COMMERCE COMMITTEE - NEVADA STATE LEGISLATURE - 58TH SESSION

April 23, 1975

The meeting was called to order by Chairman Robinson at 3:25 P.M.

MEMBERS PRESENT: Mr. Benkovich
Mr. Demers
Mr. Getto
Mr. Harmon
Mr. Hickey
Mr. Moody
Mr. Schofield
Mr. Chairman

MEMBERS ABSENT: Mr. Wittenberg - excused

SPEAKING GUESTS: Mr. Noel Clark, Public Service Commission
Richard G. Campbell, Sierra Pacific Power Company
Charles H. McCrea, Southwest Gas Corporation
Carl Soderblom, Nevada Railroad Association
Bob McAdams, Nevada Bell
Wayne Norris, Central Telephone
Joe Gremban, Sierra Pacific Power Co.
Gene Matteucci, Nevada Power Company
Thomas Bell, Southern California Edison
Dr. Roger Steele, Desert Research Institute
Dick Serdoz, Department of Human Resources
Donald R. Arkell, Clark County District Health De
Mr. Hobert, Southern California Edison

The purpose of this meeting was to hear testimony on the following bills:

AB 640	AJR 31
AB 641	AJR 37
AB 642	AB 675
AB 643	
AB 644	

The first bills to be discussed were AB 640 and AB 643 which:

AB 640 - Allows Public Service Commission of Nevada to require a public utility to conduct a management efficiency study.

AB 643 - Authorizes Public Service Commission of Nevada to require management studies of public utilites.

Mr. Noel Clark was the first to speak in favor of this bill. He said AB 640 and AB 643 were very similar and he preferred AB 643. He said this measure was not aimed at any specific utility but from time to time question does come up whether a utility is performing in a manner commensurate with the Public Service Commission and in the best interest of its certified authority. He felt this should be required for clearing the air in the eye of the consumer. He urged passage of AB 643.

Mr. Clark said a study had been done in Arizona which cost $100,000 and saved the consumer money and pointed out some problem areas. This was a very comprehensive report and it is hard to relate the savings in dollars and cents because it is an on-going program. He did say in the area of fuel management it probably saved at least the cost of the study. He said other states have conducted similar studies.

Chairman Robinson stated that since AB 640 and AB 643 were almost identical bills, futher testimony on AB 640 would be deferred and testimony would be continued on AB 643.

Mr. Richard Campbell spoke in opposition to AB 643. He felt the bill needed some clarification. In paragraph 5, if the determination was made by some vote of a hearing process, he said they would not object to this, but to merely say that they can determine that a study be conducted without proper procedure could be onerous.

With regard to the provision in the bill that the expense of these studies shall not be borne by the rate payer is not fair to the industry. Having the stockholders pay for such things will only serve to drive stockholders away. He added that if the determinations of these studies proved negligence on the part of the utility, perhaps then the cost should be borne by other than the rate payer. He hoped the purpose of these studies would be enlightenment and not for a form of punishment or penalty. He said that other than these things, they do not object to the bill. Mr. Campbell added that they are continually under in-house or contracted review and these results are available to the Public Service Commission.

Mr. Hickey wondered if the Public Service Commission was active as an adversary to the utility companies. Mr. Campbell said they are always the adversary at rate hearings. He did say that the Commission, in general, acts as a quasi-judicial body and he felt the Commission staff was gaining more independence all the time.

Mr. Charles McCrea of Southwest Gas Corporation spoke in opposition to AB 643 saying he concurred with Mr. Campbell's statements. He said he would endorse the bill if it were amended as Mr. Campbell stated to provide that a management study would be ordered only after a hearing from which the scope of the study would be forthcoming.

Mr. Clark said he would be opposed to such a wording and that due process would be extended regardless of the wording in the bill. There would be a preliminary hearing to lay the ground rules for such a study.

Carl Soderblom then spoke questioning how this would affect utilities operating in inter-state commerce. He felt it would impose a burden on any one railroad if a study of this magnitude was requested by any one state. He did not understand the study of a public utility of that nature.

Mr. Clark commented to Mr. Soderblom's remarks stating that he had no fears and he did not think the railroads would be hurt by this bill

Mr. Bob McAdams of Nevada Bell then spoke saying he concurred with the previous statements submitted by Mr. Campbell and Mr. McCrea. He said he did not feel his shareholders should be assessed the cost of a management study that might be required by the Commission. He went on to comment on the comprehensive in-house review which is an on-going thing in his Company. He said they have a measurement system which has been refined over the years with great validity. All personnel with the exception of their engineers and that type of employee which are measured in a different manner, are carefully reviewed. In addition to this, they recognize they could have "blind spots" so for that reason they have an individual survey done from out of state firm that supplies them with input on a month to month basis in order to determine if the public thinks they are doing their job. He commented that he did not feel they were perfect but that they do strive to effect the best service possible and all of this data is available to the Public Service Commission. He said he thought this issue might better become a part of ACR 38 for a little more consideration. He did not think we should act in haste until proper consideration is given.

Mr. Demers commented to Mr. McAdams that the purpose of this bill was to measure the public from time to time not a tool that would be used indiscriminately but used from time to time to inform the public. Dr. Robinson added that if a company is being run inefficiently, the customer suffers. This bill would be to tighten up these companies to save money for the rate payer. Mr. Getto commented that this would help public relations because the public would know there is a government study going on by an individual agency so that they can be assured a company is being run efficiently.

Mr. McAdams commented that he felt judgment would be used under Mr. Clark's direction but he said things can change. He said he would like to think the Public Service Commission could develop an audit that could provide the same results. He also said that all utilities would be treated the same under this bill but they all do not operate the same way. He said he would rather this type of thing be kept in State as much as possible rather than having someone come from out of state to conduct a study. He concluded by stating he did not believe this type of legislation would be in the public interest.

Wayne Norris of Central Telephone in Nevada said he concurred with Mr. McAdams. He said his company, too, has an in-house study going on all the time to assure their standards are up to those the public wants. He said he also concurred with Mr. McAdams with regard to the cost of a management study being borne by the specific utility company rather than being able to charge them off as an operating expense. He felt this might have a tendency to drive away potential investors. He felt these management studies should be decided on before an impartial hearing and that the cost of these studies should be charged off as an operating expense. He also felt some type of limit should be placed with regard to the frequency that these studies are conducted.

Discussion was then taken up on AB 641 which:

> Extends economic development revenue bond law to include capital improvements by public utility.

Noel Clark spoke in favor of this bill saying it will make available to the utilities funding at a lower interest cost than is presently available in the open market for utility financing. He said that AJR 31, however, requests that the IRS consider all utility property under this particular bonding act. He said he would like this to include all utility property for purpose of low cost financing. He felt this is something from which the company and the consumer could derive benefits. He said this could reduce the interest rate as much as 2% or perhaps more and these savings are passed on to the consumer.

Mr. Joe Gremban and Mr. Matteucci were proponents to AB 641. There were no opponents.

AB 642 was then taken up which:

> Authorizes Public Service Commission to review and approve security and credit transactions of all privately owned public utilities operating in Nevada.

Mr. Clark said he supported this bill because only 1/2 of the utilities in Nevada are subject to review of Public Service Commission He said the Commission is not supplied with information he believes necessary for evaluation and perhaps assisting them at some points in time on their construction programs. He said he did not believe this would put an undue burden on any of the existing utilities because those who do not file with the Nevada Commission do file with the California Commission and that presentation would only have to be duplicated and submitted to the Nevada Public Service Commission in order to comply with the provisions in this bill. He said this would impose some extra burden on the Commission but he felt they could handle it with no additional staff. He felt it was in the public interest for full disclosure of what is transpiring with any utility company operating in the State of Nevada. In this instance, he said he agreed with Mr. Soderblom in that the railroads should be exempt in this bill. It would serve no purpose for them to fall under this bill because of the nature of their operation. He said they already receive copies of the borrowing requests of railroads as provided for by law under the Interstate Commerce Act. He added that truck lines are not a public utility so would not come under this bill. He said with regard to airlines, he has not given it much thought but he said there are airlines which operate exclusively in this State and the Commission would want to keep track of their borrowing. He said he thought all of these were Nevada corporations with the exception of United Airlines and perhaps Air West. He commented that this could be a problem. He said this would give them a handle on the borrowing of utilities so they would know exactly what was borrowed and for what purpose. He said it was in the public interest to have full disclosure of borrowing and spending of a public utility. He added a number of states have similar laws.

Tom Bell spoke in opposition to AB 642 representing Southern California Edison Company. He suggested the language on Line 3 of the bill be changed to read "operating as a public utility in the State of Nevada". He commented that Southern California Edison Company is not operating as a public utility in the State of Nevada.

Mr. Charles McCrea felt there was no need for this type of legislation as it does not address itself to any current problem. It would just make needless work and needless expense for the Public Service Commission and for the companies. He said the reason for this must be the injudicious issuance of securities by a public utility but the Commission already has a complete handle on this because they can disallow the cost of securities from the company's return if the Commission feels they were issued injudiciously. He felt that the fact that only 1/2 of the utilities in the State are subject to this law to be inmaterial. He said there was no need to make a law just to be uniform. He commented that with the exceptions that have been mentioned, he was afraid the only one left was Southwest Gas . He added that by the time you get all the data together and file it with the Commission and they act on it, the same interest rate may not be available. The time lag is a problem. He commented that this would be a sea of redtape and that it doesn't need to be unnecessarily complicated. He felt the fact that an applicant might be required by law will not make more information available. The information is already available. He went on to say that all costs have an impact on the rate. This would probably be a relatively small impact but why make any at all if it is not necessary.

Discussion then turned to AB 644 which:

> Authorizes public service commission to increase assessments on public utilities and general improvement districts.

Mr. Clark spoke in favor of this measure saying the Commission has been able to maintain a very substantial balance in the revolving fund at the 3 mill level; however, examining it out to 1977, in the event that the consumer division is created within the Commission at a cost of about $106,000 annually and by bringing staff up to an authorized level including the new positions requested in the current budget, in 1977, if they don't immediately institute an increase in the mill factor, the Commission will be short of operating revenue. He said the savings presently reflected in the Commission's fund are primarily a result of salary savings and other savings due to having spent less than authorized by the Legislature. It is important that this fund remain at a reasonably high level - at least $200,000 - so that the Commission may act effectively. He said if confronted with a shortage in the regulatory fund, there is no other avenue for the Commission to obtain money. He said they do not obtain any funds from the General Fund. They were not be able to staff in any manner commensurate with the responsibilities placed on the Commission by the law until the mill tax assessment became a method of funding and they were no longer required to rely on the General Fund. This would be an increas

of one mill over the current assessment and it should be effective on July 1, 1975 so that revenues could start to be collected at that time for the ensuing year. He added that they operate back one year, i.e. funds collected in 1973-74 are the operating funds for 1975. He concluded by stating that in the event the Commission should go into arrears or there is a recession or substantial cut back in the use of public utilities, the Commission could find itself in the serious condition of not having sufficient operating revenues. He said these provisions would be reflected on the rate payers bill. He went on to say that the funds talked about here would be:

1973-1974	$577,000
1974-1975	$666,000
1975-1976 projected	$680,000

These figures are based on three mills and would be for the entire State. He said there would be roughly a 33% increase for one mill.

Mr. Gremban spoke saying that he feels the Commission needs added staff and more qualified people and for that they need additional funding. He said he feels this additional tax should be placed on only in a time when the funds are needed. When funds are depleted to a certain amount, then put the tax on. You would then be delaying the matter as long as possible since this cost does have to be borne by the consumer.

Mr. Clark commented that if this is not started by July 1975, the Commission could run into a deficiency and be placed in the precarious position if they had to start laying off staff because of lack of funds.

This concluded testimony on AB 644 and with regard to AJR 31, Chairman Robinson said that enough testimony had been heard on AB 641 to cover AJR 31.

Discussion then turned to AJR 37 which:

> Memorializes Congress to refuse to enact certain parts of the proposed Energy Independence Act of 1975.

Mr. Clark spoke in favor of this measure saying under Title 7 of the Energy Independence Act of 1975, the administration proposes a bill which is very far reaching. It would require state regulatory agencies to provide certain things under Federal guidance and he felt this to be an erosion of state authority and that the Public Service Commission and public utility commissions throughout the U.S. are quite capable of handling the problems and that the regulatory scene at the local level would be better performed by a local regulatory commission. He said the National Governors' Conference was on record as opposing Title 7 as it applies to state regulatory commissions and also opposing it is the National Association of Utility

Regulatory Commissions. He said the matters he was speaking to specifically were that Title 7 would require the Commission to decide rate cases within five months and he said they find it absolutely impossible in that time to complete an examination from the time it is filed, audited and a report and order written and complete this entire process. He said up until four years ago, they had only 150 days to complete a proceeding. He said they found themselves in a box attempting to complete these in a workman-like manner and asked for an additional 30 days which was opposed by utilities but approved by the Legislature so that they then had 180 days. In addition, he said Title 7 would require a "pass through" of all fuel and purchased power costs without the benefit of pre-examination by the Commission. This would place the burden on the Commission to prove whether rates are just and reasonable rather than the public utility to make this determination. It would also require that the cost of all environmental protection equipment be included in the rates. This has been done consistently in Nevada and he did not feel we needed the "Feds" telling us when and how. He said it would also require the use of a Federal future test period which would include construction work in progress and he felt this a dangerous precedent and better regulated at the state level. It would also mandate peak load pricing investigation and he said this was being looked into on the State level and that we did not need Federal preemption in order to accomplish our goals in this area.

Mr. Clark concluded his remarks on this bill by stating that this entire package has been looked at very carefully at the headquarters of the National Association of Utility Regulatory Commissions by an economist who has concluded that the increased cost to the consumer would be between 21% and 25%. He said he therefore believes it not to be in the public interest. He also felt if this type of legislation was allowed that it would only be the beginning.

There were no opponents to this measure. Testimony was then taken on AB 675 which:

Makes certain changes in air pollution regulations.

Mr. Clark commented that the Commission takes no stand on air pollution control matters either for or against. In the past, all costs have been passed on to the consumer. He said he would be available for any assistance to the committee.

Dr. Roger Steele of the Desert Research Institute spoke on this bill submitting to the committee a statement of the Laboratory of Atmospheric Physics at the Desert Research Institute regarding Air Quality and Air Quality Standards in Nevada. This entire statement is attached hereto as Exhibit A. He read the Summary Statement which included the following:

I. Purpose of the Survey
II. Program Description
III. Pre-Operational Results
IV. Results - Post Operation - Partial Load
V. Biological Study

He then read the Summary Statement of this research giving its conclusions.

In answer to a question by Mr. Demers, Dr. Steele stated that under the Clark County emission regulations for sulfur dioxide, Mohave Station would require scrubbers; however, under Federal standards scrubbers would not be required there with respect to ambiant SO_2 measured at the surface. Mr. Steele said the Federal Secondary Standard for SO_2 annually is 20 parts per billion. This is the same standard for the State and for Clark County. At Mohave Station, the measurement has been consistently below 5 parts per billion (ppb) on an annual basis. With regard to peaks at the 3 hour level for which the standard Federally, for the State and for Clark County is 500 ppb, Mohave was measured at 42 ppb. Similar results were found at Navajo, Farmington, Four Corners, Tracy and Ft. Churchill. The proposed scrubbers for Mohave Station are designed to meet Clark County emission standards for both particulates and SO_2. The difference in cost for scrubbers for removing particulates only and for those to remove both particulates and SO_2 would be substantial and perhaps as significant at 30%.

Chairman Robinson commented that a decision will have to be made as to whether to maintain the high standards we have or to go to perhaps the Federal standards which are more lenient and have a little bit dirtier air but lower consumer costs.

Mr. Serdoz commented that the Federal standards are 70% less stringent than the present Nevada standards with regard to emission control. He said he felt this bill was mixing emission or discharge standards with ambiant air standards and he felt this was not a reasonable solution.

Dr. Steele stated that the point the DRI was trying to make was that in talking about sulfur dioxide emission standards and coal fired generating stations burning low sulfer coal, meeting the Federal standards does not result in significant deterioration as defined by the EPA.

A representative from Nevada Power Company commented that the average customer uses 1500 KWH per month for an average bill of abour $25.75. He went on to say that by the time the three new plants are built complying with Clark County Standards, the average customer can expect for just the pollution control equipment, a 25% increase in his bill or about $6.00. There would be no increase to comply with Federal Standards.

Mr. Don Arkell then spoke in opposition to this bill. He said this bill represents action which he does not believe should be passed. He said the measure extends into every area of air pollition control in the State and the language is ambiguous and would cause disruption of on-going pollution control programs at a time when such programs are essential to the orderly development of the State's resources.

Mr. Arkell said Section 1 of the bill ignores the fact that with a few exceptions, air quality in Nevada is far better than Federal primary and secondary standards and would therefore be a license to pollute these clean areas.

This bill would also require the State Commission and local agencies to adopt regulations much more restrictive for existing industry in those areas where air quality standards are exceeded before any new industry can move in. Existing industry would be penalized in these areas and new industries would be free to move inot the clean areas without controls. A single industry could move into a clean area and pollute up to the standards thereby preventing any additional development.

Mr. Arkell went on to say that the deletion of the policy of maintaining levels to protect human health and safety and substituting a policy of simply promoting public health and welfare would eliminate a large part of the basis of any air pollution control program.

He said Section 2, Subsection 2a is unclear as to what alternative controls are and the emphasis on cost benefit justification leaves us up in the air--cost benefit to whom? A dirty industry or uncontrolled utility would obviously benefit if no controls were placed on it but the general public would suffer additional health care costs and material damage costs. He said he felt this measure to be short sighted. He said it is easy to determine costs of control equipment but difficult to establish dollar amounts for benefits obtained when adequate controls are required. How do we put a dollar amount on public health or on preservation of scenic, historical and asthetic values of the State.

Mr. Arkell said their regulations are adopted after public hearings after giving the opportunity to all for input.

Section 3 requires establishment of ambient air quality controls no more restrictive than Federal primary and secondary air quality standards which would mean a roll back in standards for all new industry including utilities and increasing stringency for existing sources in dirty areas such as the Las Vegas Valley. The Federal standards have little regard for specific areas.

The District Board of Health of Clark County adopted a resolution today unanimously opposing this bill. They do not believe the passage of this measure will benefit anyone. It is liable to cause direct Federal enforcement of all industry not in compliance with existing standards.

Mr. Arkell stated that his department has never been asked to relax their standards. He said the standards in Clark County could possibly be relaxed depending on the justification. He suggested that the power companies request a hearing before the Air Pollution Control Board. A gentleman from Nevada Power commented that the records are replete with statements that the regulations are too rigorous.

Mr. Arkell said the present standards were developed by using the detailed test data supplied by the staff of the Health Department. He said at the time they had no Federal guidelines. He said he would accept AB 708 because it does not include all areas - only the utilities. It would not have an impact on the entire system. Mr. Arkell said they would consider a compromise.

The hearing was adjourned at 6:20 P.M.

ASSEMBLY

HEARING

0922

COMMITTEE ON COMMERCE

Date April 23, 1975 Time 3:00 P.M. Room 316

THIS SUPERSEDES PREVIOUS AGENDA POSTED FOR THIS DATE.

(2nd revision)

Bill or Resolution to be considered	Subject
AB 640 DEFER TO 640	Allows public service commission of Nevada to require a public utility to conduct a management efficiency study.
DO PASS AB 641	Extends economic development revenue bond law to include capital improvements by public utility.
AB 642	Authorizes public service commission to review and approve security and credit transactions of all privately owned public utilities operating in Nevada.
AB 643	Authorizes public service commission of Nevada to require management studies of public utilities.
DO PASS AS AMENDED AB 644	Authorizes public service commission to increase assessments on public utilities and general improvement districts.
DO PASS AJR 37	Memorializes Congress to refuse to enact certain parts of the proposed Energy Independence Act of 1975.
[redacted] AB 675	Makes certain changes in air pollution regulations.
DO PASS AJR 31	Memorializes Congress to amend the Internal Revenue Code to allow the issuance of tax-free capital improvement bonds for public utilities.

GUEST REGISTER

0932

COMMERCE COMMITTEE

DATE: 4/23

ADDRESS & NAME	REPRESENTING	PLEASE CHECK IF YOU WISH TO SPEAK
Bob McAdam	Nevada Bell	←
Joe L. Brenton	Sierra Pacific Power Co.	←
Gary M. Lori Co	"	✓
Dick Campbell	"	←
Wayne Harris	Central Telephone Co.	[redacted]
DICK SERDOZ	AIR QUALITY - Dept. Hum. Res.	AB-675 YES
Donald R. Arkell	Clark Co. Dist. Health Dept.	✓ AB675
C.A. SODERBLOM	NEV. R.R. ASSOC.	AB-634-640-641-642 643+644
C.F. McCREA	SOUTHWEST GAS CORP	✓
Allen Bell	So. Cal Ed.	
M. Jane Mattenni	Nev. Power Co.	✓
Charlie F. Vaughn	Nevada Power Co	✓
J.B. Moore	So Cal Edison Co	←
H.P. Belknap	" " " "	
Larry Mayuchen	Employment Security	
Jim Hann	" "	

Mr. Demers
from
Sen. Wilson

DESERT RESEARCH INSTITUTE
University of Nevada System
Office of the President

Reno, Nevada 89507
(702) 784-6131

0933

April 22, 1975

The Honorable Keith Ashworth
Chairman, Select Joint Committee on
Public Utilities
Nevada State Legislature
Carson City, Nevada 89701

Dear Chairman Ashworth:

At the request of Senator Thomas R.C. Wilson, letter dated April 14, 1975, we are transmitting the attached statement pertaining to air quality regulations and their relation to emission regulations for power generating stations in Nevada. The statement was prepared by Dr. Patrick Squires, Director of the Laboratory of Atmospheric Physics, and Professor Roger L. Steele, Manager of the Air Resources Program.

We are quite pleased that the Committee requested this statement and will be glad to provide any further assistance that you may require.

Very sincerely yours,

Lloyd P. Smith
Acting President

LPS/fl
cc: Senator Thomas R.C. Wilson
Chancellor Neil D. Humphrey
Dr. Patrick Squires
Professor Roger L. Steele
enclosure

DR. STEELE
EXHIBIT F

AIR QUALITY AND AIR QUALITY STANDARDS

0934

IN NEVADA

Statement of the Laboratory of Atmospheric Physics
Desert Research Institute
University of Nevada System

SUMMARY STATEMENT

At the request of the Select Joint Committee, air quality and emission regulations and their meaning in terms of actual air quality in Clark County, have been reviewed by the Desert Research Institute of the University of Nevada System. It has been found that, with the exception of particulates, the air quality well away from urban areas is near background levels, that is, similar to that air quality found in remote areas of the globe. Particulates are higher than normal due to the indigenous dustiness of arid areas and the impact of tourism. They can be alarming even in small communities when the desert surface is disturbed, e.g., by tract housing development.

The measured impact of large coal-burning generating stations on the atmospheric environment has been reviewed, particularly Mohave Station in Clark County. The monitoring results of large stations near Page, Arizona and Farmington, New Mexico, have been reviewed as well to add perspective to the power plant air quality impact assessment problems with respect to air quality regulations.

The results of all of these studies demonstrate that sulfur dioxide concentrations measured at the surface, do not approach federal secondary standards. It should be noted that in all cases, low sulfur coal is used (approximately 0.5 % sulfur).

The use of this fuel permits compliance with Federal sulfur dioxide emission regulations as well. In addition, the measured surface concentrations also are sufficiently low to meet EPA, Class II standards which are designed to prevent significant deterioration of air quality.

In view of the above findings, it is the opinion of the Desert Research Institute that existing Nevada and Clark County sulfur dioxide emission regulations are more stringent than appears to be necessary for the prevention of significant deterioration of air quality in the State of Nevada.

The existing regulations regarding plume opacity and particulates seem adequate until more is known about the impact of power plant plumes on scenic and recreational areas and on the quality of life in general. Also, the costs of compliance with opacity and particulate emission standards are less than those of complying with the Nevada and Clark County sulfur dioxide emission standards.

AIR QUALITY AND AIR QUALITY STANDARDS IN NEVADA

Statement of the Laboratory of Atmospheric Physics
Desert Research Institute
University of Nevada System

1. Introduction

In many urban areas the deterioration of the atmospheric environment as a result of man's activities is obvious and has been well documented. On a much larger scale, concern regarding the impact of man on the quality of the atmosphere, and even on climate, is now worldwide; several nations, including the United States, are engaged in a cooperative effort to determine in what ways and to what degree the global atmosphere has been changed.

Between these two extreme scales, the problem of air quality has received little attention; little is known concerning the effects which very large cities have on the surrounding country, or of the consequences of transportation and development in non-metropolitan regions where air quality takes on a very special significance, such as in the Grand Canyon of the Colorado River and the Lake Mead National Recreation area. On the other hand, intensive investigations of air quality as a result of energy production by burning of fossil fuels in the desert southwest have been carried out in the vicinity of the stations producing this energy. These, when properly controlled, have generally shown insignificant effects upon the environment as will be discussed later.

On all scales of consideration, socio-economic and legal problems are involved. On the national, state and county scales, regulatory controls, (e.g., the federal primary and secondary standards), are in effect. On the non-urban regional scale there

has been a succession of court actions which ended in a United States Supreme Court decision. This called for nondegradation of air quality in those areas where this is significantly better than the air quality described by federal criteria. This has resulted in the publication, "Approval and Promulgation of Implementation Plans for the Prevention of Significant Air Quality Deterioration" (1).

The air quality problem, especially in southern Nevada, will be addressed in this testimony with respect to standards, including non-significant deterioration. The answer is complex because practical air quality standards are normally derived by considering the complex interactions of socio-economic, legal and scientific factors.

2. Ambient Air Quality Standards

The Environmental Protection Agency, as a result of the Federal Clean Air Act of 1970, has promulgated primary and secondary air quality standards. The primary standards were established to provide air quality that would have an adequate margin of safety to protect human health. The secondary standards were established to protect the public welfare from any known or anticipated adverse effects.

The State of Nevada was divided into three Air Quality Control regions for complying with that implementation plan. These areas were Washoe and Douglas Counties and Carson City in the north; Clark County in the south; and all of the remaining counties in the central portion of the state. Clark County, in its role as an air quality region, established in August 1971, emission standards which were among the most restrictive emission standards in the United States.

These regulations, along with those established in the other two regions, became a part of the Nevada State Implementation Plan. The State of Nevada submitted an implementation plan that established air quality standards and emission standards for each of the three Air Quality Control regions.

These standards are presented in Table I and II but include mainly those standards which are generally applied to large coal-fired power plants, since the central theme of this testimony focuses upon the impact of these power plants on the air quality of Nevada and not upon the more complex question of air quality in the urban areas. These can be treated separately since in Nevada, the large plants are located well away from urban areas. The 1600 megawatt coal-fired station, located near Davis Dam in Clark County, has been monitored for some six years. Furthermore, this is the only such source in the state that has been extensively studied. Much of this testimony, therefore, addresses this data.

Another "standard" of importance to be considered in an environmental assessment question is background air quality as found in southern Nevada by actual measurement. As shown in Table I, this is quite similar to that found in remote areas of the United States and other sparsely populated areas of the globe. Much of Nevada falls under this "standard" except for particulates which can be high due to the indigenous dustiness of arid areas as well as to increasing disturbance of the desert pavement by population growth and tourism. Also shown on the table is the arithmetic ratio of federal to background air quality to demonstrate the large differences in these.

The background air quality discussed above coupled with the impact of growth on remote areas of the United States upon this air quality prompted litigation to prevent significant deterioration of air quality as cited earlier. As a result, EPA has promulgated additional regulations calling for non-significant deterioration. Three classifications of degradation were specified, i.e., Class I, II, and III,and currently, Nevada and all other States fall under Class II. The States or other governmental agencies can designate areas as Class I which essentially is background air quality, but this involves a number of steps, including public hearings (1). The Class II standards, or the present nondegradation standard, is therefore, shown on Table I. Of further interest is actual air quality as measured in southern Nevada in the vicinity of the previously mentioned 1600 megawatt coal-fired power plant near Davis Dam. Measured air quality in the area is shown on Table I for both the pre and post operational cases. The sampling network and its design are described in Appendix A.

The real meaning of the measurements taken at Mohave have been the subject of some controversy. Of particular concern are the locations of the sampling stations with respect to the measurement of station influence. Various models have been suggested, particularly the NOAA model which was employed in the Southwest Energy Study (2) to evaluate the existing and potential impact of a number of generating stations in the southwest and Mohave was among these.

As a consequence, the network was modified in 1972 to test the NOAA model as discussed in Appendix A. No other models have been used in the design or evaluation of the Mohave data since it is our view that models do not presently exist which are applicable in a practical sense to the complex terrain of the Mohave area. This is currently the subject of intense research by a number of institutions throughout the nation which may eventually result in a workable model(3).

Because of this difficulty with models in complex terrain and because of logistics, the Mohave sampling network was designed to sample air quality where people live as well as away from the influence of human activities. The station locations were also limited by the availability of electric power and the need for protection from vandalism. The network which resulted from all of the above considerations is shown on Figure 1.

With the above in view, the measurements certainly show that there has been no station influence where the measurements were made. We consider that they are probably representative of the whole area, since there is adequate observational evidence that the plume normally remains well above the terrain. Contrary to the predictions of the NOAA model, there is a general absence of fumigation or plume impaction at the surface due to the meteorological characteristics of the area.

The network measurements of interest are summarized in Table I. When one considers the post operational case (CY 74-data), it is seen that the air quality in the vicinity of the station is near background except for particulates and oxides of nitrogen. Sulfur dioxide is in background concentrations on an annual basis. The atmospheric pollutant, sulfur dioxide, measured in the vicinity of the station is an indicator of station influence in the area since the station is the only very large source present. The concentrations are at background levels on an annual basis.

Various other sulfur dioxide concentration measurements are also shown in Table I (i.e. 24-hour, 3-hour, and 1 hour maximum values for 1974). These are very low when compared with the Nevada and Clark County ambient air standards. Furthermore, and more importantly, they are below the Class II designations. Again, referring to Table I, the 24-hour and

3-hour nondegradation standards are plus 35 and plus 245 PPB respectively (the positive sign indicates the amount the concentrations can be raised above background levels). The actual measured values at Mohave for 1974 are 16 PPB for the maximum 24-hour and 42 PPB for the maximum 3-hour or roughly factors of 2 and 6 below the nondegradation Class II standard. The annual geometric mean concentration has not gone above background and so has no influence in terms of the Class II designations.

The network also includes a large number of sulfation plates which have been set out where feasible, to check the NOAA model discussed earlier, which predicted high concentrations in the area. The sulfation plate method was used since continuous monitoring systems were not possible in the impact area predicted by the NOAA model due to the lack of electrical power and the absence of access roads. The sulfation measurements from all of the stations have consistently shown background concentrations at levels less than 5 PPB averaged over one month. A concentration of about 5 PPB is considered the threshold level of SO_2 detection using sulfation plates. The NOAA model predicts much higher concentrations as shown by the concentration contours in Figure 2; e.g., the NOAA predicted concentration at the station designated KH-3 is 35 PPB, while the actual measurements are at the threshold level. The State of Arizona and the counties of Clark in Nevada and San Bernardino in California also sample the air quality within the sampling network although all are limited to rather small portions of it. These agencies report no significant pollution in the valley with the exception of suspended solids which are attributed to local construction activity.

The table also shows degradation of air quality in the area in CY-1974, when nitrogen dioxide, oxidants, particulates are compared with the background standard. The former, while not alarming, does show the influence of population growth in

the area which has been found to correlate well with traffic counts across Davis Dam. The latter particulates are alarming since the values often greatly exceed federal standards when measured in the communities of Bullhead City, Arizona, Needles, California, and the populated regions in-between. Particulates measured in the remote area of the network, well away from human activity, show a normal background level 40 µgm-3. The high particulate concentrations have been attributed to human activity in the area and are commonly reported in areas of the southwest when the desert has been disturbed (4). As pointed out previously, these cannot be the result of power generation in the area due to the general absence of sulfur dioxide.

The federal standards for oxidants were exceeded in 1974 but this is not uncommon in the southwest. A lightning strike in the vicinity of a monitoring station can cause high short term values. The mean oxidant level in the area is only 31 PPB, which compares favorably with background levels.

3. Emission Standards

Emission standards are generally promulgated on the basis of maintaining ambient air standards. These are very important in urban areas where air pollution is already at intollerable levels. They are of equal importance in rural areas but should be related to the carrying capacity of the atmospheric reservoir into which they are released. This is usually not taken into account in the development of emission standards for remote areas as evidenced by the recent call for such research by the Bureau of Land Management in Utah (5).

Thus, in establishing emission standards one should know the capacity of the various atmospheric reservoirs and the planned development of power generation and other industries within these reservoirs.

This problem can be and is attacked on an iterative basis by the preparation of the environmental impact statements as a result of actual field meteorological and air quality measurements. The findings of these statements are then substantiated by field verification through monitoring of the facility in question both before and after it begins operation.

With these procedures it is possible to determine if emission standards are adequate from the results of monitoring programs. We believe that the measurements made in the vicinity of the Mohave Station, as an example, indicate that the station with the existing controls does not result in degradation of air quality, as measured at the surface, using EPA nonsignificant deterioration Class II as the criteria as shown in Table I.

Furthermore, the measurements of air quality at the surface do not approach Nevada, Clark County, or federal secondary ambient standards and therefore, do not endanger or tend to endanger human health and welfare, on the basis of these criteria.

It may be also of interest to the committee to note that preliminary results from a detailed monitoring program in the Four Corners area near Farmington, New Mexico, extending over an 18-month period, show ranges of concentrations of ambient sulfur dioxide similar to those found near the Mohave Station, which meet the EPA Class II nondegradation standard.

Further perspective with respect to discussion of emission regulations is reflected by the results of an intensive field monitoring program that has been under way in recent months around the Navajo Generating Station, near Page, Arizona. The purpose has been to determine from operation of the 750 megawatt Unit No. 1 of Navajo, the amount of SO_2 absorption that will be required on all three units of this 2250 megawatt station in

order to meet the Federal secondary ambient air quality standards. The Navajo Station uses low sulfur coal from the same Black Mesa area as does the Mohave Generating Station.

Twenty-six sensitive ground monitoring stations were placed around the site at points that were estimated to have the greatest potential for exposure to the plume. In this case, high terrain areas were considered to have the highest exposure likelihood. Several airplanes were used to monitor the plume and to indicate its dispersion characteristics, especially during period of stable atmosphere, in which highest ground concentrations at high terrain could occur. Continuous measurements with the ground stations were made over the five month winter period during which the most severe conditions were expected.

The monitoring program has been concluded and the results are still being thoroughly analyzed to provide detailed correlations with atmospheric conditions and station emissions. However, the actual measurements produced a maximum concentration of 23 percent of the 24-hour average standard (365 μgm^3) and 38 percent of the 3-hour average standard (1300 μgm^3), when extrapolated to three units operating at full power. Thus, the data show that ambient SO_2 concentrations without any SO_2 absorption will be well within both the primary and secondary standards. Furthermore, these measured maxima are within the EPA non-degradation standards for a Class II region.

A monitoring program for the Fort Churchill and Tracy Station of Sierra Pacific Power Company, using high sulfur oil or the fuel has also been conducted. The results are similar to those cited above, i.e., there has been no significant ground level effect of sulfur dioxide concentrations.

In the case of these generating stations including Mohave and Clark County, it may therefore be concluded that the actual sulfur dioxide emissions from the station are within federal

standards for new sources when using the present sources of low sulfur coal. This statement also applies to prevention of significant deterioration of surface air quality as pointed out in the previous section. It is also the view of the DRI that, given proper station design, siting and consideration of atmospheric reservoir limitations, the Federal standards for sulfur dioxide emissions, are adequate to protect the desert environment from significant deterioration, using EPA Class II ambient air quality criteria. The necessary precautions can be taken given adequate environmental assessment as referred to above.

This testimony may be concluded with a discussion of particulate emission and plume opacity standards which are also shown on Table II. These are difficult to address since the effect is an esthetic one when the plume does not impact on the surface. The visible plume is degrading to a scenic area and so adversely impacts the tourist industry. As a consequence, the existing emission standards for particulates and opacity in Nevada and Clark County were designed in part to minimize visible effects of plumes. Aside from these considerations, one must evaluate the effect of a generating station plume upon visibility in the atmospheric reservoir referred to previously. This is not well understood as evidenced by the aforementioned Bureau of Land Management call for research.

Therefore, the DRI views the Nevada and Clark County opacity and particulate standards as realistic until more is known about plume opacity effects, especially as regards the atmospheric reservoir, visibility, and esthetic effects. It is understood that the cost associated with complying with the most stringent opacity and particulate controls, e.g., those of Clark County, are significantly less than the added cost associated with complying with Nevada and Clark County sulfur dioxide emission standards.

TABLE I

AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	FEDERAL Primary	FEDERAL Secondary	NEVADA	States of California	States of Arizona	CLARK COUNTY	SO. NEVADA▲ (Mohave Area Background Air Quality)	RATIO Nev. Std/ Background	SO.NEV.○ (Mohave Area) 1974 data	EPA Non-deg. Class II
Photochemical Oxidants	1 hr.	80 ppb☆	80 ppb	80 ppb	100 ppb	80 ppb	80 ppb	∿35 ppb*	∿2.0	∿31 ppb○	no.std.
Nitrogen Dioxide	Annual	50 ppb	50 ppb	50 ppb	---	50 ppb	50 ppb	<5 ppb	25.0	12	no. std.
	1 hr.	---	50 ppb	---	250 ppb	---	---	---	---	250 ppb	no. std.
Sulfur Dioxide	Annual	30 ppb	20 ppb	20 ppb	---	25 ppb	20 ppb	<5 ppb	10	< 5 ppb△	+5.3 ppb□
	24 hrs	140 ppb	100 ppb	100 ppb	40 ppb	100 ppb	100 ppb	---	---	16	+35 ppb
	3 hrs	---	500 ppb	500 ppb	---	500 ppb	500 ppb	---	---	42	+245 ppb
	1 hr	---	---	---	500 ppb	---	---	---	---	63	no. std.
Suspended Particulates Geometric	Annual	75 $\mu g/m^3$	60 $\mu g/m^3$	60 $\mu g/m^3$	60 $\mu g/m^3$	60 $\mu g/m^3$	---	40 $\mu g/m^3$	1.7	706●	+10 ppb
	24 hrs	260 $\mu g/m^3$	150 $\mu g/m^3$	150 $\mu g/m^3$	100 $\mu g/m^3$	150 $\mu g/m^3$	150 $\mu g/m^3$	50 $\mu g/m^3$	3.0	983■	+30 ppb

☆ Pollutant concentration in parts per billion.

* Background concentration depends upon latitude and season.

○ As determined from DRI monitoring network since Mohave commerical operation.

△ Threshold limit of measurement. No change since Mohave commerical operation.

□ Increases permitted above baseline background air quality for prevention of significant air quality deterioration Federal Register, Vol. 39, No. 235. 12/5/74.

○ Annual mean.

● Six year geometric mean, Bullhead City

■ Network maximum, 1974.

▲ Values compare well with background air quality in remote areas of the United States.

∿ Indicates approximate value

< Indicates value less than the amount shown

COMPARISON OF POWER PLANT EMISSION REGULATIONS

TABLE II

EMISSION CONSTITUENT	EPA		STATE OF NEVADA	CLARK COUNTY	
	NEW SOURCES	EXISTING SOURCES	NEW AND EXISTING SOURCES	EXISTING SOURCES	NEW SOURCES
PARTICULATE (Maximum 2-hour Average) Units: Pounds per Million Btu	0.100	None	0.068 (1)	0.068 (1)	0.068 (1)
PLUME OPACITY Unite: Ringelmann Number	1.0 (20% Opacity)	None	1.0 (20% Opacity)	1.0 (20% Opacity)	0.0 (5% Opacity)
SULFUR DIOXIDE (Coal-Fired Power Plant) Units: Pounds per Million Btu	1.20 (1)	None	0.21 (1)	0.15	0.15

(1) Emission regulation depends upon size of source. Values shown apply to Mohave Station

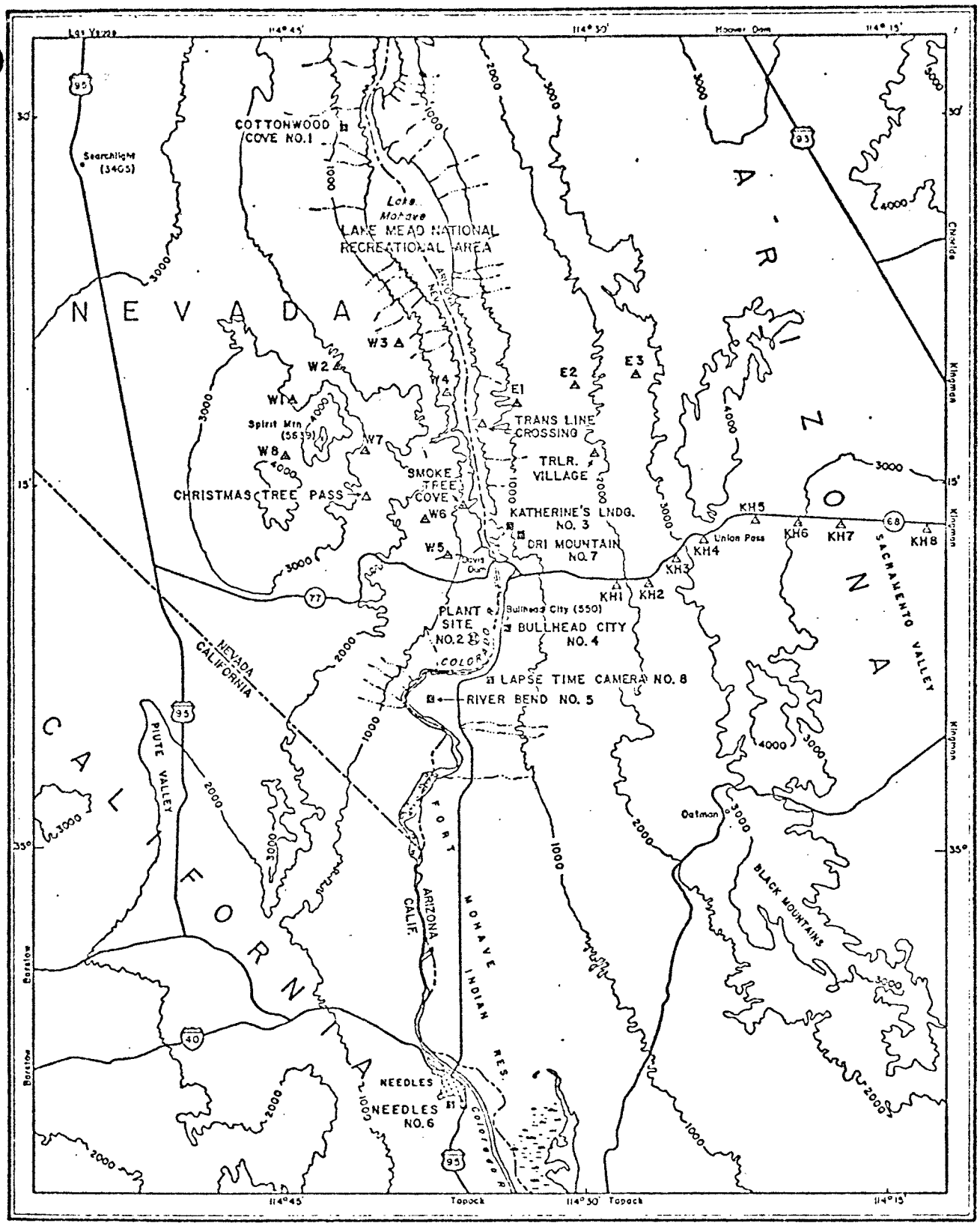
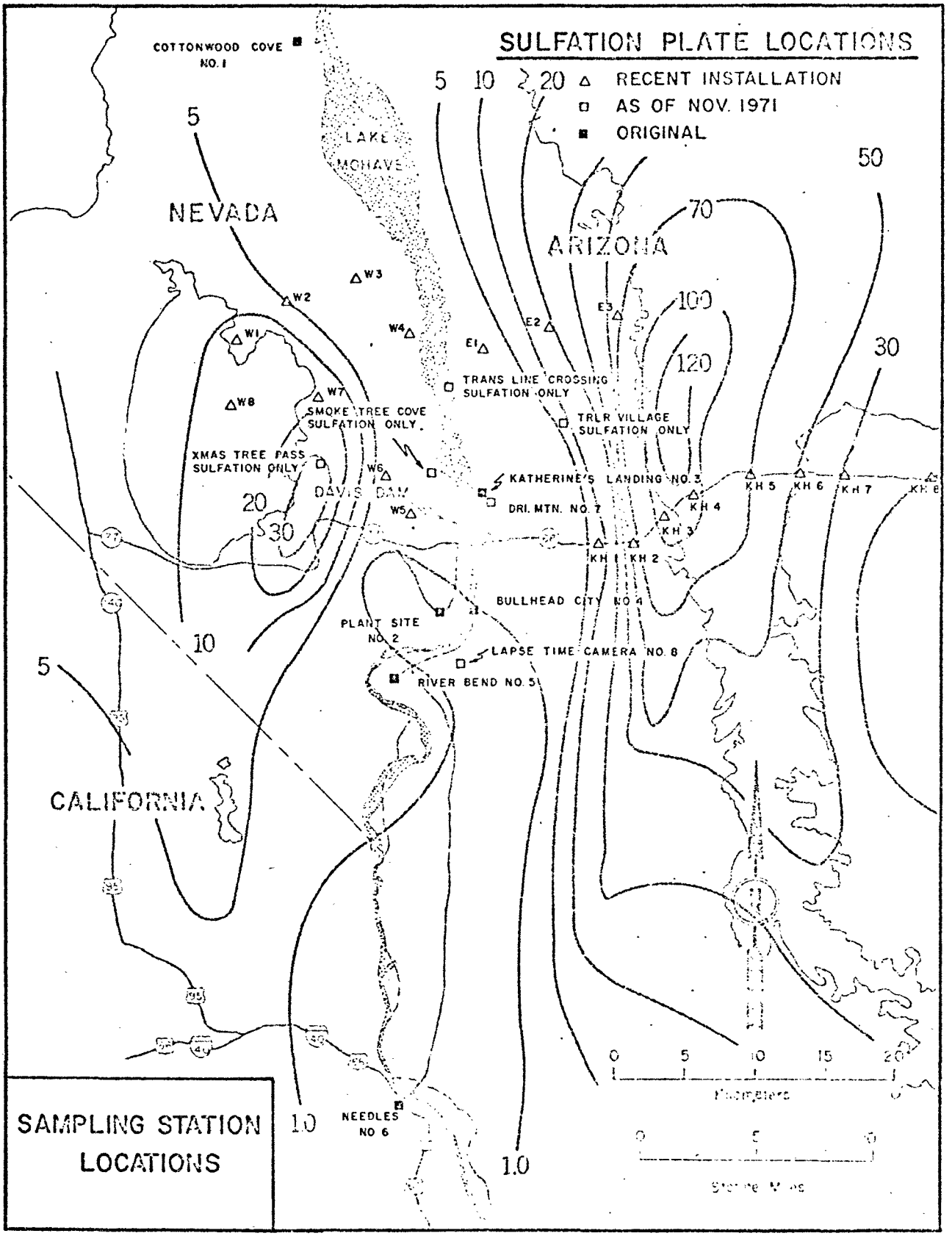


FIGURE 1. Map of monitoring network.

FIGURE 2



NOAA MODEL

HYPOTHESIZED ANNUAL SO_2 CONCENTRATION μ GRAMS M^{-3}

MOHAVE POWERPLANT UNITS NO. 1 & 2

TERRAIN CONTOUR 3000 FT. LEVEL

REFERENCES

1. Environmental Protection Agency (EPA) Regulations, Federal Register, Vol. 39, No. 235, December 5, 1974

2. Southwest Energy Study, Appendix E, Meteorology, USDI, March 1972.

3. EPA Request for Proposal DU-75-13126, "A proposal for Field Measurement Study to (1) obtain reliable measurements of SO_2, sulfate, NO, and NO_2 concentrations and (2) to establish improved relationships among sulfur emissions, meteorological variables, and ground-level concentrations of SO_2 due to a large coal-fired power plant located in a non-urban area of complex mountainous terrain," February 21, 1975.

4. Air Quality Monitoring Network Data, Arizona Department of Health, Phoenix, Arizona, 1973.

5. "Determine the Limiting Factors of Utah's Atmospheric Reservoir as They Relate to Natural Resource Development," BLM, RFP announced in Commerce Business Daily, March 5, 1975.

ATMOSPHERIC SURVEY - MOHAVE STATION

HEARING STATEMENT

This statement augments and brings to date the attached statement made to the Clark County Air Pollution Control Board on July 3, 1974, regarding air quality in the vicinity of Mohave Station.

The statements made at that hearing were based upon review of all data through March, 1974. The air quality data taken since then has been reviewed through September, 1974 with the finding that there is still no significant station influence upon ground level air quality. The primary bases of this conclusion are the results of sulfation and SO_2 measurements which remain at background levels, equivalent to those found in remote areas of the globe.

INTRODUCTORY STATEMENT

The Desert Research Institute is an arm of the University of Nevada System headed by President John M. Ward. The Laboratory of Atmospheric Physics is one of several laboratories of the institute with Dr. Patrick Squires as Director. This laboratory conducts theoretical, experimental and field research in the physics of clouds precipitation and aerosols. Other work focuses on field programs in weather modification and air pollution. The several programs are headed by principal investigators, all of whom are experts in these rather broad areas. Ultimate responsibility for adequate execution of the work rests with the Laboratory Director and the President.

ATMOSPHERIC SURVEY - MOHAVE STATION

SUMMARY STATEMENT

I. Purpose of the Survey

The survey was begun over five years ago to ascertain any effect the Mohave Station might have upon the atmospheric environment in the vicinity of the station. The first two years of observations were made prior to start-up to determine the air quality in the area before station operation. The station has been operating since that time so that this latter measurement period reflects possible changes in the atmospheric environment that could be attributed to the station.

II. Program Description

The program began with the establishment of simple sampling network, consisting mainly of manual sampling devices, as shown in Figure 1. The initial stations were located at Needles, California, River Bend, Bullhead City, Katherines Landing in Arizona and Cottonwood Cove and the Plant Site in Nevada at which the following were measured; SO_2, NO_x, NO_2, sulfation and particulates.

Other auxiliary measurements such as directional solids and dust fall were also made. Integrated SO_2, NO_x and NO_2 concentrations were determined by standard techniques using bubbler trains operating over 24 hour periods for five days at bimonthly intervals. Total sulfur was measured with standard lead peroxide candles measured over monthly intervals at stations one through six. Continuous monitors for measurement of SO_2, NO_2 and NO_x were also utilized to measure any significant, short term high concentrations of these pollutants.

About two years ago, shortly after the station began operation, it became clear that additional monitoring would be desirable to better measure possible station effects. To accomplish this, Dri Mountain Station, also shown on Figure 1, was established on a hilltop about 600 feet above the valley floor. It is north of the station and with the prevailing north/south winds the valley airstream may be sampled with and without possible station influence. Measurements made at Dri Mountain include wind speed and direction, visibility (nephelometer), temperature, vertical temperature gradient

and ozone. Other data was desired such as SO_2 but no instruments were available which would reliably measure the anticipated low concentrations.

The initial expansion of the program was completed by the installation of a lapse time camera and additional sulfation plates. This was done after consultation with the National Park Service, to provide indication of SO_2 concentrations in certain sensitive areas with respect to plant life and recreation in the area north of Davis Dam.

Shortly after the completion of this work a second program modification was initiated to keep the program in pace with the rapid change in air pollution measurement technology that occurred with the establishment of the EPA and corresponding large increases in activity by state and county public health agencies. The program was modified along the following lines.

First, additional, reliable SO_2 monitoring equipment was needed to provide more information on short term, low level SO_2 concentrations. Consequently, five new continuous instruments were purchased of the flame photometric type sensitive to SO_2 concentrations as low as 5 ppb. These are now in operation at River Bend, Bullhead City, Katherines Landing, Dri Mountain and Cottonwood Cove.

The second and third phases of the new program focused on the establishment of additional sulfation stations and weekly manual sampling of SO_2, NO_x, NO_2 and particulates in addition to the bi-monthly sampling. The complete sulfation network as it is now laid out is shown on Figure 1. The new stations, designated by letter prefixes, were located to the north of the station to monitor the hypothesized NOAA model for predicting high SO_2 concentrations in the Mohave Valley.

This rather brief but involved description of the current program may be completed by a description of data analysis reporting and program technical control. Most of the network data from continuous monitors is telemetered to a central data acquisition system on Dri Mountain Station where it is encoded on tape. It is then processed by computer on a quarterly basis. Computer analysis includes monthly summaries of results according to wind

direction and time averages. An annual report is also issued which analyzes and summarizes all data taken from the monitoring network. Program technical control is maintained by a DRI chemical laboratory in Boulder City, Nevada operating under the Laboratory of Atmospheric Physics in Reno. In all, five professionals are directly involved in the project together with an adequate staff of technicians, two of whom are permanently located in the field. The program is further enhanced by two consultants from the Bay Area Pollution Control District who continually assist in the on-going instrument calibration activity.

III. Pre-Operational Results

As cited previously, the first two years of the study were set aside to determine air quality in the area before station operation. This established criteria for future assessment of any impact the station might have on surface air quality in the Mohave Valley. This was found to be exceptionally good except for particulates. As discussed in the 1970 Annual Report the following average background levels of common pollutants were established.

SO_2	$\leq$5 ppb
NO_2	$\leq$5 ppb
Total Sulfation	$\leq$5 mg 100 CM^{-2} mo^{-1}
Particulates	$\leq$80 g/m^{-3} μg

The concentrations of SO_2, NO_2 and sulfation levels are typical of those measured in remote, unpopulated areas. These are also at essentially the threshold detection levels of the measuring apparatus. On the other hand, the particulate concentration, averaged over the two year pre-operational period, is high but is indigenous in a desert area such as the Mohave Valley. Furthermore, this fluctuates widely probably as a result of wind blown dust. The rapid population growth in the southwest has undoubtedly aggravated the particulate problem since disturbance of the desert surface by construction and other human activity often creates a dust source.

IV. Results - Post Operation - Partial Load

The station has been operating since late 1971. To date, the results of the study clearly show that the station had no effect

on the atmospheric environment as monitored at the surface by the station network. Some air pollution was observed to the south of Davis Dam particularly at Bullhead City, Needles and River Bend where the mean values of NO_2 and NO were up slightly from the background levels of 5 ppb. On the other hand, there was no corresponding increase in SO_2 which would have also been observed were there a station influence. For further details concerning 1971 and 1972 data the reader is referred to the Annual Reports, attached.

All the data for 1973 have been reviewed and analyzed with the conclusion that their have been no significant changes compared with the 1971-72 data. In fact, the 1973 results from the continuous monitoring instruments show that the secondary standards for SO_2 were only surpassed 0.03% of the time, a remarkably low percentage. Other program aspects are discussed in detail in the 1973 Annual Report which is currently in press.

The 1974 data has been reviewed through March, and again, no significant changes have been observed.

Certain other air quality criteria were established with respect to the Dri Mountain Station during 1972. These are local visual distance as measured by the nephelometer, ozone, a wind rose and an atmospheric stability parameter. These new criteria are cited in the 1972 and 1973 Annual Reports with the findings that the visibility is typically greater than 50 mi and that the average ozone level corresponds with that measured in a non-urban area. Both of these levels are essentially independent of plant operation since no station influence is indicated in the other related 1972 data. Wind rose and atmospheric stability data are too complex for inclusion in this statement.

V. Biological Study

A biological study was initiated about three years ago under the supervision of Dr. Frits Went, Director of the Laboratory of Desert Biology. A number of field surveys have been made with the result that no vegetation damage has been observed that is attributable to the station.

VI. Results from other Agencies

The state of Arizona, and the counties of Clark in Nevada and San Bernardino in California also sample the air quality within the sampling network although all are limited to rather small portions of it. These agencies report no significant pollution in the valley with the exception of suspended solids which are attributed to local construction activity.

CONCLUDING STATEMENT

The results of five and one-half years of the Atmospheric Survey with respect to Mohave Station have been carefully reviewed. Air quality in the region prior to station operation was found to be pristine except for particulates which are high due to the indigenent dustiness of the desert. The station has been operating over the past three and one-half years of the study period and no significant station influences on ground level air quality has been observed. This finding is underscored by the fact that over 450 separate 24 hour observations of sulfur dioxide have shown the level of this contaminant to be equivalent of that found in remote areas of the globe. Furthermore, the sulfation network, established to the north of the station to prove or disprove the NOAA model, has shown only background levels of SO_2. This data then indicates that the very high SO_2 concentrations predicted by the NOAA model are hypothetical rather than real and that the model is thereby quite likely not applicable to Mohave.