

PR 93-130

RECEIVED

JAN 11 1993

REGION 22

FCC - MAIL ROOM

(MINNESOTA)

DOCKET FILE COPY ORIGINAL

REGIONAL PLAN

For The Use Of 800 MHz Channels

601 Through 830

Within The State Of Minnesota

GEN Docket 87-112

Report and Order 87-359

Recommended For Use By The

NATIONAL PUBLIC SAFETY PLANNING ADVISORY COMMITTEE (NPSPAC)

and the

MINNESOTA REGION 22 PLANNING COMMITTEE

RECEIVED

JAN 11 1993

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

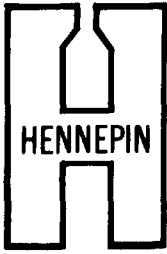
RECEIVED

JAN 14 1 39 PM '93

TELECOMMUNICATIONS  
PRIVATE RADIO BUREAU  
F.C.I.

ORIGINAL

DECEMBER 1992



INFORMATION SERVICES  
COMMUNICATIONS  
A-023 Government Center  
Minneapolis, MN 55487-0007



RECEIVED

JAN 11 1993

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

RECEIVED

JAN 11 1993

FCC - MAIL ROOM

January 6, 1993

SECRETARY,  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554

Dear Secretary:

In response to Report and Order 87-359 on Gen Docket 87-112 the Regional Plan for Region 22 (Minnesota) is hereby submitted to the Commission on this date for its consideration.

Enclosed are six (6) copies of this Regional Plan.

Respectfully submitted,

H. P. Hillegas  
Chairman, Region 22 Planning Committee  
% HENNEPIN COUNTY  
GOVERNMENT CENTER  
300 South Sixth Street  
Minneapolis, MN 55487-0007

Phone (612) 348-5555

**HENNEPIN COUNTY**

an equal opportunity employer

RECEIVED

JAN 11 1993

FCC - MAIL ROOM

RECEIVED

JAN 11 1993

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

R E G I O N 22

(MINNESOTA)

REGIONAL PLAN

For The Use Of 800 MHz Channels

601 Through 830

Within The State Of Minnesota

GEN Docket 87-112

Report and Order 87-359

Recommended For Use By The

NATIONAL PUBLIC SAFETY PLANNING ADVISORY COMMITTEE (NPSPAC)

and the

MINNESOTA REGION 22 PLANNING COMMITTEE

DECEMBER 1992

## PREFACE

Responding to direction by the United States Congress in 1983 the Federal Communications Commission (FCC) adopted Report and Order 87-359 on November 24, 1987 for General Docket 87-112 to accomplish the following:

"Development and Implementation of a  
Public Safety National Plan and amendment  
of Part 90 to Establish Service Rules and  
Technical Standards for Use of the 821-824/  
866-869 MHz Bands by the Public Safety Services"

This action made available to the Public Safety entities an additional 230 radio channels in the 821/824-866/869 MHz bands.

The Commission had established the National Public Safety Planning Advisory Committee (NPSPAC) in 1986 for the purpose of involving interested parties in a Public Safety planning effort and with the following specific tasks:

1. Identify communications requirements of Public Safety services.
2. Develop a scheme for efficient use of the new frequencies.
3. Develop a scheme to increase utility of existing public safety frequencies.
4. Recommend the manner in which new technologies can be applied to public safety frequencies.
5. Recommend guidelines to insure compliance with the National Plan.

In the structure of the National Plan proposed by the FCC the United States was divided into "regions" which, in many instances, coincided with the boundaries of individual states. The state of Minnesota was identified as Region 22.

The Report and Order specified that authorizations for use of these channels would not be made within the region until a formal "Regional Plan" had been prepared, filed with and approved by the FCC. The Associated Public Safety Communications Officers, Inc. (APCO) was given the responsibility of convening a meeting to initiate the planning process within each region that would lead to the preparation of this Regional Plan.

This document has been prepared, in the manner described therein, to fulfill that FCC requirement and is respectfully submitted to the FEDERAL COMMUNICATION COMMISSION this 6<sup>th</sup> day of January 1993 for its consideration.

H. P. Hillegas

H. P. Hillegas  
Chairman, Region 22 Planning Committee  
% HENNEPIN COUNTY  
Communications Division  
300 South 6th Street  
Minneapolis, MN 55487

Phone (612) 348-5555

## TABLE OF CONTENTS

	Acknowledgements.....	5
1.0	Scope.....	6
1.1	Introduction.....	6
1.2	Purpose.....	6
2.0	Authority .....	8
2.1	Regional Planning Committee.....	8
2.2	Notification To Convene.....	8
2.3	Organizational Meetings.....	9
2.4	Elected Officers .....	10
2.5	Plan Approval by Committee.....	11
3.0	National Interrelationships.....	11
3.1	Federal Interoperability.....	11
4.0	Regional Review Committee.....	12
5.0	Spectrum Utilization.....	13
5.1	Region Defined.....	14
5.2	Region Profile .....	14
5.3	Minnesota Population.....	14
5.4	Minnesota Geographical Description.....	14
6.0	Usage Guidelines .....	15
6.1	Technical Design Requirements.....	16
6.2	Definition of Coverage Area.....	16
6.3	System Coverage Limitations.....	17
6.3 3(a)	Frequency use in Aircraft.....	18
6.4	Determination of Coverage.....	18
6.5	Annexation and Other Expansions.....	20
6.6	Coverage Area Description.....	20
6.7	Reassignment of Frequencies.....	21
6.8	Unused Spectrum.....	21
6.9	Coordination of Common Channels.....	21
7.0	Initial Spectrum Utilization.....	22
7.1	Frequency Sorting Methodology.....	22
7.2	Geographic Area.....	22
7.3	Define the Environment.....	22
7.4	Blocked Channels.....	23
7.5	Transmitter Combining.....	23
7.6	Special Considerations.....	23
7.7	Protection Ratios.....	23
7.8	Adjacent Region Coordination.....	24
7.9	Frequency Allocation Process.....	24
7.10	Frequency Allocations By County .....	25

8.0	Communications Requirements.....	25
8.1	Common Channel Implementation.....	25
8.1.1	806 MHz Common Channels.....	25
8.2.	Areas of Operation.....	27
8.3	Operation on the Common Channels.....	27
8.4	Operation Procedures.....	28
8.4.1	International Calling Channel (ICALL)....	28
8.4.2	International Tactical Channels ITAC 1TAC Through ITAC-4).....	28
8.5	Coded Squelch.....	28
8.6	Network Operating Method.....	29
9.0	Requirements For Trunking.....	29
10.0	Channel Loading Requirements.....	30
10.1	Loading Tables.....	31
10.2	Loading For Digital Systems.....	31
10.3	Traffic Loading Study.,.....	31
10.4	Slow Growth.....	32
11.0	Use of Long Range Communications.....	32
12.0	Expansion of Existing Systems.....	32
13.0	Assignment Statistics.....	33
14.0	Expansion of Initial Allocation.....	33
15.0	Application Documents Required.....	33
16.0	Prioritization of Applicants.....	34
16.1	Twin Cities Metropolitan Area Planning...	34
17.0	Appeal Process.....	35

Notifications Of Intent To Convene....	Exhibit A
Committee Membership.....	Exhibit B
Population Distribution.....	Exhibit C
Data Used For Channel Packing.....	Exhibit D
Channel Assignments (Numerical Order).	Exhibit E
Channel Assignments (By County).....	Exhibit F
Sites and Excluded Channels.....	Exhibit G
County Locations Within State .....	Exhibit H
METROPOLITAN COUNCIL Request .....	Exhibit I

Field Strength vs. Distance.....	Appendix A
Glossary .....	Appendix B

## FOREWORD

For those individuals who have been involved with the planning of Public Safety Land Mobile Radio systems and are familiar with frequency coordination guidelines for such systems, it will be immediately recognized that the technical requirements set forth for these particular 800 MHz channels, as they relate to the confinement of signal propagation, are considerably more stringent than what has been previously required for other commonly used Public Safety radio frequencies.

In most heavily populated areas of the country, and certainly within many areas within the State of Minnesota, public safety communications has for years been seriously compromised by frequency congestion and destructive interference from nearby adjacent and co-channel users. At first glance the 230 additional radio channels, recently made available by the FCC in the " NPSPAC" (National Public Safety Planning Advisory Committee) allocation and contained in this Plan, may appear to be a lasting solution to such problems. It can only approach that however, if we plan, manage and continue to use these, and all other channels, in the most possible efficient manner.

Strict limitations are essential and will be placed on the geographical area over which a user's communication system, utilizing these NPSPAC channels, can propagate. Limitations will be placed on the transmitter output power (ERP), antenna heights and, where necessary, require the use of special antenna patterns to control unnecessary signal propagation. For all systems utilizing these channels, the geographical area covered by the base station's signal must be limited to only the legal jurisdiction of the applicant plus a very small distance beyond, typically three (3) air miles. Exceptions to this will be very rare and can only be made when extreme circumstances justify it and compatibility can be maintained with the frequency assignments for other nearby areas in the state outlined in this Plan.

It is not realistic to expect that a user will never need to communicate beyond their jurisdictional boundaries, however if every system were capable of transmitting well beyond their jurisdictional boundaries chaos would soon return to Public Safety communications even in this 800 MHz band.

Being able to communicate with other Public Safety agencies during major disasters when joint response is being made has been a serious shortcoming in many present day systems. In this NPSPAC allocation of frequencies the FCC has mandated that five (5) specific channels be used for "common channel" use throughout the nation thereby providing a communication link among all jurisdictions in areas using the NPSPAC channels. All 800 MHz systems utilizing NPSPAC channels will be required to include these "common channels" in their system so that this very essential objective will be achieved.

Three (3) additional channels in the 806/821 MHz Public Safety group have also been set aside in Minnesota for similar "common channel" usage.

The radio channels contained in this allocation are primarily intended to be used in systems utilizing "trunking technology" and in fact is required by the FCC in any system utilizing five (5) or more channels. Although systems utilizing less than five (5) channels are not required to "trunk", adjacent jurisdictions, and even counties may find it rewarding and cost effective to combine their channels and utilize "trunking technology". This technique not only may prove cost effective but also would allow such users to realize the many other benefits of a "trunked" radio system that otherwise may not be affordable.

In some of the less populated counties of the state where "trunking systems" are not needed, or contemplated, the use of the 800 MHz radio channels contained in this Plan with their seemingly stringent restrictions may be inappropriate. For those particular applications there are numerous other similar 800 MHz channels that have no "trunking" requirements, or the stringent restrictions on antenna height, and coverage, that are attached to the NPSPAC channels. At the time of this writing such channels are for the most part very lightly used throughout the state of Minnesota and are available for both "conventional" and "trunking" system use by all Public Safety jurisdictions through the normal FCC application procedures.

In the more heavily populated areas of the state however these new radio channels, when properly planned and used, will bring greatly needed relief to Public Safety agencies who have been hampered in their attempts to utilize the modern technology that is rapidly emerging and so necessary for present day emergency communications systems.

## ACKNOWLEDGMENTS

Sincere appreciation is expressed to each individual who has participated in the formation of this Regional Plan. Many hours of time, and travel by many, have been spent during the last four years in helping put it together.

We are certain too that all members, and the agencies they represent, will appreciate the action taken by the Federal Communications Commission in recognizing and responding to the communications problems faced by many Public Safety agencies. These additional radio channels, being made available through the NPSPAC docket, will make it possible to take advantage of the much needed new technology that is now emerging for public safety communications systems.

The Regional Planning Committee appreciates the assistance of the National Office of "APCO" (Associated Public Safety Communications Officers Inc.), for their work and expense in performing the frequency "sort" and "packing" which is the basis for the distribution of channels listed in this Plan.

Our appreciation is also extended to the Minnesota Chapter of APCO for their financial contribution to cover the expense of printing and distribution of this Regional Plan.

H. P. Hillegas  
Chairman  
Region 22 (Minnesota) Planning Committee

1.0 SCOPE:

1.1 INTRODUCTION:

In December of 1983, the United States Congress directed the Federal Communications Commission (FCC) to establish a plan to ensure that the communications needs of state and local public safety authorities would be met. By their regular means of initiation, the FCC began the process of developing such a plan. Through their efforts, and the efforts of the National Public Safety Planning Advisory Committee (NPSPAC) the plan was begun.

The National Public Safety Planning Advisory Committee provided an opportunity for the public safety community and other interested members of the public to participate in an overall spectrum management approach by recommending policy guidelines, clinical standards, and procedures to satisfy public safety needs for the foreseeable future. After consideration of NPSPAC's Final Report and comments filed in Docket No. 87-112, a Report and Order was released by the FCC in December 1987, which established a structure for the National Plan that consists of guidelines for the development of regional plans.

The National Plan provides guidelines for the development of regional plans. The particulars of this plan are found in FCC Docket 87-359, which contains the required steps and contents for regional plan development. It is on that document that this plan is developed.

1.2 PURPOSE:

Public safety communications has, for many years, been inadequate throughout much of the United States. This is equally true for many areas of Minnesota where public safety radio users are constantly experiencing interference from other users in adjacent or nearby jurisdictions, who, because of necessity must share the same channel. Many public safety radio communications systems, because of their design and terrain characteristics, propagate signals much beyond their licensee's immediate service areas and interfere with other systems sharing the same channel. The metropolitan area of St. Paul/Minneapolis, where fifty-two (52) per-cent of the state's population is concentrated, borders the State of Wisconsin and must therefore also share and compete for channels used in several counties of Wisconsin.

Trunking technology will greatly improve on the utilization of the limited spectrum thus providing room for growth as the demands for public safety services increases. Trunking will provide greater compatibility of communications systems when emergency conditions require coordinated responses by other jurisdictions and departments. Public Safety communications systems in different jurisdictions, and in many instances even within the same jurisdiction, are not always compatible with each other, thus placing seriously limitations on their ability to communicate when joint responses are required. Although a nationwide Police channel is available that permits Law Enforcement personnel to communicate across jurisdictions, other Public Safety fleets do not have access to this or another similar common channel.

This regional plan was developed with the objective of assuring all levels of Public Safety and Public Service agencies that radio communications in the near and distant future will not suffer from the problems of the past. The allocation of frequencies was done in as equitable a way as possible. A minimum of four (4) channels were allocated for use in each county in the state regardless of the total population. This allocation exceeds the "one channel per 25,000 population" formula that was first suggested for Regional Planning guidelines.

The National Plan, as developed by NPSPAC, was followed very closely for frequency allocation, re-use, turn back, regional interoperability, spectrum requirements and adjacent region operations. Strict guidelines have been established to insure proper design of communications systems so that unnecessary and harmful propagation into other areas does not occur. Antenna heights and ERP will be limited to only that necessary to provide a 40 dBu signal level throughout the applicant's service area. Inter-communications between un-like systems will always be possible on the common mutual aid channels. The use of remote receivers may be required to provide adequate "talk-back" by both portable and mobile units where a single receive site would not be adequate. In some areas, especially those with irregular terrain and wide area jurisdictions, multiple transmitter sites will most likely be necessary. Every effort must be made to consolidate smaller systems into single trunked systems if these frequency allocations are to be expected to accommodate the needs of Public Safety communications for the foreseeable future. This plan should provide the flexibility to accommodate the growth and changes

which are bound to occur in public safety and public service communications operations long into the future.

**2.0 AUTHORITY:**

**2.1 REGIONAL PLANNING COMMITTEE::**

The development of the Public-Safety Radio Communications Plan for Region 22, the State of Minnesota, has followed the requirements of the FCC's Report and Order as issued in the matter of General Docket 87-112.

In accordance with the FCC's Report and Order 87-112, the Associated Public-Safety Communications Officers Inc. (APCO) recommended to the Commission the appointment of a "Convenor" for Minnesota Region 22. The Convenor served as the coordinator for the assembly and formation of the planning committee.

Participants in the formation of the Regional Planning Committee represent interested parties from both the Public Safety and Special Emergency Radio Services. A total of forty (40) individuals have attended meetings and participated in the development process. Exhibit "B" contains the names, telephone numbers, organizational affiliations, and mailing addresses of all participants in the meetings of the Regional Planning Committee.

The committee was selected by attendance at the planning meetings. Each member of the Committee representing an eligible licensee under the Public Safety Radio Services and the Special Emergency Radio Services was permitted to participate in all discussions at committee meetings. Except as may be provided elsewhere in the Plan, the majority of those present at a scheduled meeting constituted a majority for all business. Final approval of the plan, prior to submission to the FCC, was sought by a vote at the last meeting. A mail-back ballot was provided with the meeting notice for those members who could not attend. For this final approval therefore, votes from more than would be in attendance at a regular meeting was possible thus providing all those who had participated in the planning process an opportunity to vote on the final draft. This way, the finished plan was reviewed and accepted by the widest, within reason, group of public safety/public service users.

**2.2 NOTIFICATION TO CONVENE:**

Several methods of notification were used to invite interested parties to participate in the development of this plan.

On May 10, 1988 information about the project was sent to the following organizations, requesting them to make their members aware of the committee's activities. Recipients of this letter were the following organizations:

1. Minnesota State Sheriff's Association.
2. Minnesota Veterinary Medical Association.
3. Executive Director AASHTO.
4. Minnesota Fire Chief's Association.
5. Minnesota Police Chief's Association.
6. Minnesota Dept. of Health.
7. Minnesota Association of Counties.
8. Minnesota League of Cities.
9. Minnesota Medical Association.
10. National Office APCO
11. St. Paul FCC Office

Letters were also sent to all members of the Minnesota Chapter of APCO.

A Public Notice, announcing the date of the first organizational meeting to be held on July 13, 1988, was run in the May 30, 1988 issue of the State (Minnesota) Register.

A similar announcement was sent to all Law Enforcement agencies over the statewide computer network "MINCIS" and also published in the June 6, 1988 issue of "RCR Publications".

These announcements and notices are illustrated in EXHIBIT "A" of this plan.

### 2.3

#### ORGANIZATIONAL MEETING:

The first meeting was held on July 1988 at the ANOKA COUNTY ACTIVITY CENTER in Andover, MN., a public facility. (See EXHIBIT "A".

During the initial meeting, names, addresses and telephone numbers of those individuals present who wished to either participate in the planning process, or who wanted to be kept informed on the progress of the planning effort were taken. These individuals or

agencies were sent all announcements for meetings and bulletins of progress.

Requirements for a regional planning committee were presented and discussed at the organizational meeting. At this first meeting and at each presentation thereafter there was an opportunity for persons to place themselves and/or their agency on the mailing list.

Two organizational meetings were held before the chair-person was elected.

Committee membership was left open to any person or agency which may not have been notified or decided to join the committee later.

Vendors participation was permitted, but vendors were not allowed to vote on committee issues.

At a later date a "questionnaire" for the purpose of inventorying existing Public Safety communications systems in each of Minnesota's eighty-seven (87) counties and to further announce the Committee's purpose was mailed to each county. Thirty-eight responses (44%) were received.

#### 2.4 ELECTED REGION 22 PLANNING COMMITTEE OFFICERS:

##### CHAIRPERSON:

NAME: H. P. Hillegas  
AFFILIATION: HENNEPIN COUNTY  
ADDRESS: 300 South 6th Street  
Minneapolis, MN 55487  
Phone: (612) 348-5555

##### CO-CHAIR:

NAME: Henry E. Bruns  
AFFILIATION: STATE OF MINNESOTA  
ADDRESS: 3926 Glenview Avenue  
Arden Hills, MN 55112  
Phone: (612) 633-6613

RECORDING SECRETARY: Jeffrey Nelson  
CITY OF MINNEAPOLIS  
Room B911 City Hall  
Minneapolis, MN 55415  
Phone: (612) 348-7210

Exhibit "B" contains a roster of all individuals attending Region 22's 800 MHz Planning Committee meetings.

**2.5 REGION PLAN APPROVAL:**

The proposed revisions to the Region Plan draft were submitted to a total of fifty-five (55) individuals who had participated in the region planning process. Those individuals who are employed by public safety organizations eligible to use Public Safety radio channels and had attended at least one meeting, were invited to a final committee meeting, scheduled for December 9, 1992, to resolve the remaining issues. A mail-back ballot was included with the meeting notice for use by those who could not attend the meeting. Two (2) ballots were returned, in favor of the changes, prior to the meeting. Eighteen (18) individuals attended this meeting and voted 15 to 1 in favor of the proposed revisions. The entire plan was also approved by voice vote 15 to 1.

**3.0 NATIONAL INTER-RELATIONSHIPS:**

The Regional Plan is in conformity with the National Plan. If there is a conflict between the two plans, the National Plan will govern. It is expected that Regional Plans for other areas of the country may differ from this plan due to the broad differences in circumstance, geography, and population density. By officially sanctioning this plan the Federal Communications Commission agrees to its conformity to the National Plan. Nothing in the Plan is to interfere with the proper functions and duties of the organizations appointed by the FCC for frequency coordination in the Private Land Mobile Radio Services, but rather it provides procedures that are the consensus of the Public Safety Radio Services and Special Emergency Radio Service user agencies in this Region. If there is a perceived conflict then the judgment of the FCC will prevail.

**3.1 FEDERAL INTER-OPERABILITY:**

Interoperability between the Federal, State and Local Governments during both daily and disaster operations will primarily take place on the five common channels identified in the National Plan. Additionally, through the use of S -160 or equivalent agreements, a licensee may permit Federal use of a non-Federal communications system. Such use, on other than the five identified common channels, is to be in full compliance with FCC requirements for government use of non-government frequencies (Title 47 CFR, sec 2.103). It is permissible for a non-Federal government licensee to increase channel requirements to account for 2- 10 percent increase in mobile

units, dependent on the amount of Federal Government Agencies involvement in its area, provided that written documentation from Federal agencies supports at least that number of increased units.

4.0

**REGIONAL REVIEW COMMITTEE:**

Upon approval of this Plan by the Federal Communications Commission, a Region Review Committee will be established for the review of applications which do not fall within the stated guidelines provided for in this plan, to arbitrate disputes concerning this plan and/or its application, monitor compliance by existing users of their channel loading and other requirements and to formulate any necessary modifications to the Regional Plan as circumstances may require.

This Review Committee must be convened no later than six (6) months following the date on which the Region 22 Plan has been accepted by the FCC.

To maintain uniformity in its proceedings, BY-LAWS AND OPERATING PROCEDURES should be adopted by the Review Committee.

Members of this committee must be regular full-time employees of organizations eligible for radio authorizations in these Public Safety Radio Services and to be selected as follows:

**Chair:**

Until the end of the first full calendar year following the date on which the Review Committee first convened, the Chairperson of the Region 22 Planning Committee will serve as Chairperson of the Region Review Committee. At the final meeting of this first full calendar year a chairperson should be elected from the membership of the Review Committee and thereafter at the end of each calendar year or as otherwise provided for by any adopted By-Laws and Operating Procedures.

**Other Members will consist of:**

1. The APCO Frequency Coordinator for the Police and Local Government Radio Services within Minnesota.
2. A member appointed by the Minnesota State Fire Chief's Association.
3. A member appointed by the Minnesota State Police Chief's Association.
4. A member appointed by the Minnesota State Sheriff's Association.

5. A member appointed by the President of the Minnesota Chapter of APCO.
6. A member appointed by the Minnesota Ambulance Association.
7. A member appointed by the Minnesota Chapter of the American Public Works Association.
8. A member of ASSHTO (American Association of State Highway and Transportation Officials) to represent Minnesota Highway Engineers responsible for highway maintenance radio systems.
9. A member appointed by the Association of Minnesota Emergency Managers.
10. A member appointed by the State of Minnesota's Commissioner of Public Safety.
11. A member appointed by the Governor of Minnesota.

Terms of membership to this committee should be defined in the BY-LAWS AND OPERATING PROCEDURES of the Review Committee.

Although the membership described above should encompass all expected users of these frequencies in the near future, the Chairperson must insure that all licensees have a voice in the proceedings of the Review Committee. This may require additional members from other user groups not specifically identified herein.

Since this committee may not have a regular business schedule the local Frequency coordinators for the Radio Services using these frequencies will be expected to notify the Review Committee Chairperson of matters requiring the attention of the Review Committee. It is recommended however that at least one meeting be conducted during each calendar year for the purpose of reviewing all license activity and to anticipate future problems in the Plan's implementation.

## 5.0

### SPECTRUM UTILIZATION:

This portion of the Plan provides a basis for proper spectrum utilization. Its purpose is to guide the Local APCO Frequency Advisor and/or the Regional Review Committee in their task of evaluating the implementation of this plan within this Region.

5.1 **REGION DEFINED:**

Region 22 is the State of Minnesota. This region is the result of definition by the Federal Communications Commission as a result of recommendations made in the National Public Safety Planning Advisory Committee (NPSPAC) plan as submitted and approved and contained in Docket 87-112. For purposes of this plan the State of Minnesota shall be defined as all the lands and waters contained within the boundaries of the State of Minnesota.

5.2 **REGION PROFILE:**

The purpose of this section is to provide the basis for the assignment of frequencies, and their re-use. Since the frequency allocation formula used is based to a degree on population within a county, it is necessary to provide this information within this plan. Below is the data used in the determination of frequency allocations.

5.3 **POPULATION:**

The 1990 Census indicates a population of 4,375,099 for the State of Minnesota (Region 22). Population in each of the eighty-seven (87) counties within Region 22 is illustrated in EXHIBIT "C".

5.4 **GEOGRAPHICAL DESCRIPTION:**

There are 87 counties in the state with a total surface area of approximately 80,000 square miles.

Approximately 10% of the total surface area in the state is classified as water basins and wetlands.

The largest county is St. Louis, with a total area of 6,125 square miles. The smallest county in geographical area (154 square miles) is Ramsey, however it is the second most populated in the state and contains more than 11% of the state's total population. Hennepin County, with 611 square miles and adjacent to Ramsey, contains 23% of the state's total population.

The seven (7) counties comprising the Minneapolis/St. Paul metropolitan area accounts for 52.3 % of the state's total population, yet only 3.5% of the total land area. Conversely many of the out-state counties have a relatively sparse population, however the state's four (4) smallest counties in geographical size are in the seven county Minneapolis/St. Paul metropolitan area and contain approximately 17 % of the state's total population.

As defined by the U.S. Census Bureau the population

of the state in the 1990 Census is classified as 69.9 % being URBAN and 31.1 % RURAL. This compares with the National Average of 75.2 % being URBAN. For purpose of definition, URBAN is considered a population of 2500 or more residents.

All of these items were taken under consideration in the allocation plan.

## 6.0

### USAGE GUIDELINES:

All systems operating within the Region having five or more channels will be required to be trunked. The FCC, in its Report and Order states, "Exceptions" will be permitted on the trunking requirement only when a substantial showing is made that alternative technology would be at least as efficient as trunking or that trunking would not meet operational requirements. Exceptions will not be granted routinely, however, and strong evidence showing why trunking is unacceptable must be presented in support of any request for exception."

Those systems having four or less channels may be conventional or trunked although as counties experience rapid growth in the future it may be prudent for both economic and operational considerations that counties pool their channels and implement a multi-county trunked system.

Systems of four or less channels operating in the conventional mode who do not meet FCC loading standards will be required to share the frequency on a non-exclusive basis.

Public Safety communications at the state level, as it impacts the Region, will be reviewed by the Committee. State-wide public safety agencies will submit their communications plans for impact approval if they utilize communications systems within the Region and those portions of such systems must be compatible with the Regional Plan.

The next level of communication coverage will be a county/multiple municipality area. Those systems that are designed to provide area communication coverage must demonstrate their need to require such wide area coverage. This would apply in a situation such as a city requesting coverage of an entire county. Communication coverage beyond the bounds of a jurisdictional area of concern cannot be permitted unless it can be substantiated that such radio coverage is critical to the protection of life and property. If the 800 MHz trunked radio technology is utilized, the system design must include as many

county/multiple municipality government public safety and public service radio users as can be managed technically.

The county/multiple municipality agency (ies)), depending upon systems loading and the need for multiple systems within an area, must provide intercommunications between area-wide systems. In a multi-agency environment, a lead agency using the 800 MHz spectrum, which is an agency or organization having primary response obligations in the geographic area, shall be responsible for coordinating the implementation the Common Channels in this band as mandated by the National Plan. Such implementation must be reviewed and approved by the Local APCO Frequency Advisor, and at his/her discretion, the Regional Review Committee.

Municipal terminology often differs. In order to provide a title for the next level of communications the term "municipal" is used to define the level below county-wide. "Municipal" communications for public safety and public services purposes must provide only the communications needed within its boundaries. However, if the total number of radios in service does not reach minimum loading criteria for a trunked system, that agency must consider utilizing the next higher system level if 800 MHz trunked radio is available in the area. As those higher level systems reach capacity, the smaller system communicators in public safety and public service must then consider uniting their communications efforts to formulate one large system or forfeit use of the limited 800 MHz spectrum.

Where smaller conventional 800 MHz needs are requested, those frequencies to be utilized must not interfere with the region's trunked systems. The 800 MHz trunked radio system is to be considered the higher technology at this time and in greater compliance with FCC guidelines. The amount of interference that can be tolerated depends on the service affected. Personal life and property protection shall receive the highest priority and disruptive interference with communications involved in these services in an area shall not be tolerated. Any co-channel interference within an authorized area of coverage will be examined on a case by case basis by the Regional Review Committee.

6.1 TECHNICAL DESIGN REQUIREMENTS FOR LICENSING:

6.2 DEFINITION OF "COVERAGE AREA":

"Coverage area" referred to in this Plan is that

geographical area throughout which the applicant has primary jurisdiction, plus approximately three (3) miles, and throughout which the radio "base station (s)" to be installed are intended to provide a minimum received signal strength of 40 dBu (decibels above 1 microvolt, equivalent to approximately 4.6 microvolts across 50 ohms at 850 MHz) to the associated mobile stations.

### 6.3

#### SYSTEM COVERAGE LIMITATIONS:

Every effort must be made to ensure the most possible re-use (shared) of spectrum by confining signal radiation of a system to only the geographical area throughout which the applicant has primary jurisdiction. It is recognized however that radio signals do not stop at jurisdictional borders nor do jurisdictional boundaries rarely center around a selected transmitter site. All possible considerations however must be given in the system's design to achieve this balance of signal propagation to the utmost.

Overlap or extended coverage must be minimized, even where systems utilizing 800 MHz trunked radio systems are proposing to intermix systems for cooperative and/or mutual aid purposes.

Antenna heights are to be limited to provide only the necessary coverage for a system. When antenna locations are restricted to only the "high-ground", transmitter outputs and special antenna patterns must be employed to produce only the necessary coverage with the proper amount of ERP.

The following criteria must be met in the design of communication systems utilizing frequencies in this allocation, assuming a 40 dBu service contour is provided by the desired stations throughout the intended coverage area:

#### 1. BASE-TO-MOBILE:

- (a) Signals from co-channel base stations must not exceed 5 dBu (approximately .08 microvolts across 50 ohms @ 867 MHz) at any point within other coverage areas.
- (b) Signals from next-adjacent offset-channel base stations must not exceed 25 dBu (approximately .80 microvolts @ 867 MHz) at any point within other coverage areas.

## 2. MOBILE AND CONTROL STATIONS:

- (a) Mobile and Control stations from co-channel systems shall provide a minimum of 35 dB protection to other co-channel base receivers.
- (b) Mobile and Control stations shall provide a minimum of 15 dB protection to receivers operating on next-adjacent-offset channels.

The use of "satellite receivers" should be used to enhance the talk-back of low powered transmitters.

The location and design of such systems however must anticipate the potential for interference from other systems operating within this plan's guidelines. The criteria listed above is intended to provide protection to only receivers located at the base or mobile relay station site.

Applicants choosing to operate a system with less than a 40 dBu signal contour within their coverage area should be cognizant that noticeable co-channel interference may be experienced from other co-channel users who have systems conforming to these radiated power limitations.

## 3. USE OF FREQUENCIES IN AIRCRAFT:

- (a) The degree to which these 800 MHz channels are to be "re-used" within the Region and their assignments in adjacent Regions require that their use in aircraft be restricted. Limitations are:
  - (1) A maximum ERP of 1.0 watt above 500 ft. AGL.
  - (2) No transmissions on the "local channels" above 2,000 ft. AGL.
  - (3) No transmissions on "common channels" above 5,000 ft. AGL.
  - (4) Avoid using the input frequency to the mobile relay station and use the "talk-a-round" mode whenever possible.

## 6.4 DETERMINATION OF COVERAGE:

There are four variables used in determining the area of coverage of a proposed system. These variables are (1) the required strength of the received signal, (2) antenna height above average terrain (HAAT), (3) the effective radiated power (ERP) of the system, and (4) the type of environment.

**Received Signal Strength:**

For purposes of this plan, received signal strength shall be the determining factor which defines the actual boundary of a system. The signal level which marks the outer boundary of a system must not exceed 40 dBu.

**Antenna Height:**

Shall be the height of the antenna above the average terrain surrounding the tower site.

**Effective Radiated Power (ERP):**

The ERP is the transmitter output power times the net gain of the antenna system. The actual formula is:

$$\text{ERP (watts)} = \text{Watts} \times \text{antilog (Net Gain/10)}$$

**Environment Type:**

OKUMURA/HATA METHOD - The Okumura method uses four different classifications to describe the average terrain around a transmitter site or area. The classifications are:

- 1-URBAN; Which is built-up city-crowded with large buildings or closely interspersed with houses and densely grown trees. This would include the downtown area of a major city.
- 2-SUBURBAN; WHICH is a city scattered with trees, houses and buildings. This would include the downtown area of a large city.
- 3-QUASI-OPEN; Is an area between suburban and open areas. This includes areas outside of city limits that have few buildings and houses.
- 4-OPEN; Is an area where there are no obstacles such as tall trees or buildings in the propagation path or a plot of land which is cleared of anything for 300 to 400 meters ahead. This would include farm land, open fields, etc.

The Okumura/Hata method is the method resident in the computer packing program to develop this plan. A minimum system shall be permitted without special consideration when it is limited to an HAAT of 100 feet and the transmitter is centrally located within the jurisdiction or jurisdictions participating in a system. In all jurisdictions, regardless of size, a maximum boundary radius of 8 miles shall be allowed

provided adequate measures have been taken to assure that interference of existing co-channel and adjacent channel systems will not occur. Preparation of these requirements shall be the responsibility of the applicant. The Federal Communications Commission provides, in part 90.309(a) (4)) of the Rules and Regulations, some additional guidance for these calculations.

6.5

**ANNEXATIONS AND OTHER EXPANSIONS:**

It is well known that as cities grow, annexations occur. When an expansion of the present city limits of any city currently using an 800 megahertz system within the spectrum as herein specified occurs, it is understood that the existing system may have to be expanded and its range increased. This is a modification and may be permitted. The increased range of the system will have to be determined at the time of modification to assure non-interference with any other existing system. Where interference is likely, the use of alternate methods of expansion, such as satellite systems or multiple transmitter sites with reduced heights may be necessary. Should the annexation or expansion of a city effectively take in all or most of a county, the allocation for that county may be given to the city if required by said city and not in use or planned to be used by the county. Where more spectrum is not available from the initial allocation, the rules for expansion of initial allocation, as contained in this plan, shall apply.

6.6

**COVERAGE AREA DESCRIPTION:**

All applicants shall provide with their applications a map showing the jurisdictional boundaries to be covered by the system, with the calculated system coverage displayed graphically. This map must display the location of all system transmitter(s), including control stations. It is recommended that a U.S. Geological Survey (USGS) Quad topographical map be used for this purpose. If not available, a high quality locally produced map such as a highway map may be substituted. Regardless of the type map used, the name of the applicant and the scale of the map shall be displayed on the map.

The attached table (APPENDIX "A") lists the field strength in dBu/KW versus distance and antenna height for the suburban environment. The adjustment factors for the other environments relative to the suburban environment are:

Urban = Suburban - 9.7 dB,  
Quasi-open = Suburban + 9.2 dB,  
Open = Suburban + 18.4 dB

6.7

**RE-ASSIGNMENT OF FREQUENCIES:**

All agencies participating in the use of this new 800 MHz spectrum shall prepare and submit a plan for the abandonment of any currently licensed frequencies in the lower bands that are presently being used for the activity to be conducted on the new 800 channels. The regional planning committees would have the freedom to consider below-800 MHz public safety bands in further development of their regional plans, but the licensing of channels in these bands would continue to be conducted through existing frequency coordination procedures.

Lower band Frequencies that are replaced by these 800 MHz channels can not be automatically retained or "handed down" to another agency in their respective jurisdiction. Such re-use of frequencies can only be accomplished through the regular procedures followed for a new application.

The time frame allowed for phasing out of lower band frequencies and into 800 MHz and will normally be one (1) year. Any agency requiring more than one year must provide documents stating the reasons for the delay and give the estimated time of completion. Such extensions are subject to approval by the FCC.

6.8

**UNUSED SPECTRUM:**

Since all of the frequency spectrum is not needed at this time, the excess channel pairs will be returned to a reserve pool. These channels may be used for conflict with adjacent Region allocations or may simply remain within this Region until needed. This does not imply that these frequencies are unavailable, only that before they can be utilized within the Region they must be coordinated via the regular APCO coordination process and within the guidelines set forth in this plan. Where possible, the channels designated for a jurisdiction in this plan shall be used.

Additional assignments to be made from the "unused spectrum" pool, when proposed for areas within seventy-five (75) miles of a bordering State or Region, shall be first coordinated with that bordering state or region.

6.9

**COORDINATION OF STATE-WIDE/ COMMON CHANNELS:**

As the use of the five National channels is not considered a day-to-day function, coordination for the use of these channels is not considered to be necessary or advisable. The use of these channels will always be on a non-interference basis, with on-the-air coordination at the time of use when

required. Any user found to be operating in any manner other than this shall be considered to be operating improperly and subject to the existing Federal Communications Commission rules for willful interference with the communications of other users.

The block of thirty (30) additional channels allocated for "state-wide" use were derived from the alternating blocks of thirty (30) channels used in the Illinois, Indiana, Michigan and Wisconsin Regions.

## 7.0 INITIAL SPECTRUM ALLOCATION:

### 7.1 FREQUENCY SORTING METHODOLOGY

The initial spectrum allocation for the Region was determined by a computerized frequency sorting process performed by APCO/CET. The purpose of the computer program which assigns frequencies to specific eligibles, where specified, and to pools for future assignments is two-fold, a) they must result in a high degree of spectrum efficiency, and b) they must result in a low probability of co-channel and adjacent channel interference.

Since the desired output is a geographic sorting of frequencies, a method of defining geography must be part of the input. A list of the number of channels to be assigned in each geographic area is also required, along with the name of the eligible, if specified, or pool. Acceptable interference probabilities are determined for the Region. Frequency assignments are then made using a computer program which satisfies the goals of spectrum efficiency and interference protection. The following narrative describes the factors and process used by the computer program.

### 7.2 GEOGRAPHIC AREA:

For the purpose of this frequency sort, a geographic area is defined as one or more circles of equal radius. To the degree practical, the circle(s) should include the entire area of the geo-political boundary, but not exceed the boundary by more than three (3) miles. Thus, the procedure is to gather maps of sufficient detail, outline the areas to be defined, determine the coordinates and radius of the circles which define each area, and tabulate the data.

### 7.3 DEFINE THE ENVIRONMENT:

The environment of each system is defined according to the Okumura/Hata method of classifications described elsewhere in this Plan.

7.4

**BLOCKED CHANNELS:**

In the Region there are five mutual aid channels which must be blocked out to prevent the computer from making assignments on these channels. (Since the mutual aid channels are spaced at 0.5 MHz intervals, other Region-wide systems are spaced at 0.5 MHz and placed adjacent to the mutual aid channels. This procedure reduces the impact of blocked adjacent channels by virtue of the fact that the channel plan already has protection spacing on each side of the mutual aid channels.)

These Region-wide blocked channels are identified by FCC channel number, tabulated and they become input to the computer program.

7.5

**TRANSMITTER COMBINING:**

The computer program is designed to provide a minimum frequency separation between any two channels assigned to the same eligible at the same site. This separation is provided in order to enable more efficient combining of multiple transmitters to a single antenna. These separated blocks of frequencies also have a maximum size. That is, if the eligible has more frequencies than the maximum size of the combining block, then a second compatible block is created, and so on. Each of these parameters is adjustable in the program on a global basis. The default parameters chosen are 0.25 MHz minimum spacing and five channel blocks.

7.6

**SPECIAL CONSIDERATIONS:**

There are licensees in the 806-821/852-866 MHz spectrum who plan to expand existing systems into the 821-824/866-869 MHz bands. Some of the existing radio units are unable to operate on 12.5 KHz separated carrier frequencies. The result is that these radios can only operate on "even" FCC numbered channels in the 821-824/866-869 MHz band. The computer program is able to take this into account when making assignments.

7.7

**PROTECTION RATIOS:**

There are two interference protection ratios built into the computer program. One is for the co-channel case, the other is for the adjacent channel case. The ratios provide 35 dB Desired/Undesired signal ratio for co-channel assignments, and 15 dB Desired/Undesired ratio for the adjacent channel case. These ratios provide an acceptable probability of interference for Public Safety Services.

7.8

**ADJACENT REGION COORDINATION:**

The computer program requires a listing of channels

to be blocked along the borderline with other regions which have pre-existing plans. If the adjacent region plan was developed using the APCO/CET packing program, this information exists in the data base.

All regions bordering Minnesota are being "packed" by the APCO/CET program and have received a copy of this Plan.

Although channels 628, 666, 704, 742, 780, and 820 have been assigned in certain Minnesota counties their proposed use within seventy-five (75) miles of the Wisconsin border must first be coordinated with the Wisconsin Region.

Channels assigned for Statewide use and their adjacent guard channels are to be shared and coordinated with the adjacent States and Regions.

7.9

#### FREQUENCY ALLOCATION PROCESS:

The method used for "packing" Region 22 was also the APCO/CET computerized method. The approximate geographical location for the center of each county, in latitude and longitude, were provided along with the environmental type of the county and the approximate radius to cover the county lines. Along with this information, a list of frequencies to block along the adjacent region's border was included. The actual assignment of frequencies is for a minimum of four (4) channel-pairs to be used in each county. To the extent possible the "one channel per 25,000 population formula" was followed for the greater seven county Minneapolis/St. Paul metropolitan area however this was not entirely possible. In anticipation of expected rapid growth for certain "outer-ring counties" in and adjacent to this metro area, the committee attempted to allocate more than the minimum of four channels however this was not possible.

Twenty-seven (27) channels have been allocated for "state-wide" assignments for use by the State of Minnesota. These channels shall provide the various state agencies with the channel capacity to insure the interoperability necessary when employing many different agencies and governmental service providers over large areas and requiring command and control over such wide spread operations.

Three (3) channels have been allocated for "statewide" assignments for use by all eligible applicants requiring wide area coverage such as drug enforcement or other application requirements not appropriate for the five National Mutual Aid

Channels.

- 7.10 **FREQUENCY ALLOCATION MAP:**  
EXHIBIT "H" illustrates the geographical outlines of the State of Minnesota and its eighty-seven (87) counties.

EXHIBIT "D" describes the theoretical site locations within each county that were used by the APCO/CET computerized packing program.

EXHIBITS "E" and "F" contain the resulting channel assignments for each county or other service area.

EXHIBIT "G" contains a listing of channels that could not be considered for assignment within the respective counties.

8.0 **COMMUNICATIONS REQUIREMENTS:**

- 8.1 **"Common Channel" ("Mutual Aid") Implementation**  
A very essential requirement of this plan and benefit to be derived from its implementation is the needed enhancement of inter-agency communications, not only between agencies based in a common geographical area but also by transient vehicles from other jurisdictions who may be assisting or otherwise traveling outside their service area(s). Five (5) channels in this 800 MHz allocation have been mandated by the FCC for this "common channel" purpose, one of which is a nation-wide "calling channel" to be used only for the purpose of establishing initial contact when inter-agency communications is desired.

- 8.1.1 **ADDITIONAL "COMMON CHANNELS" FROM THE 806 MHz BAND.**  
In addition to the five Mutual Aid channels required by the FCC, the Region 22 Committee recommends that three (3) additional channels, to be obtained from the 806 MHz allocation, be likewise designated as "statewide mutual aid" channels.

Specific channels recommended for this purpose are:  
Channel 240 - Intended for "High Level Law"  
Channel 280 - Intended for "High Level Fire"  
Channel 320 - Intended for "Low Level Law"  
Use of these three particular channels would be prioritized as follows:

Priority 1 - Disaster and extreme emergency operations for mutual aid and inter-agency communications.

Priority 2 - Emergency or urgent operation involving

imminent danger to the safety of life or property.

Priority 3 - Special event control activities, generally of a pre-planned nature, and generally involving joint participation of two or more agencies.

Priority 4 - Single agency secondary communications."

The implementation of the International Common Channels must follow the guidelines as set forth by the Federal Communications Commission by the approval of the National Plan. These five common channels are accessible by all levels of government and shall be used in accordance with the provisions of the National Plan.

As new 800 MHz "service areas" are developed, for example a "county", provisions must also be made to provide for communications on at least two (2) of the national common channels (the "calling" plus a "TAC" channel) throughout the service area. Considering the number of jurisdictions served, their diversity in mission, and quantity of mobile units, additional "TAC" channels may be required.

It is beyond the scope of this Plan to identify the source of funding for such equipment however a cooperative effort by all jurisdictions may be most acceptable. The "licensee" in most instances should be the County throughout which the system is intended to cover.

In those instances where only an individual agency, or only a small percentage of agencies in a "service area" applies for 800 MHz channels and others in the area continue to use lower frequency bands, the application must describe how "inter-communications with other departments located in that service area, and with transients from other areas, will be accomplished. Interfacing the 800 MHz system with the existing "MINSEF" (155.475 MHz) system may be required to meet this objective.

In any area where 800 MHz common channel stations are installed, at least one agency must be required to monitor this channel at all times. The area of coverage provided by this channel must provide radio coverage throughout the areas of all the individual licensees in the area which the network serves. This may or may not require the use of satellite receivers within the area to meet this requirement.

Mutual aid stations required by this Plan must be capable of functioning as a mobile relay station. Mobile units, including portable transceivers, must also have the capability of communicating directly to other similar units without the mobile relay station in what is commonly referred to as "talk-around".

The four International Tactical (ITAC) Channels will be assigned State-wide, for use as needed by all eligible licensees. These channels are to be used in accordance with the National Plan and in compliance with the regulations as set forth by the Federal Communications Commission. These channels require no special licensing for mobile and portable transceivers, only that the users have an authorization for Public Safety 800 MHz channels as specified in section 90.617 (a) of the FCC Rules and Regulations. Control stations must be licensed in the name of the department where installed.

**8.2 AREAS OF OPERATION:**

The common channels shall be available for use throughout the Region. No specific locations are specified within the Region.

**8.3 OPERATION ON THE COMMON CHANNELS:**

Normally, the five inter-operable channels are to be used only for activities requiring inter-communications between agencies not sharing any other compatible communications system. Inter-operable channels are not to be used by any agency for routine, daily operations. In major emergency situations, one or more ITAC channels may be assigned by the primary Public Safety Agency within that area of operation. The primary Public Safety agency in each county, if not defined elsewhere in the plan, should be the County Sheriff, State Patrol, or other Public Safety Department that has assumed the role of "incident commander" for the incident being attended, which may be any agency licensed to operate in this spectrum.

Participants in the inter-operable channels include Federal, State, and units of Local Government within the State of Minnesota. Police, Fire, and providers of Basic and Advanced Life support services will be the primary using agencies. If radio channels are available, other services provided for in the Public Safety Radio Services and the Special Emergency Radio Services may also participate to the extent required to insure the safety of the public.

It is recommended that a committee be established in the Region to formulate and enforce uniform

procedures for the implementation, administration and use of these "common channels" on a state-wide basis. The committee must have a fair and proportionate representation by all the various user categories eligible for and using these channels. If acceptable by the State of Minnesota's Commissioner of Public Safety, this task may be performed by the existing "MINSEF" Committee that oversees the use of the 155.475 MHz Emergency channel throughout the state. In the absence of any such commitment by that "MINSEF Committee" the Regional Review Committee must assume this responsibility.

**8.4 OPERATING PROCEDURES: (MUTUAL AID CHANNELS)**

On all Common Channels, plain English will be used at all times, and the use of unfamiliar terms, phrases, or codes will not be permitted.

**8.4.1 International Calling Channel (ICALL):**

The ICALL channel shall be used to establish contact with other users in a particular Region that can render assistance at an incident. This channel shall not be utilized as an on-going working channel. Once contact has been established between agencies, an agreed upon ITAC or mutual aid channel shall be used for continued communications.

**8.4.2 International Tactical Channels (ITAC-1 -ITAC-4):**

These frequencies are reserved for use by those agencies involved in inter-agency communications. Incidents requiring multi-agency participation will utilize these frequencies as directed by the control agency assuming responsibility for an incident or area of concern. These frequencies may be subdivided according to function in an incident or by geographical location in response to an incident. Unless otherwise provided for by the Region Review Committee, it is recommended that the following assignments for ITAC-1 through ITAC-4 be used where user diversity requires it.

- ITAC-1..... Law Enforcement
- ITAC-2 .....Fire Services
- ITAC-3 .....Emergency Medical Services
- ITAC-4 .....Command and Control

**8.5 CODED SQUELCH (MUTUAL AID CHANNELS):**

All equipment capable of operating on the five (5) common channels shall be equipped with the National Common Tone Squelch of 156.7 Hz. Mobile relays on these channels, if authorized, may use additional tone or digital squelch codes for the purpose of selecting individual mobile relay stations, provided the National Common Tone Squelch Code is used on the

output. If such an arrangement is utilized, provision must also be made for certain centralized, high level sites to be activated by the 156.7 tone to ensure emergency access by transient units.

**8.6 NETWORK OPERATING METHODS:**

Communications systems on ITAC-1 thru ITAC-4 will be implemented by agencies who volunteer on a distributed coordinated basis. Every primary geographic section of the Region is intended to be covered by at least one ITAC channels. In many areas the common channels will be utilized on a mobile to mobile talk-around basis. Mobile relays on ITAC-1 thru ITAC-4 will be on a limited coverage design to permit reuse of the channel several times within the Region and in adjacent regions. Since Region 22 will probably not have a large number of stationary ITAC Channel stations, the implementation of mobile relay or repeaters is strongly encouraged. This will fill an "on-scene" requirement for most multi-agency response situations.

Adjacent region coordination will be via existing mutual aid coordination procedures with the requesting region establishing the tactical frequency assignment.

**9.0 TRUNKING REQUIREMENTS:**

All systems operating in the Region having five or more channels will be required to be trunked. Those systems having four or less channels may be conventional however it is strongly recommended that any entity licensing three or more "repeaters" use trunking technology in their equipment.

The FCC in its Report and Order states: "Exceptions will be permitted only when a substantial showing is made that alternative technology would be at least as efficient as trunking or that trunking would not meet operational requirements. Exceptions will not be granted routinely and strong showings as to why trunking is unacceptable must be presented in support of any request for exception."

Depending on systems loading and the need for multiple systems within an area, operators of wide area systems (including, but not limited to, designated "Monitoring Agencies") must provide for coordination between area-wide systems and "Monitoring Agencies". Single municipalities or agencies must restrict design and implementation of their systems(s) to provide only the communications needed within its geopolitical boundaries. The use of trunked systems is

encouraged, however if the total number of radios in service does not reach minimum loading criteria for a trunked system, that user must consider utilizing the next higher system level if 800 MHz trunked radio is available in the area. As systems reach capacity, the smaller system users must consider consolidating their communications systems to formulate one large trunked system.

**10.0 CHANNEL LOADING REQUIREMENTS:**

An agency/jurisdiction requesting its first single frequency to replace a frequency currently in use that will be turned back for re-assignment will not be required to meet loading requirements in order to obtain the new frequency. However, if the single frequency is not loaded to more than 50 units within three years after the license is granted, the frequency will be available for assignment to other agencies on a shared basis in the event that other frequencies meeting the criteria for assignment are exhausted. Shared use of a frequency is not interference free.

Agencies/jurisdictions requesting multiple frequencies or employing trunking technology shall comply with the loading standards as outlined below.

Agencies requesting additional frequencies must show loading of 100 percent or greater on their existing system.

Systems that do not meet established loading standards can be required to share such frequencies on a non-exclusive basis. Those agencies requesting Data channels only can be required to share channels with adjacent agencies wherever feasible or limit cover age to their geographic area. Exceptions will be considered on a case-by-case basis by the Regional Review Committee.

Should a demand for frequencies exist after allocated frequencies become exhausted, any system having more than one channel assigned under this plan four or more years previously and not loaded to at least 70 percent may be required to forfeit a sufficient number of channels to bring their system into compliance with the 70 percent loading standard. Frequencies lost in this manner will be re-allocated to other agencies to help satisfy the demand for additional frequencies.

## 10.1 MINIMUM LOADING TABLES FOR ANALOG MODULATION SYSTEMS

	UNITS PER CHANNEL	
	(Conventional)	(Trunked)
(a) "EMERGENCY" USE (Police, Fire, Medical)	70	100
(b) "NON-EMERGENCY" USE (All Other)	100	130

While these quantities are considered appropriate for most typical systems, it must be realized that the ratio of channels needed to the quantity of mobile/portable units is not necessarily linear as the quantity of mobile units increases in large trunked systems. Justification for the number of requested channels in larger systems should not be solely based on the quantity of mobile and portable units expected to be used in the system. A mathematical calculation, similar to that used in the telephone industry for trunked circuit system design, that takes into consideration the "busiest hour", "message length", "number of units in service", "unit call rate" and "grade of service" may be required to further substantiate the desired channel assignments.

## 10.2 LOADING FOR DIGITAL SYSTEMS:

Standards for loading on channels utilizing "digital modulation" systems are yet to be formulated. As this technology develops and becomes common place in Public Safety communications the loading requirements set forth above for analog systems will most likely be in-appropriate for efficient spectrum utilization when using "digital" modulation. Existing users migrating to digital systems and new applicants planning to use digital modulation technology in their equipment will be required to conform to new loading standards as they are developed..

## 10.3 TRAFFIC LOADING STUDY:

At the discretion of the Regional Review Committee should a channel shortage exist, licensees with multiple channels assigned may be required to show justification for the number of channels being used.

For trunked systems a computer generated traffic loading analysis of the actual system would be required. A showing of air time usage, excluding telephone interconnect air time, during the peak busy hour greater than 70 percent per channel on three

consecutive days will be required to satisfy loading criteria. Should the system be considered 100% loaded

the loading study should illustrate the degree of "blocking" (number of units placed in "queue", and their waiting times) during peak hours of usage.

For conventional systems an accurate vehicle inventory list along with documents such as copies of Purchase Orders, vendor invoices, and packing slips accurately describing equipment regularly being used will be required.

10.4 **SLOW GROWTH:**

All systems in the 821-824/866-869 MHz bands will be slow growth in accordance with Section 90.629 of the Commission's Rules.

11.0 **LONG RANGE COMMUNICATIONS:**

During incidents of major proportions, where Public Safety requirements might include the need for long-range communications in and out of a disaster area, alternate radio communications plans are to be addressed by Primary Public Safety agencies within this sub-region. These agencies should integrate the appropriate interface to the long distance communications providers. Such long distance radio communications might be amateur radio operations, satellite communications and/or long range emergency preparedness communications systems, any of or all of which should be incorporated as part of the communications plans of those lead agencies. They then could provide the means to communicate outside the area for themselves and the smaller agencies who might need assistance. Instances as addressed in the National Public Safety Planning Advisory Committee's Plan, such as earthquakes, hurricanes, floods, widespread forest fires, or nuclear reactor problems could be a cause for such long-range communications needs.

12.0 **EXPANSION OF EXISTING SYSTEMS:**

Existing systems that are to be expanded to include the frequency bands of 821-824/866-869 MHz will have the mobile radios "grand-fathered", provided that they are modified in conformance with the Memorandum Opinion and Order, FCC Docket 87-112. Primarily this involves reducing the modulation to +/- 4 KHz. Existing base stations in the frequency bands 806-821/851-866 MHz may not be used in the frequency bands 821-824/866-869 MHz.

13.0 **ASSIGNMENT STATISTICS:**

Maximum field strength for co-channel operation is 5.0 dBu.

Maximum field strength for adjacent channel operation is 25.0 dBu.

Iterations required for solution	= 120
Number of channels used for solution	= 224
Total number of channels assigned	= 429
Total number of un-assigned channels	= 24
Total number of reserved channels	= 61
Total number of co-channels assigned	= 289

Probability of interference with the nearest:

- (a) Co-channel user is between 0% and 1%
- (b) Adjacent channel user is between 0% and 1%

14.0 **EXPANSION OF INITIAL ALLOCATION:**

In the event that the allocation for any county becomes depleted, the Region Review Committee shall meet to make further allocations to said county. Should this occur, the applying agency or entity shall submit the proper license and coordination applications with all applicable fees, as in any other licensing request. Allocations will be made based on the initial frequency allocation plan as mentioned above, taking into consideration the channels which were returned to the reserve pool.

15.0 **INFORMATION REQUIRED WHEN SUBMITTING APPLICATIONS:**

In addition to the required FCC and Coordination forms, the following supplemental data must be provided for the coordinator's use to determine compliance with the Regional Plan.

1. A statement that describes the purpose of the proposed radio equipment, for example is it a replacement for an existing system, a new communication system, or a modification to an existing system?
2. A description of the applicant's legal jurisdiction such as "the City of \_\_\_\_\_" or the "County of \_\_\_\_\_". A map, such as a County Highway map or a U.S. Geological topographical map, should be used to draw an outline of the applicant's jurisdiction.
3. The proposed location of the base station (s) must be marked on the map.
4. An accurate, graphic illustration on the map of

the 40 dBu contour expected from each base station.

5. A statement describing the proposed loading of the channel(s) being requested. Quantities, that can be verified, of vehicles, mobile radios, portable transceivers, and control stations that will be using the system must be listed along with the projected dates by which they will be placed in service. Portable transceivers should be in two categories, (1) those used full time as the sole communicating device for the bearer and (2) those used only part time to supplement a vehicle installed radio unit or other part time usage.
6. To supplement the information listed on the FCC application form, provide a copy of the work sheet used to calculate the expected ERP of the base stations.
7. A list of any lower band frequencies that will be replaced by the proposed 800 MHz system.
8. The manner in which "interoperability" with other jurisdictions will be accomplished.

16.0 **PRIORITIZATION OF APPLICANTS:**

At the present time there are no un-filled requests for spectrum usage in the 800 MHz Public Safety allocations within the Region and with the exception of the seven (7) county Minneapolis/St. Paul metropolitan area none is anticipated during the foreseeable future. To provide for such conditions should they occur however, a simple method of prioritization of requests will be used.

Until a more detailed prioritization formula is developed by the Region Review Committee the following will be used:

Public Safety Agencies .....	2 Points
Public Service Agencies.....	1 Point
Multi-agency System.....	2 Points
Multi-agency/Multi Jurisdiction System...	3 Points
Single Agency/Jurisdiction System.....	1 Point

16.1 **TWIN CITIES METROPOLITAN AREA PLANNING:**

At the present time a very significant planning effort is being undertaken to implement a single metropolitan-wide trunked communication system for all Public Safety systems operating in the seven (7) county metropolitan area in which the cities of Minneapolis and St. Paul and suburbs are located. This endeavor, if successful, would accomplish in a

single task a very significant portion of the long range goals set out for Region 22 in the Regional Plan. An untold number of lower band frequencies would become available for other applicants and users in the counties bordering and beyond this seven county metropolitan area.

This effort is being organized by the METROPOLITAN COUNCIL (see Exhibit "I"), a public agency of the STATE OF MINNESOTA charged with the task of fostering the coordination and integration of governmental planning and services within the seven county Minneapolis/St. Paul metropolitan area. The complexity of this issue, principal of which perhaps is its economic considerations, will require considerable time to be resolved. The Legislative approval process in itself will consume many months.

Considering the scope of this proposed system, its obvious contribution to fulfilling the goals of the National Plan, and that its feasibility is almost totally dependent upon the availability of an adequate number of radio channels, it is recommended that no authorizations for these NPSPAC channels be released in the seven (7) Minnesota counties of ANOKA, CARVER, DAKOTA, HENNEPIN, RAMSEY, SCOTT and WASHINGTON for a period of time considered necessary for the METROPOLITAN COUNCIL to complete the feasibility determination study that has already begun. The suggested cut off date for this proposed "hold" on such authorizations is June 30, 1994.

The committee realizes that other eligible applicants must not be penalized in their efforts to implement 800 MHz communications systems while waiting for other eligibles to reach a decision. As of December 1992 however, approximately 50% of the seventy (70) Public Safety Category channels in the 806 MHz allocation are un-assigned in these seven (7) counties. A similar percentage of channels 1 thru 150, shared by all users, also remain un-assigned. Considering the number of currently available channels in the metropolitan area, a hardship for other eligibles therefore is not expected during the relatively brief period of time the "hold" on authorizations is considered necessary.

17.0

**APPEAL PROCESS:**

At any time, any applicant may appeal an allocation, rejection, or any limits placed on a particular application for any reason. The appeal process has two levels; the Region Review Committee, and the FCC. An applicant who decides to appeal a rejection should initiate that appeal immediately upon

notification of rejection. In the event that an appeal reaches the FCC, their decision will be final and binding upon all parties.

EXHIBIT "A"

NOTICES AND PUBLICITY GIVEN

FOR THE FORMING OF THE

REGION 22 800 MHz PLANNING COMMITTEE

Minutes of the 800 Mhz Planning Committee  
March 16, 1988

At the direction of Minnesota APCO President Judy Sullivan, a preliminary meeting was held of the Ad Hoc 800 Mhz Planning Committee. Sullivan had asked Harry Hillegas to convene the meeting. It was held at the Bunker Hill (Anoka County) Activities Center, Room C, First Floor, 550 Bunker Lake Blvd., Anoka, MN. Present were: Judy Sullivan, MN State Patrol; Harry Hillegas, Hennepin County MN; Henry Bruns, MN Dept. of Transportation; Paul Kent, St. Louis County MN Communications; Jeff Nelson, City of Minneapolis MN, Dept of Emergency Communications; Richard Richardson, City of Minneapolis MN, Public Works Radio Shop; Phillip Saunders, City of St. Paul MN; Donald Vodegal, Hennepin County MN Sheriff's Radio.

Hillegas convened the meeting at 1:05 pm.

He explained that the FCC Report and Order # 87-359 directed that APCO convene meetings in each "region". The purpose of this meeting was to start the planning process for a subsequent public forum where planning on the utilization of certain 800 Mhz frequencies would begin. It was explained that 60 days of prior public notice was required before the public meeting could occur and that this session would focus on:

- Time, date, and location of the public meeting.
- Methods of providing notice to interested parties (news release and public notice and the potential audience)
- Identifying a process for electing a chair and vice chair of the planning committee during or after the public meeting.
- Documenting the steps taken at each phase of the process.

Hillegas solicited input on someone to head and assist in a nominating committee for officers of the planning committee - once it got underway. Saunders and Vodegal volunteered for these respective roles and Hillegas accepted their offers. Hillegas asked for volunteers for the role of recording secretary and Nelson volunteered and was accepted.

Discussion followed on the various professional associations and their constituents who should be made aware of the public meeting. A list of the various associations and organizations as suggested at this meeting is attached at the end of these minutes.

Since emergency preparedness functions are specifically identified in the FCC Report and Order, Bruns agreed to contact the State Emergency Preparedness Director to get a list of potentially interested persons for the planning meeting. Saunders agreed to contact the Metropolitan Council for a similar list and to contact an associate for a mailing list of all the newspapers in the state. It was determined that everyone present had a responsibility to think about and assemble lists of potentially interested persons for the public notice and/or news release and to bring these to the next meeting.

Discussion followed on the form and content of the public notice and the news release. Nelson agreed to draft a news release by 3/31 and distribute it to the members of this group. It was agreed that a follow-up meeting should be held on 4/6/88 at 1:00 pm at Hennepin Sheriff's Radio (Golden Valley) for the

purpose of reviewing the news release and doing further planning on the public meeting. It would be the group's objective to then have the public notice and news release ready for distribution by 4/15/88. After discussion on the pros and cons of various meeting locations it was agreed that we would target to hold the public meeting on 7/13/88 at 1:00 pm in this same setting (Anoka Activities Center).

The need for some form of working fund for this endeavor was discussed and Sullivan agreed to raise this topic at the 3/31/88 Chapter meeting of APCO. Saunders suggested a \$ 500 contingency fund.

Saunders spoke about the importance of maintaining accurate records of participants and the activities of this entire planning process for use in the future should an issue become contested. To that end he volunteered to create a form which would seek information on attendees at the public meeting with particular attention to the type of service(s) they represented.

Other topics discussed:

- Hillegas' office will provide clerical support for mailings, etc..
- News release should identify (break down) who is eligible and potentially benefits from participating in this planning process.
- Some mention of the market value of this spectrum allocation should be made to communicate the importance of this planning effort.
- Things/Issues for Public Meeting: Handouts, tape recording the session, PA system, Agenda, time for public comments, time line, possible inventory of existing systems and users.

The meeting concluded at 3:00 PM.

See attachment for preliminary list of possible recipients of public notice and/or news release.

Submitted by,

J. J. Nelson



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

State Register  
Legal Notice - Attn: Robin Panlener  
504 Rice Street  
St. Paul, MN 55103

Dear Ms. Panlener:

Please run the attached Public Notice announcing the initial meeting of a regional committee on radio frequency spectrum planning for publication in the Register at the earliest possible date.

Send the bill and affidavit to my attention at the address shown below:

J. J. Nelson c/o APCO  
Room 316 - City Hall  
Minneapolis, MN 55415

If you have questions please feel free to call me on 348-7210. Thank you.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota

PUBLIC NOTICE

ANNOUNCEMENT OF THE INITIAL MEETING OF THE  
REGIONAL PLANNING COMMITTEE FOR RADIO FREQUENCIES  
IN THE 821-824/866-869 MHz BAND FOR USE BY PUBLIC SAFETY  
AND SPECIAL EMERGENCY RADIO SERVICES WITHIN  
THE STATE OF MINNESOTA, REGION 22.

Having been duly certified to the Federal Communications Commission (FCC) by the Associated Public Safety Communications Officers, Inc. (APCO) as the Convenor of an initial meeting of representatives of parties eligible for radio authorizations in the Public Safety and Special Emergency Radio Services to establish a Regional Planning Committee within the State of Minnesota, Region 22 as designated by the FCC, I hereby give Public Notice that such an initial meeting will be held on:

Date: July 13, 1988  
Time: 1:00 P.M.  
Place: Anoka County Activity Center  
550 Bunker Lake Blvd., N.W.  
Andover, Mn.

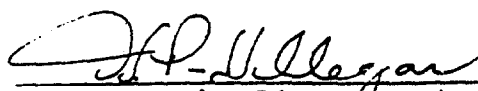
The responsibility of this Regional Planning Committee will be to develop a Plan for the utilization of newly allocated radio frequencies in the 821-824/866-869 Mhz band for use by both the Public Safety and Special Emergency Radio Services. Parties interested in this regional planning process are invited to attend this meeting.

This Public Notice is issued in accord with the FCC's Report and Order in General Docket 87-112, adopted November 24, 1987 and released December 18, 1987.

The Report and Order was based in large part on the Final Report of the National Public Safety Planning Advisory Committee which was submitted to the FCC on September 9, 1987.

Copies of both the Report and Order and the Final Report are available from the FCC's duplication contractor, International Transcription Services, Inc., Suite 140, 2100 M Street N.W. Washington, D.C. 20037.  
Telephone (202) 857-3800.

H.P. Hillegas  
Region 22 Convenor  
c/o Hennepin County  
A-2309 Government Center  
Minneapolis, Mn. 55487-0239  
Telephone (612) 348-5555

  
(Convenor's Signature)  
APRIL 6 1988  
(Date)

**NEWS RELEASE**

**For Release on May 9, 1988**

**Regional Public Safety Frequency Planning Meeting Set**

It was announced today that the first in a series of formal public meetings will be held Wednesday, July 13, 1988 at 1:00 pm for the purposes of planning future uses of public safety radio frequencies in Minnesota.

This initial meeting and the follow-up activities are required by the Federal Communications Commission (FCC) to further development of regional plans for use of certain 800 Megahertz radio frequencies in the Public Safety and Special Emergency Radio Services. The meeting is being convened under the auspices of the Minnesota Chapter of APCO (Associated Public Safety Communications Officers, Inc.). APCO, with national membership, has been recognized and given authority by the FCC to initiate and coordinate the planning process throughout the United States.

The release of certain radio frequencies in the 800 Megahertz spectrum for use by public safety and special emergency services followed lengthy deliberations by the FCC. Popular estimates of the value of these frequencies for commercial and broadcast use has been placed in the billions of dollars had they been made available to these interests. In its Report and Order on the release of the frequencies the FCC has required that regional plans be developed before licenses will be issued to public safety or special emergency agencies.

This first planning meeting in Minnesota will be convened by Mr. Harry Hillegas who can be contacted at (612) 348-5555. The meeting will be held at the Anoka County Activity Center, 550 Bunker Lake Blvd. NW, Andover, MN at 1:00 pm on July 13, 1988.

-end of release-

Released by:

J. J. Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota  
c/o Room 316 - City Hall  
Minneapolis, MN 55415  
(612) 348-7210

UNITED PARCEL SERVICE F COPY

State of Minnesota  
 Department of Administration  
 Documents Division  
 117 University Avenue - St. Paul, MN 55155  
 (612) 297-3000

State of Minnesota  
 Department of Administration  
 Documents Division  
 117 University Avenue - St. Paul, MN 55155  
 (612) 297-3000

Associated Public-Safety Communications  
 Officers, Inc  
 J J Nelson  
 Room 316 - City Hall  
 Minneapolis, MN 55415

CUSTOMER NO.	CONTRACT NO.	CUSTOMER'S P.O. NUMBER	SLMN	ENTRY DATE	INVOICE NUMBER	INVOICE DATE	AS OF	CA CC
				05/30/88	05/30/88	05/30/88		

TERMS: NET 30 DAYS

Ordered Shipped Back Order

SHIPPED VIA

SPECIAL INFORMATION

Our Order

QUANTITY	ITEM NUMBER	DESCRIPTION	PRICE	AMOUNT
		5 Pgs of copy in State Register Vol. 12, Number 48, May 30, 1988	\$79.00/page	39.50
		PUBLIC NOTICE		
		PLEASE INCLUDE A COPY OF THIS INVOICE WITH PAYMENT		

SALES TAX	PAY THIS AMOUNT
	39.50

SR 00003-02

MINCIS TXT Message

Request for Statewide Broadcast

Notice of Public Meeting Regarding Public Safety Radio Frequencies:

On Weds., July 13, 1988 at 1:00 pm a public organizational meeting will be held for the purpose of planning the use of certain 800 Mhz radio frequencies. This meeting and subsequent planning sessions are required under an FCC plan which has set aside more than 200 radio channels in the 800 Mhz spectrum for use by Public Safety and Special Emergency service providers.

The FCC has required that a regional plan be created concerning the use of these radio frequencies before any licenses will be issued. Details on this first planning meeting are:

Place: Anoka County Activity Center  
550 Bunker Lake Blvd., N.W.  
Andover, MN

Time: 1:00 pm, July 13, 1988

Attendance at this meeting ~~is~~ by representatives of public safety agencies is particularly encouraged. For more information contact Harry Hillegas at (612) 348-5555 or Jeff Nelson at (612) 348-7210.



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota State Sheriff's Association  
c/o Holly Lack - Executive Director  
Box 623  
South St. Paul, MN 55075

Re: 800 Mhz Planning Meeting

Dear Director Lack:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Veterinary Medical Association  
c/o Executive Director  
379 University Avenue E.  
St. Paul, MN 55103

Re: 800 Mhz Radio Planning Meeting

Attached is some information which may be of interest to the members of your association. Under FCC rules, veterinarians are eligible for radio station licensing in the service discussed in the attached announcement. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



**ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.**

**Minnesota Chapter**

May 10, 1988

Mr. Francis B. Francois  
Executive Director, AASHTO  
Suite 225 - 444 Capitol Street NW  
Washington, DC 20001

**Re: 800 Mhz Radio Planning Meeting**

Dear Mr. Francois:

Attached is some information which may be of interest to you and AASHTO membership in the State of Minnesota. The Minnesota Chapter of APCO would greatly appreciate it if you could make affected members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Fire Chief's Association  
c/o Ed Kohner - Secretary  
Winona Fire Dept.  
451 E. 3rd Street  
Winona, MN 55987

Re: 800 Mhz Planning Meeting

Dear Chief Kohner:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Police Chief's Association  
c/o Darrell Plath, Secretary  
Hastings Police Dept.  
107 W. 5th Street  
Hastings, MN 55033

Re: 800 Mhz Planning Meeting

Dear Chief Plath:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Department of Health  
Emergency Medical Services Newsletter  
EMS Section Attn: Diane Kline  
717 Delaware Street SE  
Minneapolis MN 55440

Dear Ms. Kline:

Attached is some information which may be of interest to the readers of your newsletter. The Minnesota Chapter of APCO would greatly appreciate it if you could publish this information in original or excerpted form prior to the date of the public meeting in July.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota

EMERGENCY COMMUNICATIONS CENTER  
ROOM 310 CITY HALL  
MINNEAPOLIS, MN 55415-1382

(612) 348-7210  
ORI/MNO2711C2

PAUL D. LINNÉE  
DIRECTOR

April 17, 1988

minneapolis

city of lakes

Mr. Robert Buttgen  
APCO National Office  
P O Box 669  
New Smyrna Beach, FL 32070

Dear Bob,

Enclosed please find a Public Notice announcing the initial meeting of Minnesota's 800 Mhz Planning Committee.

If possible, I would like to get mention of the meeting notice inserted in the Bulletin. Thanks.

Sincerely,



J. Jeffrey Nelson  
Assistant Director  
Emergency Communications Center

Ad Hoc Recording Secretary  
MN APCO 800 Mhz Planning Committee

enclosure

EMERGENCY COMMUNICATIONS CENTER  
ROOM 310 CITY HALL  
MINNEAPOLIS, MN 55415-1382

(612) 648-7210  
ORI/MNO2711C2

PAUL D. LINNEE  
DIRECTOR

minneapolis

city of lakes

April 17, 1988

Mr. Frank Evans  
Federal Communications Commission  
Field Operations Bureau  
St. Paul District Office  
691 Federal Building  
316 N. Robert Street  
St. Paul, MN 55101

Dear Mr. Evans:

Enclosed please find a Public Notice announcing the initial meeting of Minnesota's 800 Mhz Public Safety & Special Emergency Planning Committee.

If possible, we would appreciate any assistance your office can provide in disseminating notice of this important meeting.

Sincerely,

  
J. Jeffrey Nelson  
Assistant Director  
Emergency Communications Center

Ad Hoc Recording Secretary  
MN APCO 800 Mhz Planning Committee

enclosure

ALTERNATIVE ACTION EMPLOYER

TTY: VOICE (612) 648-7210

A-16

EMERGENCY COMMUNICATIONS CENTER  
ROOM 316 - CITY HALL  
MINNEAPOLIS, MN 55415-1322

(612) 348-7210  
OR/MNO2711C2

PAUL D. LINNEE  
DIRECTOR

minneapolis



city of lakes

April 17, 1988

Mr. Paul Linnee  
Emergency Communications Center  
316 - City Hall  
Minneapolis, MN 55415

Re: APCO/MN Newsletter

Dear Paul,

Enclosed please find a Public Notice announcing the initial meeting of Minnesota's 800 Mhz Public Safety & Special Emergency Planning Committee.

On behalf of the this committee, we would like to get notice of this meeting published in the APCO/MN newsletter. Thank you.

Sincerely,

J. Jeffrey Nelson  
Assistant Director  
Emergency Communications Center

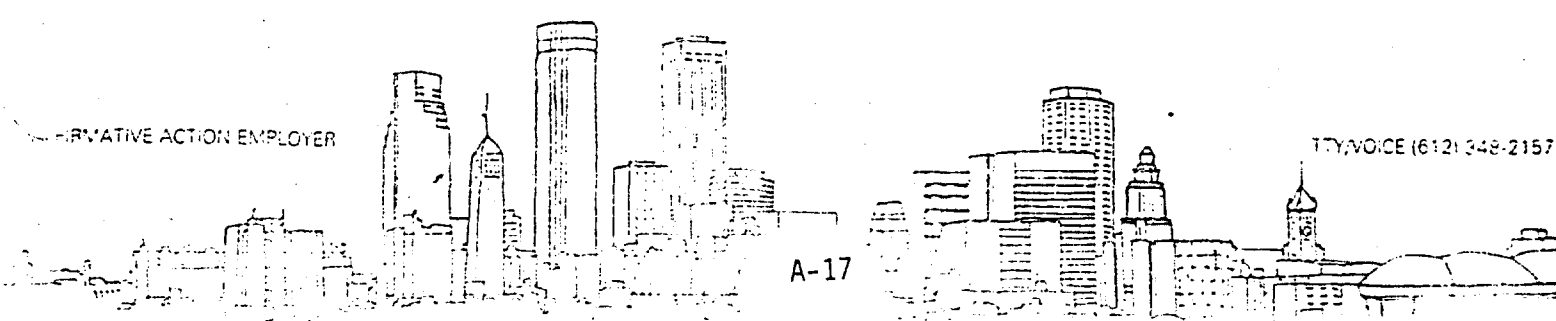
Ad Hoc Recording Secretary  
MN APCO 800 Mhz Planning Committee

enclosure

ALTERNATIVE ACTION EMPLOYER

TTY/VOICE (612) 348-2157

A-17





ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Association of Counties  
Attn: Newsletter Editor  
555 Park Street - Suite 300  
St. Paul, MN 55103

Re: 800 Mhz Radio Planning Meeting

Dear Editor:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota League of Cities  
Attn: Newsletter Editor  
183 University Ave. East  
St. Paul, MN 55101

Re: 800 Mhz Radio Planning Meeting

Dear Editor:

Attached is some information which may be of interest to the members of the League. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Medical Association  
Minnesota Medicine  
Attn: Merideth McNab  
2221 University Ave. SE Suite 400  
Minneapolis MN 55414

Dear Ms. McNab:

Attached is some information which may be of interest to the readers of your newsletter. The Minnesota Chapter of APCO would greatly appreciate it if you could publish this information in original or excerpted form prior to the date of the public meeting in July.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota



ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Editor  
Radio Communications Report - RCR  
1728 Downing Street  
Denver, CO 80218

Re: 800 Mhz Planning Meeting

Dear Editor:

Attached is some information which may be of interest to the readers of your publication. The Minnesota Chapter of APCO would greatly appreciate it if you could publish this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
800 Mhz Planning Committee  
Region 22 - Minnesota

# Pemberton leaves L.A. Cellular; Frantom named interim president

By Craig Kacskos

LOS ANGELES—Brian Pemberton has resigned as president of the Los Angeles Cellular Telephone Co., the country's largest nonwireline system.

Pemberton left L.A. Cellular, effective May 12, to join Monroe Systems for Business, a Morris Plains, N.J.-based office equipment manufacturer.

Howard Frantom, the company's vice president of operations, has been named interim president.

Frantom said he is not a candidate for the top spot of the cellular phone company, which turned on its \$43 million switch in March 1987.

Pemberton oversaw the launch of L.A. Cellular's system during his two-year tenure at the company.

L.A. Cellular was formed in 1983 by a partnership of Lin Broadcasting Corp. and American Cellular Communications Corp., a joint venture between Mobile Communications Corp. of America and BellSouth, and was a reseller in the nation's top-ranked market until turning on its digital switch.

The 60-percent ACC stake in the Block A system will belong to Bell.

South pending approval of the company's acquisition of MCCA (RCR, March 14, 1988, p. 13).

Pemberton will be president and chief operating officer of Monroe Systems and said the move to Monroe includes an equity stake in the 75-year old year firm which employs 2,500 people and posted revenues of approximately \$175 million last year.

Frantom, who joined L.A. Cellular in January, has 30 years engineering and operations experience with Pacific Bell and AT&T.

"We have the utmost confidence in Howard Frantom and the rest of the L.A. Cellular management team. Our main goal during this period will be to continue developing our subscriber base, maximize customer satisfaction, and enhance support for our agents and resellers," said Carroll McHenry, president of ACC.

Frantom said until a new president is named he will oversee L.A. Cellular's daily operations and the com-

## Minnesota meeting set for public safety planning

MINNEAPOLIS—The regional planning committee for public safety and special emergency radio frequencies in Minnesota will meet July 13 at the Anoka County Activity Center in Andover.

Those interested are invited to attend the meeting, scheduled to begin at 1 p.m. at the Activity Center, 550 Bunker Lake Blvd., N.W., Andover.

Copies of the Report and Order are available from International Transcript Services Inc, Suite 140, 2100 M St. N.W., Washington, D.C., 20037. The phone number is (202) 857-3800. □



Published biweekly.

Bill Maguire  
Editor

Craig Howson  
Managing Editor

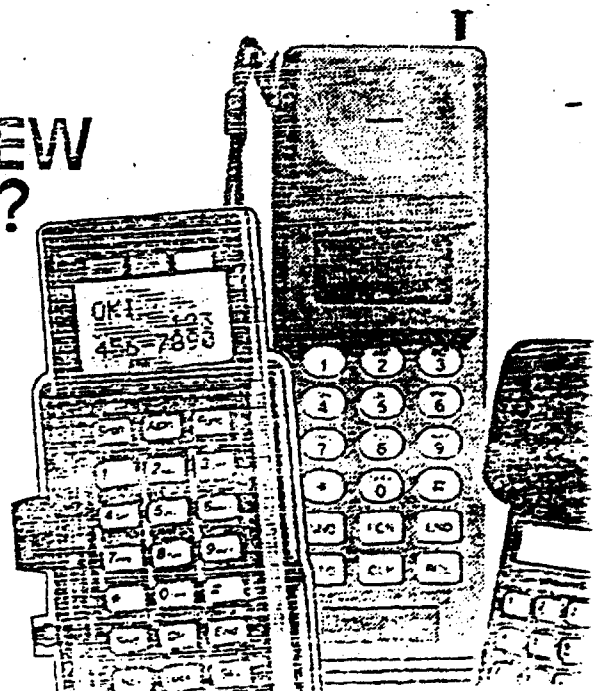
Jeffrey Silva

# POTAMK COMMUNICA IS SERIO ABOUT CELL

## WHAT'S NEW ABOUT US?

Almost everything! Because a brand new management team is now in place. A team with many years of experience in cellular sales and service. And along with our new personnel is a newly expanded product line! Now you have the kind of choice you need to serve your r

• AUDIOVO: A-22





ASSOCIATED  
PUBLIC-SAFETY  
COMMUNICATIONS  
OFFICERS, INC.

Minnesota Chapter

June 3, 1989

Mr. Thomas Motherway  
Dept. of Public Safety  
Division of Emergency Services  
B-5 - State Capitol Building  
St. Paul, MN 55155

Dear Mr. Motherway:

This letter is to invite you or a member of your staff to attend the next meeting of the Region 22 (Minnesota) 800 MHz Planning Committee. The location of the meeting is:

Anoka County Activity Center  
550 Bunker Lake Blvd., N.W.  
Andover, MN  
Weds., July 12, 1989  
1:00 pm

The Federal Communications Commission (FCC) has empowered the Region 22 Planning Committee to develop a communications plan which will determine how certain 800 Mhz radio channels are utilized within the State of Minnesota. As you know, there are present shortages within current radio spectrum for government use. Other states facing similar shortages have encountered significant difficulties in times of crisis as a result of these shortages and the resulting inability to effectively coordinate communications during disasters.

The FCC has mandated that any regional plan submitted pay particular attention to emergency management and for that reason we would appreciate participation from someone in a professional leadership role from your office.

Enclosed are some materials from the most recent meeting, the mailing list of those currently interested in Committee affairs, and a summary what the 800 Mhz planning process is about. For more information on this meeting or the planning process please contact Harry Hillegas (612) 348-5555.

Sincerely,

J. Jeffrey Nelson  
Recording Secretary  
Region 22 - 800 Mhz Planning Committee  
c/o Room B-911 - City Hall  
Minneapolis, MN 55415

Meeting Summary  
800 Mhz Planning Committee  
Region 22 - Minnesota  
July 13, 1988 - 1:30 pm  
Anoka County Activity Center

The first formal meeting of the Minnesota (Region 22) 800 Mhz Planning meeting occurred on this date. 21 people attended; their names and other identifying information is contained on the attachment titled "Attendee Information" (Not shown on that list is Don Vodegal, Hennepin County Sheriff's Office, who was also present.

Convenor Harry Hillegas called the meeting to order at approximately 1:45 pm. Hillegas introduced himself and provided a brief overview of the FCC action which allocated 6 Mhz of 800 Mhz spectrum for "public safety" and "special emergency use". He explained the process used by the FCC whereby APCO (Associated Public Safety Communications Officers, Inc.) was identified as the group responsible for starting the planning process for utilization of the spectrum within the regions. Hillegas explained that this was the organizational meeting and that the FCC had placed a 5 year deadline on the planning process with the frequencies unavailable for release until a plan was in place within each region and which called for the frequencies to be turned back if a plan wasn't in place within five years on a region by region basis.

Hillegas introduced the ad hoc committee members present: Bruns, Saunders, Nelson, himself, Vodegal, and Kent. (Ad Hoc committee member Dick Richardson was absent) He explained the purpose of a questionnaire being circulated to those present was to gather census information on the persons attending and indicated that additional planning committee membership was open and encouraged those with an interest in active participation to indicate this on the form.

Hillegas entertained questions at this point and recognized Francis Bauer. Bauer represented the fire service and expressed the view that fire service representation was most important on the 800 Mhz planning group. He indicated the fire service's need for, and interest in, adequate frequency spectrum to accomplish their mission and commented on the historical problems they had in getting their needs addressed. Saunders explained some of the steps that had been taken in planning for this meeting and highlighted the process used to notify all interested parties of the meeting. Bauer affirmed that the Minnesota Fire Chief's Association received adequate notice of the session. His principal concern was to go on record early in the process to stress that fire service frequency planning was important and should not be overlooked. He volunteered to make sure that the IAFC had a representative available to participate on the committee if none volunteered for the fire service.

Hillegas reiterated that it was the intent of this committee to have representation from and/or take input from all services eligible for licensing under this planning process.

Hillegas then asked for a report from the Ad Hoc nominating committee. Phil Saunders explained the nominating committee's report which offered the following slate of officers:

Chairperson	Harry Hillegas
Vice-Chair	Hank Bruns
Secretary	Jeff Nelson

The prepared ballot was explained and it was pointed out that there were spaces for write-in candidates on the ballot. Hillegas asked for additional nominations for the office of chair. There were none and they were closed. Hillegas then called for nominations for the office of vice-chair. Francis Bauer nominated Dick Richardson for vice-chair. There were no further nominations for vice-chair and they were closed. Hillegas then called for additional nominations for Secretary. There were none and they were closed.

Francis Bauer asked to speak to his nomination of Dick Richardson for vice-chair and was allowed to do so. The ballots were distributed, marked by those in attendance, and returned to the nominating committee members: Saunders and Vodegal. They counted the ballots and reported the results as follows:

Chair	Harry Hillegas	19 votes
Vice-Chair	Hank Bruns	17 votes
Secretary	Jeff Nelson	19 votes
Vice-Chair	Dick Richardson	3 votes

Bauer moved that the delegates be elected based on the votes cast on a unanimous ballot. Sullivan seconded the motion and it carried on a voice vote.

Hillegas suggested that an Ad Hoc operating committee put together a set of basic procedures to be followed to conduct the business of the Committee. Volunteers were solicited; Nelson and Vodegal volunteered. Hillegas also solicited help from volunteers interested in rounding out the Committee's membership both in terms of service represented and geography by seeking other participants. Bruns related that he had conversations with representatives of FCCA (Forestry Conservation Communications Association), EMS from the State Health Dept., State Emergency Services, and others. Bruns related that the general posture of the representatives he spoke with was to be made aware of committee activities from time to time. (Note from Secretary: Bruns is requested to forward copies of the minutes to persons not shown on the attached attendance list who may be interested in receiving them.)

Bauer suggested that each service eligible for licensing have at least two members actively participating in committee activities. Dick Shulak from the State of Wisconsin was recognized and suggested (based on his attendance at the Southern Lake Michigan Regional Planning meeting) that sub-committees be established (e.g. paging, mobile data terminal, frequency sharing, digital voice encryption, etc..) which would facilitate members making meaningful contributions to the planning effort based on their interest/expertise. Shulak also expressed interest in active committee participation . . . particularly as it related to coordination of frequency use between Wisconsin and Minnesota.

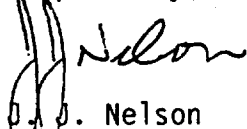
Shulak also suggested that other regions in the U.S. that had more definitively developed plans be used as a model for Minnesota's planning efforts. Saunders expressed the view that within the Minnesota region there was not as pressing an interest in the planning process as there were in other regions where other frequency allocations (including previous 800 Mhz allocations) had already been used up. He expressed the view that at some point the planning process would need to proceed when good faith efforts to recruit interest in the planning process was exhausted. Shulak indicated that at other planning meetings he attended initial attendance and interest was small but grew as the direction of the planning process moved ahead.

It was suggested that first drafts of other region's plans may be available at the National APCO meeting in Little Rock which would provide additional committee direction. Saunders

was asked to summarize the attendance questionnaires (results attached). It was suggested that those attending introduce themselves. Convenor Hillegas thanked those present for their remarks and attendance.

The next meeting was tentatively scheduled for September 14, 1988. **NOTE: THIS MEETING WILL NOT BE HELD ON 9/14/88. NOTICE OF THE ACTUAL MEETING TIME, DATE, AND PLACE WILL BE ANNOUNCED.** A motion to adjourn was entertained and moved.

Prepared by,



J. J. Nelson  
Recording Secretary  
(512) 348-7210

**BALLOT**

**Region 22 - Minnesota  
800 Mhz Planning Officers**

<u>Chairperson</u>	Harry Hillegas	-----
<u>Vice-Chair</u>	Hank Bruns	-----
<u>Secretary</u>	Jeff Nelson	-----

**Write-In Candidates**

<u>Chair</u>	-----
<u>Vice-Chair</u>	-----
<u>Secretary</u>	-----

**Election: July 13, 1988  
Andover, MN**

ATTENDANCE ROSTER  
800 MHz PLANNING COMMITTEE MEETINGS  
REGION 22 (MINNESOTA)

LAST NAME	FIRST	AFFILIATION	ADDRESS	CITY	ST	ZIP	PHONE
Anderson	David	SHERBURNE COUNTY	13880 Highway 10	Elk River	MN	55330	(612) 441-2522
Bahneman	Steven	ST.CROIX COUNTY	911 Fourth St.	Hudson	WI	54016	(612) 386-4747
Bauer	Francis	CITY OF PLYMOUTH	11010 Co. Rd. 15	Plymouth	MN	55441	(612) 545-6690
Beutelspacher	Jim	STATE OF MINNESOTA	658 Cedar St	St. Paul	MN	55155	(612) 296-7104
Brantner	Bruce	ST.CROIX COUNTY	911 Fourth St.	Hudson	WI	54016	(715) 386-4747
Bruns	Henry	STATE OF MINNESOTA	3926 Glenview Ave	Arden Hills	MN	55112	(612) 633-6613
Carlberg	Darrell	HEALTH ONE TRANSPORTATION	167 Grand Ave.	St. Paul	MN	55102	(612) 228-8410
Catlich	Neal	NORTH AMERICAN TELCOM	Box 938	Mankato	MN	56001	(800) 247-0433
Contreras	Freddie	STATE OF MINNESOTA	717 Delaware Street N.E.	Minneapolis	MN	55440	(612) 623-5486
Dristie	Jim	CITY OF BROOKLYN PARK	5800 85th Avenue No.	Brooklyn Park	MN	55443	(612) 424-8000
Gargaro	Sam	STATE OF MINNESOTA	Kelly Annex Suite 900	St. Paul	MN	55155	(612) 296-7402
Gerdes	Craig	CITY OF BLOOMINGTON	2215 West Old Shakopee E	Bloomington	MN	55431	(612) 881-2333
Hagen	John	ELERT & ASSOCIATES	140 Third Street South	Stillwater	MN	55082	(612) 430-2772
Halvorson	Roberta	HENNEPIN COUNTY	320 Washington Ave. Sout	Hopkins	MN	55343	(612) 930-2691
Hannon	Thomas	CITY OF ST. CLOUD	102 N. 7th Avenue	St. Cloud	MN	56303	(612) 251-3627
Hanson	Nora	STATE OF MINNESOTA	393 North Dunlap St.	Minneapolis	MN	55164	(612) 643-2164
Heglund	Robert	BRICKSON-GE COMMUNICATIONS	7241 Ohms Lane	Edina	MN	55439	(612) 831-2220
Hillegas	Harry	HENNEPIN COUNTY	300 South 6th St.	Minneapolis	MN	55487	(612) 348-5555
Johnson	Wayne	STATE OF MINNESOTA	320 W. 2nd St.	Duluth	MN	55802	(218) 723-4648
Johnson	David	CITY OF ST. CLOUD	807 Courthouse Square	St. Cloud	MN	56302	(612) 259-3800
Johnson	Lowell	WASHINGTON COUNTY	14900 N. 61st St.	Stillwater	MN	55082	(612) 779-5445
Kelly	Sharon	STATE OF MINNESOTA	B-5 State Capitol	St. Paul	MN	55155	(612) 296-2233
Kent	Paul	ST. LOUIS COUNTY	7823 Highway 135	Virginia	MN	55792	(218) 749-7150
Kilbo	Melvin	CITY OF ORONO	1335 Brown Road	Crystal Bay	MN	55323	(612) 473-7710
Kline	Diane	STATE OF MINNESOTA	717 S.E. Delaware Street	Minneapolis	MN	55440	(612) 623-5000
Kochevar	Roger	STATE OF MINNESOTA	Kelly Annex Suite 900	St. Paul	MN	55155	(612) 296-7419
Kurtz	Therese	CITY OF BLOOMINGTON	2215 West Old Shakopee E	Bloomington	MN	55431	(612) 881-5881
Lorenz	Al	MOTOROLA COMMUNICATIONS	6409 City West Parkway	Eden Prairie	MN	55344	(612) 942-3500
Motherway	Thomas	STATE OF MINNESOTA	B-5 State Capitol Buildi	St. Paul	MN	55155	(612) 296-0449
Mox	Morrie	ANOKA COUNTY	325 East Main St.	Anoka	MN	55303	(612) 755-2035
Nelson	Jeffrey	CITY OF MINNEAPOLIS	City Hall	Minneapolis	MN	55415	(612) 348-7210
Nihart	John	STATE OF MINNESOTA	2116 Campus Dr. S.E.	Rochester	MN	55904	(507) 285-7289
Nordby	Richard	STATE OF MINNESOTA	393 Dunlop Street	St. Paul	MN	55164	(612) 623-5283
Paulfranz	Theodore	CITY OF EDINA	4801 West 50th St.	Edina	MN	55424	(612) 927-8868
Peterson	Gary	SHERBURNE COUNTY	13880 Highway 10	Elk River	MN	55330	(612) 241-2700
Pollack	Nancy	St. Louis County	4848 Lackland Street	Duluth	MN	55811	(218) 726-2920
Porth	Dick	CITY OF BLOOMINGTON	2215 West Old Shakopee E	Bloomington	MN	55431	(612) 881-5881
Puffer	John	ANOKA COUNTY	325 East Main Street	Anoka	MN	55303	(612) 755-2035
Richardson	Dick	CITY OF MINNEAPOLIS	5601 Upton Ave South	Minneapolis	MN	55410	(612) 673-2488
Robinson	Daniel	ANOKA COUNTY	325 East Main Street	Anoka	MN	55303	(612) 755-2035
Roehler	John	E.F. JOHNSON CO.	11095 Viking Dr. #220	Eden Prairie	MN	55344	(612) 942-1018
Sadoff	Lynn	CELLULAR ONE	7900 Yerxes Ave So. #120	Bloomington	MN	55431	(612) 831-3531
Sanders	Phillip	CITY ST. PAUL	1590 Olene Ave North	Stillwater	MN	55082	(612) 292-3599
Sandwich	Steven	MINNETONKA POLICE DEPT	14600 Minnetonka Blvd	Minnetonka	MN	55345	(612) 933-2511
Shulak	Richard	STATE OF WISCONSIN	P.O. Box 7912	Madison	WI	53707	(608) 267-9763

ATTENDANCE ROSTER  
800 MHz PLANNING COMMITTEE MEETINGS  
REGION 22 (MINNESOTA)

LAST NAME	FIRST	AFFILIATION	ADDRESS	CITY	ST	ZIP	PHONE
Stevenson	Corky	HENNEPIN COUNTY	320 Washington Ave. Sout	Hopkins	MN	55343	(612) 930-2693
Sullivan	Judy	STATE OF MINNESOTA	B-5 State Capitol	St. Paul	MN	55155	(612) 296-2233
Swanson	Craig	CITY OF EDINA	4801 West 50th St.	Edina	MN	55424	(612) 927-8861
T'Kach	Steven	ST. CROIX COUNTY	911 Fourth Street	Hudson	WI	54016	(715) 386-2345
Vaccaro	Paul	BRICKSON-GE COMMUNICATIONS	7241 Ohms Lane	Edina	MN	55439	(612) 831-2220
Vodegel	Donald	HENNEPIN COUNTY	9300 Naper St.	Golden Valley	MN	55427	(612) 525-6206
Walsh	Jack	CITY OF MINNEAPOLIS	313 South 3rd Street	Minneapolis	MN	55415	(612) 673-2440
Waltz	David	ST. PAUL-RAMSBY MEDICAL CTR	640 Jackson Street	St. Paul	MN	55101	(612) 221-3034
Witschen	Dick	SHERBURNE COUNTY	13880 Highway 10	Blk River	MN	55330	(612) 441-2500
Wojack	Bruce	ANOKEA COUNTY	325 East Main St	Anoka	MN	55303	(612) 421-4760

EXHIBIT "C"

POPULATION DISTRIBUTION  
REGION 22

<u>COUNTY</u>	<u>COUNTY SEAT</u>	<u>AREA (Sq. Mi.)</u>	<u>LAND (%)</u>	<u>CENSUS 1980</u>	<u>CENSUS 1990</u>	<u>CHANGE (%)</u>	<u>(Net) 2000</u>
AITKIN	AITKIN	1834	94.87	13404	12425	-7.0	14578
ANOKA	ANOKA	430	85.25	195998	243641	24.0	281110 *
BECKER	DETROIT LAKES	1312	87.61	29336	27881	-5.0	37329
BELTRAMI	BRIDGI	2507	75.07	30982	34384	11.0	39550
BENTON	POLEY	408	99.05	25187	30185	20.0	32900
BIG STONE	ORTONVILLE	497	89.56	7716	6285	19.0	7022
BLUE EARTH	MANKATO	749	97.20	52314	54044	3.0	54414
BROWN	NEW ULM	610	98.79	28645	26984	-6.0	28568
CARLTON	CARLTON	864	98.27	29936	29259	-2.0	33488
CARVER	CHASKA	351	90.40	37046	47915	29.0	62220 *
CASS	WALKEE	2033	77.61	21050	21791	4.0	27130
CHIPPEWA	MONTEVIDEO	584	99.48	14941	13228	-11.0	14976
CHISAGO	CENTRE CITY	417	93.01	25717	30521	19.0	44657
CLAY	MOORHEAD	1049	98.95	49327	50422	2.0	50688
CLEARWATER	BAGLEY	999	95.03	8761	8309	-5.0	10073
COOK	GRAND MARAIS	1412	89.09	4092	3868	-10.0	4599
COTTONWOOD	WINDOM	640	98.44	14854	12694	-15.0	14123
CROW WING	BRAINERD	1008	83.96	41722	44249	6.0	53181
DAKOTA	HASTINGS	574	95.98	194279	275227	42.0	337630 *
DODGE	MANTORVILLE	439	99.99	14773	15731	6.0	19122
DOUGLAS	ALBANDRIA	643	84.33	27839	28674	3.0	37461
FARIBAULT	BLUE EARTH	714	98.69	19714	16937	-14.0	17770
FILLMORE	PRESTON	862	99.98	21930	20777	-5.0	22046
FREEBORN	ALBERT LEA	705	97.09	36329	33060	-9.0	36278
GOODHUE	BED WING	763	95.72	38749	40690	5.0	45339
GRANT	ELBOW LAKE	547	93.01	7171	6246	-13.0	6936
HENNEPIN	MINNEAPOLIS	541	85.11	941411	1032431	10.0	1108110 *
HOUSTON	CALEDONIA	564	96.45	18382	18497	1.0	20087
HUBBARD	PARK RAPIDS	936	90.37	14098	14939	6.0	19004
ISANTI	CAMBRIDGE	440	95.22	23600	25921	10.0	39943
ITASCA	GRAND RAPIDS	2661	91.02	43069	40863	-5.0	52987
JACKSON	JACKSON	699	96.58	13690	11677	-15.0	12413
KANABEC	MORA	527	98.14	12161	12802	5.0	17153
KANDIYOHI	WILMAR	784	89.01	36763	38761	5.0	45787
KITSON	HALLOCE	1104	99.34	6672	5767	-14.0	5970
KOOCHICING	INTERNATIONAL FALLS	3108	99.52	17571	16299	-7.0	18531
LAC QUI PARLE	MADISON	772	97.03	10592	8924	-16.0	10115
LAKE	TWO HARBORS	2053	61.38	13043	10415	-20.0	11379
LAKE OF THE WOODS	BAUDETTE	1296	61.66	3764	4076	8.0	3698
LE SUEUR	LE CENTRE	446	92.08	23434	23239	-1.0	26835
LINCOLN	IVANHOE	538	96.77	8207	6890	-16.0	7875
LYON	MARSHALL	714	98.45	25207	24789	-2.0	26759
MCLBOD	GLENCOE	489	96.10	29657	32030	8.0	32768
MAHONMEM	MAHONMEM	559	93.14	5535	5044	-9.0	4938
MARSHALL	WARREN	1760	95.57	13027	10993	-16.0	12955

EXHIBIT "C"

POPULATION DISTRIBUTION  
REGION 22

COUNTY	COUNTY SEAT	AREA (Sq.Mi.)	LAND (%)	CENSUS 1980	CENSUS 1990	CHANGE (%)	(Est) 2000
MARTIN	FAIRMONT	706	96.60	24687	22914	-7.0	25650
NEBEKKE	LITCHFIELD	624	91.42	20594	20846	1.0	23730
MILLE LACS	MILACA	578	62.33	18430	18670	1.0	22517
MORRISON	LITTLE FALLS	1124	97.42	29311	29604	1.0	32576
MOWER	AUSTIN	711	99.97	40390	37385	-7.0	39232
MURRAY	SLAYTON	702	96.80	11507	9660	-16.0	10033
NICOLLET	ST. PETER	440	95.08	26929	28076	4.0	30139
NOBLES	WORTHINGTON	714	98.84	21840	20098	-8.0	21069
NORMAN	ADA	877	99.75	9379	7975	-15.0	8275
OLMSTED	ROCHESTER	655	99.71	92006	106470	16.0	106947
OTTER TAIL	PERGUS FALLS	1973	85.51	51937	50714	-2.0	61761
PENNINGTON	THIEF RIVER FALLS	618	99.57	15258	13306	-13.0	16126
PINE	PINE CITY	1421	98.55	19871	21264	7.0	25127
PIPESTONE	PIPESTONE	466	99.93	11690	10491	-10.0	10297
POLK	CROOKSTON	1982	98.75	34844	32498	-7.0	35234
POPE	GLENWOOD	668	88.69	11657	10745	-8.0	12476
RAMSEY	ST. PAUL	154	88.76	459784	485765	6.0	503010 *
RED LAKE	RED LAKE FALLS	433	99.52	5471	4525	-17.0	5315
REDWOOD	REDWOOD FALLS	882	99.74	19341	17254	-11.0	18406
RENVILLE	OLIVIA	984	99.39	20401	17673	-13.0	19232
RICE	PARIBAULT	501	96.11	46087	49183	7.0	52370
ROCK	LUVERNE	483	99.99	10703	9806	-8.0	10705
ROSEAU	ROSEAU	1677	97.95	12574	15026	20.0	13759
ST. LOUIS	DULUTH	6125	88.88	222229	198213	-11.0	210272
SCOTT	SHAROPPE	357	92.73	43784	57846	32.0	76910 *
SHERBURNE	BLK RIVER	435	95.41	29908	41945	40.0	60759
SIBLEY	GAYLORD	593	97.03	15448	14366	-7.0	15123
STEARNS	ST. CLOUD	1338	95.56	108161	118791	10.0	127858
STEELE	OWATONNA	431	99.24	30328	30729	1.0	34908
STEVENS	MORRIS	560	96.11	11322	10634	-6.0	11263
SWIFT	BENSON	743	97.34	12920	10724	-17.0	12652
TODD	LONG PRAIRIE	941	94.70	24991	23363	-7.0	29053
TRAVERSE	WHEATON	575	97.37	5542	4463	-19.0	4711
WABASHA	WABASHA	537	97.12	19335	19744	2.0	22898
WADENA	WADENA	538	98.77	14192	13154	-7.0	16038
WASECA	WASECA	422	98.89	18448	18079	-2.0	21692
WASHINGTON	STILLWATER	390	91.31	113571	145896	28.0	177340 *
WATONWAN	ST. JAMES	435	98.72	12361	11682	-5.0	11086
WILKIN	BERCKENRIDGE	751	99.79	8454	7516	-11.0	8027
WINONA	WINONA	630	99.72	46256	47828	3.0	48389
WRIGHT	BUFFALO	672	85.36	58681	68710	17.0	98848
YELLOW MEDICINE	GRANITE FALLS	758	98.94	13653	11684	-14.0	12127

\*\*\* Total \*\*\* 79546 4075970 4375099 7.3

EXHIBIT "D"

Input Data For Multiple Site Systems

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* WADENA	A 46 29 7	94 58 14	4	11.00	-18.80	100.00	4
* WADENA	B 46 40 48	94 58 14	4	11.00	-18.80	100.00	4
* HUBBARD	A 46 56 29	94 54 30	4	13.00	-16.00	100.00	4
* HUBBARD	B 47 15 30	94 54 30	4	13.00	-16.00	100.00	4
* HUBBARD	C 47 6 10	94 54 30	4	13.00	-16.00	100.00	4
* HOUSTON	A 43 44 59	91 35 7	4	8.00	-23.60	100.00	4
* HOUSTON	B 43 44 59	91 23 35	4	8.00	-23.60	100.00	4
* HOUSTON	C 43 36 7	91 23 35	4	8.00	-23.60	100.00	4
* HOUSTON	D 43 36 7	91 35 7	4	8.00	-23.60	100.00	4
* WABASHA	A 44 17 33	92 2 54	4	8.00	-18.60	100.00	3
* WABASHA	B 44 12 14	92 12 12	4	8.00	-18.60	100.00	3
* WABASHA	C 44 17 20	92 25 48	4	8.00	-18.60	100.00	3
* WABASHA	D 44 21 46	92 17 23	4	8.00	-18.60	100.00	3
* DODGE	A 44 5 37	92 48 38	4	8.00	-18.60	100.00	3
* DODGE	B 44 5 37	92 54 20	4	8.00	-18.60	100.00	3
* DODGE	C 43 56 9	92 54 53	4	8.00	-18.60	100.00	3
* DODGE	D 43 56 9	92 48 22	4	8.00	-18.60	100.00	3
* STEELE	A 43 56 31	93 10 37	4	8.00	-18.60	100.00	3
* STEELE	B 43 56 31	93 16 19	4	8.00	-18.60	100.00	3
* STEELE	C 44 5 59	93 16 19	4	8.00	-18.60	100.00	3
* STEELE	D 44 5 59	93 10 53	4	8.00	-18.60	100.00	3
* RICE	A 44 17 6	93 10 53	4	8.00	-18.60	100.00	3
* RICE	B 44 22 40	93 10 53	4	8.00	-18.60	100.00	3
* RICE	C 44 26 45	93 24 2	4	8.00	-18.60	100.00	3
* RICE	D 44 16 55	93 23 45	4	8.00	-18.60	100.00	3
* WASBECA	A 43 56 43	93 32 35	4	8.00	-18.60	100.00	3
* WASBECA	B 43 56 43	93 37 25	4	8.00	-18.60	100.00	3
* WASBECA	C 44 5 59	93 37 25	4	8.00	-18.60	100.00	3
* WASBECA	D 44 5 59	93 32 35	4	8.00	-18.60	100.00	3
* ROCK	A 43 44 50	96 12 13	4	8.00	-23.60	100.00	4
* ROCK	B 43 44 50	96 18 44	4	8.00	-23.60	100.00	4
* ROCK	C 43 36 23	96 18 44	4	8.00	-23.60	100.00	4
* ROCK	D 43 36 23	96 10 55	4	8.00	-23.60	100.00	4
* LE SUEUR	A 44 26 27	93 39 46	4	8.00	-18.60	100.00	3
* LE SUEUR	B 44 26 27	93 46 56	4	8.00	-18.60	100.00	3
* LE SUEUR	C 44 19 60	93 53 7	4	8.00	-18.60	100.00	3
* LE SUEUR	D 44 17 20	93 39 27	4	8.00	-18.60	100.00	3

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* SCOTT	A 44 42 41	93 29 28	4	8.00	-5.20	100.00	2
* SCOTT	B 44 38 1	93 23 56	4	8.00	-5.20	100.00	2
* SCOTT	C 44 35 21	93 46 43	4	8.00	-5.20	100.00	2
* SCOTT	D 44 37 8	93 36 18	4	8.00	-5.20	100.00	2
* WATONWAN	A 43 56 33	94 29 31	4	8.00	-23.60	100.00	4
* WATONWAN	B 43 56 33	94 42 54	4	8.00	-23.60	100.00	4
* WATONWAN	C 44 0 47	94 42 54	4	8.00	-23.60	100.00	4
* WATONWAN	D 44 0 47	94 29 5	4	8.00	-23.60	100.00	4
* PIPESTONE	A 44 6 11	96 11 29	4	8.00	-23.60	100.00	4
* PIPESTONE	B 44 6 11	96 19 1	4	8.00	-23.60	100.00	4
* PIPESTONE	C 43 56 33	96 19 1	4	8.00	-23.60	100.00	4
* PIPESTONE	D 43 56 33	96 11 29	4	8.00	-23.60	100.00	4
* ISANTI	A 45 28 32	93 8 35	4	7.00	-20.50	100.00	3
* ISANTI	B 45 28 58	93 22 55	4	7.00	-20.50	100.00	3
* ISANTI	C 45 38 6	93 22 55	4	7.00	-20.50	100.00	3
* ISANTI	D 45 38 6	93 16 24	4	7.00	-20.50	100.00	3
* BBNTON	A 45 42 59	93 54 0	4	8.00	-5.20	100.00	2
* BBNTON	B 45 42 59	94 9 47	4	8.00	-5.20	100.00	2
* BBNTON	C 45 39 39	94 5 15	4	8.00	-5.20	100.00	2
* BBNTON	D 45 39 39	93 53 41	4	8.00	-5.20	100.00	2
* CARLTON	A 46 37 30	92 52 55	4	11.00	-13.80	100.00	3
* CARLTON	B 46 33 3	92 52 55	4	11.00	-13.80	100.00	3
* CARLTON	C 46 33 3	92 29 46	4	11.00	-13.80	100.00	3
* CARLTON	D 46 37 30	92 29 46	4	11.00	-13.80	100.00	3
* DOUGLAS	A 45 58 16	95 20 44	4	11.00	-18.80	100.00	4
* DOUGLAS	B 45 53 49	95 20 44	4	11.00	-18.80	100.00	4
* DOUGLAS	C 45 53 49	95 34 13	4	11.00	-18.80	100.00	4
* DOUGLAS	D 45 58 16	95 34 13	4	11.00	-18.80	100.00	4
* POPE	A 45 32 14	95 18 10	4	11.00	-18.80	100.00	4
* POPE	B 45 32 14	95 32 38	4	11.00	-18.80	100.00	4
* POPE	C 45 37 21	95 32 57	4	11.00	-18.80	100.00	4
* POPE	D 45 37 21	95 18 29	4	11.00	-18.80	100.00	4
* STEVENS	A 45 37 21	95 56 6	4	11.00	-18.80	100.00	4
* STEVENS	B 45 37 21	96 4 47	4	11.00	-18.80	100.00	4
* STEVENS	C 45 32 54	96 4 47	4	11.00	-18.80	100.00	4
* STEVENS	D 45 32 54	95 56 6	4	11.00	-18.80	100.00	4
* GRANT	A 45 52 56	95 56 6	4	11.00	-18.80	100.00	4
* GRANT	B 45 52 56	96 4 47	4	11.00	-18.80	100.00	4
* GRANT	C 45 59 36	96 4 47	4	11.00	-18.80	100.00	4

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name		Site <u>Latitude</u>	Site <u>Longitude</u>	Qty of <u>Chann</u>	Coverage <u>(mi)</u>	KRP <u>(Db/KW)</u>	Antenna <u>Ht (ft)</u>	Environment <u>Type</u>
* GRANT	D	45 59 36	95 56 6	4	11.00	-18.80	100.00	4
* KITTSON	A	48 40 46	96 35 21	4	11.00	-18.80	100.00	4
* KITTSON	B	48 40 46	96 58 30	4	11.00	-18.80	100.00	4
* KITTSON	C	48 52 2	96 58 30	4	11.00	-18.80	100.00	4
* KITTSON	D	48 52 2	96 35 21	4	11.00	-18.80	100.00	4
* MAHONEN	A	47 23 26	95 54 54	4	8.00	-23.60	100.00	4
* MAHONEN	B	47 23 26	95 42 46	4	8.00	-23.60	100.00	4
* MAHONEN	C	47 14 7	95 42 46	4	8.00	-23.60	100.00	4
* MAHONEN	D	47 14 7	95 54 54	4	8.00	-23.60	100.00	4
* WINONA	A	43 56 4	91 29 21	4	8.00	-18.60	100.00	3
* WINONA	B	43 57 10	91 55 37	4	8.00	-18.60	100.00	3
* WINONA	C	43 57 10	91 41 12	4	8.00	-18.60	100.00	3
* WINONA	D	44 5 49	91 55 37	4	8.00	-18.60	100.00	3
* WINONA	E	44 1 9	91 48 49	4	8.00	-18.60	100.00	3
* BIG STONE	A	45 19 18	96 15 47	4	8.00	-23.60	100.00	4
* BIG STONE	B	45 29 9	96 22 33	4	8.00	-23.60	100.00	4
* BIG STONE	C	45 29 9	96 40 59	4	8.00	-23.60	100.00	4
* BIG STONE	D	45 29 9	96 30 51	4	8.00	-23.60	100.00	4
* BIG STONE	E	45 24 13	96 21 50	4	8.00	-23.60	100.00	4
* TRAVERSE	A	45 41 21	96 23 41	4	8.00	-23.60	100.00	4
* TRAVERSE	B	45 39 17	96 43 49	4	8.00	-23.60	100.00	4
* TRAVERSE	C	45 43 41	96 29 23	4	8.00	-23.60	100.00	4
* TRAVERSE	D	45 54 51	96 22 55	4	8.00	-23.60	100.00	4
* TRAVERSE	E	45 54 51	96 27 29	4	8.00	-23.60	100.00	4
* CLEARWATER	A	47 16 50	95 21 5	4	10.00	-20.20	100.00	4
* CLEARWATER	B	47 27 31	95 21 5	4	10.00	-20.20	100.00	4
* CLEARWATER	C	47 37 32	95 21 5	4	10.00	-20.20	100.00	4
* CLEARWATER	D	47 47 33	95 22 3	4	10.00	-20.20	100.00	4
* CLEARWATER	E	47 53 53	95 23 31	4	10.00	-20.20	100.00	4
* FILLMORE	A	43 36 20	92 18 25	4	8.00	-23.60	100.00	4
* FILLMORE	B	43 35 54	91 52 48	4	8.00	-23.60	100.00	4
* FILLMORE	C	43 35 54	92 4 20	4	8.00	-23.60	100.00	4
* FILLMORE	D	43 44 45	91 52 48	4	8.00	-23.60	100.00	4
* FILLMORE	E	43 44 45	92 4 20	4	8.00	-23.60	100.00	4
* FILLMORE	F	43 44 45	92 18 45	4	8.00	-23.60	100.00	4
* OLMSTED	A	43 56 43	92 13 1	6	8.00	-5.20	100.00	2
* OLMSTED	B	44 0 29	92 13 1	6	8.00	-5.20	100.00	2
* OLMSTED	C	44 6 2	92 26 38	6	8.00	-5.20	100.00	2
* OLMSTED	D	44 6 2	92 32 28	6	8.00	-5.20	100.00	2

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* OLMSTED	E 43 55 37	92 32 28	6	8.00	-5.20	100.00	2
* OLMSTED	F 43 56 57	92 22 25	6	8.00	-5.20	100.00	2
* NOWB	A 43 35 27	92 35 14	4	8.00	-18.60	100.00	3
* NOWB	B 43 35 27	92 55 5	4	8.00	-18.60	100.00	3
* NOWB	C 43 35 27	92 43 34	4	8.00	-18.60	100.00	3
* NOWB	D 43 44 19	92 34 55	4	8.00	-18.60	100.00	3
* NOWB	E 43 44 45	92 55 5	4	8.00	-18.60	100.00	3
* NOWB	F 43 44 45	92 46 26	4	8.00	-18.60	100.00	3
* FREEBORN	A 43 35 45	93 11 9	4	8.00	-18.60	100.00	3
* FREEBORN	B 43 35 45	93 30 27	4	8.00	-18.60	100.00	3
* FREEBORN	C 43 35 45	93 20 48	4	8.00	-18.60	100.00	3
* FREEBORN	D 43 45 2	93 20 48	4	8.00	-18.60	100.00	3
* FREEBORN	E 43 45 2	93 11 9	4	8.00	-18.60	100.00	3
* FREEBORN	F 43 45 2	93 30 27	4	8.00	-18.60	100.00	3
* FARIBAULT	A 43 45 2	93 47 20	4	8.00	-23.60	100.00	4
* FARIBAULT	B 43 45 2	94 6 37	4	8.00	-23.60	100.00	4
* FARIBAULT	C 43 45 2	93 56 58	4	8.00	-23.60	100.00	4
* FARIBAULT	D 43 35 45	93 56 58	4	8.00	-23.60	100.00	4
* FARIBAULT	E 43 35 45	93 47 20	4	8.00	-23.60	100.00	4
* FARIBAULT	F 43 35 45	94 6 37	4	8.00	-23.60	100.00	4
* MARTIN	A 43 35 45	94 23 30	4	8.00	-23.60	100.00	4
* MARTIN	B 43 35 45	94 42 48	4	8.00	-23.60	100.00	4
* MARTIN	C 43 35 45	94 33 9	4	8.00	-23.60	100.00	4
* MARTIN	D 43 45 2	94 33 9	4	8.00	-23.60	100.00	4
* MARTIN	E 43 45 2	94 23 30	4	8.00	-23.60	100.00	4
* MARTIN	F 43 45 2	94 42 48	4	8.00	-23.60	100.00	4
* JACKSON	A 43 45 2	94 59 40	4	8.00	-23.60	100.00	4
* JACKSON	B 43 45 2	95 18 58	4	8.00	-23.60	100.00	4
* JACKSON	C 43 45 2	95 9 19	4	8.00	-23.60	100.00	4
* JACKSON	D 43 35 45	95 9 19	4	8.00	-23.60	100.00	4
* JACKSON	E 43 35 45	94 59 40	4	8.00	-23.60	100.00	4
* JACKSON	F 43 35 45	95 18 58	4	8.00	-23.60	100.00	4
* NOBLES	A 43 35 56	95 36 8	4	8.00	-23.60	100.00	4
* NOBLES	B 43 35 56	95 54 52	4	8.00	-23.60	100.00	4
* NOBLES	C 43 35 56	95 46 11	4	8.00	-23.60	100.00	4
* NOBLES	D 43 44 50	95 46 11	4	8.00	-23.60	100.00	4
* NOBLES	E 43 44 50	95 54 52	4	8.00	-23.60	100.00	4
* NOBLES	F 43 44 50	95 35 35	4	8.00	-23.60	100.00	4

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* BLUE BARTH	A 43 57 5	93 54 19	4	8.00	-18.60	100.00	3
* BLUE BARTH	B 43 57 18	94 13 35	4	8.00	-18.60	100.00	3
* BLUE BARTH	C 43 57 18	94 4 9	4	8.00	-18.60	100.00	3
* BLUE BARTH	D 44 10 39	94 17 39	4	8.00	-18.60	100.00	3
* BLUE BARTH	E 44 8 26	93 54 47	4	8.00	-18.60	100.00	3
* BLUE BARTH	F 44 3 59	94 6 22	4	8.00	-18.60	100.00	3
* COTTONWOOD	A 44 0 47	94 59 10	4	8.00	-23.60	100.00	4
* COTTONWOOD	B 44 5 36	95 19 14	4	8.00	-23.60	100.00	4
* COTTONWOOD	C 44 5 36	95 13 19	4	8.00	-23.60	100.00	4
* COTTONWOOD	D 43 56 33	95 19 31	4	8.00	-23.60	100.00	4
* COTTONWOOD	E 43 56 33	94 59 30	4	8.00	-23.60	100.00	4
* COTTONWOOD	F 43 56 33	95 9 22	4	8.00	-23.60	100.00	4
* MURRAY	A 43 56 33	95 35 32	4	8.00	-23.60	100.00	4
* MURRAY	B 43 56 33	95 55 36	4	8.00	-23.60	100.00	4
* MURRAY	C 43 56 33	95 45 34	4	8.00	-23.60	100.00	4
* MURRAY	D 44 6 11	95 45 34	4	8.00	-23.60	100.00	4
* MURRAY	E 44 6 11	95 35 32	4	8.00	-23.60	100.00	4
* MURRAY	F 44 6 11	95 55 36	4	8.00	-23.60	100.00	4
* LYON	A 44 31 38	95 44 19	4	8.00	-23.60	100.00	4
* LYON	B 44 31 38	95 57 8	4	8.00	-23.60	100.00	4
* LYON	C 44 18 8	95 57 8	4	8.00	-23.60	100.00	4
* LYON	D 44 23 56	95 57 8	4	8.00	-23.60	100.00	4
* LYON	E 44 16 13	95 44 35	4	8.00	-23.60	100.00	4
* LYON	F 44 23 56	95 44 35	4	8.00	-23.60	100.00	4
* LINCOLN	A 44 18 8	96 12 10	4	8.00	-23.60	100.00	4
* LINCOLN	B 44 31 38	96 12 10	4	8.00	-23.60	100.00	4
* LINCOLN	C 44 31 38	96 19 42	4	8.00	-23.60	100.00	4
* LINCOLN	D 44 18 8	96 19 42	4	8.00	-23.60	100.00	4
* LINCOLN	E 44 23 56	96 19 42	4	8.00	-23.60	100.00	4
* LINCOLN	F 44 23 56	96 12 10	4	8.00	-23.60	100.00	4
* RAMSEY	A 44 56 7	93 1 39	20	4.00	-1.90	100.00	1
* RAMSEY	B 44 55 47	93 9 18	20	4.00	-1.90	100.00	1
* RAMSEY	C 45 0 41	93 7 50	20	4.00	-1.90	100.00	1
* RAMSEY	D 45 4 21	93 9 38	20	4.00	-1.90	100.00	1
* RAMSEY	E 45 4 21	93 3 16	20	4.00	-1.90	100.00	1
* RAMSEY	F 45 0 14	93 3 16	20	4.00	-1.90	100.00	1
* KANDIYOHI	A 44 59 9	94 53 26	4	8.00	-18.60	100.00	3
* KANDIYOHI	B 44 59 9	95 6 56	4	8.00	-18.60	100.00	3
* KANDIYOHI	C 45 18 27	95 6 56	4	8.00	-18.60	100.00	3
* KANDIYOHI	D 45 8 4	95 6 56	4	8.00	-18.60	100.00	3
* KANDIYOHI	E 45 18 27	94 53 26	4	8.00	-18.60	100.00	3
* KANDIYOHI	F 45 8 4	94 53 26	4	8.00	-18.60	100.00	3
* CHISAGO	A 45 38 32	93 1 30	4	7.00	-7.10	100.00	2
* CHISAGO (Cont'd)	B 45 22 58	92 53 28	4	7.00	-7.10	100.00	2

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chan	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* CHISAGO	C 45 22 58	92 50 13	4	7.00	-7.10	100.00	2
* CHISAGO	D 45 25 38	92 46 58	4	7.00	-7.10	100.00	2
* CHISAGO	E 45 28 18	92 50 13	4	7.00	-7.10	100.00	2
* CHISAGO	F 45 29 52	92 53 28	4	7.00	-7.10	100.00	2
* ANOKA	A 45 18 58	93 8 27	9	7.00	-7.10	100.00	2
* ANOKA	B 45 12 17	93 8 27	9	7.00	-7.10	100.00	2
* ANOKA	C 45 8 30	93 14 57	9	7.00	-7.10	100.00	2
* ANOKA	D 45 19 24	93 23 25	9	7.00	-7.10	100.00	2
* ANOKA	E 45 19 24	93 16 15	9	7.00	-7.10	100.00	2
* ANOKA	F 45 14 57	93 19 50	9	7.00	-7.10	100.00	2
* SHERRBURN	A 45 28 18	93 37 57	4	7.00	-7.10	100.00	2
* SHERRBURN	B 45 21 11	93 37 57	4	7.00	-7.10	100.00	2
* SHERRBURN	C 45 30 05	94 02 41	4	7.00	-7.10	100.00	2
* SHERRBURN	D 45 28 18	93 50 19	4	7.00	-7.10	100.00	2
* SHERRBURN	E 45 23 51	93 46 25	4	7.00	-7.10	100.00	2
* SHERRBURN	F 45 28 45	93 55 12	4	7.00	-7.10	100.00	2
* PINE	A 46 17 28	92 29 46	4	11.00	-18.80	100.00	4
* PINE	B 46 8 34	92 29 46	4	11.00	-18.80	100.00	4
* PINE	C 46 17 28	92 52 55	4	11.00	-18.80	100.00	4
* PINE	D 46 1 54	92 52 55	4	11.00	-18.80	100.00	4
* PINE	E 45 51 53	92 56 28	4	11.00	-18.80	100.00	4
* PINE	F 46 3 1	92 44 53	4	11.00	-18.80	100.00	4
* CROW WING	A 46 16 44	93 59 34	4	11.00	-13.80	100.00	3
* CROW WING	B 46 15 24	94 9 59	4	11.00	-13.80	100.00	3
* CROW WING	C 46 40 46	94 8 41	4	11.00	-13.80	100.00	3
* CROW WING	D 46 27 25	94 8 41	4	11.00	-13.80	100.00	3
* CROW WING	E 46 40 46	93 58 23	4	11.00	-13.80	100.00	3
* CROW WING	F 46 29 38	93 59 21	4	11.00	-13.80	100.00	3
* TODD	A 46 14 4	94 57 52	4	11.00	-18.80	100.00	4
* TODD	B 45 54 2	94 57 52	4	11.00	-18.80	100.00	4
* TODD	C 46 5 10	94 57 52	4	11.00	-18.80	100.00	4
* TODD	D 46 14 4	94 51 9	4	11.00	-18.80	100.00	4
* TODD	E 45 54 2	94 51 9	4	11.00	-18.80	100.00	4
* TODD	F 46 5 10	94 51 9	4	11.00	-18.80	100.00	4
* WILKIN	A 46 7 19	96 23 41	4	8.00	-23.60	100.00	4
* WILKIN	B 46 31 43	96 25 35	4	8.00	-23.60	100.00	4
* WILKIN	C 46 23 55	96 25 35	4	8.00	-23.60	100.00	4
* WILKIN	D 46 16 8	96 25 35	4	8.00	-23.60	100.00	4
* WILKIN	E 46 23 55	96 32 20	4	8.00	-23.60	100.00	4
* WILKIN	F 46 31 43	96 39 5	4	8.00	-23.60	100.00	4

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* BECKER	A 46 51 42	95 21 52	4	11.00	-13.80	100.00	3
* BECKER	B 46 51 42	95 58 60	4	11.00	-13.80	100.00	3
* BECKER	C 46 51 42	95 42 7	4	11.00	-13.80	100.00	3
* BECKER	D 47 1 18	95 58 60	4	11.00	-13.80	100.00	3
* BECKER	E 47 1 18	95 42 7	4	11.00	-13.80	100.00	3
* BECKER	F 47 1 18	95 21 52	4	11.00	-13.80	100.00	3
* NORMAN	A 47 14 7	96 11 52	4	8.00	-23.60	100.00	4
* NORMAN	B 47 14 29	96 42 18	4	8.00	-23.60	100.00	4
* NORMAN	C 47 14 29	96 27 45	4	8.00	-23.60	100.00	4
* NORMAN	D 47 24 22	96 12 23	4	8.00	-23.60	100.00	4
* NORMAN	E 47 24 22	96 29 22	4	8.00	-23.60	100.00	4
* NORMAN	F 47 24 22	96 41 29	4	8.00	-23.60	100.00	4
* PENNINGTON	A 48 4 27	95 43 1	4	7.00	-20.50	100.00	3
* PENNINGTON	B 48 2 35	95 40 35	4	7.00	-20.50	100.00	3
* PENNINGTON	C 48 4 27	95 55 8	4	7.00	-20.50	100.00	3
* PENNINGTON	D 48 4 27	96 4 50	4	7.00	-20.50	100.00	3
* PENNINGTON	E 48 4 27	96 24 14	4	7.00	-20.50	100.00	3
* PENNINGTON	F 48 4 27	96 14 32	4	7.00	-20.50	100.00	3
* GOODHUE	A 44 30 38	92 25 48	4	7.00	-20.50	100.00	3
* GOODHUE	B 44 37 30	92 40 23	4	7.00	-20.50	100.00	3
* GOODHUE	C 44 25 58	92 54 48	4	7.00	-20.50	100.00	3
* GOODHUE	D 44 28 11	92 42 55	4	7.00	-20.50	100.00	3
* GOODHUE	E 44 17 7	92 55 25	4	7.00	-20.50	100.00	3
* GOODHUE	F 44 17 7	92 40 50	4	7.00	-20.50	100.00	3
* GOODHUE	G 44 27 18	92 32 50	4	7.00	-20.50	100.00	3
* REDWOOD	A 44 17 45	95 13 49	4	8.00	-23.60	100.00	4
* REDWOOD	B 44 17 45	95 27 12	4	8.00	-23.60	100.00	4
* REDWOOD	C 44 26 38	95 27 12	4	8.00	-23.60	100.00	4
* REDWOOD	D 44 36 16	95 16 19	4	8.00	-23.60	100.00	4
* REDWOOD	E 44 27 1	95 0 43	4	8.00	-23.60	100.00	4
* REDWOOD	F 44 22 12	95 0 9	4	8.00	-23.60	100.00	4
* REDWOOD	G 44 30 6	95 10 1	4	8.00	-23.60	100.00	4
* KANEDEC	A 45 48 53	93 23 24	4	7.00	-25.50	100.00	4
* KANEDEC	B 45 53 22	93 23 41	4	7.00	-25.50	100.00	4
* KANEDEC	C 46 4 30	93 17 54	4	7.00	-25.50	100.00	4
* KANEDEC	D 46 4 30	93 11 8	4	7.00	-25.50	100.00	4
* KANEDEC	E 45 49 35	93 24 20	4	7.00	-25.50	100.00	4
* KANEDEC	F 45 49 9	93 15 33	4	7.00	-25.50	100.00	4
* KANEDEC	G 45 56 29	93 15 33	4	7.00	-25.50	100.00	4
* HILLE LACS	A 45 38 55	93 38 27	4	7.00	-25.50	100.00	4
* HILLE LACS	B 45 47 49	93 38 27	4	7.00	-25.50	100.00	4
* HILLE LACS	C 45 56 43	93 38 27	4	7.00	-25.50	100.00	4

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* MILLE LACS	D 46 8 30	93 40 43	4	7.00	-25.50	100.00	4
* MILLE LACS	E 46 2 43	93 40 43	4	7.00	-25.50	100.00	4
* MILLE LACS	F 46 4 3	93 34 13	4	7.00	-25.50	100.00	4
* MILLE LACS	G 46 9 37	93 33 34	4	7.00	-25.50	100.00	4
* AITKIN	A 46 22 31	93 37 24	4	11.00	-18.80	100.00	4
* AITKIN	B 46 38 6	93 35 7	4	11.00	-18.80	100.00	4
* AITKIN	C 46 53 40	93 35 7	4	11.00	-18.80	100.00	4
* AITKIN	D 46 53 40	93 14 52	4	11.00	-18.80	100.00	4
* AITKIN	E 46 40 19	93 14 52	4	11.00	-18.80	100.00	4
* AITKIN	F 46 26 58	93 14 52	4	11.00	-18.80	100.00	4
* AITKIN	G 46 15 51	93 14 52	4	11.00	-18.80	100.00	4
* COOK	A 47 42 55	90 49 36	4	11.00	-18.80	100.00	4
* COOK	B 48 6 57	90 49 36	4	11.00	-18.80	100.00	4
* COOK	C 47 55 5	90 49 36	4	11.00	-18.80	100.00	4
* COOK	D 47 58 3	90 26 28	4	11.00	-18.80	100.00	4
* COOK	E 47 49 9	90 26 28	4	11.00	-18.80	100.00	4
* COOK	F 47 58 3	90 3 19	4	11.00	-18.80	100.00	4
* COOK	G 47 58 3	89 47 53	4	11.00	-18.80	100.00	4
* CASS	A 46 27 27	94 33 23	4	12.00	-17.40	100.00	4
* CASS	B 46 41 28	94 33 23	4	12.00	-17.40	100.00	4
* CASS	C 46 58 9	94 24 42	4	12.00	-17.40	100.00	4
* CASS	D 47 14 50	94 24 42	4	12.00	-17.40	100.00	4
* CASS	E 47 11 30	93 58 40	4	12.00	-17.40	100.00	4
* CASS	F 46 58 9	93 58 40	4	12.00	-17.40	100.00	4
* CASS	G 47 19 51	94 7 50	4	12.00	-17.40	100.00	4
* ROSEAU	A 48 47 53	95 15 38	4	11.00	-18.80	100.00	4
* ROSEAU	B 48 50 51	95 31 4	4	11.00	-18.80	100.00	4
* ROSEAU	C 48 51 45	96 10 57	4	11.00	-18.80	100.00	4
* ROSEAU	D 48 51 45	95 52 55	4	11.00	-18.80	100.00	4
* ROSEAU	E 48 40 46	96 12 12	4	11.00	-18.80	100.00	4
* ROSEAU	F 48 40 46	95 49 3	4	11.00	-18.80	100.00	4
* ROSEAU	G 48 40 46	95 33 37	4	11.00	-18.80	100.00	4
* NICOLLET	A 44 13 6	94 5 23	4	6.00	-9.00	100.00	2
* NICOLLET	B 44 22 27	94 2 29	4	6.00	-9.00	100.00	2
* NICOLLET	C 44 25 33	94 39 47	4	6.00	-9.00	100.00	2
* NICOLLET	D 44 24 40	94 28 43	4	6.00	-9.00	100.00	2
* NICOLLET	E 44 23 20	94 16 40	4	6.00	-9.00	100.00	2
* NICOLLET	F 44 23 20	94 9 11	4	6.00	-9.00	100.00	2
* NICOLLET	G 44 19 20	94 20 15	4	6.00	-9.00	100.00	2
* NICOLLET	H 44 16 53	94 11 47	4	6.00	-9.00	100.00	2

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* NCLBOD	A 44 54 16	94 6 29	4	6.00	-22.40	100.00	3
* NCLBOD	B 44 54 16	94 24 1	4	6.00	-22.40	100.00	3
* NCLBOD	C 44 54 16	94 15 20	4	6.00	-22.40	100.00	3
* NCLBOD	D 44 42 2	94 24 1	4	6.00	-22.40	100.00	3
* NCLBOD	E 44 42 2	94 21 7	4	6.00	-22.40	100.00	3
* NCLBOD	F 44 47 35	94 24 1	4	6.00	-22.40	100.00	3
* NCLBOD	G 44 47 35	94 6 39	4	6.00	-22.40	100.00	3
* NCLBOD	H 44 47 35	94 15 20	4	6.00	-22.40	100.00	3
* SWIFT	A 45 18 27	95 22 48	4	8.00	-23.60	100.00	4
* SWIFT	B 45 18 27	95 58 37	4	8.00	-23.60	100.00	4
* SWIFT	C 45 18 27	95 48 58	4	8.00	-23.60	100.00	4
* SWIFT	D 45 18 27	95 35 28	4	8.00	-23.60	100.00	4
* SWIFT	E 45 15 29	95 21 57	4	8.00	-23.60	100.00	4
* SWIFT	F 45 15 29	95 35 28	4	8.00	-23.60	100.00	4
* SWIFT	G 45 15 29	95 58 37	4	8.00	-23.60	100.00	4
* SWIFT	H 45 15 29	95 47 2	4	8.00	-23.60	100.00	4
* CHIPPEWA	A 45 3 37	95 21 57	4	7.00	-25.50	100.00	4
* CHIPPEWA	B 45 6 35	95 54 45	4	7.00	-25.50	100.00	4
* CHIPPEWA	C 45 3 37	95 31 36	4	7.00	-25.50	100.00	4
* CHIPPEWA	D 45 3 37	95 43 11	4	7.00	-25.50	100.00	4
* CHIPPEWA	E 45 0 39	95 39 19	4	7.00	-25.50	100.00	4
* CHIPPEWA	F 44 56 12	95 33 32	4	7.00	-25.50	100.00	4
* CHIPPEWA	G 44 53 13	95 31 36	4	7.00	-25.50	100.00	4
* CHIPPEWA	H 44 59 9	95 21 57	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	A 44 42 50	96 19 50	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	B 44 42 50	96 6 19	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	C 44 42 50	95 54 45	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	D 44 50 16	95 43 11	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	E 44 42 50	95 41 15	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	F 44 44 19	95 35 28	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	G 44 36 54	95 29 40	4	7.00	-25.50	100.00	4
* YELLOW MEDICINE	H 44 38 23	95 29 40	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	A 44 56 12	95 52 49	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	B 44 53 13	95 56 41	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	C 44 53 13	96 19 50	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	D 44 53 13	96 8 15	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	E 45 11 2	96 19 50	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	F 45 2 8	96 19 50	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	G 45 6 35	96 8 15	4	7.00	-25.50	100.00	4
* LAC QUI PARLE	H 45 0 39	96 0 32	4	7.00	-25.50	100.00	4

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* RED LAKE	A 47 54 1	96 22 54	4	6.00	-27.40	100.00	4
* RED LAKE	B 47 54 1	96 15 5	4	6.00	-27.40	100.00	4
* RED LAKE	C 47 54 1	96 5 23	4	6.00	-27.40	100.00	4
* RED LAKE	D 47 54 1	95 48 24	4	6.00	-27.40	100.00	4
* RED LAKE	E 47 54 1	95 58 6	4	6.00	-27.40	100.00	4
* RED LAKE	F 47 50 6	95 55 56	4	6.00	-27.40	100.00	4
* RED LAKE	G 47 50 6	96 15 20	4	6.00	-27.40	100.00	4
* RED LAKE	H 47 50 6	96 5 38	4	6.00	-27.40	100.00	4
* SIBLEY	A 44 39 8	93 52 50	4	6.00	-22.40	100.00	3
* SIBLEY	B 44 39 8	94 9 54	4	6.00	-22.40	100.00	3
* SIBLEY	C 44 39 8	94 1 14	4	6.00	-22.40	100.00	3
* SIBLEY	D 44 39 8	94 34 2	4	6.00	-22.40	100.00	3
* SIBLEY	E 44 32 14	94 32 24	4	6.00	-22.40	100.00	3
* SIBLEY	F 44 32 54	94 24 55	4	6.00	-22.40	100.00	3
* SIBLEY	G 44 32 54	94 17 26	4	6.00	-22.40	100.00	3
* SIBLEY	H 44 32 41	94 0 11	4	6.00	-22.40	100.00	3
* SIBLEY	I 44 32 41	94 8 58	4	6.00	-22.40	100.00	3
* CARVER	A 44 55 16	93 56 2	4	5.00	-11.60	100.00	2
* CARVER	B 44 55 16	93 51 12	4	5.00	-11.60	100.00	2
* CARVER	C 44 50 29	93 35 17	4	5.00	-11.60	100.00	2
* CARVER	D 44 50 22	93 44 27	4	5.00	-11.60	100.00	2
* CARVER	E 44 42 8	93 44 27	4	5.00	-11.60	100.00	2
* CARVER	F 44 46 55	93 41 34	4	5.00	-11.60	100.00	2
* CARVER	G 44 43 35	93 48 48	4	5.00	-11.60	100.00	2
* CARVER	H 44 46 15	93 56 22	4	5.00	-11.60	100.00	2
* CARVER	I 44 50 42	93 54 55	4	5.00	-11.60	100.00	2
* OTTER TAIL	A 46 14 44	95 19 45	4	11.00	-13.80	100.00	3
* OTTER TAIL	B 46 14 44	96 4 28	4	11.00	-13.80	100.00	3
* OTTER TAIL	C 46 14 44	95 41 19	4	11.00	-13.80	100.00	3
* OTTER TAIL	D 46 30 18	96 4 28	4	11.00	-13.80	100.00	3
* OTTER TAIL	E 46 34 45	95 58 40	4	11.00	-13.80	100.00	3
* OTTER TAIL	F 46 34 45	95 21 3	4	11.00	-13.80	100.00	3
* OTTER TAIL	G 46 34 45	95 38 25	4	11.00	-13.80	100.00	3
* OTTER TAIL	H 46 24 11	95 21 46	4	11.00	-13.80	100.00	3
* OTTER TAIL	I 46 24 11	95 48 47	4	11.00	-13.80	100.00	3
* CLAY	A 46 43 39	96 38 45	4	8.00	-18.60	100.00	3
* CLAY	B 46 43 39	96 18 30	4	8.00	-18.60	100.00	3
* CLAY	C 46 43 39	96 28 37	4	8.00	-18.60	100.00	3
* CLAY	D 46 54 2	96 18 30	4	8.00	-18.60	100.00	3
* CLAY	E 47 3 23	96 19 38	4	8.00	-18.60	100.00	3
* CLAY	F 47 3 23	96 39 53	4	8.00	-18.60	100.00	3
* CLAY	G 47 3 23	96 29 46	4	8.00	-18.60	100.00	3
* CLAY (Cont'd)	H 46 52 60	96 39 53	4	8.00	-18.60	100.00	3

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* CLAY	I 46 52 50	96 29 46	4	8.00	-18.60	100.00	3
* LAKE OF THE WOODS A	48 29 47	94 36 54	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS B	48 29 47	95 0 55	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS C	48 37 12	95 8 38	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS D	48 57 5	95 7 20	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS E	49 15 28	94 59 5	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS F	49 1 32	94 56 3	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS G	48 49 58	94 55 11	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS H	48 36 1	94 37 23	4	11.00	-18.80	100.00	4
* LAKE OF THE WOODS I	48 38 59	94 52 29	4	11.00	-18.80	100.00	4
* LAKE	A 48 1 1	91 12 45	4	11.00	-18.80	100.00	4
* LAKE	B 47 31 21	91 12 45	4	11.00	-18.80	100.00	4
* LAKE	C 47 46 11	91 12 45	4	11.00	-18.80	100.00	4
* LAKE	D 47 7 36	91 35 54	4	11.00	-18.80	100.00	4
* LAKE	E 47 22 26	91 35 54	4	11.00	-18.80	100.00	4
* LAKE	F 47 34 19	91 35 54	4	11.00	-18.80	100.00	4
* LAKE	G 47 46 11	91 35 54	4	11.00	-18.80	100.00	4
* LAKE	H 48 3 59	91 35 54	4	11.00	-18.80	100.00	4
* LAKE	I 47 55 5	91 24 20	4	11.00	-18.80	100.00	4
* LAKE	J 47 20 22	91 25 9	4	11.00	-18.80	100.00	4
* ST LOUIS	A 47 5 32	92 11 4	8	20.00	-7.10	100.00	4
* ST LOUIS	B 48 1 54	92 11 4	8	20.00	-7.10	100.00	4
* ST LOUIS	C 47 41 8	92 11 4	8	20.00	-7.10	100.00	4
* ST LOUIS	D 47 23 20	92 11 4	8	20.00	-7.10	100.00	4
* ST LOUIS	E 46 59 36	92 41 55	8	20.00	-7.10	100.00	4
* ST LOUIS	F 46 56 38	92 18 47	8	20.00	-7.10	100.00	4
* ST LOUIS	G 48 22 40	92 41 55	8	20.00	-7.10	100.00	4
* ST LOUIS	H 48 1 54	92 41 55	8	20.00	-7.10	100.00	4
* ST LOUIS	I 47 41 8	92 41 55	8	20.00	-7.10	100.00	4
* ST LOUIS	J 47 20 22	92 41 55	8	20.00	-7.10	100.00	4
* ITASCA	A 47 34 32	94 11 44	4	12.00	-17.40	100.00	4
* ITASCA	B 47 41 32	94 11 44	4	12.00	-17.40	100.00	4
* ITASCA	C 47 41 32	93 48 2	4	12.00	-17.40	100.00	4
* ITASCA	D 47 43 32	93 17 39	4	12.00	-17.40	100.00	4
* ITASCA	E 47 43 32	93 35 1	4	12.00	-17.40	100.00	4
* ITASCA	F 47 10 10	93 17 39	4	12.00	-17.40	100.00	4
* ITASCA	G 47 20 11	93 17 39	4	12.00	-17.40	100.00	4
* ITASCA	H 47 30 11	93 17 39	4	12.00	-17.40	100.00	4
* ITASCA	I 47 26 31	93 42 43	4	12.00	-17.40	100.00	4
* ITASCA	J 47 9 50	93 34 25	4	12.00	-17.40	100.00	4
* MARSHALL	A 48 17 19	96 58 28	4	9.00	-21.80	100.00	4
* MARSHALL	B 48 17 19	95 45 43	4	9.00	-21.80	100.00	4

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	RRP (Db/KW)	Antenna Ht (ft)	Environment Type
* MARSHALL	C 48 17 19	96 2 41	4	9.00	-21.80	100.00	4
* MARSHALL	D 48 17 19	96 19 40	4	9.00	-21.80	100.00	4
* MARSHALL	E 48 17 19	96 36 38	4	9.00	-21.80	100.00	4
* MARSHALL	F 48 25 42	96 58 28	4	9.00	-21.80	100.00	4
* MARSHALL	G 48 25 42	96 41 13	4	9.00	-21.80	100.00	4
* MARSHALL	H 48 25 42	96 24 14	4	9.00	-21.80	100.00	4
* MARSHALL	I 48 25 42	95 45 26	4	9.00	-21.80	100.00	4
* MARSHALL	J 48 25 42	96 4 50	4	9.00	-21.80	100.00	4
* BROWN	A 44 25 34	94 48 13	4	6.00	-22.40	100.00	3
* BROWN	B 44 17 33	94 45 37	4	6.00	-22.40	100.00	3
* BROWN	C 44 12 53	95 1 33	4	6.00	-22.40	100.00	3
* BROWN	D 44 12 53	94 54 24	4	6.00	-22.40	100.00	3
* BROWN	E 44 10 13	95 2 12	4	6.00	-22.40	100.00	3
* BROWN	F 44 10 13	94 49 50	4	6.00	-22.40	100.00	3
* BROWN	G 44 10 13	94 27 23	4	6.00	-22.40	100.00	3
* BROWN	H 44 10 13	94 38 7	4	6.00	-22.40	100.00	3
* BROWN	I 44 13 33	94 28 2	4	6.00	-22.40	100.00	3
* BROWN	J 44 17 34	94 33 36	4	6.00	-22.40	100.00	3
* BROWN	K 44 19 53	94 40 55	4	6.00	-22.40	100.00	3
* WRIGHT	A 45 2 30	93 51 23	4	6.00	-9.00	100.00	2
* WRIGHT	B 45 2 30	94 10 12	4	6.00	-9.00	100.00	2
* WRIGHT	C 45 2 30	94 1 31	4	6.00	-9.00	100.00	2
* WRIGHT	D 45 14 44	94 10 12	4	6.00	-9.00	100.00	2
* WRIGHT	E 45 8 4	94 10 12	4	6.00	-9.00	100.00	2
* WRIGHT	F 45 20 18	94 1 31	4	6.00	-9.00	100.00	2
* WRIGHT	G 45 14 44	93 36 55	4	6.00	-9.00	100.00	2
* WRIGHT	H 45 13 37	93 48 30	4	6.00	-9.00	100.00	2
* WRIGHT	I 45 17 11	93 54 28	4	6.00	-9.00	100.00	2
* WRIGHT	J 45 10 31	93 47 25	4	6.00	-9.00	100.00	2
* WRIGHT	K 45 10 31	93 58 59	4	6.00	-9.00	100.00	2
* MEEKER	A 45 12 44	94 21 21	4	6.00	-27.40	100.00	4
* MEEKER	B 45 2 43	94 21 21	4	6.00	-27.40	100.00	4
* MEEKER	C 45 8 17	94 21 21	4	6.00	-27.40	100.00	4
* MEEKER	D 44 57 36	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	E 44 57 36	94 36 56	4	6.00	-27.40	100.00	4
* MEEKER	F 45 4 17	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	G 45 15 24	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	H 45 15 24	94 26 48	4	6.00	-27.40	100.00	4
* MEEKER	I 45 9 50	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	J 45 6 30	94 31 9	4	6.00	-27.40	100.00	4
* MEEKER	K 45 3 37	94 29 25	4	6.00	-27.40	100.00	4
* RENNVILLE	A 44 48 20	94 36 16	4	7.00	-25.50	100.00	4
* RENNVILLE	B 44 48 20	95 22 34	4	7.00	-25.50	100.00	4

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* RENVILLE	C 44 48 20	95 10 59	4	7.00	-25.50	100.00	4
* RENVILLE	D 44 48 20	94 57 29	4	7.00	-25.50	100.00	4
* RENVILLE	E 44 48 20	94 45 55	4	7.00	-25.50	100.00	4
* RENVILLE	F 44 32 1	94 43 59	4	7.00	-25.50	100.00	4
* RENVILLE	G 44 39 26	94 43 59	4	7.00	-25.50	100.00	4
* RENVILLE	H 44 45 22	95 12 55	4	7.00	-25.50	100.00	4
* RENVILLE	I 44 40 55	95 5 12	4	7.00	-25.50	100.00	4
* RENVILLE	J 44 36 28	94 55 33	4	7.00	-25.50	100.00	4
* RENVILLE	K 44 43 53	94 55 33	4	7.00	-25.50	100.00	4
* STEARNS	A 45 25 38	94 13 30	8	8.00	-5.20	100.00	2
* STEARNS	B 45 22 44	94 19 22	8	8.00	-5.20	100.00	2
* STEARNS	C 45 25 25	94 37 55	8	8.00	-5.20	100.00	2
* STEARNS	D 45 30 18	94 59 54	8	8.00	-5.20	100.00	2
* STEARNS	E 45 30 18	94 48 20	8	8.00	-5.20	100.00	2
* STEARNS	F 45 40 19	94 59 54	8	8.00	-5.20	100.00	2
* STEARNS	G 45 40 19	94 45 26	8	8.00	-5.20	100.00	2
* STEARNS	H 45 40 19	94 30 58	8	8.00	-5.20	100.00	2
* STEARNS	I 45 40 19	94 20 3	8	8.00	-5.20	100.00	2
* STEARNS	J 45 32 58	94 20 3	8	8.00	-5.20	100.00	2
* STEARNS	K 45 32 58	94 37 25	8	8.00	-5.20	100.00	2
* MORRISON	A 46 4 23	93 56 23	4	7.00	-20.50	100.00	3
* MORRISON	B 46 4 23	94 8 36	4	7.00	-20.50	100.00	3
* MORRISON	C 46 14 17	94 30 48	4	7.00	-20.50	100.00	3
* MORRISON	D 45 52 2	94 30 48	4	7.00	-20.50	100.00	3
* MORRISON	E 45 59 50	94 30 48	4	7.00	-20.50	100.00	3
* MORRISON	F 46 7 37	94 30 48	4	7.00	-20.50	100.00	3
* MORRISON	G 46 4 17	94 20 40	4	7.00	-20.50	100.00	3
* MORRISON	H 45 52 2	94 25 1	4	7.00	-20.50	100.00	3
* MORRISON	I 45 54 16	93 52 33	4	7.00	-20.50	100.00	3
* MORRISON	J 45 54 16	94 4 7	4	7.00	-20.50	100.00	3
* MORRISON	K 45 54 16	94 15 42	4	7.00	-20.50	100.00	3
* BELTRANI	A 48 23 51	95 24 27	4	11.00	-13.80	100.00	3
* BELTRANI	B 48 8 43	95 24 27	4	11.00	-13.80	100.00	3
* BELTRANI	C 47 59 49	95 1 18	4	11.00	-13.80	100.00	3
* BELTRANI	D 47 33 7	94 58 45	4	11.00	-13.80	100.00	3
* BELTRANI	E 47 44 59	94 58 45	4	11.00	-13.80	100.00	3
* BELTRANI	F 47 33 7	94 35 36	4	11.00	-13.80	100.00	3
* BELTRANI	G 47 47 57	94 35 36	4	11.00	-13.80	100.00	3
* BELTRANI	H 48 14 39	94 35 36	4	11.00	-13.80	100.00	3
* BELTRANI	I 47 59 49	94 35 36	4	11.00	-13.80	100.00	3
* BELTRANI	J 48 14 39	94 54 54	4	11.00	-13.80	100.00	3
* BELTRANI	K 48 14 39	95 10 19	4	11.00	-13.80	100.00	3

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* WASHINGTON	A 45 14 22	92 56 33	6	5.00	-11.60	100.00	2
* WASHINGTON	B 45 9 55	92 56 33	6	5.00	-11.60	100.00	2
* WASHINGTON	C 45 14 22	92 50 46	6	5.00	-11.60	100.00	2
* WASHINGTON	D 45 7 41	92 50 46	6	5.00	-11.60	100.00	2
* WASHINGTON	E 45 4 21	92 54 9	6	5.00	-11.60	100.00	2
* WASHINGTON	F 44 59 14	92 54 9	6	5.00	-11.60	100.00	2
* WASHINGTON	G 44 53 47	92 54 9	6	5.00	-11.60	100.00	2
* WASHINGTON	H 44 49 40	92 55 56	6	5.00	-11.60	100.00	2
* WASHINGTON	I 44 48 33	92 51 42	6	5.00	-11.60	100.00	2
* WASHINGTON	J 44 52 47	92 51 42	6	5.00	-11.60	100.00	2
* WASHINGTON	K 44 56 21	92 50 14	6	5.00	-11.60	100.00	2
* WASHINGTON	L 45 0 8	92 51 3	6	5.00	-11.60	100.00	2
* KOCHICHING	A 48 3 34	93 17 39	4	11.00	-18.80	100.00	4
* KOCHICHING	B 48 3 34	93 39 21	4	11.00	-18.80	100.00	4
* KOCHICHING	C 48 0 14	93 56 43	4	11.00	-18.80	100.00	4
* KOCHICHING	D 48 0 14	94 13 6	4	11.00	-18.80	100.00	4
* KOCHICHING	E 48 13 35	94 13 6	4	11.00	-18.80	100.00	4
* KOCHICHING	F 48 36 56	94 13 6	4	11.00	-18.80	100.00	4
* KOCHICHING	G 48 23 35	94 13 6	4	11.00	-18.80	100.00	4
* KOCHICHING	H 48 30 16	94 0 4	4	11.00	-18.80	100.00	4
* KOCHICHING	I 48 30 16	93 16 40	4	11.00	-18.80	100.00	4
* KOCHICHING	J 48 16 55	93 16 40	4	11.00	-18.80	100.00	4
* KOCHICHING	K 48 22 15	93 38 22	4	11.00	-18.80	100.00	4
* KOCHICHING	L 48 15 35	93 55 44	4	11.00	-18.80	100.00	4
* DAKOTA	A 44 51 34	93 5 42	10	5.00	-11.60	100.00	2
* DAKOTA	B 44 44 53	93 14 23	10	5.00	-11.60	100.00	2
* DAKOTA	C 44 47 47	93 8 17	10	5.00	-11.60	100.00	2
* DAKOTA	D 44 41 6	93 14 43	10	5.00	-11.60	100.00	2
* DAKOTA	E 44 31 25	93 12 19	10	5.00	-11.60	100.00	2
* DAKOTA	F 44 31 25	93 6 32	10	5.00	-11.60	100.00	2
* DAKOTA	G 44 34 12	92 59 18	10	5.00	-11.60	100.00	2
* DAKOTA	H 44 36 6	92 52 33	10	5.00	-11.60	100.00	2
* DAKOTA	I 44 40 59	92 48 3	10	5.00	-11.60	100.00	2
* DAKOTA	J 44 43 13	92 54 39	10	5.00	-11.60	100.00	2
* DAKOTA	K 44 43 13	93 3 20	10	5.00	-11.60	100.00	2
* DAKOTA	L 44 36 32	93 12 1	10	5.00	-11.60	100.00	2
* DAKOTA	M 44 37 39	93 1 53	10	5.00	-11.60	100.00	2
* HENNEPIN	A 44 53 34	93 16 18	38	5.00	-1.90	100.00	1
* HENNEPIN	B 44 58 54	93 16 37	38	5.00	-1.90	100.00	1
* HENNEPIN	C 45 5 1	93 21 56	38	5.00	-1.90	100.00	1
* HENNEPIN	D 45 10 35	93 30 37	38	5.00	-1.90	100.00	1
* HENNEPIN	E 45 7 15	93 26 17	38	5.00	-1.90	100.00	1
* HENNEPIN	F 45 9 28	93 34 58	38	5.00	-1.90	100.00	1
* HENNEPIN	G 45 5 1	93 39 8	38	5.00	-1.90	100.00	1

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* HENNEPIN	H 44 57 1	93 41 5	38	5.00	-1.90	100.00	1
* HENNEPIN	I 45 1 21	93 41 5	38	5.00	-1.90	100.00	1
* HENNEPIN	J 44 56 54	93 30 57	38	5.00	-1.90	100.00	1
* HENNEPIN	K 44 52 0	93 26 36	38	5.00	-1.90	100.00	1
* HENNEPIN	L 44 51 27	93 20 49	38	5.00	-1.90	100.00	1
* HENNEPIN	M 44 59 14	93 23 43	38	5.00	-1.90	100.00	1
* HENNEPIN	N 45 2 34	93 30 57	38	5.00	-1.90	100.00	1
* POLK	A 47 49 23	95 41 24	4	8.00	-23.60	100.00	4
* POLK	B 47 35 58	95 43 20	4	8.00	-23.60	100.00	4
* POLK	C 47 35 58	96 41 33	4	8.00	-23.60	100.00	4
* POLK	D 47 35 58	96 27 58	4	8.00	-23.60	100.00	4
* POLK	E 47 35 58	96 12 27	4	8.00	-23.60	100.00	4
* POLK	F 47 35 58	95 56 55	4	8.00	-23.60	100.00	4
* POLK	G 47 38 57	95 53 2	4	8.00	-23.60	100.00	4
* POLK	H 47 38 57	96 6 37	4	8.00	-23.60	100.00	4
* POLK	I 47 38 57	96 20 12	4	8.00	-23.60	100.00	4
* POLK	J 47 46 24	96 27 58	4	8.00	-23.60	100.00	4
* POLK	K 47 46 24	96 47 22	4	8.00	-23.60	100.00	4
* POLK	L 47 56 51	96 53 12	4	8.00	-23.60	100.00	4
* POLK	M 48 4 18	96 59 1	4	8.00	-23.60	100.00	4
* POLK	N 48 4 18	96 37 40	4	8.00	-23.60	100.00	4
* POLK	O 48 4 18	96 49 19	4	8.00	-23.60	100.00	4
* POLK	P 47 55 21	96 37 40	4	8.00	-23.60	100.00	4

Input Data For Single Site Systems

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* DULUTH	46 47 13	92 07 17	4	7.00	-3.50	200.00	1
* ROCHESTER	44 01 21	92 21 46	4	7.00	-3.50	200.00	1

EXHIBIT "B"

FCC CHANNEL ASSIGNMENTS

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
601	821.0125/866.0125 Mutual Aid Statewide
602	821.0375/866.0375 Duluth, Wadena, Steele, Rock, Watonwan, Big Stone, Kandiyohi, and Hennepin
603	821.0500/866.0500 Rochester, Benton, Douglas, Mahnomen, and Redwood
604	821.0625/866.0625 Hubbard, Waseca, Pipestone, Carlton, Traverse, and Hennepin
605	821.0750/866.0750 Dodge, Pope, Jackson, Crow Wing, Norman, and McLeod
606	821.0875/866.0875 Fillmore, Faribault, Lyon, Wilkin, Kanabec, and Hennepin
607	821.1000/866.1000 Rice, Stevens, Nobles, Becker, and Neeker
608	821.1125/866.1125 Houston, Mower, Martin, Lincoln, Todd, Mille Lacs, and Washington
609	821.1250/866.1250 Wabasha, Scott, and Grant
610	821.1375/866.1375 Freeborn, Cottonwood, Anoka, Cass, and Swift
611	821.1500/866.1500 Olmsted, Pine, Nicollet, and Otter Tail
612	821.1625/866.1625 Murray, Chippewa, and Dakota
613	821.1750/866.1750 Blue Earth, Aitkin, Clay, and Wright
614	821.1875/866.1875 Ramsey and Yellow Medicine
615	821.2000/866.2000 Le Sueur, Chisago, and Stearns

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
616	821.2125/866.2125 Winona, Lac Qui Parle, and Hennepin
617	821.2250/866.2250 Sibley and Stearns
618	821.2375/866.2375 Olmsted and Hennepin
619	821.2500/866.2500 Brown and Morrison
620	821.2625/866.2625 Ramsey
621	821.2750/866.2750 Sherburne
622	821.2875/866.2875 Duluth, Wadena, Steele, Rock, Watonwan, Big Stone, Ramsey, and Kandiyohi
623	821.3000/866.3000 Rochester, Benton, Mahnomon, and Redwood
624	821.3125/866.3125 Hubbard, Waseca, Pipestone, Carlton, Douglas, and Anoka
625	821.3250/866.3250 Dodge, Traverse, Jackson, Crow Wing, Norman, and Benville
626	821.3375/866.3375 Pope, Fillmore, Faribault, Lyon, Kanabec, and Hennepin
627	821.3500/866.3500 Rice, Nobles, and Wilkin
628	821.3625/866.3625 Houston, Stevens, Mower, Martin, Lincoln, McLeod, and Washington
629	821.3750/866.3750 Reserved for Guard
630	821.3875/866.3875 Reserved for State Use
631	821.4000/866.4000 Reserved for Guard
632	821.4125/866.4125 Reserved for State Use

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
633	821.4250/866.4250 Reserved for Guard
634	821.4375/866.4375 Reserved for State Use
635	821.4500/866.4500 Reserved for Guard
636	821.4625/866.4625 Reserved for State Use
637	821.4750/866.4750 Reserved for Guard
638	821.4875/866.4875 Reserved for State Use
639	821.5125/866.5125 Mutual Aid
640	821.5375/866.5375 Grant, Olmsted, Cottonwood, Becker, Aitkin, and Hennepin
641	821.5500/866.5500 Le Sueur, Todd, and Yellow Medicine
642	821.5625/866.5625 Freeborn, Murray, Ramsey, Swift, and Clay
643	821.5750/866.5750 Cass, and Wright
644	821.5875/866.5875 Blue Earth, Ramsey, Chippewa, and Otter Tail
645	821.6000/866.6000 Wabasha, Chisago, and Meeker
646	821.6125/866.6125 Nicollet, Lac Qui Parle, and Hennepin
647	821.6250/866.6250 Pine, and Stearns
648	821.6375/866.6375 Hennepin
649	821.6500/866.6500 Mille Lacs, and Sibley

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
650	821.6625/866.6625 Winona, and Ramsey
651	821.6750/866.6750 Goodhue, Brown, and Morrison
652	821.6875/866.6875 Anoka
653	821.7000/866.7000 Scott
654	821.7125/866.7125 Renville, and Washington
655	821.7250/866.7250 Unassigned
656	821.7375/866.7375 Hennepin
657	821.7500/866.7500 Unassigned
658	821.7625/866.7625 Ramsey
659	821.7750/866.7750 Unassigned
660	821.7875/866.7875 Hennepin
661	821.8000/866.8000 Unassigned
662	821.8125/866.8125 Ramsey
663	821.8250/866.8250 Isanti
664	821.8375/866.8375 Dakota
665	821.8500/866.8500 Unassigned
666	821.8625/866.8625 Hennepin

EXHIBIT "B" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
667	821.8750/866.8750 Reserved for Guard
668	821.8875/866.8875 Reserved for State Use
669	821.9000/866.9000 Reserved for Guard
670	821.9125/866.9125 Reserved for State Use
671	821.9250/866.9250 Reserved for Guard
672	821.9375/866.9375 Reserved for State Use
673	821.9500/866.9500 Reserved for Guard
674	821.9625/866.9625 Reserved for State Use
675	821.9750/866.9750 Reserved for Guard
676	821.9875/866.9875 Reserved for State Use
677	822.0125/867.0125 Mutual Aid
678	822.0375/867.0375 Hennepin
679	822.0500/867.0500 Goodhue, and Stearns
680	822.0625/867.0625 Anoka
681	822.0750/867.0750 Carver
682	822.0875/867.0875 Ramsey
683	822.1000/867.1000 Unassigned

## EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
684	822.1125/867.1125 Hennepin
685	822.1250/867.1250 Unassigned
686	822.1375/867.1375 Hennepin
687	822.1500/867.1500 Unassigned
688	822.1625/867.1625 Hennepin
689	822.1750/867.1750 Unassigned
690	822.1875/867.1875 Sherburne, and Dakota
691	822.2000/867.2000 Unassigned
692	822.2125/867.2125 Anoka
693	822.2250/867.2250 Unassigned
694	822.2375/867.2375 Hennepin
695	822.2500/867.2500 Unassigned
696	822.2625/867.2625 Hennepin
697	822.2750/867.2750 Unassigned
698	822.2875/867.2875 Hennepin
699	822.3000/867.3000 Unassigned
700	822.3125/867.3125 Ransey

EXHIBIT "B" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
701	822.3250/867.3250 Unassigned
702	822.3375/867.3375 Hennepin
703	822.3500/867.3500 Unassigned
704	822.3625/867.3625 Hennepin
705	822.3750/867.3750 Reserved for Guard
706	822.3875/867.3875 Reserved for State Use
707	822.4000/867.4000 Reserved for Guard
708	822.4125/867.4125 Reserved for State Use
709	822.4250/867.4250 Reserved for Guard
710	822.4375/867.4375 Reserved for State Use
711	822.4500/867.4500 Reserved for Guard
712	822.4625/867.4625 Reserved for State Use
713	822.4750/867.4750 Reserved for Guard
714	822.4875/867.4875 Reserved for State Use
715	822.5125/867.5125 Mutual Aid
716	822.5375/867.5375 Scott, Kittson, Cook, and Koochiching
717	822.5500/867.5500 Clearwater
718	822.5625/867.5625 Roseau, St. Louis, and Hennepin

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
719	822.5750/867.5750 Pennington
720	822.5875/867.5875 Lake of the Woods, Lake, and Dakota
721	822.6000/867.6000 Red Lake, and Itasca
722	822.6125/867.6125 Marshall, and Hennepin
723	822.6250/867.6250 St. Louis
724	822.6375/867.6375 Beltrami, and Hennepin
725	822.6500/867.6500 Unassigned
726	822.6625/867.6625 Ransey
727	822.6750/867.6750 Isanti
728	822.6875/867.6875 Ransey
729	822.7000/867.7000 Carver
730	822.7125/867.7125 Ransey
731	822.7250/867.7250 Unassigned
732	822.7375/867.7375 Hennepin
733	822.7500/867.7500 Polk
734	822.7625/867.7625 Hennepin
735	822.7750/867.7750 Unassigned

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
736	822.7875/867.7875 Kittson, Cook, Washington, and Koochiching
737	822.8000/867.8000 Scott, and Clearwater
738	822.8125/822.8125 Anoka, Roseau, and St. Louis
739	822.8250/867.8250 Pennington
740	822.8375/867.8375 Lake of the Woods, Lake, and Hennepin
741	822.8500/867.8500 Red Lake, Itasca, and Stearns
742	822.8625/867.8625 Marshall, and Hennepin
743	822.8750/867.8750 Reserved for Guard
744	822.8875/867.8875 Reserved for State Use
745	822.9000/867.9000 Reserved for Guard
746	822.9125/867.9125 Reserved for State Use
747	822.9250/867.9250 Reserved for Guard
748	822.9375/867.9375 Reserved for State Use
749	822.9500/867.9500 Reserved for Guard
750	822.9625/867.9625 Reserved for State Use
751	822.9750/867.9750 Reserved for Guard
752	822.9875/867.9875 Reserved for State Use

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
753	823.0125/868.0125 Mutual Aid
754	823.0375/868.0375 Beltrami, and Hennepin
755	823.0500/868.0500 Unassigned
756	823.0625/868.0625 Koochiching, Dakota, and Polk
757	823.0750/868.0750 Unassigned
758	823.0875/868.0875 Anoka, and St. Louis
759	823.1000/868.1000 Unassigned
760	823.1125/868.1125 Ramsey
761	823.1250/868.1250 Unassigned
762	823.1375/868.1375 Anoka
763	823.1500/868.1500 Sibley
764	823.1625/868.1625 Hennepin
765	823.1750/868.1750 Unassigned
766	823.1875/868.1875 McCleod, and Washington
767	823.2000/868.2000 Sherburne
768	823.2125/868.2125 Ramsey
769	823.2250/868.2250 Isanti, Goodhue, and Carver

EXHIBIT "E" (Cont'd)

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
770	823.2375/868.2375 Ramsey, and Benville
771	823.2500/868.2500 Le Sueur, and Morrison
772	823.2625/868.2625 Olmsted, and Hennepin
773	823.2750/868.2750 Rice, Brown, and Stearns
774	823.2875/868.2875 Ramsey
775	823.3000/868.3000 Nicollet, and Stearns
776	823.3125/868.3125 Lac Qui Parle, and Dakota
777	823.3250/868.3250 Blue Earth, and Meeker
778	823.3375/868.3375 Murray, Mille Lacs, Chippewa, Clay, and Dakota
779	823.3500/868.3500 Faribault, and Wright
780	823.3625/868.3625 Mower, Cottonwood, Ramsey, Pine, Swift, Otter Tail, and Polk
781	823.3750/868.3750 Reserved for Guard
782	823.3875/868.3875 Reserved for State Use
783	823.4000/868.4000 Reserved for Guard
784	823.4125/868.4125 Reserved for State Use
785	823.4250/868.4250 Reserved for Guard
786	823.4375/868.4375 Reserved for State Use

**EXHIBIT "B" (Cont'd)**

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
787	823.4500/868.4500 Reserved for Guard
788	823.4625/868.4625 Reserved for State Use
789	823.4750/868.4750 Reserved for Guard
790	823.4875/868.4875 Reserved for State Use
791	823.5000/868.5000 Reserved for Guard
792	823.5125/868.5125 Grant, Olmsted, Aitkin, Beltrami, and Hennepin
793	823.5250/868.5250 Freeborn, Lincoln, and Todd
794	823.5375/868.5375 Stevens, Winona, Nobles, Becker, Red Lake, St. Louis, and Hennepin
795	823.5500/868.5500 Dodge, Lyon, Wilkin, Kanabec, Cass, and Marshall
796	823.5625/868.5625 Carlton, Pope, Clearwater, Fillmore, Jackson, and Dakota
797	823.5750/868.5750 Wabasha, Waseca, Benton, Norman, Roseau, Yellow Medicine, Lake, and Itasca
798	823.5875/868.5875 Duluth, Hubbard, Pipestone, Traverse, Martin, Kandiyohi, Pennington, and Dakota
799	823.6000/868.6000 Houston, Steele, Douglas, Mahnomon, Chisago, Crow Wing, Redwood, Cook, and Lake of the Woods.
800	823.6125/868.6125 Rochester, Wadena, Rock, Watonwan, Kittson, Big Stone, St. Louis, and Hennepin
801	823.6250/868.6250 Renville
802	823.6375/868.6375 Hennepin
803	823.6500/868.6500 Brown, and Stearns

**EXHIBIT "B" (Cont'd)**

<u>CHANNEL</u>	<u>COUNTIES/USE</u>
804	823.6625/868.6625 Hennepin
805	823.6750/868.6750 Nicollet
806	823.6875/868.6875 Anoka, and Meeker
807	823.7000/868.7000 Blue Earth, Goodhue, and Lac Qui Parle
808	823.7125/868.7125 Ramsey, McCleod, Clay, and Morrison
809	823.7250/868.7250 LeSueur, Murray, Pine, and Chippewa
810	823.7375/868.7375 Mower, Mille Lacs, Otter Tail, Washington, Koochiching, and Polk
811	823.7500/868.7500 Rice, Cottonwood, Swift, and Wright
812	823.7625/868.7625 Grant, Faribault, Ramsey, Aitkin, Sibley, and Beltrami
813	823.7750/868.7750 Isanti, Olmsted, Lincoln, and Todd
814	823.7875/868.7875 Stevens, Freeborn, Nobles, Becker, Red Lake, Carver, and St. Louis
815	823.8000/868.8000 Winona, Lyon, Wilkin, Kanabec, Cass, and Marshall
816	823.8125/868.8125 Dodge, Carlton, Pope, Clearwater, Jackson, and Hennepin
817	823.8250/868.8250 Waseca, Benton, Fillmore, Norman, Roseau, Yellow Medicine, Lake, and Itasca
818	823.8375/868.8375 Duluth, Hubbard, Wabasha, Pipestone, Traverse, Martin, Kandiyohi, Pennington, and Hennepin
819	823.8500/868.8500 Houston, Steele, Douglas, Mahnomon, Chisago, Crow Wing, Redwood, Cook, and Lake of the Woods
820	823.8625/868.8625 Rochester, Wadena, Rock, Watonwan, Kittson, Big Stone, Sherburne, St. Louis, and Dakota