperature distribution is given in TableVII.14 forthe local data and TableVII.1.5 for NASN data. There is a significant correlation between particulate concentration and increasing temperature. The NASN data also show a fairly significant correlation although the data for this station are limited.

Table VII.1.6 shows the variation in particulate concentration with average daily wind speed at each of the eight local stations. A weak correlation appears to exist between increasing wind speed and particulate concentration although too few samples are available for the >12 mph

TABLE VII.1.4 Measurements of Total Suspended Particulates (TSP)

As a Function of Temperature
Anchorage Local Data
(March 1969 - March 1971)

Station		<25°F	25°-40°F	>40°F
Muldoon	$\bar{x}_g$	35	50	81
	σ_g	2.78	2.61	2.05
	n	32	57	133
Sand Lake	$\bar{x}_g$	39	51	135
	σ_g	2.02	2.43	2.58
	n	19	45	127
City Fire Station	$\bar{x}_g$	55	87	120
	σ_g	2.19	2.28	1.58
	n	42	68	132
Palmer Agriculture	$\bar{x}_g$	28	20	116
	σ_g	2.12	2.74	5.00
	n	10	11	24
Kenai Borough	$\bar{x}_g$	22	54	59
	σ_g	2.86	3.08	2.38
	n	3	19	16
Nikiski Station	$\bar{x}_g$	9.27	15	20
	σ_g	2.34	2.04	1.70
	n	3	19	17
Matanuska Valley	$\bar{x}_g$	41	22	66
	σ_g	3.78	3.38	2.71
	n	10	12	21
Tudor Fire Station	$\bar{x}_g$	31	60	77
	σ_g	1.72	2.16	1.97
	n	19	28	77

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

TABLE VII.1.5 Measurement Of Total Suspended Particulates (TSP) As A Function Of Temperature Distribution

Anchorage NASN Data
(1969-1970)

	<25°F	25°-40°F	>40°F
$\bar{x}_g$	37	72	105
σ_g	1.88	2.35	1.63
n	10	16	24

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)
σ_g = geometric standard deviation
n = number of samples

grouping to be significant. The NASN data versus wind speed distribution, as shown in TableVII.1.7 is too limited to support any conclusion.

The variation in particulate concentration with wind speed distribution and precipitation is shown in Table 2B-8 for City Fire Station. This was the only station with sufficient data for this analysis. The increase in particulate concentration is apparent in this analysis; however, the number of samples in the greater than 12 mph grouping is still insufficient to conclude a continued increase in particulate concentration with wind speed above 12 mph.

Figures VII.1.1 and VII.1.2 illustrate the seasonal variation in particulate concentration at the Anchorage NASN station for 1969 and 1970. Figure VII.1.3is a composite of these 2 years using the Monthly Geometric Mean concentrations. There are too few data available for this station tc support a definitive analysis; however, the major features of the seasonal distribution are indicative of the effects of the climatological factors discussed above. For example, the late spring maximum suggests the predominance of precipitation or dryness as a factor especially during the warmer months when the soil is not frozen. Freezing temperatures combined with light winds and frequent precipitation could account for the

very low particulate concentrations experienced throughout the midwinter months.

Data for the City Fire Station in downtown Anchorage are sufficient to support the conclusions suggested by the NASN seasonal distribution data. The overall shape of the curve given in Figure VII.1.4 is very similar to the curve given for the NASN data in Figure VII.1.3.The spring maximum is more pronounced and the fall dry period also is better defined. The summer minimum is shifted to later in the season which would seem to be a better indicator of the late summer rainy season. The overall average concentration appears slightly higher than the NASN station. This could reflect the proximity of the local station to the road or the limited data available for the NASN station.

TABLE VII.1.6 Measurement of Total Suspended Particulates (TSP)

As a Function of Wind Speed Distribution
(Average Daily)
Anchorage Local Data
(March 1969 - March 1971)

Station and Sampling Period		<5	5 - 12	>12 mph
Muldoon	$\bar{x}_g$	64	66	50
3/19/69 to 3/19/70	σ_g	2.97	2.37	1.81
	n	45	147	23
Nikiski	$\bar{x}_g$	8	21	17
1/13/70 to 1/12/71	σ_g	2.02	1.66	1.40
	n	10	23	4
Matanuska Valley	$\bar{x}_g$	20	40	114
1/20/70 to 1/8/71	σ_g	1.88	4.04	1.52
	n	9	26	6
Palmer	$\bar{x}_g$	25	45	214
1/20/70 to 1/8/71	σ_g	2.98	4.82	2.45
	n	9	27	9
Kenai	$\bar{x}_g$	25	61	37
1/13/70 to 1/12/71	σ_g	2.73	3.27	1.48
	n	10	26	3
Tudor Fire Station	$\bar{x}_g$	57	63	58
3/12/70 to 3/15/71	σ_g	2.39	1.82	1.96
	n	18	90	16
Sand Lake Fire Station	$\bar{x}_g$	85	95	80
3/25/69 to 3/24/70	σ_g	2.91	2.96	2.24
	n	37	126	19
City Fire Station	$\bar{x}_g$	82	100	97
3/25/69 to 3/19/70	σ_g	1.96	2.11	1.59
3/21/70 to 3/15/71	n	58	160	17

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

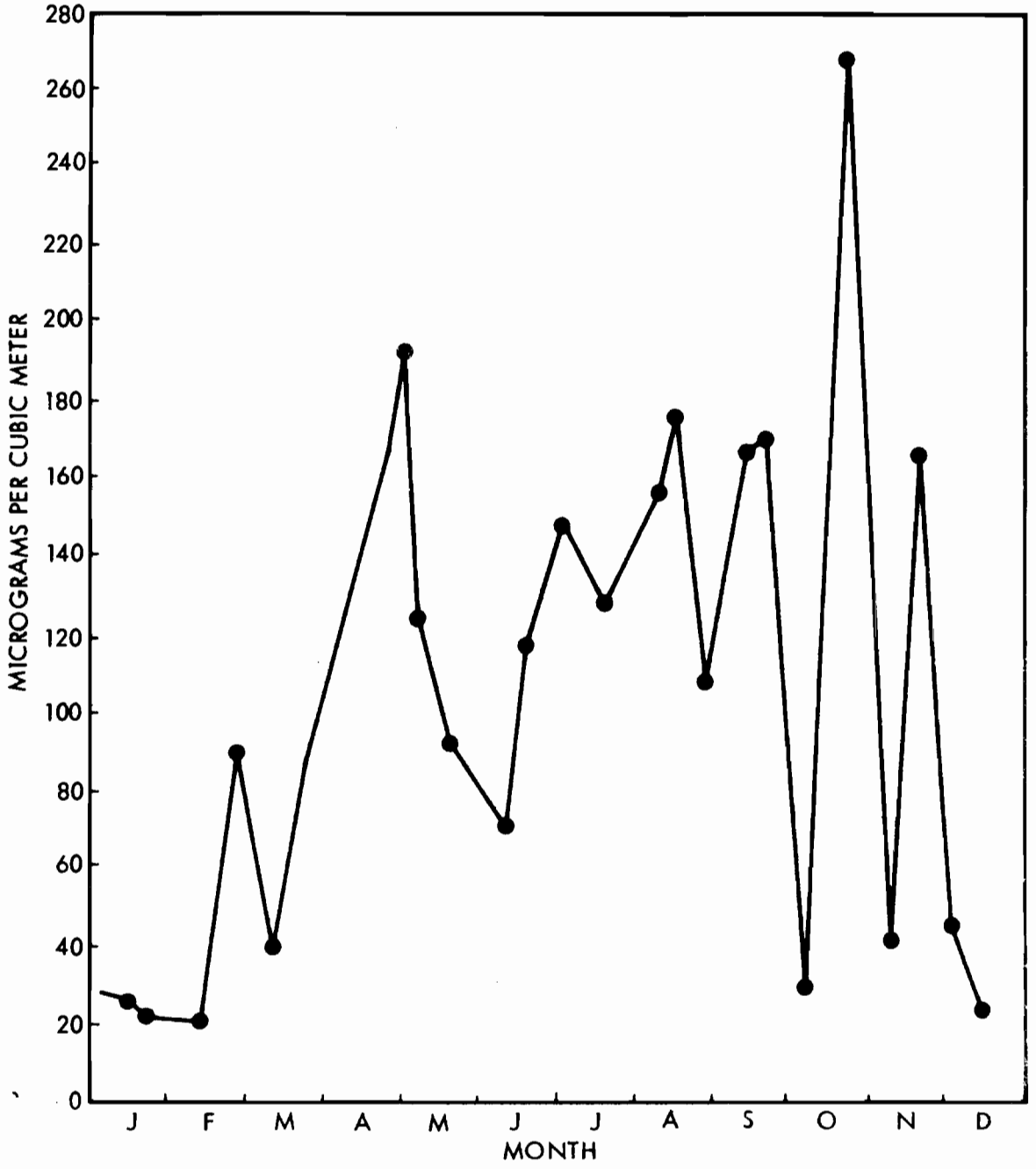


FIGURE VII.1.1 Seasonal Variation of Suspended Particulates 1969, Anchorage NASN Data

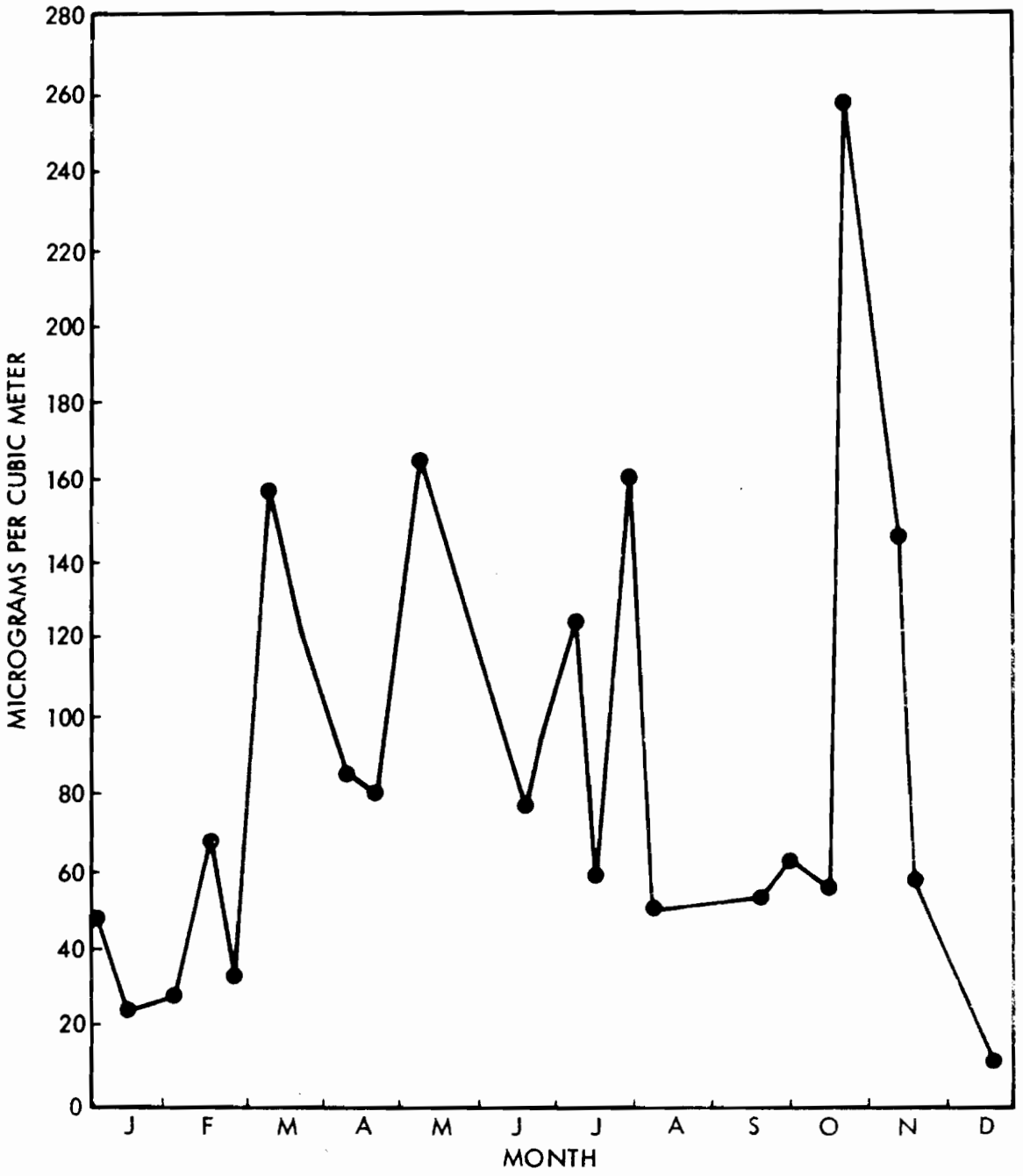


FIGURE VII.1.2 Seasonal Variation of Suspended Particulates 1970, Anchorage NASN Data

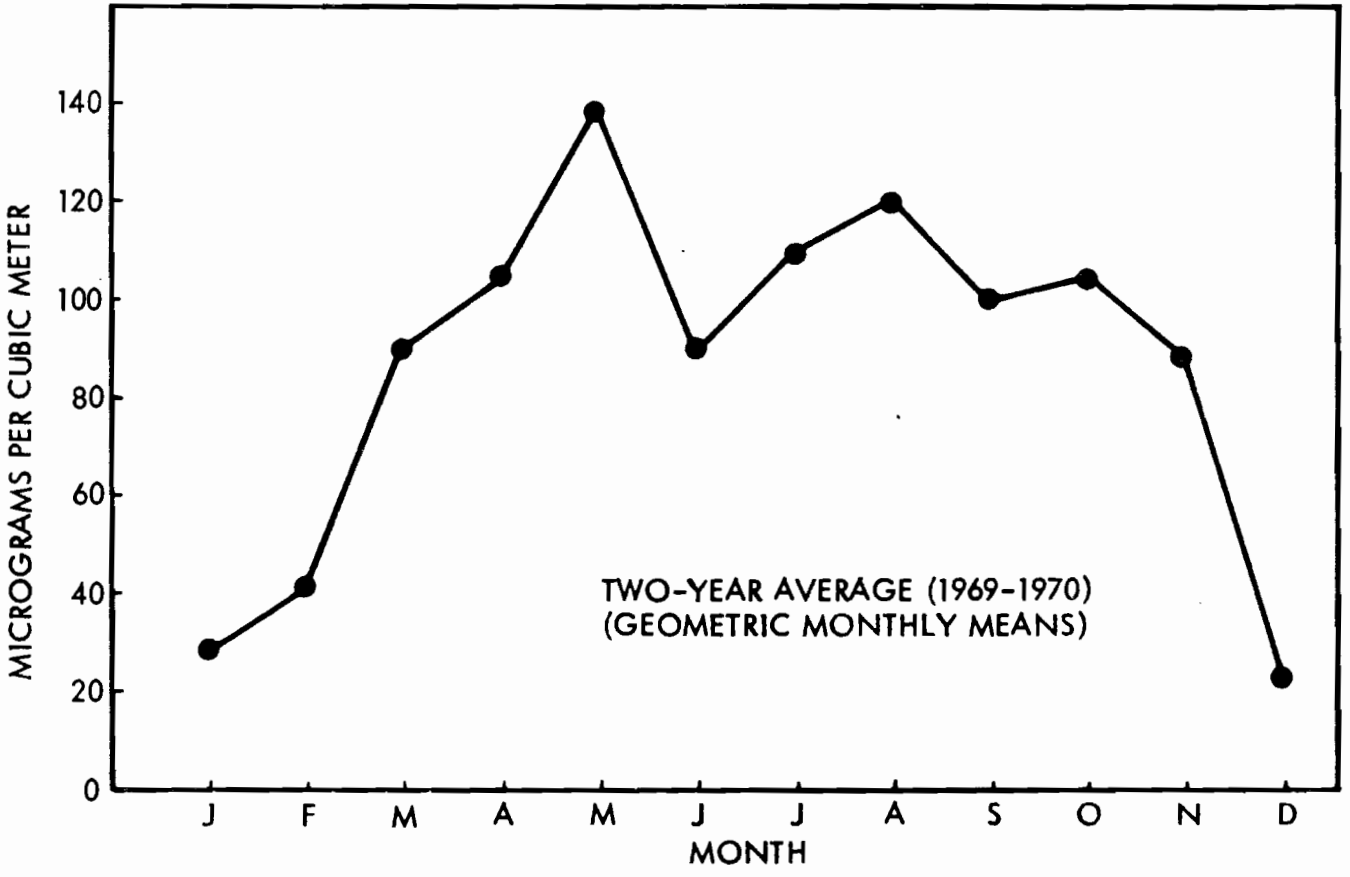


FIGURE VII.1.3 Seasonal Variation of Suspended Particulate Concentration, Anchorage NASN Data

TABLE VII.1.7 Measurements Of Total Suspended Particulates (TSP) ASA Function Of Wind Speed Distribution

Anchorage NASN Data
(1969-1970)

	<5 mph	5-12 mph	>12 mph
$\bar{x}_g$	62	81	79
σ_g	2.59	2.06	1.73
n	12	30	8

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)
σ_g = geometric standard deviation
n = number of samples

TABLE VI.F.1.8 . Measurement Of Total Suspended Particulates (TSP) As A Function Of Wind Speed Distribution (Average Daily)

Anchorage Local Data
(March 1969 - March 1971)

City Fire Station		< 5	5-12	>12 mph
Wet Days	$\bar{x}_g$	43	54	62
	σ_g	1.86	1.75	1.47
	n	8	25	5
Dry Days	$\bar{x}_g$	115	134	96
	σ_g	1.74	1.73	1.79
	n	32	78	8

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)
σ_g = geometric standard deviation
n = number of samples

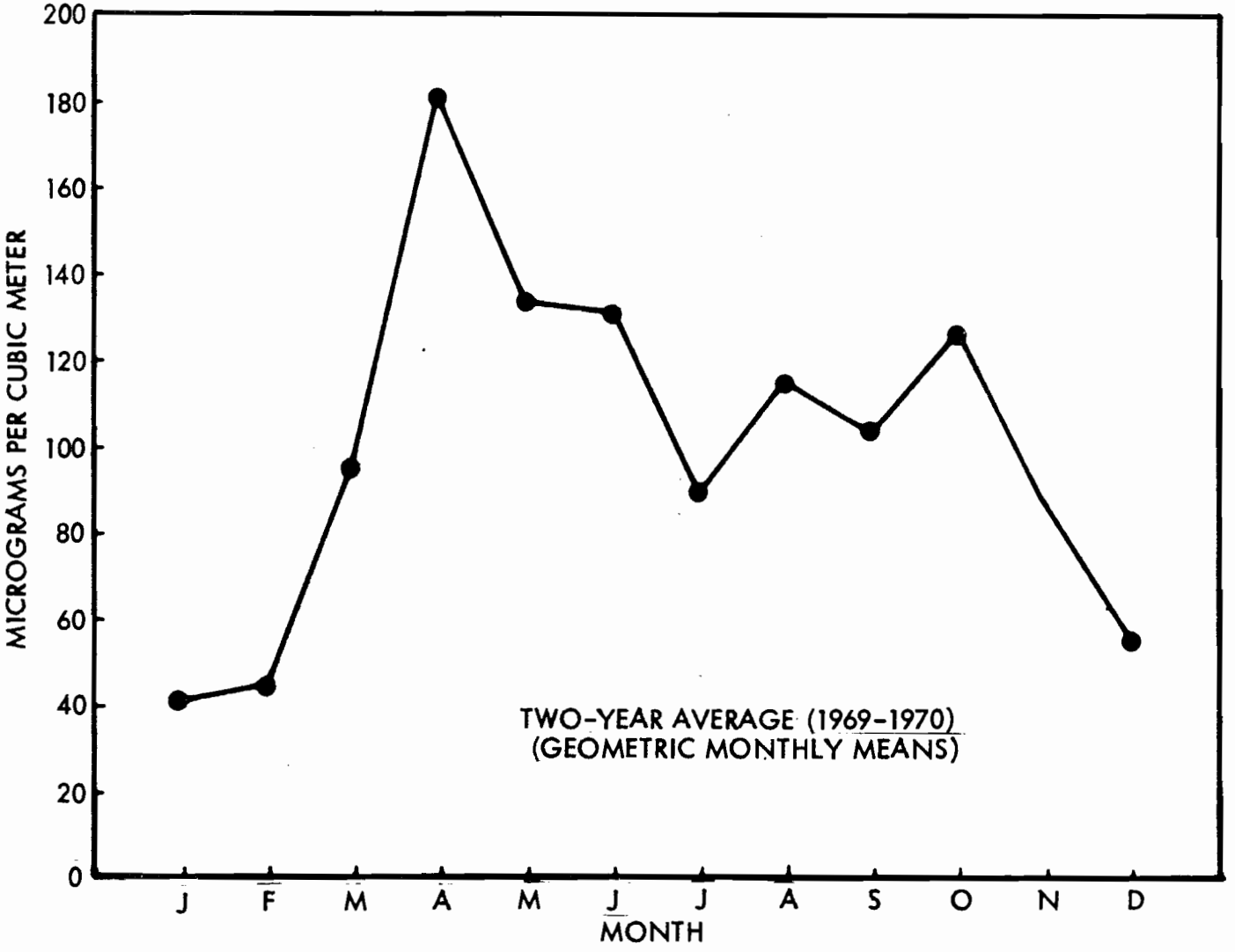


FIGURE VII.1.4 Seasonal Variation of Suspended Particulate Concentration, Anchorage Local Data City Fire Station

APPENDIX VII.2

ESTIMATION OF AIR QUALITY CAUSED BY PARTICULATE EMISSION IN ANCHORAGE

Calculations shown in this appendix were based on the procedures given in Reference 7, Appendix A: "Air Quality Estimation". The following values were used:

1) Average wind speed is 2.3 m/sec.

2) Particulate emissions from identifiable point and area sources in the Cook Inlet Intrastate AQCR total 2626 tons/year. (This value does not include emissions from certain man-made sources, such as traffic-generated dust and forest fires.)

1. URBAN SIZE C

Urban size C is defined in Reference 7 as

$$C = \frac{1}{2}\sqrt{\text{urban area}}, \quad \text{km}$$

Three areas were chosen to be used for "urban area":

1) Within city limits: 129.5 km^2; C = 5.68 km

2) Greater Anchorage: 184 km^2; C = 6.80 km

3) "Air shed" area: 450 km^2; C = 10.6 km

2. NORMALIZED CONCENTRATION $\frac{u}{Q}$

Pollutant concentration, χ, is calculated from the known emission density (or emission rate per unit area), Q [g/sec-m^2], and the average wind speed, u (m/sec), by means of a curve developed by the EPA, described by the curve-fit equation

$$\log_{10} \frac{\chi u}{Q} = 0.398 \log_{10} C + 1.829$$

Thus,

1) $C = 5.68$: $\frac{\chi u}{Q} = 134$

2) $C = 6.8$: $\frac{\chi u}{Q} = 142$

3) $C = 10.6$: $\frac{\chi u}{Q} = 169$

where

$u = 2.3$ m/sec

Q = emission density

3. PARTICULATE CONCENTRATION

For a limiting value calculation we shall assume that all of the particulate emissions included in the Emission Inventory influence the particulate concentration in downtown Anchorage (location of maximum increased concentrations).

Then, Q = (total emissions)/(urban area)

$$= 2626 \text{ (ton/year)} \times 28.8 \times 10^{-3} \left(\frac{\text{g/sec}}{\text{ton/yr}}\right) \Big/ \text{(urban area)}$$

$$= \left(75.7 \frac{\text{g}}{\text{sec}}\right) \Big/ \text{(urban area)}$$

1) Urban Area = 129.5 km^2

$Q = 0.575 \ \mu\text{g/m}^2\text{-sec}$

$= 134 \times 0.575/2.3 = \underline{33 \ \mu\text{g/m}^3}$

2) Urban Area = 184 km^2

$Q = 0.412 \ \mu\text{g/m}^2\text{-sec}$

$= 142 \times 0.412/2.3 = \underline{25 \ \mu\text{g/m}^3}$

3) Urban Area = 450 km^2

$Q = 0.168 \ \mu\text{g/m}^2\text{-sec}$

$= 169 \times 0.168/2.3 = \underline{12 \ \mu\text{g/m}^3}$

Measured particulate concentrations are generally far above these values (see Figures VII.1.1 through VII.1.4 of Appendix VII.1). Thus, it is clear that particulate sources such as blown dust, road dust, and/or forest fires must contribute substantially to the particulate concentration in the Anchorage region.

Control strategies are based on measured particulate concentrations. The above calculations only serve to compare emission rates from identified sources to emission rates necessary to explain high particulate concentrations.

APPENDIX VII.3

DESCRIPTION OF ROAD SURFACE CONDITIONS IN ANCHORAGE

1. ESTIMATE OF NUMBER OF PAVED AND UNPAVED ROADS IN 1971 AND 1975

1.1 1971

The numbers of miles of paved and unpaved roads in Anchorage service areas and in the City of Anchorage were taken from Reference 29.

Service Areas: Spenard, Muldoon and Sandlake

Total miles of borough maintained roads in service areas = 126.7 miles

Total miles of paved roads in service areas = 25.6 miles

$$\text{\% paved roads in service areas} = \left(\frac{25.6}{126.7}\right) \times 100 = 20\%$$

Total miles of unpaved roads in service areas = 101.1 miles

$$\text{\% unpaved roads in service areas} = \left(\frac{101.1}{126.7}\right) \times 100 = 80\%$$

City of Anchorage

Assume the city of Anchorage is the central business district (CBD)

Total miles of roads and alleys in CBD = 204.1 miles

Total miles of paved roads and alleys = 95.2 miles

$$\text{\% paved roads and alleys in Anchorage} = \left(\frac{95.2}{204.1}\right) \times 100 = 45\%$$

Total miles of unpaved roads and alleys = 108.9 miles

$$\text{\% unpaved roads and alleys in CBD} = \left(\frac{108.9}{204.1}\right) \times 100 = 55\%$$

% breakdown of paved and unpaved roads and alleys in CBD:

	Roads	Alleys
Unpaved	73.9 miles	35.0 miles
Paved	91.3 miles	3.9 miles
Total	165.2 miles	38.9 miles

(Above data from Reference 29)

$$\underline{\text{\% paved roads in CBD}} = \left(\frac{91.3}{165.2}\right) \times 100 = \underline{55\%}$$

$$\underline{\text{\% unpaved roads in CBD}} = \left(\frac{73.9}{165.2}\right) \times 100 = \underline{45\%}$$

$$\underline{\text{\% paved alleys in CBD}} = \left(\frac{3.9}{38.9}\right) \times 100 = \underline{10\%}$$

$$\underline{\text{\% unpaved alleys in CBD}} = \left(\frac{35.0}{38.9}\right) \times 100 = \underline{90\%}$$

1.2 1975

The amount of road paving planned for existing roads for 1971 to 1975 was estimated by Mr. J. Emerson of Anchorage:

% increase in paved roads from 1971 to 1975 = 80%

Assume that all roads built between 1971 and 1975 will be paved, and that the total miles of roads (paved plus unpaved) remain the same in 1975 as in 1971 for both the service areas and the Anchorage CBD.

Service Areas - Spenard, Muldoon and Sandlake

Total miles of Borough maintained roads in service areas in 1975 = 126.7 miles

Total miles of paved roads in service areas in 1971 = 25.6 miles

Total miles of paved roads in service areas in 1975 = 25.6 miles x (1.8) = 46.1 miles

$$\underline{\text{\% paved roads in service areas in 1975}} = \left(\frac{46}{126.7}\right) \times 100 = \underline{36\%}$$

Total miles of unpaved roads in service areas in 1975 = 101.1 miles - 20.5 miles = 80.6 miles

$$\underline{\text{\% unpaved roads in service areas in 1975}} = \left(\frac{80.6}{126.7}\right) \times 100 = \underline{64\%}$$

City of Anchorage (CBD)

Total miles of roads and alleys in CBD in 1975 = 204.1 miles

Total miles of paved roads and alleys in CBD in 1975 - 95.2 miles x (1.8) = 171.4 miles

$$\underline{\text{\% paved roads and alleys in CBD in 1975}} = \left(\frac{171.4}{204.1}\right) \times 100 = \underline{84\%}$$

Total miles of unpaved roads and alleys in CBD in 1975 = 108.9 miles - 76.2 miles = 32.7 miles

$$\underline{\text{\% unpaved roads and alleys in CBD in 1975}} = \left\{\frac{32.7}{204.1}\right\} \times 100$$

$$= \underline{16\%}$$

% breakdown of paved and unpaved roads and alleys in CBD in 1975:

	Roads	Alleys
Unpaved	1.2 miles	31.9 miles
Paved	164 miles	7 miles
Total	165.2 miles	38.9 miles

$$\underline{\text{\% paved roads in CBD in 1975}} = \left(\frac{164}{165.2}\right) \times 100 = \underline{99\%}$$

$$\underline{\text{\% unpaved roads in CBD in 1975}} = \left(\frac{1.2}{165.2}\right) \times 100 = \underline{1\%}$$

$$\underline{\text{\% paved alleys in CBD in 1975}} = \left(\frac{7}{38.9}\right) \times 100 = \underline{18\%}$$

$$\underline{\text{\% unpaved alleys in CBD in 1975}} = \left(\frac{31.9}{38.9}\right) \times 100 = \underline{82\%}$$

2. ESTIMATE OF VEHICLE MILES AND DESTINATIONS

2.1 1971

From Reference 26, page 48: Average number of vehicle trips made within the Anchorage metropolitan area (including the service areas) on an average weekday.

= 230,549 vehicle trips/day

From Reference 26, page 62: Average trip length

= 10.6 minutes

Assume average trip speed of 20 miles per hour

$$\text{Average trip length} = 20\text{mph}\left(\frac{10.6 \text{ minutes}}{60 \text{ minutes/hr}}\right) = 3.5 \text{ miles/trip}$$

Average number of vehicle miles driven within the Anchorage metropolitan area on an average weekday

$$= 230{,}549 \ \frac{\text{vehicle trips}}{\text{day}} \times 3.5 \ \frac{\text{miles}}{\text{trip}} = 806{,}292 \ \frac{\text{miles}}{\text{day}}$$

From Reference 26, page 48: Destinations of vehicles' trips

21.5% of all driven trips were made entirely within the CBD (assume City of Anchorage only).

APPENDIX VII-4

SEASONAL VARIATIONS IN PARTICULATE CONCENTRATIONS IN ANCHORAGE

A summary of the suspended particulate measurements in Anchorage from 1963 to 1970 and the calculation of the estimated average yearly variation in dustfall is presented in Table VII.4.1. An average variation of 65% is indicated.

TABLE VII.4.1 Summary of Suspended Particulate Measurements in Anchorage

Composite Quarterlies

Year	No. of Samples	Quarter No. 1 (Jan.-Mar.) $\mu g/m^3$	Quarter No. 2 (Apr.-June) $\mu g/m^3$	Quarter No. 3 (July-Sep.) $\mu g/m^3$	Quarter No. 4 (Oct.-Dec.) $\mu g/m^3$	Yearly Variation: $\frac{max-min}{max} \times 100$
1963	27	35	102	62	72	$\frac{102-35}{102} = 65\%$
Max			234 on 5/22			
Min		5 on 3/15				
1964	24	31	130	190	53	$\frac{190-36}{190} = 84\%$
Max				342 on 8/14		
Min						
1966	23	36	148	152	119	$\frac{152-36}{152} = 76\%$
Max					349 on 10/1	
Min		12 on 3/4			20 on 11/17	
1967	24	42	198	85	73	$\frac{198-42}{198} = 79\%$
Max			320 on 5/21			
Min						
1968	28	70	97	86	55	$\frac{97-55}{97} = 44\%$
Max			190 on 4/26			
Min		20 on 2/28				
1969	26	45	134	151	95	$\frac{151-45}{151} = 68\%$
Max					268 on 10/23	
Min					19 on 12/16	
1970	24	67	99	85	106	$\frac{106-67}{106} = 37\%$
Max					258 on 10/20	
Min		24 on 1/15				

$$\text{Average \% Variation} = \frac{\Sigma(\text{\% Yearly Variation})}{7 \text{ years}} = 65\%$$

APPENDIX VII.5

VARIATIONS IN PARTICULATE CONCENTRATIONS WITH WIND, RAIN AND TEMPERATURE IN FAIRBANKS

Four years of suspended particulate data are available from the NASN station in Fairbanks. The sampling station intake elevation is 3 feet. Samples are obtained on a random basis throughout the year. It is notable that few midwinter samples were collected. Table VII.5.1 is a summary of the effects of precipitation and wind direction on mean particulate concentration for this station. Data are insufficient in any of the quadrants with the exception of the northerly quadrant to conclude any directional effect. There are sufficient data among all the dry day samples (48 hours without precipitation) and all the wet day samples (any measureable amount of precipitation within 24 hours or trace quantities over a period greater than 12 of 24 hours or a trace amount of precipitation on a day following 2 or more days of heavy precipitation) to suggest that dry days yield a significantly higher concentration of suspended particulates than wet days.

Table VII.5.2 shows the variation in particulate concentration with temperature distribution. It is significant that for days with average temperature well below freezing the particulate concentrations are fairly low. It should be remembered that there is a persistent snow cover throughout the winter months. There are too few samples for the 25° to 40° F range to draw any conclusions; however, the overall increase in particulate concentration with temperature is significant.

Wind speed distribution versus particulate concentration is given in Table VII.5.3 Although a weak correlation could be suspected from these data, there are too few cases for the greater than 12 mph grouping to substantively support this conclusion.

Figures VII.5.1 through VII.5.4 illustrate the seasonal variation in particulate concentration at Fairbanks for each of the 4 years of NASN data. Figure VII.5.5 is a composite of these 4 years showing the monthly geometric mean concentrations. Although there are limited data available for each month, the composite does illustrate the combined effects of freezing

Temperatures, low wind speeds and snow cover during the winter months as suggested in the foregoing analyses. The September maximum appears to be a result of the very dry period during September just before the return of freezing temperatures. The cool nights and warm dry days experienced during this month would tend to cause expansion and contraction in the soil, loosening the surface and allowing even fairly light winds to entrain this thin crusty alluvium.

TABLE VII.5.1 Measurement of Total Suspended Particulates (TSP) as a Function of Wind Direction

Fairbanks NASN Data (1967-1970)						
		Calm	Wind Direction Quadrant (degrees)			
		00	33-05	06-14	15-23	24-32
Dry Days	$\bar{x}_g$	59	259	213	177	152
	σ_g	—	1.90	1.87	1.39	1.86
	n	1	36	7	7	6
Wet Days	$\bar{x}_g$		78	317	82	99
	σ_g		1.72	—	2.21	2.19
	n		8	1	10	6
All Dry Days	$\bar{x}_g$	220				
	σ_g	1.91				
	n	56				
All Wet Days	$\bar{x}_g$	89				
	σ_g	2.07				
	n	25				

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

TABLE VII.5.2 Measurement of Total Suspended Particulates (TSP) as a Function of Temperature Distribution (Average Daily)

Fairbanks NASN Data (1967-1970)			
	<25° F	25-40° F	>40° F
$\bar{x}_g$	89	168	259
σ_g	1.82	2.85	1.51
n	43	19	44

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

TABLE VII.5.3 Measurement of Total Suspended Particulates (TSP) as a Function of Wind Speed Distribution (Average Daily)

Fairbanks NASN Data (1967-1970)			
	<5 mph	5-12 mph	>12 mph
$\bar{x}_g$	101	194	178
σ_g	2.30	2.03	1.88
n	35	67	4

$\bar{x}_g$ = geometric mean ($\mu g/m^3$)

σ_g = geometric standard deviation

n = number of samples

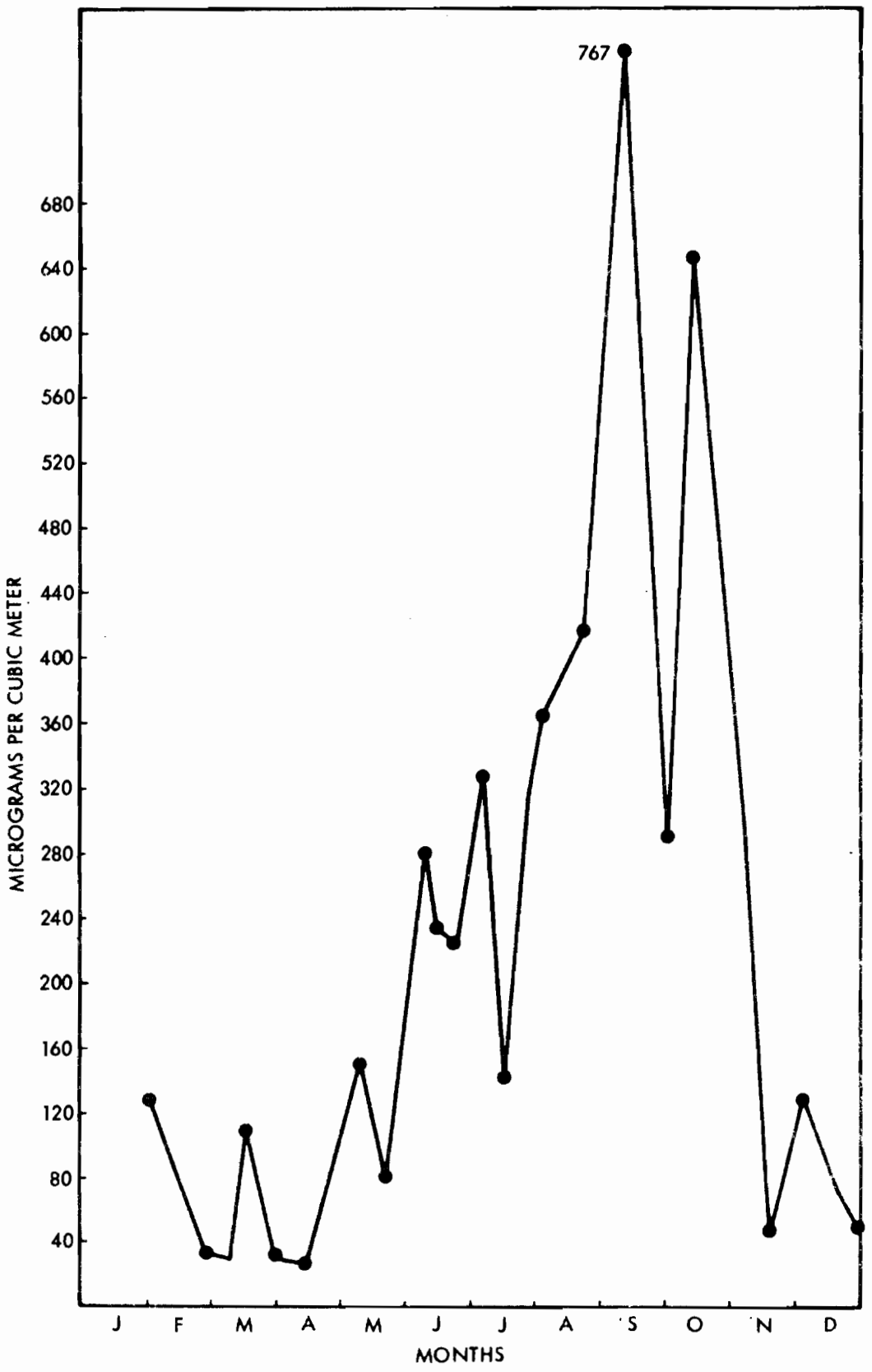


FIGURE VII.5.1 Seasonal Variation of Suspended Particulates 1967 Fairbanks NASN Data

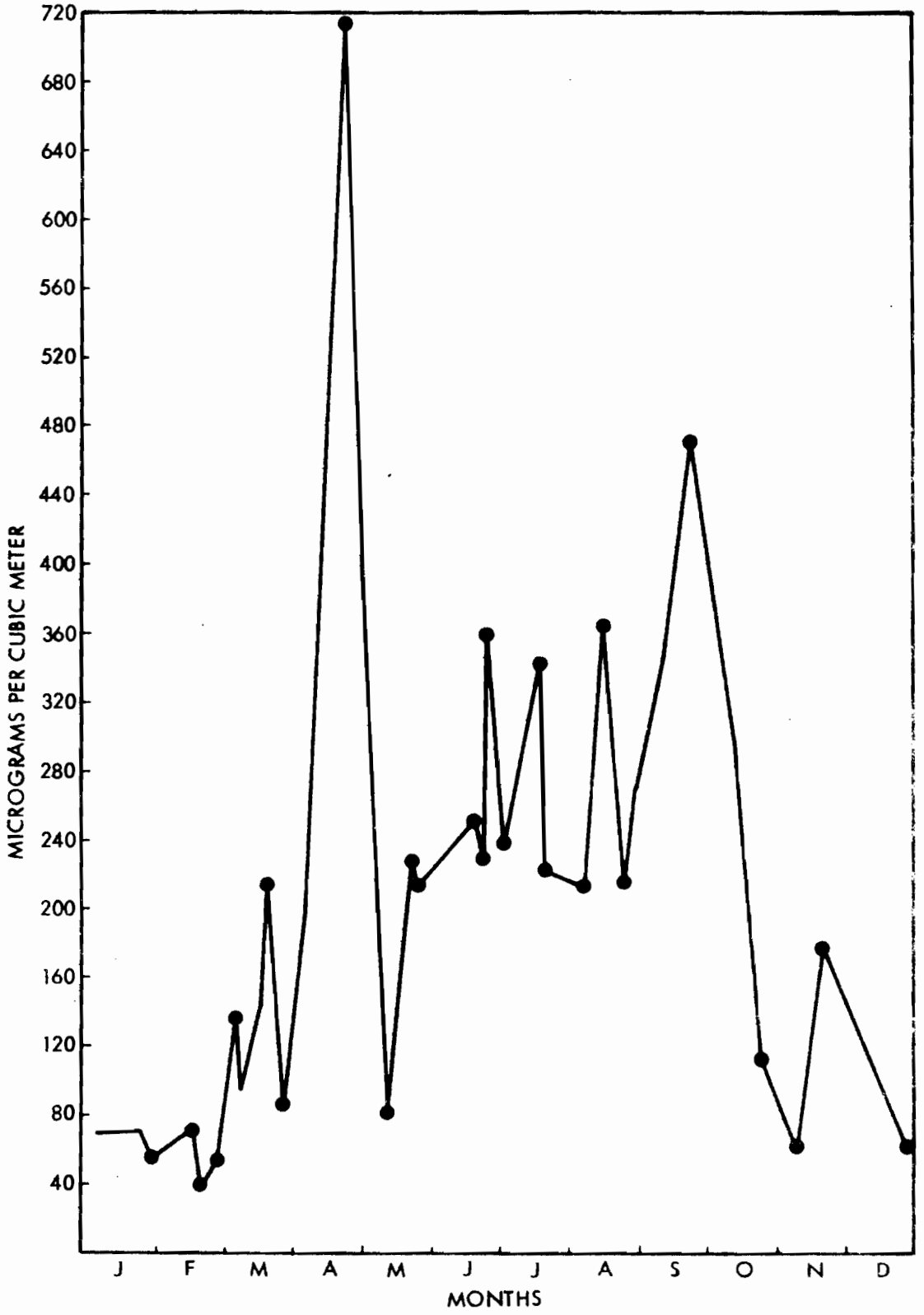


FIGURE VII.5.2 Seasonal Variation of Suspended Particulates 1968 Fairbanks NASN Data

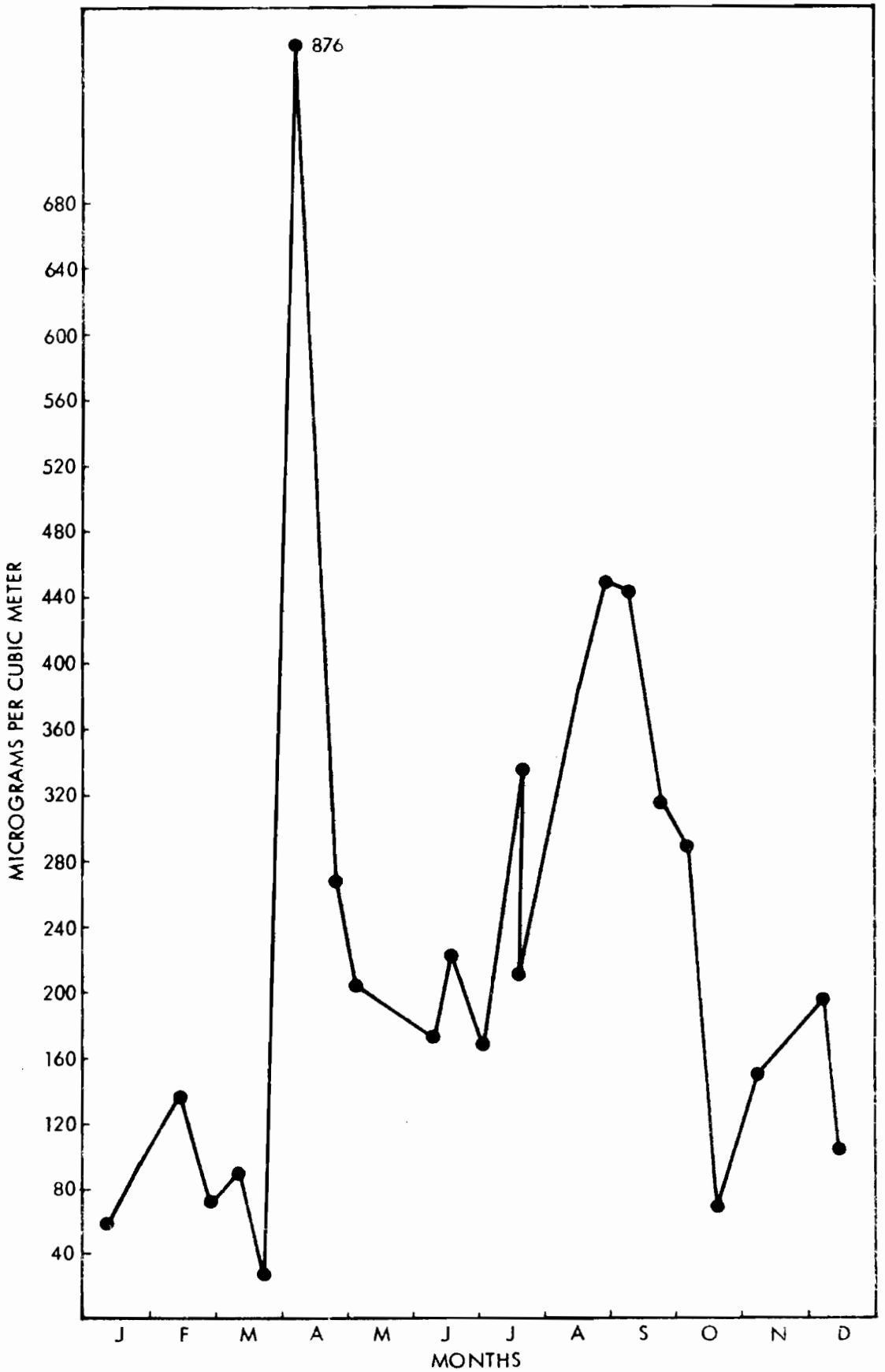


FIGURE VII.5.3 Seasonal Variation of Suspended Particulates 1969 Fairbanks NASN Data

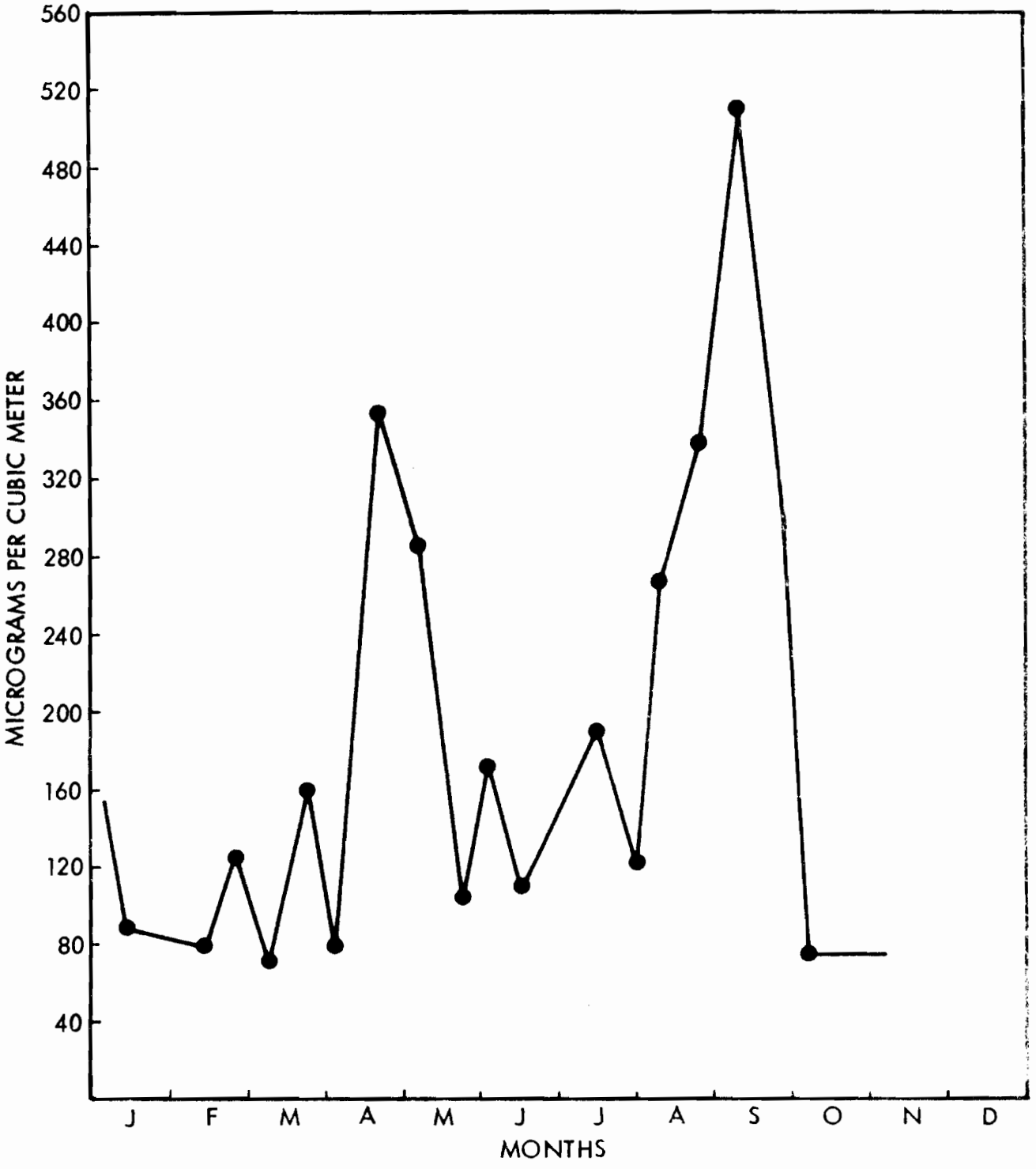


FIGURE VII.5.4 Seasonal Variation of Suspended Particulates 1970 Fairbanks NASN Data

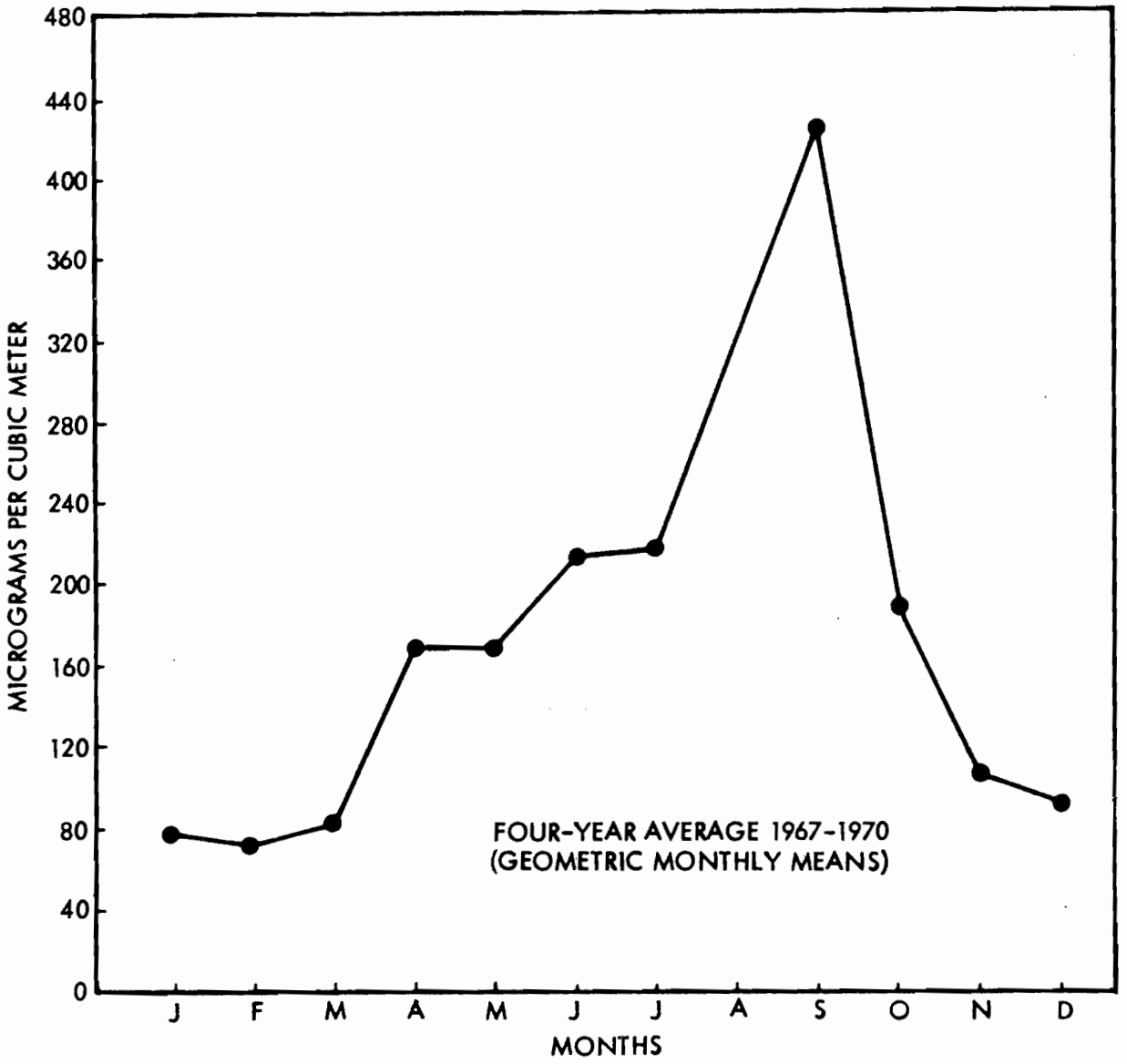


FIGURE VII.5.5 Seasonal Variation of Suspended Particulates Fairbanks NASN Data

APPENDIX VII.6

ESTIMATION OF AIR QUALITY DUE TO PARTICULATES IN FAIRBANKS

These calculations are based on the procedures in Reference 6, Appendix A: "Air Quality Estimation". The average wind speed is 2.3 m/sec.

1. URBAN SIZE C

Urban size is defined in Reference 6 as $C = 1/2 \sqrt{\text{urban area}}$, km

Two areas were chosen to be used for "urban area" (see Figure 3-6):

1) City area: 42 km^2; C = 3.23 km

2) "Air shed" area: 227 km^2; C = 7.55 km

2. NORMALIZED CONCENTRATION $\frac{\chi u}{Q}$

Pollutant concentration, χ, is calculated from the known emission density, Q, and the average wind speed, u, by means of a curve developed by the EPA and described by the curve-fit equation

$$\log_{10} \frac{\chi u}{Q} = 0.398 \log_{10} C + 1.829$$

1) for C = 3.23; $\frac{\chi u}{Q} = 107.4$; $\chi = 47\ Q$

2) for C = 7.55; $\frac{\chi u}{Q} = 151$; $\chi = 65.6\ Q$

for u = 2.3 m/sec

3. PARTICULATE CONCENTRATIONS

The total particulate emission excluding forest fires, traffic-generated dust and blown-in dust is 2555 tons/year from area sources (Reference 20, page 21). Particulate emissions from the major point sources amount to about 6000 tons/year if the cyclone efficiencies are assumed to be 84% or less. However, some of the particulate emissions cannot affect air quality in the central city. Eielson AFB is too far removed (22 miles from Fairbanks) to affect either the larger "air shed" area or the city-sized area. A total of 7000 tons/year is a reasonable

total emission rate for the larger area. The smaller area includes the Fairbanks Municipal and the University of Alaska power plants and an estimated 75% of the area sources, for a total of 3600 tons/year.

1) City area; $Q = 3600 \times 28.8 \times 10^3/(42 \times 10^6) = 2.46\ \mu g/sec\text{-}m^2$

2) "Air shed" area; $Q = 7000 \times 28.8 \times 10^3/(227 \times 10^6)$
$= 0.9\ \mu g/sec\text{-}m^2$

Thus,

1) $\chi = 116\ \mu g/m^3$ based on the city area

2) $\chi = 59\ \mu g/m^3$ based on an "air shed" area.

The air quality calculated with the smaller area is larger than the measured monthly geometric mean averages in winter (see Figure VII.5.5 in Appendix VII.5).

The air quality calculated with the larger "air shed" type area is close to the particulate concentrations measured during the winter months, when blown-in and traffic-generated dust is practically nil and forest fires are unlikely to occur.

Further control of power plant emissions will reduce point-source emissions to about 2000 tons/year. The air quality in 1975, based on a 227 km^2 area and including a 16% population growth between 1970 and 1975, would be close to 41 $\mu g/m^3$ in winter (1.16 x 2555 + 2000 = 4900 tons/year).

APPENDIX VII.7

MOTOR VEHICLE EMISSIONS IN FAIRBANKS

1. CARBON MONOXIDE EMISSIONS

1.1 IDLE EMISSION RATE

Car models 1967 and older are not exhaust emission controlled and have substantially higher rates than 1968-1970 vehicles; the controls will be more effective on the post 1971 cars. Carbon monoxide mass emissions for the three vehicle age groups, as measured by 1972 Federal test procedures, are shown in Table VII.7.2. The 1972 Federal test cycle is a composite drive cycle with average speed of 22 mph which is initiated with the powertrain conditioned to 70° F. The emission factors corresponding to 1972 Federal test cycle have been developed by TRW from numerous tests on a large number of motor vehicles.[30]

The cold weather, low speed emission factors are extrapolations of tests reported in Reference 17. Cold weather idle emission factor is calculated as follows:

The estimate of cold weather idle CO exhaust emissions is made using the following assumptions:

1) Manual choke override in cold weather results in fuel-to-air ratio mixtures near the black smoking condition, regardless of manufacturer or model year.

2) The powertrain population is essentially made up of middle-sized V-8 engines.

3) The total carburetor air mass flow rate is insensitive to the choke blade setting (i.e., reduced volumetric flow rate is directly offset by increased air density resulting from sub-zero temperatures).

Applying the above assumptions and the following equation, CO emissions of 2700 gm/hr are calculated:

$$\text{idle CO} = p\dot{V}\,CO = \frac{33\ \text{gm}}{\text{ft}^3}\ \frac{10\ \text{ft}^3}{\text{min}}\ \frac{0.135\ \text{ft}^3}{\text{ft}^3\ \text{air}}\ \frac{60\ \text{min}}{\text{hr}}$$

$$= 2700\ \text{gm/hr}$$

where:

$\dot{V}$ = volumetric flow rate at idle, 10 cfm (Reference 11, assumptions 2 and 3).

CO = CO concentration at incipient black smoke, 13.5% (Reference 11).

p = conversion constant, 33 gm/ft^3 (Reference 8).

Cold weather prolongs engine warm-up and results in extended idling time to maintain favorable underhood temperatures. In order to estimate vehicle CO exhaust emission rates, a composite estimate of combined nominal and cold weather driving is required. Cold weather idle emissions and low speeds driving during warm-up are assumed equivalent across all model years (i.e., engine warm-up requires the same amount of choke action and idle warm-up).

1.2 EMISSIONS ATTRIBUTED TO WINTER IDLING

The following is an estimate of the percent of automobile CO emissions due to winter idling. This calculation is based on data derived previously in this report and on statistics acquired independently.

1) According to the Alaska Department of Revenue, 25,500,000 gallons of gasoline were consumed in Division 4 in fiscal year 1971. Assuming that 80% of this amount is used in the Fairbanks, area, 20,400,000 gallons of gasoline were burned in the Fairbanks area.

2) The vehicle age distribution by year (Table VII.7.1) indicates that 36% of the automobiles in 1970 were 1968 or newer models. This would give an average emission factor of:

$$\underset{\text{pre-1968 vehicles}}{\frac{122 \text{ grams CO}}{\text{mile}} \times .64} + \underset{\text{1968 and newer}}{\frac{88 \text{ grams CO}}{\text{mile}} \times .36} = \underset{\text{average}}{\frac{110 \text{ grams CO}}{\text{mile}}}$$

using Table VII.7.2.

3) a) Using the previously calculated figure of $\frac{2700 \text{ grams CO}}{\text{hour}}$ at idle conditions, the gasoline consumption would be $\frac{.52 \text{ gallons}}{\text{hour}}$ assuming stoichiometric gasoline combustion.[41] This would mean that 5200 grams of CO would be liberated per gallon of gasoline burned at idle conditions.

b) For a moving vehicle, using the national average gasoline consumption of 12.5 miles per gallon, the consumption of gasoline at 22 mph would be 1.76 gallons/hour. 1380 grams of CO would be liberated for each gallon of gas used in such a moving vehicle, using the emission factor derived in 2). The CO emission would be 2420 grams per hour.

4) In order to consider the effect of idling on total CO emissions, assume two possible situations:

a) an average vehicle is operated 5% of the time in the idle mode:

Idling Vehicle

$$.05 \times \frac{2700 \text{ gram CO}}{\text{hour}} = \frac{135 \text{ gram CO}}{\text{hour}} = 5.5\% \text{ of total CO emissions}$$

Moving Vehicle

$$.95 \times \frac{2420 \text{ gram CO}}{\text{hour}} = \frac{2300 \text{ gram CO}}{\text{hour}} = 94.5\% \text{ of total CO emissions}$$

b) a vehicle is operated 50% of the time in the idle mode:

Idling Vehicle

$$.50 \times \frac{2700 \text{ gram CO}}{\text{hour}} = \frac{1350 \text{ gram CO}}{\text{hour}} = 53\% \text{ of total CO emissions}$$

Moving Vehicle

$$.50 \times \frac{2420 \text{ gram CO}}{\text{hour}} = \frac{1210 \text{ gram CO}}{\text{hour}} = 47\% \text{ of total CO emissions}$$

5) Assume that gasoline consumption is approximately constant throughout the year. On a given day, therefore, the gasoline consumption would be:

$$\frac{20{,}400{,}000 \text{ gallons/year}}{365 \text{ days/year}} = \frac{56{,}000 \text{ gallons}}{\text{day}}$$

6) a) The gasoline consumption during condition 4),a) would be:

Idling Vehicle

$$.05 \times \frac{.52 \text{ gallon}}{\text{hour}} = \frac{.0260 \text{ gallon}}{\text{hour}} = 1.5\% \text{ of total gas consumption}$$

Moving Vehicle

$$.95 \times \frac{1.76 \text{ gallons}}{\text{hour}} = \frac{1.67 \text{ gallons}}{\text{hour}} = 98.5\% \text{ of total gas consumption}$$

Therefore, on a given day, the CO emissions would be:

Idling Vehicle

$$.015 \times \frac{56{,}000 \text{ gallon}}{\text{day}} \times \frac{5200 \text{ gram CO}}{\text{gallon}} = \frac{4.4 \times 10^6 \text{ gram CO}}{\text{day}}$$

Moving Vehicle

$$.985 \times \frac{56{,}000 \text{ gallon}}{\text{day}} \times \frac{1380 \text{ gram CO}}{\text{gallon}} = \frac{7.6 \times 10^7 \text{ gram CO}}{\text{DAY}}$$

TOTAL $\quad \frac{8.0 \times 10^7 \text{ gram CO}}{\text{day}}$

b) The gasoline consumption during condition 4), b) would be:

Idling Vehicle

$$.50 \times \frac{.52 \text{ gallon}}{\text{hour}} = \frac{.26 \text{ gallon}}{\text{hour}} = 23\% \text{ of total gas consumption}$$

Moving Vehicle

$$.50 \times \frac{1.76 \text{ gallon}}{\text{hour}} = \frac{.88 \text{ gallon}}{\text{hour}} = 77\% \text{ of total gas consumption}$$

Therefore, on a given day, the CO emissions would be:

Idling Vehicle

$$.23 \times \frac{56{,}000 \text{ gallon}}{\text{day}} \times \frac{5200 \text{ grams}}{\text{gallon}} = \frac{6.7 \times 10^7 \text{ gram CO}}{\text{day}}$$

Moving Vehicle

$$.77 \times \frac{56{,}000 \text{ gallon}}{\text{day}} \times \frac{1380 \text{ gram CO}}{\text{gallon}} = \frac{5.6 \times 10^7 \text{ gram CO}}{\text{day}}$$

TOTAL $\quad \frac{12.3 \times 10^7 \text{ gram CO}}{\text{day}}$

TABLE VII.7.1 Vehicle Population Distribution

1970 Distribution Year Model	Percent	1971 Distribution Year Model	1975 Distribution Year Model	1977 Distribution Year Model	Percent
1970	8.52	1971	1975	1977	8.52
1969	12.82	1970	1974	1976	12.82
1968	14.82	1969	1973	1975	14.82
1967	10.70	1968	1972	1974	10.70
1966	10.25	1967	1971	1973	10.25
1965	9.84	1966	1970	1972	9.84
1964	7.58	1965	1969	1971	7.58
1963	6.34	1964	1968	1970	6.34
1962	19.13	1963	1967	1969	4.00
and older		and older	and older	1968	3.00
				1967	12.13
				and older	
Total	100%	22,000 vehicles	25,000 vehicles	26,000 vehicles	100%

TABLE VII.7.2. Carbon Monoxide Emission Rates for Motor Vehicles

	1972 Test 22 MPH gm/mile	Cold Weather Idle gm/hour
Precontrolled 1967	122	2700
Controlled - 1968-70	88	2700
Controlled - 1971-74	51	2700
Controlled - 1975-77	4	2700

1. APPENDIX VII.8

Estimates of Air Quality Effects of SO_2 from Pulp Mills in the Southeast Air Quality Control Region

There currently are two major sources of SO_2 in the Southeast Air Quality Control Region, both sulfite pulp mills. These are the Alaska Lumber & Pulp Co. at Silver Bay, near Sitka, and the Ketchikan Pulp Co. at Ward Cove, near Ketchikan, which are approximately 200 miles apart. A new kraft pulp mill has been proposed at Berner's Bay, about 50 miles north of Juneau (see Table VII.8.1).

The sources of SO_2 from sulfite mill operation are the sulfite liquor recovery furnaces and the auxilliary power boilers. A summary of the emissions from each mill from these sources is as follows:[31, 34] (Emissions are in tons of SO_2 per year.)

	Alaska Lumber & Pulp Co. (600 tons pulp per day)	Ketchikan Pulp Co. 670 tons pulp per day)
sulfite waste liquor recovery.....	2000	3200
auxilliary power generation.	2000	1400

The liquor recovery emission figures are based upon an emission factor of 30 lbs. of SO_2 released per ton of pulp produced, with allowance for the fraction of waste liquor that is recovered.[35] The Ketchikan Pulp Co. currently recovers about 94% of its waste liquor and the Alaska Lumber and Pulp Co. recovers about 65%; 90% recovery is predicted to be necessary for the mills to meet water quality regulations.[32, 33]

Fuel for auxilliary power generation at the Ketchikan mill consists of an average 1.3% sulfur content fuel oil in combination with wood wastes.[31] Similarly, the Sitka mill burns a 1.7% sulfur fuel with wood wastes.[31] An emission factor of 1 lb. of SO_2 emitted per ton of wood waste burned was used.[36] The Sitka mill burns about 7 tons per hour of wood wastes.[31, 38] No figures were available for the Ketchikan mill, so it was assumed that the Ketchikan mill burns an amount of wood waste proportional to the Sitka mill. The pulp production rates for the mills were used to provide the proportionality.

Diffusion calculations based upon these emission estimates for the mills indicate that a violation of the proposed Alaska Ambient Air Standards and the National Secondary Ambient Air Standards for SO_2 could occur in the vicinity of the Ketchikan Mill. See Figures VII.8.1 and VII.8.2 for a graphical presentation of the calculations. The diffusion estimates were made for a low wind speed, neutral stability atmosphere, which appears to be representative for a maximum 24 hour average concentration prediction.[37] The calculated concentrations are considered conservative, due to the topographical constraints in the vicinity of both mills. An eleva-

tion of 20 meters was assumed to be representative of residences in the vicinity of the Ketchikan mill.

The mill emissions would not be expected to result in violation of the air quality standards when in compliance to the proposed Regulation 18 AAC 50.070, 20 lbs. of SO_2 per ton of pulp produced, according to the diffusion calculations. See Table VII.8.2 for the presentation of the calculated effects of the emissions on ambient air concentrations before and after compliance. The SO_2 emissions from the mills when in compliance would be as follows: (SO_2 emission in tons per year.)

	Alaska Lumber and Pulp Co.	Ketchikan Pulp Co.
sulfite waste liquor recovery.....	2000	2300
power generation.....	2000	1400

These estimates are based upon the following considerations:

1. Net sulfite liquor recovery emissions from the Alaska Lumber and Pulp Co. will not change significantly due to water quality regulations requiring the recovery of 90% of the sulfite waste liquor (compared to the 65% which is now recovered);

2. Emission estimates are made based on an emission factor of 20 lbs. of SO_2 emitted per ton of pulp produced with no allowance for the percentage of sulfite waste liquor that is recovered;

3. The mills are assumed to operate 24 hours/day, 340 days per year at capacities of 600 tons of pulp per day for Alaska Lumber and Pulp Co. and 670 tons of pulp per day for Ketchikan Pulp Co.

Table VII.8.1

Potential New Source

Type of Operation . . . . Kraft Pulp Mill

Firm . . . . . U. S. Plywood Champion

Location . . . . . Berner's Bay

Process Rate . . . . . 500-550 tons/day - air dried pulp

Potential Emissions

Reduced Sulfur Compounds (Expressed as H_2S)	17.5 ppm in recovery furnace stacks
Sulfur Oxides*	10 lbs/ton pulp
Particulate Matter (Recovery Furnaces, Lime Kiln, Smelt Tank)	2 lbs/ton pulp
Particulate Matter (Wood-waste Boiler)	.15 grains/SCF

*This figure based on estimate of 200 ppm in recovery stack, assuming 300,000 SCF exhaust/ton pulp.

Table VII.8.2

Effects of SO_2 Emissions from the Alaska Lumber & Pulp Co. and the Ketchikan Pulp Co.

	Alaska Lumber & Pulp Co.	Ketchikan Pulp Co.
Calculated Maximum 24 Hour Average Ambient Air SO_2 Concentration Resulting from Pulp Mill Emissions in Micrograms/Meter^3*	205	310
Calculated Maximum 24 Hour Average Concentration when Pulp Mills are in Compliance to Proposed Regulations*	205**	240
*Estimate at 2 kilometers downwind **Estimate is unchanged for Sitka mill after compliance due to calculated effect of recovering 90% of sulfite waste liquor to comply with water quality regulations.		
Alaska and National Secondary Ambient Air Standards for SO_2; 24 hour average not to be exceeded.	260	

2. Calculations for (1) Alaska Lumber & Pulp Co. and (2) Ketchikan Pulp Co. Emissions

SO_2 Emissions from Sulfite Liquor Recovery Furnaces

Assumptions:
a. emission factor = 30 # SO_2/ton Pulp
b. operational hours = 8150 hrs/year
340 days/year
c. % liquor recovered = (1) 65%
= (2) 94%
d. output = (1) 600 tons Pulp/day
= (2) 670 tons Pulp/day

Calculations:

(1) a. $\frac{600 \text{ ton Pulp}}{\text{day}} \times .65 \times \frac{30\# \ SO_2}{\text{ton Pulp}} \times \frac{340 \text{ days}}{\text{year}} \times \frac{\text{ton } SO_2}{2000\# \ SO_2}$

= 2.0×10^3 ton SO_2/year = 67 gm SO_2/sec.

b. check from emission inventory registration figures for Alaska Lumber and Pulp Co. - 400 ppm SO_2 in 90,000 SCFM Exhaust.

$\frac{90{,}000 \text{ SCF}}{\text{MIN.}} \times 4 \times 10^{-4} \times \frac{28.3 \text{ l}}{\text{SCF}} \times \frac{\text{mole}}{22.4 \text{ l}} \times \frac{64 \text{ gm } SO_2}{1} \times \frac{\text{MIN.}}{60 \text{ sec.}}$

= 49 gm SO_2/sec. = 1.6×10^3 ton SO_2/year

(2) $\frac{670 \text{ ton Pulp}}{\text{day}} \times .94 \times \frac{30\# \ SO_2}{\text{ton Pulp}} \times \frac{340 \text{ day}}{\text{year}} \times \frac{\text{ton } SO_2}{2000\# \ SO_2}$

= 3.2×10^3 ton SO_2/year = 100 gm SO_2/sec.

SO_2 Emissions from Boilers

Assumptions:
a. emission factors = 1# SO_2/ton wood-waste
= (1) $\frac{.034\# \ SO_2}{\text{lb.Oil}}$
= (2) $\frac{.026\# \ SO_2}{\text{lb.Oil}}$
b. operational hours = 8150 hrs/year
= 340 days/year
c. fuel oil use = (1) 1000 BBL/day
(2) 13.6×10^6 gal/year
d. wood-waste fuel use = (1) 320,000 lb/day
(2) proportional to "(1)" by ratio of production rates
e. production rate = (1) $\frac{600 \text{ ton Pulp}}{\text{day}}$
= (2) $\frac{670 \text{ ton Pulp}}{\text{day}}$

(1) emissions from wood-waste burning:

$$\frac{320{,}000 \text{ lbs.}}{\text{day}} \times \frac{340 \text{ day}}{\text{year}} \times \frac{\text{ton}}{2000 \text{ lb.}} \times \frac{1\# \ SO_2}{\text{ton}} \times \frac{1 \text{ ton } SO_2}{2000\# \ SO_2} = \frac{26 \text{ ton } SO_2}{\text{year}}$$

$$= \frac{.79 \text{ gm } SO_2}{\text{sec.}}$$

emissions from oil burning:

$$\frac{1{,}000 \text{ BBL}}{\text{day}} \times \frac{340 \text{ day}}{\text{year}} \times \frac{42 \text{ gal.}}{\text{BBL}} \times \frac{8 \text{ lb.Oil}}{\text{gal.}} \times \frac{.0344\# \ SO_2}{\text{lb.Oil}} \times \frac{\text{ton } SO_2}{2000\# \ SO_2}$$

$$= \frac{2000 \text{ ton } SO_2}{\text{year}} = \frac{61 \text{ gm } SO_2}{\text{sec.}}$$

Totals = 26 ton SO_2/year + 2000 ton SO_2/year $\simeq \frac{2000 \text{ ton } SO_2}{\text{year}} \simeq \frac{62 \text{ gm } SO_2}{\text{sec.}}$

(2) emissions from wood-waste burning:

$$\frac{26 \text{ ton } SO_2}{\text{year}} \times \frac{670 \text{ ton Pulp/Day}}{600 \text{ ton Pulp/Day}} = \frac{29 \text{ ton } SO_2}{\text{year}} = .88 \text{ gm } SO_2/\text{sec.}$$

emissions from oil burning:

$$13.6 \times 10^6 \text{ gal.} \times \frac{8 \text{ lb.Oil}}{\text{gal.}} \times \frac{.026\# \ SO_2}{\text{lb. Oil}} \times \frac{\text{ton } SO_2}{2000\# SO_2} =$$

$$1.4 \times 10^3 \ \frac{\text{ton } SO_2}{\text{year}} = 43 \text{ gm } SO_2/\text{sec.}$$

Totals = 29 ton SO_2/year + 1400 ton SO_2/year $\simeq 1400 \ \frac{\text{ton } SO_2}{\text{year}} \simeq 44$ gm SO_2/sec.

Plume Rise Calculations and Effective Stack Heights

Assumptions:
a. stack heights, h = (1) 40 meters, all stacks
(2) 45 meters, boilers -
42 meters, process stacks
effective stack height, $h = h + \Delta H$
b. plume rise given by Holland formula

$$\Delta H = \frac{Vd}{u}\left[1.5 + 2.69 \times 10^{-3} \ p\left(\frac{Ts-Ta}{Ts}\right) d\right]$$

c. exit gas velocity, V = (1) 20.4 meter/sec, boiler
10 meter/sec, recovery
(2) 10 meter/sec, all stacks
d. u, wind speed = 1 meter/sec.
e. P, atmospheric pressure = 1000 mb
f. Ts, exit temperature = (1) 322°K, sulfite recovery
535°K, boilers

(2) 322°K, sulfite recovery
480°K, boilers

g. Ta, ambient temperature = 288°K

h. stack diameter, d, = (1) 1.8 meter, all stacks
(2) 1.8 meter, sulfite liquor recovery
3.5 meter, boiler

Calculations:

(1) SWL Recovery Furnaces

h = 40 meters

$$\Delta H = \frac{(20.0)(1.8)}{1}\left[1.5 + 2.69 \times 10^{-3}\ (1000)\left(\frac{322-288}{322}\right)(1.8)\right]$$

ΔH = 38 meters

H = 40 + 38 = 78 meters

Boilers

h = 40 meters

$$\Delta H = \frac{(20.4)(1.8)}{1}\left[1.5 + 2.69 \times 10^{-3}(1000)\left(\frac{535-288}{535}\right)(1.8)\right]$$

ΔH = 135 meters

H = 175 meters

(2) SWL Recovery Furnaces

h = 42 meters

ΔH = 38 meters

H = 80 meters

Boilers

h = 45 meters

$$\Delta H = (10)(3.5)\left[1.5 + 2.69 \times 10^{-3}\ (1000)\left(\frac{480-288}{480}\right)(3.5)\right]$$

ΔH = 185 meters

H = 45 + 185 = 230 meters

Predicted Ambient Concentration of SO_2

Assumptions: a. effective stack heights = (1) 78 meter, SWL;
175 meter, Boilers
(2) 80 meter, SWL;
230 meter, Boilers

b. height at which concentration is to be estimated = 20 meters

c. net effective stack heights = (1) 60 meters & 155 meters
(2) 60 meters & 210 meters

d. emission rates = (1) 62 gm/sec., SWL;
80 gm/sec., Boilers
(2) 100 gm/sec., SWL;
64 gm/sec., Boilers

e. 24 hour average concentration estimated using pg. 14 of P.H.S. publication #999-AP-26 and

$$X_{\text{max. 24 hour}} = \frac{X}{Q}\ u \times \frac{Q}{(u)(7.8)}$$

where χ = 10 min. max. conc.
u = wind speed
Q = emission rate
$\frac{\chi u}{Q}$ = dimensionless parameter

(1) downwind concentration estimates

distance downwind	SWL, Q = 62 $\frac{\chi u}{Q}$	SWL, Q = 62 χ_{24} hour	Boilers, Q = 62 $\frac{\chi u}{Q}$	Boilers, Q = 62 χ_{24} hour	Total
.5 km.	$.22 \times 10^{-5}$	18µg/m^3	0	0	18 µg/m^3
1.	2.5	200	0	0	200
2.	2.5	200	$.5 \times 10^{-5}$	4 µg/m^3	204
3.	1.8	143	.19	15	158
4.	1.4	110	.26	21	131
5.	1.0	80	.30	24	104
10.	.37	30	.24	19	49

(2)

	SWL, Q = 100		Boilers, Q = 43		
.5 km.	$.22 \times 10^{-5}$	28µg/m^3	0		28 µg/m^3
1.	2.5	318	0		318
2.	2.5	318	0		318
3.	1.8	230	0		230
4.	1.4	180	$.025 \times 10^{-5}$	1.4µg/m^3	181
5.	1.0	128	.054	3	131
10.	.37	47	.12	7	54

3. Calculated Ambient SO_2 Concentrations after Compliance

Assumptions: a. emission factor = 20# SO_2/ton pulp

Calculations:

(2) calculated emissions

$$\frac{670 \text{ ton Pulp}}{\text{day}} \times \frac{20\# \ SO_2}{\text{ton pulp}} \times \frac{\text{ton } SO_2}{2000\# \ SO_2} \times \frac{340 \text{ day}}{\text{year}} = \frac{2.28 \times 10^3 \text{ ton } SO_2}{\text{year}}$$

$$= 71 \text{ gm/sec.}$$

effect on X max
24 hour

contribution of X max due to SWL process = 318 $\mu g/m^3$

therefore, reduction to $\frac{318 \ \mu g}{m^3} \times \frac{71}{100} = 242 \ \mu g/m^3$

(1) calculated emissions

$$\frac{600 \text{ ton Pulp}}{\text{day}} \times \frac{20\# \ SO_2}{\text{ton pulp}} \times \frac{\text{ton } SO_2}{2000\# \ SO_2} \times \frac{340 \text{ day}}{\text{year}} = 2.04 \times 10^3 \ \frac{\text{ton } SO_2}{\text{year}}$$

$$= 63 \text{ gm/sec.}$$

change in X max, 2 $\mu g/m^3$
24 hour

Boiler contribution to X max = 4 $\mu g/m^3$
SWL process contribution = 200
Emissions are essentially unchaged due to water quality regulations requiring additional SWL recovery, so X max = 205 $\mu g/m^3$
24 hour

SO_2 Concentration (See Graph, Next Page) as a Function or Elevation

Assumptions: a. distance from source = 1 km.
b. source is (2), Ketchikan Pulp Co.
c. procedures same as previous section

Calculations:

Waste Liquor Recovery	Boilers
Q = 100 gm SO_2/sec.	Q = 64 gm SO_2/sec.
Effective Stack Height, H = 80 meters	H = 230 meters

Elevation of receptor (meters)	SWL Recovery $\frac{\chi u}{Q}$	Max 24 hr. SO_2 Conc. (X max)	Wood-Waste Boilers $\frac{\chi u}{Q}$	X max	TOTAL ($\mu g/m^3$)
0	.8 x 10^{-5}	103 g/m^3	0	0	103
20*	2.5	318	0	0	318
40	6.5	830	0	0	830
60	12.0	1540	0	0	1540
80	15.0	1920	0	0	1920
100	12.0	1540	0	0	1540
120	6.5	830	.07	4	834
140	2.5	318	.2	11	329
160	.8	103	1.3	73	178
180	.1	13	3.5	195	208
200	0	0	10.0	550	550
220	0	0	14.0	790	790
240	0	0	14.0	790	790
260	0	0	10.0	550	550
280	0	0	3.5	195	195
300	0	0	1.3	73	73

*Elevation used for calculations in previous sections.

4. SO_2 Concentrations in Stack Gases from Boilers

Assumptions:

a.	emissions (SO_2)	= (1) 62 gram/sec (2) 43 gram/sec
b.	exit temperature	= (1) 500° F. (2) 385° F.
c.	stack diameters	= (1) 2 stacks, 6' (2) 11'
d.	H_2O(v) content of plumes	= 10%
e.	standard conditions	= 0% H_2O, 29.92" Hg, 520° R
f.	exit velocities	= (1) 67 ft/sec. (2) 30 ft/sec.

Calculations:

(1) Gas flow, liters/sec, one stack -

$$\pi\ (9\ ft^2) \times \frac{67\ ft}{sec} \times (.9) \times \frac{520°\ R}{960°\ F} \times \frac{28.32\ \ell}{ft^3} = \frac{2.6 \times 10^4\ \ell}{second}$$

SO_2 flow, liters/sec., one stack, Q = 31 gms/sec.

$$\frac{40\ gm}{sec} \times \frac{mole}{64gm} \times \frac{24.2\ \ell}{mole} = 11.5\ \ell/sec.$$

SO_2 Concentration in ppm -

$$\frac{11.1}{2.6 \times 10^4} = 4.5 \times 10^{-4} = 450\ ppm$$

(2) Gas flow in liters/sec.

$$\pi\ (30\ ft^2) \times \frac{30\ ft}{sec} \times (.9) \times \frac{520°\ R}{845°\ R} \times \frac{28.32\ \ell}{ft^3} = \frac{4.5 \times 10^4\ \ell}{sec.}$$

SO_2 flow -

$$\frac{43\ gram}{sec.} \times \frac{mole}{64gm} \times \frac{24.2\ \ell}{mole} = \frac{16\ liter}{sec.}$$

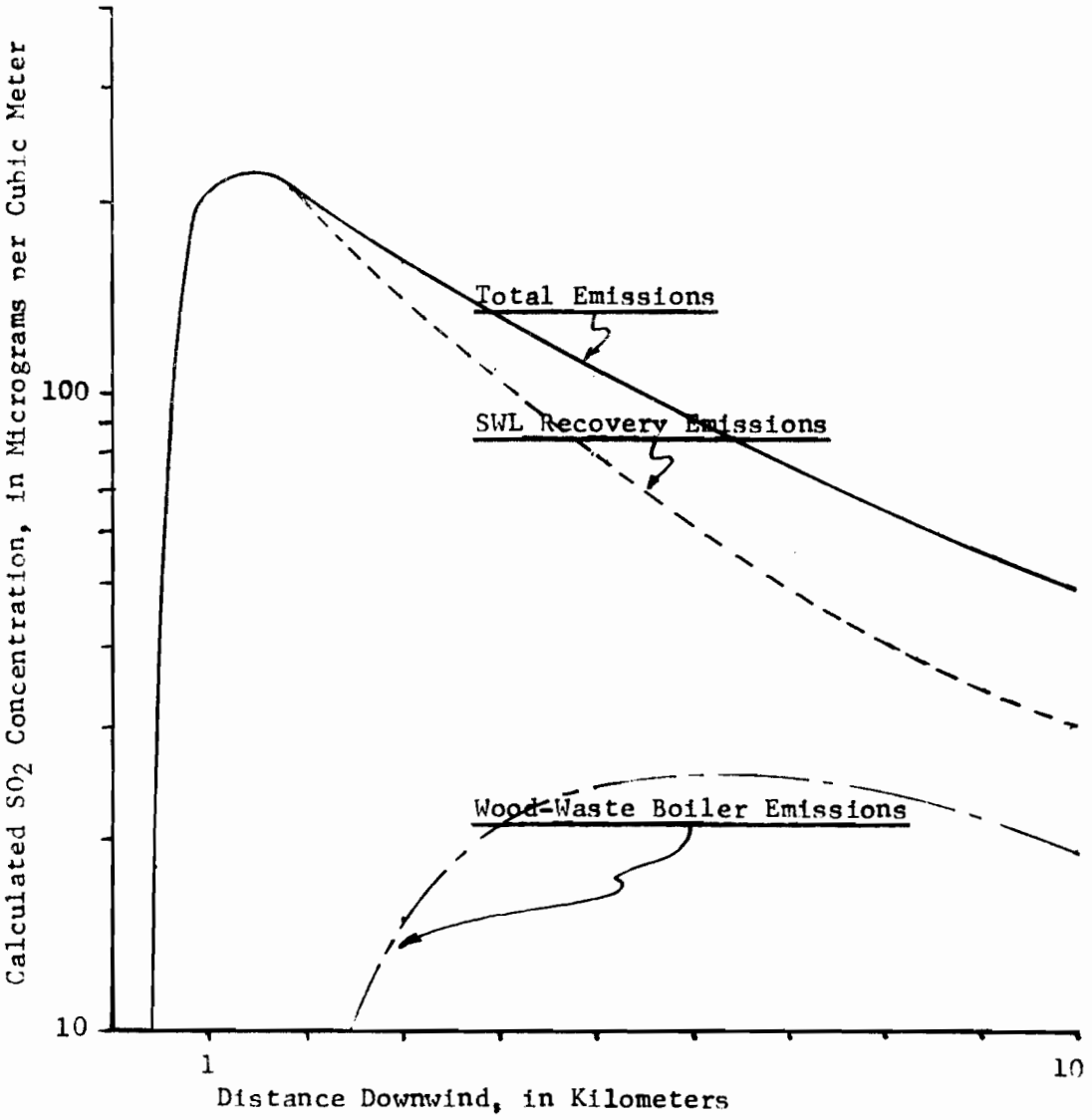
SO_2 Concentration in ppm -

$$\frac{16}{4.5 \times 10^4} = 3.6 \times 10^{-4} = 360\ ppm$$

Therefore, no reduction of sulfur content in fuel is necessary to meet 500 ppm requirement for boilers.

FIGURE VII.8.1

Calculated Maximum 24 Hour Average Concentration of SO_2 as a Function of Downwind Distance from the Alaska Lumber & Pulp Co., Silver Bay, Alaska



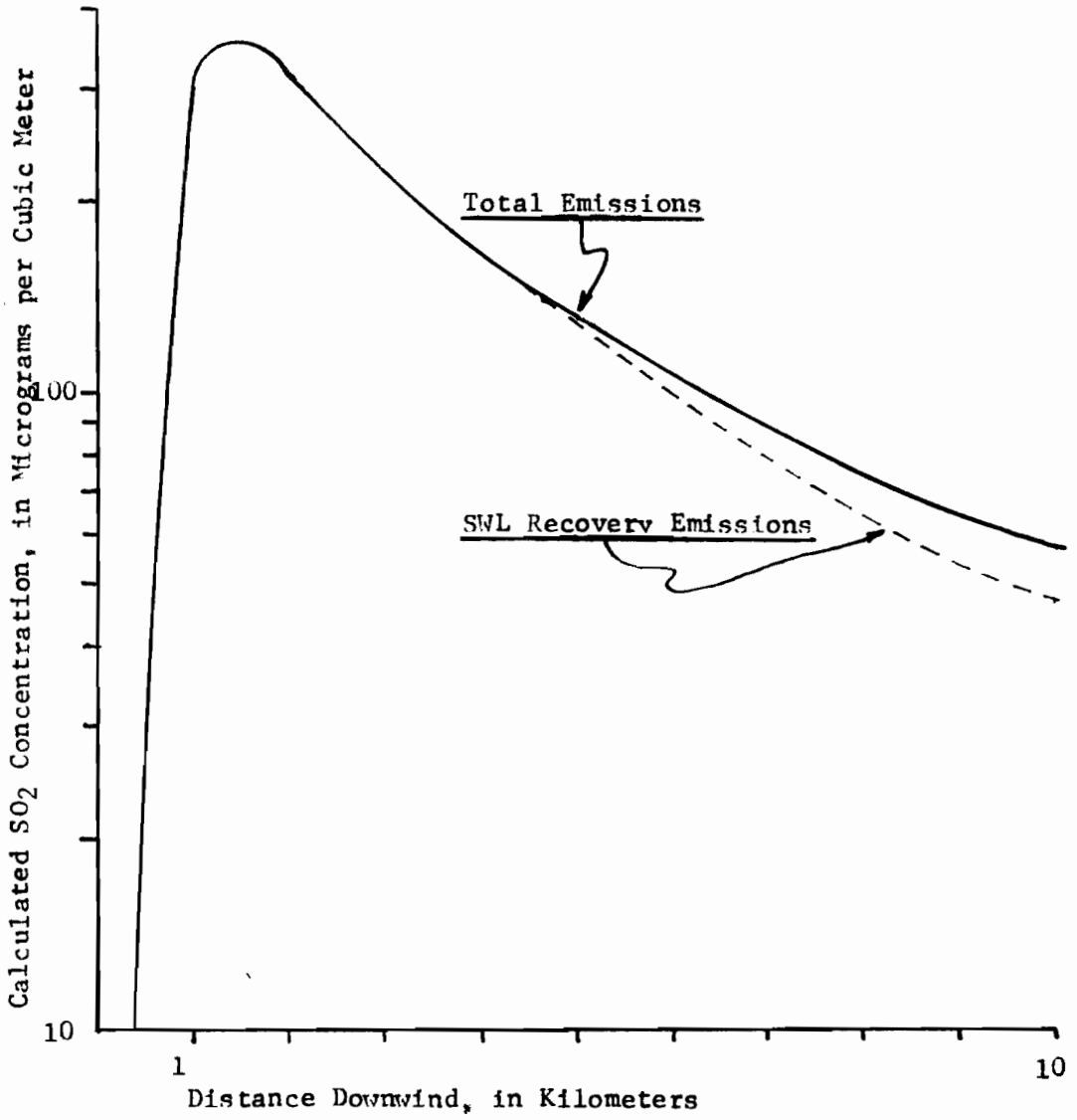
Meteorological Assumptions:
- Stability Class "D"
- Wind of 1 meter/second

Net Effective Stack Heights:
- SWL Recovery, 60 meters
- Wood-Waste Boilers, 155 meters

SO_2 Emissions:
- SWL Recovery, 62 grams/second
- Wood-Waste Boilers, 80 grams/second

FIGURE VII.8.2

Calculated Maximum 24 Hour Average Concentration of SO_2 as a Function of Downwind Distance from the Ketchikan Pulp Co., Ward Cove, Alaska



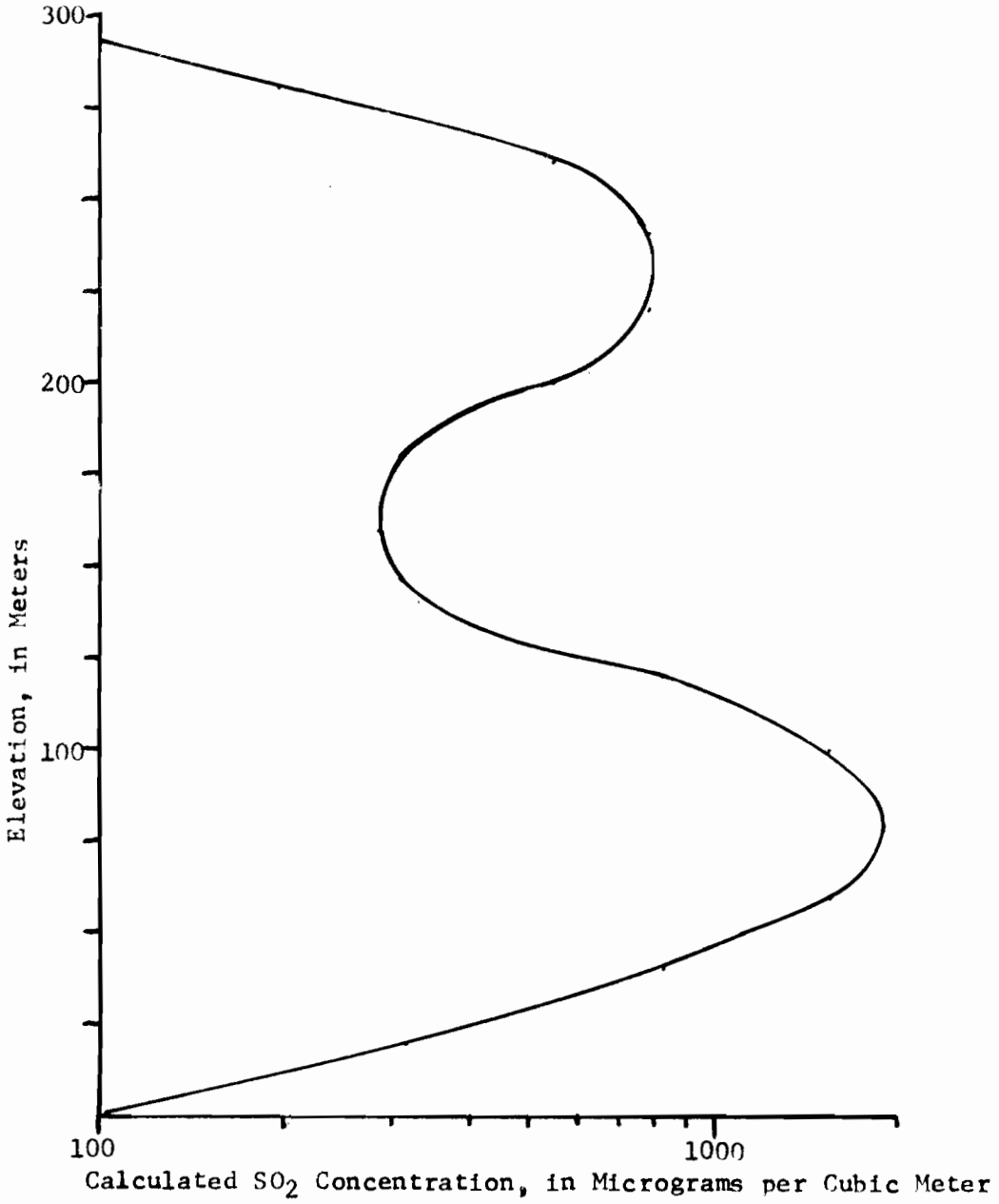
Meteorological Assumptions:
- Stability Class "D"
- Wind of 1 meter/second

Net Effective Stack Heights:
- SWL Recovery, 60 meters
- Wood-Waste Boilers, 210 meters

SO_2 Emissions:
- SWL Recovery, 100 grams/second
- Wood-Waste Boilers, 64 grams/second

FIGURE VII.8.3

Calculated SO_2 Concentration vs. Elevation, 1 Kilometer Downwind of the Ketchikan Pulp Co.



Meteorological Assumptions:
Stability Class "D"
Wind of 1 meter/second

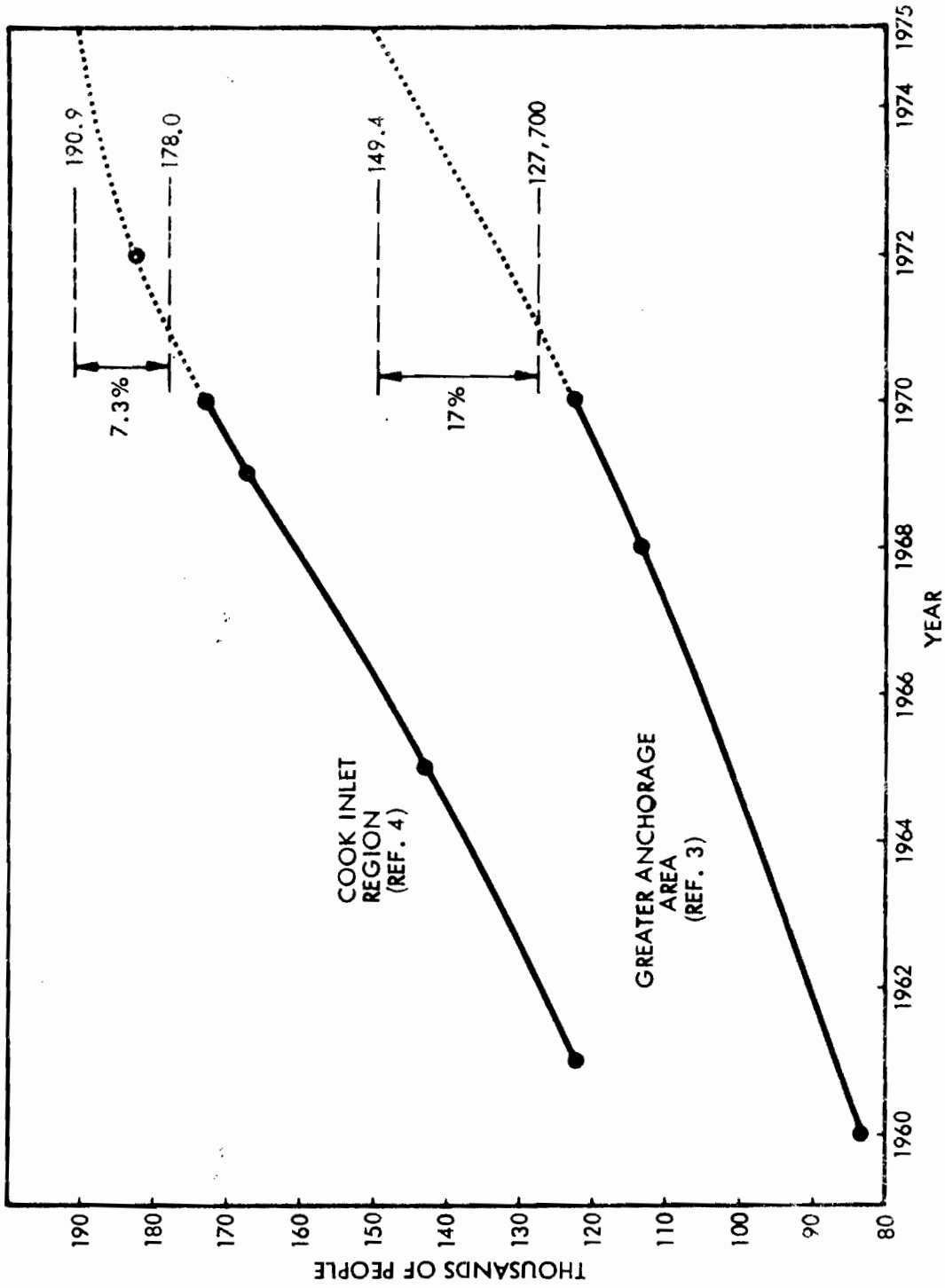


Figure VII.9.1 Population Growth in the Anchorage Area

APPENDIX VIII

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