3.6 Identification and Designation of Air Quality Maintenance Areas

Introduction

Section 51.12 Control Strategy: General (formerly Section 420.12) of the Requirements for Preparation, Adoption, and Submittal of Implementation Plans was revised on June 18, 1973 (Federal Register, Volume 38, p. 15834). The revisions require that the State Implementation Plan shall identify those areas (counties, urbanized areas, standard metropolitan statistical areas, etc.) which, due to current air quality and/or projected growth rate, may have the potential for exceeding any National Ambient Air Quality Standard within the 10-year period between 1975 and 1985. Such areas identified are referred to as "Air Quality Maintenance Areas" - AQMA's.

After a public hearing, the State must submit a listing of those potential problem areas proposed for designation as AQMA's to the U.S. Environmental Protection Agency. After review of the listing and supporting information submitted by the State, the U.S. Environmental Protection Agency will publish a final listing of areas designated as AQMA's in the Federal Register by June 18, 1974.

By June 18, 1975, the State must submit a detailed analysis of the impact on air quality over the 10-year period from 1975 to 1985 of projected growth in each potential problem area designated as an AQMA by the U.S. Environmental Protection Agency. Where necessary, the State must also submit plans to prevent any National Ambient Air Quality Standard from being exceeded over the 10-year period 1975 to 1985. Such a plan shall include, as necessary, control strategy revisions and/or measures to insure that projected growth and development will be compatible with maintenance of the National Standards throughout the 10-year period.

The required analysis will have to deal with all the significant air quality implications of growth and development, including not only the increased air pollution arising directly from new commercial, industrial, and residential development, but also that arising from increases in demand for electricity and heat, motor vehicle traffic, and production of solid waste.

The revision also requires that at 5-year intervals, the area identifications shall be reassessed to determine if additional areas should be designated AQMA's and that the plans submitted to maintain the National Standards shall be reanalyzed and revised where necessary.

There are three types of areas which are candidates for Air Quality Maintenance Area designation. These are the Standard Metropolitan Statistical Areas (SMSA's), Natural Resource Development Areas (NRDA's), and Special Development Areas (SDA's), which have the potential for exceeding any National Ambient Air Quality Standard by 1985. Each area proposed for designation as an AQMA may be designated for one or more of the following five air pollutants on an individual basis: total suspended particulate matter, sulfur dioxide, carbon monoxide, photochemical oxidants and nitrogen dioxide.

To assist the States in identifying areas they propose to designate as AQMA's, the U.S. Environmental Protection Agency has published the guidelines document "Guidelines for Designation of Air Quality Maintenance Areas." This is the first of three guidelines to assist the States in establishing regulations and procedures to insure maintenance of air quality standards. The second guidelines document in the series will

cover in-depth analysis of emissions and air quality, and the third will cover development of the 10-year maintenance plans. These are scheduled to be published in May and August of 1974, respectively.

The document "Guidelines for Designation of Air Quality Maintenance Areas" presents techniques to project air pollutant emissions and air quality concentrations for Standard Metropolitan Statistical Areas. These techniques employ demographic and economic projections in estimating future emissions. The U.S. Environmental Protection Agency has furnished such projections on the basis of SMSA's. These SMSA projections were developed by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA) in the publication, Population and Economic Activity in the United States and Standard Metropolitan Statistical Areas - Historical and Projected - 1950-2020, July 1972.

The document "Guidelines for Designation of Air Quality Maintenance Areas" provides criteria for testing an SMSA for automatic inclusion or exclusion as an AQMA for each of the air pollutants specified. For those SMSA's which are not automatically included or excluded, the guidelines document provides techniques to project and to predict emissions and air quality to 1985 to determine if any National Ambient Air Quality Standard may be exceeded.

No guidance is included in the guidelines document relative to NRDA's and SDA's. Analysis of these areas will, of necessity, have to be conducted on a case by case basis. Generally, there are three steps which should be followed in the analytical procedure to determine whether or not a Natural Resource Development Area or Special Development Area should be designated. The first step involves compiling the latest

information on possible development in the area and reviewing the emission data and air quality information, or the estimated emissions if no actual data is available. The second step involves projecting these emissions to 1985. The third step involves air quality modeling in the area based on these projected emissions to determine whether or not there is the potential for the violation of any of the National Ambient Air Quality Standards by 1985 or earlier.

It should be borne in mind that this designation process is the first step of a more detailed analytical procedure to follow in 1974 and 1975. Following designation. a detailed analysis will be performed of each of the areas designated Air Quality Maintenance Areas, and subsequently, if necessary, a "maintenance plan" for each designated area will be developed by the State.

Designation of AQMA's

The North Dakota State Department of Health has identified and proposes for designation two Air Quality Maintenance Areas in the State of North Dakota which due to current air quality and projected growth rate or potential natural resource development may have the potential for exceeding the National Ambient Air Quality Standards for total suspended particulate matter, sulfur dioxide, and nitrogen dioxide within the 10-year period between 1975 and 1985.

Cass County, the only Standard Metropolitan Statistical Area (SMSA) in the State, is proposed for designation as an AQMA for total suspended particulate matter due to current air quality and projected growth rate. Cass County is also the North Dakota portion of the Metropolitan Fargo-Moorhead Interstate Air Quality Control Region, Region No. 130, (Cass County, North Dakota-Clay County, Minnesota).

McLean, Mercer, and Oliver Counties are proposed for designation as an AQMA for total suspended particulate matter, sulfur dioxide, photochemical oxidants, and nitrogen dioxide. These three counties are slated for large scale lignite coal development in the fields of mining, electrical power generation, and coal gasification in the near future and can be classified as a National Resource Development Area (NRDA) and as such they qualify for proposed designation as an AQMA.

A summary table of the area proposed for designation as AQMA's follows:

SUMMARY OF AQMA DESIGNATIONS
FOR THE
STATE OF NORTH DAKOTA

AQMA Area	Reason Designated	Designation for				
		TSP	SO_2	CO	O_x	NO_2
Cass County (SMSA)	Initial Criteria	X				
McLean, Mercer Oliver Counties (NRDA)	Potential Lignite Coal Energy Development	X	X		X	X

It should be noted that in the proposed designation, the Air Quality Maintenance Areas are identified by county-political boundaries because the bulk of information to be used for later analysis must include economic and demographic projections. For the most part, those bodies of information are available by county-political boundary as a minimum.

It should be emphasized that wilderness areas and national parks are excluded by definition. These areas are not now, nor should they ever be, populated, developed or used in any way that would cause the increase of pollutants over existing levels and never approaching the National Secondary Ambient Air Quality Standards.

Discussion of Cass County AQMA Designation

Cass County is proposed for designation as an AQMA for total suspended particulate matter due to current air quality and projected growth rate.

There are three total suspended particulate matter sampling stations located in Cass County. Two are located in the City of Fargo with one being a Commercial Station (Station No. 35040001) and the other being an Industrial Station (Station No. 35040002). The other sampling station is a Rural Station (Station No. 35022001) located south of Fargo. The results of the total suspended particulate sampling for 1971, 1972, and 1973 are shown in the following table. In 1973, the National Primary Standard of 75 micrograms/cubic meter, annual geometric mean, was exceeded at the Industrial Station and in 1971 and 1972 the National Secondary Standard of 60 micrograms/cubic meter, annual geometric mean, was exceeded at the Industrial Station. All three stations exceeded the National Primary Standard of 260 micrograms/cubic meter, second highest 24-hour average per year in 1973. Based on the existing air quality data for total suspended particulate matter, it appears that the Secondary Standards may not be attained or maintained for the next several years. The projected growth in the Cass County-Clay County Standard Metropolitan Statistical Area from 1975 to 1985 in population is estimated to be 10 percent, in total earnings 48 percent and in manufacturing earnings 40 percent. Consequently, it can be expected that emissions will also increase from 1975 to 1985 if emission standards remain the same. Because of the current air quality above the National Secondary and Primary Standards and projected growth rate, Cass County is unable at this time to demonstrate attainment of the National Secondary Standards for total suspended particulate matter and it will initially qualify for designation as an AQMA.

Air quality sampling data for sulfur dioxide during 1971, 1972, and 1973 indicate the annual arithmetic mean for sulfur dioxide is less than 25 micrograms/cubic meter. The highest 24-hour average was 70 micrograms/cubic meter and the second highest 24-hour average was 33 micrograms/cubic meter. These values are well below the National Primary Standards of 80 micrograms/cubic meter, annual arithmetic mean, and 365 micrograms/cubic meter, second highest 24-hour average per year. The product of the actual air quality concentrations and the relative growth in SMSA total earnings between 1975 and 1985 of 1.48 (48 percent) would still be less than the National Standards. Therefore Cass County can be automatically excluded from consideration as an AQMA for sulfur dioxide on the basis of initial designation criteria.

Region No. 130, the Metropolitan Fargo-Moorhead Interstate Air Quality Control Region, which includes Cass County, has been classified Priority III with respect to carbon monoxide, photochemical oxidants, and nitrogen dioxide. The basis for these classifications was that there were no urban areas in the region whose 1970 "urban place" population, as defined by the U.S. Bureau of Census, exceeded 200,000. The total population of the region in 1970 was 120,474. The projected population in 1985 is 134,200 which is still below 200,000.

The existing air quality for carbon monoxide, photochemical oxidants, and nitrogen dioxide is estimated to be less than National Secondary Ambient Air Quality Standards in the region. No control strategy is required for the SMSA for photochemical oxidants by the U.S. Environmental Protection Agency. Therefore Cass County qualifies for exclusion as an AQMA for carbon monoxide, photochemical oxidants, and nitrogen dioxide on the basis of initial designation criteria.

The Minnesota Pollution Control Agency has indicated that they will propose Clay County, the Minnesota portion of the SMSA, for designation as an AQMA for total suspended particulate matter. The North Dakota State Department of Health will coordinate all detailed analysis activities and maintenance plan development activities with the Minnesota Pollution Control Agency.

Total Suspended Particulate Matter Air Quality Data Summary
High-Volume Samplers
Cass County

Sampling Station	Year	Annual Geometric Mean Micrograms/Cubic Meter	Maximum 24-Hour Sample Micrograms/Cubic Meter	Second Highest 24-Hour Sample Micrograms/Cubic Meter
Commercial	1971	50	1089	170
(No. 35040001)	1972	50	154	140
	1973	56	422	337
Industrial	1971	69	256	195
(No. 35040002)	1972	65	310	180
	1973	81	272	271
Rural	1971	37	196	190
(No. 35022001)	1972	33	156	103
	1973	48	488	271

Discussion of McLean, Mercer, Oliver Counties AQMA Designation

North Dakota has an estimated total lignite coal resource of about 351 billion tons located in 23 counties in the Western part of the State. Of this amount, approximately 32 billion tons are considered to be potentially strippable. Fifteen billion tons of the 32 billion are in beds five feet or more thick and 100 feet or less below the surface. Coupled with the large lignite coal resources are the abundant water resources available from Lake Sakakawea, the Missouri River and its tributaries.

Several factors have recently stimulated interest in the large scale acquisition and development of North Dakota lignite coal reserves and water resources. One important factor is the increasing need for electric power. Major power markets are expected to develop, perhaps through extra high-voltage interties with more populous regions, and will require substantial additions to thermal power generating capacities. Another factor stimulating interest, especially in large strippable blocks of low-cost lignite and water from Lake Sakakawea, is the impending development of economic processes for the conversion of solid fuels to liquid and gaseous hydrocarbon fuels. This development has been stimulated by the growing shortages of crude oil and natural gas and the recent "energy crises" in the United States.

During 1973 several corporations have announced plans for large scale lignite coal development and associated lignite coal gasification and electrification projects in Southwestern North Dakota.

The counties of McLean, Mercer, and Oliver are slated for the initial lignite coal development and several projects have finalized site locations

in these three counties. The majority of the existing lignite mines and electrical power facilities in the State are also located in these three counties.

Existing lignite coal fired electrical power generating facilities in the three counties include Montana-Dakota Utilities' 14 megawatt plant at Beulah in Mercer County, Basin Electric Power Cooperative's 212 megawatt plant at Stanton in Mercer County, United Power Association's 172 megawatt plant at Stanton in Mercer County, and Minnkota Power Cooperative's 234 megawatt plant at Center in Oliver County.

Electrical power generating facilities under construction or proposed for the three counties include Basin Electric Power Cooperative's 440 megawatt second unit under construction at Stanton in Mercer County scheduled to start operation in September of 1975, Minnkota Power Cooperative's 400 megawatt second unit under construction at Center in Oliver County scheduled to start operation in May of 1977, United Power Association's two unit-900 megawatt plant proposed for Underwood in McLean County with the first 450 megawatt unit scheduled for operation in late 1978 and the second 450 megawatt unit scheduled for operation in late 1979, and Montana-Dakota Utilities' three unit-1320 megawatt plant proposed for Beulah in Mercer County with the first 440 megawatt unit scheduled for operation in 1981 and the second 440 megawatt unit scheduled for operation in 1985, with the scheduled date for operation of the third 440 megawatt unit unknown. In addition, Michigan-Wisconsin Pipeline Company has selected a site north of Beulah in Mercer County to build the first lignite coal gasification complex in the State. This plant would produce 250 million cubic feet per day of synthetic gas and consume 10 to 12 million tons a year of lignite coal and 17,000 acre-feet a year of water from Lake Sakakawea. This gasification plant is scheduled to

begin operation in 1980.

The mining, gasification, and generation of electrical power using lignite coal will result in the emission of large quantities of total suspended particulate matter, sulfur dioxide, and nitrogen dioxide as well as other air contaminants, the quantities and effects of which on ambient air quality and the environment are not known at this time. Photochemical oxidants could also become a problem if hydrocarbon emissions from coal gasification plants are not tightly controlled. The combination of hydrocarbon and nitrogen oxide emissions, with the high percentage of sunny days, provides all the ingredients needed to form photochemical oxidants. The three counties of McLean, Mercer, and Oliver therefore constitute a Natural Resource Development area and thus qualify for initial designation as an Air Quality Maintenance Area.

Several other companies have indicated interest in developing lignite coal reserves in Southwestern North Dakota for electrical power generation and gasification. It is anticipated that it will be necessary to propose additional counties for designation as AQMA's in the future as plans for lignite coal development become more definite and plant site locations are selected. These additional counties include Adams, Billings, Burleigh, Bowman, Dunn, Golden Valley, Grant, Hettinger, Morton, Slope, and Stark. Development activities will be monitored closely in these counties.

The counties of Morton and Burleigh, in addition to having large lignite coal reserves which may be developed, contain the metropolitan area of Bismarck and Mandan. The Bismarck-Mandan metropolitan area is projected to experience rapid population growth due to the lignite coal development in the rural counties of Southwestern North Dakota. It is also located downwind

from the power developments in McLean, Mercer, and Oliver counties. For these reasons the counties of Burleigh and Morton and the cities of Bismarck and Mandan will be monitored and evaluated very closely for possible problems developing and the necessity of proposing them for designation as AQMA's

Timetable and Methods

The methods used to produce the detailed analyses and the maintenance plans to insure attainment and maintenance of the National Ambient Air Quality Standards for the 10-year period from 1975 to 1985 within the two Air Quality Maintenance Areas will be in accordance with the guidelines to be published and/or provided by the U.S. Environmental Protection Agency. The required information will be submitted to the U.S. Environmental Protection Agency, after public hearings tentatively scheduled for May of 1975, by June 18, 1975.

Table 3. Suspended Particulate Air Quality Data Summary
High-Volume Sampler

Micrograms per Cubic Meter

Air Quality Control Region	Sampling Site	Sampling Site Location	Sampling Interval (Months)	Start Date	End Date	Number of Samples	Maximum 24 hrs.	Annual Arithmetic Mean	Standard Deviation	Annual Geometric Mean	Standard Geometric Deviation
Region No. 130	Fargo 35040001	Zone 14 5,193,860 N. 668,880 E.	12	1/6/70	12/7/70	26	171	52	31.88	45	1.73
	Moorhead	Zone 14 5,193,200 N. 669,800 E.	12	1/70	12/70	138	378	84	-	71	-
Region No. 172	Bismarck 35010001	Zone 14 5,185,000 N. 363,830 E.									
	EPA,NASN		12	1/2/70	12/14/70	26	211	96	52.58	79	1.99
	State Dept. of Health		5	7/30/70	12/14/71	12	136	70	28.95	64	1.52
	Devils Lake 35026001	Zone 14 5,328,750 N. 510,000 E.	12	1/8/70	12/15/70	26	167	58	31.90	51	1.70
	Dickinson 35030001	Zone 13 5,194,000 N. 668,520 E.	12	1/7/70	12/15/70	25	126	55	29.71	46	2.01
	Grand Forks 35046001	Zone 14 5,309,190 N. 647,619 E.	12	1/8/70	12/14/70	24	148	60	34.39	53	1.69
	Mandan 35074001	Zone 14 5,187,550 N. 355,810 E.	3	10/6/70	12/14/70	6	83	50	23.93	42	2.03
	Minot 35078001	Zone 14 5,345,300 N. 329,430 E.	12	1/23/70	12/14/70	24	272	65	61.51	46	2.24
	Wahpeton 35126001	Zone 14 5,127,190 N. 694,360 E.	2	10/27/70	12/14/70	5	324	104	125.55	65	2.97
	Foxholm 35130001	Zone 14 5,370,000 N. 308,650 E.	12	1/2/70	12/22/70	25	49	24	13.69	19	2.11
	Williston 35136001	Zone 13 5,333,310 N. 602,910 E.	7	5/29/70	12/14/70	16	86	38	22.05	27	3.00

Table 4. Sulfur Dioxide Air Quality Data Summary

Micrograms per Cubic Meter

Air Quality Control Region	Sampling Site	Sampling Site Location	Sampling Interval (Months)	Start Date	End Date	Number of Samples	Maximum 24 hrs.	Maximum One Month	Annual Arithmetic Mean	Annual Geometric Mean
Region No. 130	Estimated	Area and Point Models	-	-	-	-	<260	-	<60	-
	Fargo 35040001	Zone 14 5,293,200 N. 668,200 E.								
	Sulfation		12	12/31/69	12/31/70	12	-	85	25	16
	SO_2 bubbler		8	3/2/71	11/6/71	49	70	-	<50	<50
	Moorhead 35060001	Zone 14 5,193,200 N. 689,800 E.								
	Sulfation		8	5/1/70	12/31/70	8	-	69	27	20
Region No. 172	Estimated.	Area and Point Models	-	-	-	-	<260	-	<60	-
	Bismarck 35010001	Zone 14 5,165,200 N. 353,800 E.								
	Sulfation		12	1/2/70	12/31/70	12	-	95	24	11
	Devils Lake 35026001	Zone 14 5,328,750 N. 510,000 E.								
	Sulfation		12	1/7/70	12/31/70	12	-	58	12	6
	Dickinson 35030001	Zone 13 5,134,200 N. 668,520 E.								
	Sulfation		12	1/6/70	1/4/71	12	-	26	11	5
	Grand Forks 35046001	Zone 14 5,339,150 N. 647,619 E.								
	Sulfation		12	1/8/70	1/4/71	12	-	114	32	18
	Mandan 35074001	Zone 14 5,187,550 N. 353,810 E.								
	Sulfation		3	10/1/70	12/31/70	3	-	7	5	3
	Minot 35078001	Zone 14 5,345,200 N. 329,430 E.								
	Sulfation		12	12/30/69	12/31/70	12	-	22	9	6
	Wahpeton 35120001	Zone 14 5,127,100 N. 664,360 E.								
	Sulfation		2	10/30/70	12/31/70	2	-	10	7	5
	Fairbain 35130001	Zone 14 5,370,200 N. 308,650 E.								
	Sulfation		12	1/1/70	12/31/70	12	-	39	9	4
	Williston 35130001	Zone 13 5,393,300 N. 602,810 E.								
	Sulfation		8	5/11/70	1/4/71	8	-	42	11	7

NOTE: Sulfation data was converted from milligrams sulfur trioxide per 100 square centimeters per day to micrograms sulfur dioxide per cubic meter using the factor: 1 mg SO_3/100 cm^2/day = 0.035 p.p.m. SO_2 = 100 μg SO_2/m^3.

Table 5. Particulate Emissions Inventory Summary Tons/Year
Region No. 130, Metropolitan Fargo-Moorhead Interstate
Air Quality Control Region

Data Representative of Calendar Year 1970

Source Category	[illegible]			[illegible]			[illegible]			Region Total		
	Existing Emissions 1972	Allowable Emissions 1975	Emissions Achieved 1975	Existing Emissions 1972	Allowable Emissions 1975	Emissions Achieved 1975	Existing Emissions 1972	Allowable Emissions 1975	Emissions Achieved 1975	Existing Emissions 1972	Allowable Emissions 1975	Emissions Achieved 1975
I. Fuel Combustion-Stationary Sources:												
A. Residential Fuel-Area Sources:												
1. Bituminous Coal	0	0	0	0	0	0	77	77	77	77	77	77
2. Distillate Oil	23	23	24	6	6	6	94	94	99	117	117	123
3. Natural Gas	12	12	13	12	12	13	4	4	4	16	16	17
4. LPG	9	9	9	2	2	2	0	0	0	9	9	9
5. Total	44	44	46	20	20	21	175	175	180	219	219	226
B. Commercial, Institutional, and Industrial Fuel:												
1. Bituminous Coal												
a. Area Source	0	0	0	0	0	0	230	92	92	230	92	92
b. Point Source	1,401	172	0	1,124	140	0	3,444	357	357	4,845	529	357
2. Distillate Oil												
a. Area Source	47	47	54	7	7	8	6	6	7	53	53	61
b. Point Source	0	0	0	0	0	0	0	0	0	0	0	0
3. Residual Oil												
a. Area Source	0	0	0	0	0	0	24	24	28	24	24	28
b. Point Source	4	4	5	0	0	0	0	0	0	4	4	5
4. Natural Gas												
a. Area Source	15	15	17	15	15	17	7	7	8	22	22	25
b. Point Source	12	12	14	12	12	14	0	0	0	12	12	14
5. LPG-Area Source	2	2	2	1	1	1	0	0	0	2	2	2
6. Total	1,481	252	92	1,159	175	40	3,711	496	492	5,192	738	584
C. Steam-Electric Power Plant Fuel:												
1. Bituminous Coal	662	240	0	662	240	0	318	318	318	980	558	318
2. Residual Oil	0	0	0	0	0	0	0	0	0	0	0	0
3. Total	662	240	0	662	240	0	318	318	318	980	558	318
D. Total Stationary Fuel Combustion	2,187	536	138	1,842	415	40	4,204	979	990	6,391	1,515	1,128
II. Process Losses-Point Sources	14,922	717	830	2,073	100	116	1,547	91	105	16,469	808	935
III. Solid Waste Disposal:												
A. Incineration - On-Site Area Source	28	17	18	28	17	18	0	0	0	28	17	18
B. Open Burning - On-Site Area Source	126	0	0	9	0	0	292	0	0	418	0	0
C. Total Solid Waste Disposal	154	17	18	37	17	18	292	0	0	446	17	18
IV. Transportation-Area Sources:												
A. Motor Vehicles												
1. Gasoline	120	120	145	53	53	65	142	142	173	262	262	319
2. Diesel	64	64	78	28	28	34	27	27	33	91	91	111
B. Off-Highway Fuel Usage												
1. Gasoline	1	11	13	0	0	0	0	0	0	11	11	13
2. Diesel	8	8	9	0	0	0	0	0	0	8	8	9
C. Aircraft	44	44	52	0	0	0	0	0	0	44	44	52
D. Railroads	33	33	39	2	2	2	5	5	6	38	38	45
E. Total Transportation	269	280	337	83	83	101	174	174	212	454	454	549
V. Miscellaneous-Area Sources:												
A. Grain Elevators	1,109	321	371	439	118	131	0	0	0	1,188	321	371
VI. Grand Total:												
A. Area Source	1,730	726	845	601	261	297	908	478	527	2,638	1,204	1,372
B. Point Source	17,001	1,145	849	3,872	492	130	5,309	766	780	22,310	1,911	1,629
C. Total	18,731	1,871	1,694	4,473	753	427	6,217	1,244	1,307	24,948	3,115	3,001
Percent Reduction in Emissions		90.0	91.0		83.2	90.5		80.0	79.0		87.5	88.0

Table 6. Sulfur Dioxide Emission Inventory Summary, Tons/Year
Region No. 133, Metropolitan Fargo-Moorhead Interstate
Air Quality Control Region

Data Representative of Calendar Year 1970

Source Category	Basic Control (Fargo County) Existing Emissions 1970	Basic Control (Fargo County) Allowable Emissions 1975	Basic Control (Fargo County) Emissions Achieved 1975	Basic Control (Clay County) Existing Emissions 1970	Basic Control (Clay County) Allowable Emissions 1975	Basic Control (Clay County) Emissions Achieved 1975	Minnesota (Clay County) Existing Emissions 1970	Minnesota (Clay County) Allowable Emissions 1975	Minnesota (Clay County) Emissions Achieved 1975	Region Total Existing Emissions 1970	Region Total Allowable Emissions 1975	Region Total Emissions Achieved 1975
I. Fuel Combustion-Stationary Sources:												
A. Residential Fuel- Area Sources:												
1. Bituminous Coal	0	0	0	0	0	0	566	566	566	566	566	566
2. Distillate Oil	93	93	98	25	25	26	677	677	710	770	770	808
3. Natural Gas	0	0	0	0	0	0	0	0	0	0	0	0
4. LPG	0	0	0	0	0	0	0	0	0	0	0	0
5. Total	93	93	98	25	25	26	1,243	1,243	1,276	1,336	1,336	1,374
B. Commercial, Institutional, and Industrial Fuel:												
1. Bituminous Coal												
a. Area Source	0	0	0	0	0	0	719	719	719	719	719	719
b. Point Source	538	538	0	533	538	0	544	544	544	1,082	1,082	544
2. Distillate Oil												
a. Area Source	127	127	147	18	18	21	28	28	32	155	155	179
b. Point Source	0	0	0	0	0	0	0	0	0	0	0	0
3. Residual Oil												
a. Area Source	0	0	0	0	0	0	470	470	544	470	470	544
b. Point Source	27	27	31	0	0	0	0	0	0	27	27	31
4. Natural Gas												
a. Area Source	0	0	0	0	0	0	0	0	0	0	0	0
b. Point Source	0	0	0	0	0	0	0	0	0	0	0	0
5. LPG-Area Source	0	0	0	0	0	0	0	0	0	0	0	0
6. Total	692	692	178	556	556	21	1,761	1,761	1,839	2,453	2,453	2,017
C. Steam-Electric Power Plant Fuel:												
1. Bituminous Coal	1,655	1,655	0	1,655	1,655	0	65	65	65	1,720	1,720	65
2. Residual Oil	0	0	0	0	0	0	4	4	4	4	4	4
3. Total	1,655	1,655	0	1,655	1,655	0	69	69	69	1,724	1,724	69
D. Total Stationary Fuel Combustion	2,440	2,440	276	2,236	2,236	47	3,073	3,073	3,184	5,513	5,513	3,460
II. Process Losses-Point Sources	0	0	0	0	0	0	0	0	0	0	0	0
III. Solid Waste Disposal:												
A. Incineration - On-Site Area Source	6	6	6	6	6	6	0	0	0	6	6	6
B. Open Burning - On-Site Area Source	8	0	0	2	0	0	18	0	0	26	0	0
C. Total Solid Waste Disposal	14	6	6	8	6	6	18	0	0	32	6	6
IV. Transportation-Area Sources:												
A. Motor Vehicles												
1. Gasoline	72	72	88	32	32	39	86	86	105	158	158	193
2. Diesel	116	116	141	50	50	59	48	48	59	164	164	200
B. Off-Highway Fuel Usage												
1. Gasoline	15	15	18	0	0	0	0	0	0	15	15	18
2. Diesel	7	7	8	0	0	0	0	0	0	7	7	8
C. Aircraft	11	11	13	0	0	0	0	0	0	11	11	13
D. Railroads	86	86	101	5	5	6	13	13	15	99	99	116
E. Total Transportation	307	307	369	87	87	104	147	147	179	454	454	546
V. Miscellaneous-Area Sources:												
A. Grain Elevators	0	0	0	0	0	0	0	0	0	0	0	0
VI. Grand Total:												
A. Area Source	541	533	620	139	136	157	2,625	2,607	2,750	3,166	3,140	3,370
B. Point Source	2,220	2,220	31	2,193	2,193	0	613	613	613	2,833	2,833	644
C. Total	2,761	2,753	651	2,331	2,329	157	3,238	3,220	3,363	5,999	5,973	4,014
Percent Reduction in Emissions		0.3	76.4		0.1	93.3		0.6	-3.7		0.4	31.1

Table 7. Particulate and Sulfur Dioxide Emission Inventory Summary Tons/Year
Region No. 172, North Dakota Intrastate Air Quality Control Region

Data Representative of Calendar Year 1970

Source Category	Particulates						Sulfur Dioxide					
	Region Total			Airshed — Median			Region Total			Airshed — Median		
	Existing Emissions 1970	Allowable Emissions 1970	Emissions Achieved 1975	Existing Emissions 1970	Allowable Emissions 1970	Emissions Achieved 1975	Existing Emissions 1970	Allowable Emissions 1970	Emissions Achieved 1975	Existing Emissions 1970	Allowable Emissions 1970	Emissions Achieved 1975
I. Fuel Combustion-Stationary Sources:												
A. Residential Fuel-Area Sources:												
1. Bituminous Coal	0	0	0	0	0	0	0	0	0	0	0	0
2. Distillate Oil	396	396	415	5	5	5	1,596	1,596	1,674	19	19	20
3. Natural Gas	68	68	71	19	19	20	2	2	2	1	1	1
4. LPG	157	157	165	2	2	2	0	0	0	0	0	0
5. Total	621	621	651	26	26	27	1,598	1,598	1,676	20	20	21
B. Commercial, Institutional, and Industrial Fuel:												
1. Bituminous Coal												
a. Area Source	0	0	0	0	0	0	0	0	0	0	0	0
b. Point Source	8,585	1,261	1,261	0	0	0	2,600	2,600	2,600	0	0	0
2. Distillate Oil												
a. Area Source	792	792	916	6	6	7	2,130	2,130	2,464	13	13	15
b. Point Source	209	209	242	150	150	174	3,291	3,291	3,808	2,523	2,523	2,919
3. Residual Oil												
a. Area Source	0	0	0	0	0	0	0	0	0	0	0	0
b. Point Source	17	17	20	0	0	0	115	115	133	0	0	0
4. Natural Gas												
a. Area Source	84	84	97	21	21	24	2	2	2	1	1	1
b. Point Source	39	39	45	26	26	30	1	1	1	1	1	1
5. LPG-Area Source	39	39	45	1	1	1	0	0	0	0	0	0
6. Process Gas-Point Source	51	51	59	51	51	59	5,210	2,261	2,616	5,210	2,261	2,616
7. Total	9,816	2,492	2,885	255	255	295	13,349	10,400	11,624	7,748	4,799	5,552
C. Steam-Electric Power Plant Fuel:												
1. Bituminous Coal	38,353	12,323	12,093	3,970	2,904	2,904	55,916	54,666	54,226	7,314	7,314	7,314
2. Distillate Oil	1	1	1	0	0	0	9	9	9	0	0	0
3. Natural Gas	3	3	3	0	0	0	0	0	0	0	0	0
4. Total	38,357	12,327	12,097	3,970	2,904	2,904	55,925	55,695	55,235	7,314	7,314	7,314
D. Total Stationary Fuel Combustion:	48,759	15,440	15,633	4,251	3,185	3,226	70,872	67,693	68,535	15,082	12,133	12,887
II. Process Losses-Point Sources:	26,647	4,726	5,468	1,136	177	205	10,319	10,319	11,939	5,330	5,330	6,167
III. Solid Waste Disposal:												
A. Incineration - On-Site Area Source	203	120	126	29	17	18	44	44	46	6	6	6
B. Open Burning												
1. On-Site - Area Source	929	0	0	0	0	0	58	0	0	0	0	0
2. On-Site - Point Source	1	0	0	0	0	0	0	0	0	0	0	0
C. Total Solid Waste Disposal	1,133	120	126	29	17	18	102	44	46	6	6	6
IV. Transportation-Area Source:												
A. Motor Vehicles												
1. Gasoline	1,062	1,062	1,295	34	34	41	643	643	784	21	21	26
2. Diesel	568	568	692	18	18	22	1,023	1,023	1,247	33	33	40
B. Off-Highway Fuel Usage:												
1. Gasoline	318	318	373	0	0	0	572	572	670	0	0	0
2. Diesel	405	405	488	0	0	0	258	258	302	0	0	0
C. Aircraft	118	118	138	49	49	57	28	28	33	12	12	14
D. Railroads	555	555	650	5	5	6	1,444	1,444	1,692	14	14	16
E. Total Transportation	3,046	3,046	3,636	106	106	126	3,968	3,968	4,728	80	80	96
V. Miscellaneous-Area Sources:												
A. Grain Elevators	18,510	5,079	5,836	193	53	61	0	0	0	0	0	0
VI. Grand Total												
A. Area Source	24,524	9,781	11,357	387	230	264	7,800	7,742	8,916	120	120	139
B. Point Source	73,906	18,630	19,192	5,333	3,308	3,372	77,461	74,282	76,332	23,378	17,429	19,017
C. Total	98,430	28,411	30,549	5,720	3,538	3,636	85,261	82,024	85,248	20,498	17,549	19,156
Percent Reduction in Emissions		71.1	69.0		38.1	36.4		3.8	0		14.4	6.5