

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of	)	
	)	
ARIZONA PUBLIC SERVICE	)	Docket Nos. STN 50-528
COMPANY, ET AL.	)	STN 50-529
	)	STN 50-530
(Palo Verde Nuclear Generating	)	
Station, Units 1, 2 and 3)	)	

MOTION OF INTERVENOR TO ADD NEW CONTENTIONS OR ALTERNATELY  
AMEND HER CURRENT CONTENTION ON INADEQUATE ASSURANCE OF  
WATER

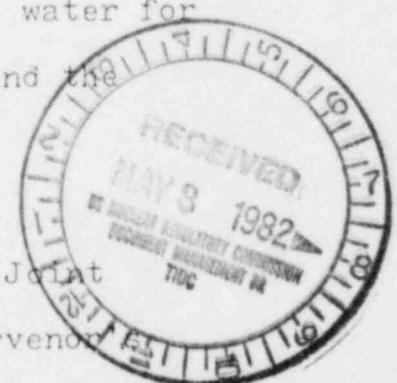
Intervenor, Patricia Lee Hourihan, pursuant to 10 C.F.R. 2.714(b) and through undersigned counsel, hereby moves for leave to submit two new contentions, or in the alternate, amend her contention on the water issue to promote a clearer focusing of the issues in this licensing hearing. The new contentions she seeks to submit include a refinement of her contention concerning an adequate assured supply of water for the plant, the normal safe shutdown of the plant, and the safe shutdown of the plant required by an accident.

I. BACKGROUND

On March 17, 1982, the Licensing Board denied Joint Applicants' Motion for Summary Disposition on Intervenor's Contention No. 5 which reads as follows:

"Applicant will not have an assured supply of usable treated municipal effluent for cooling purposes for Unit 3 of PVNGS during months of peak reactor need for the first five years of operation."

In its Memorandum Order the Board relied on a letter from Mr. Bill Stephens which indicated that Agreement No. 13904



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under which Applicants contend they can obtain sufficient effluent to operate Palo Verde Units 1, 2 and 3 was currently being renegotiated. Among the issues the Board noted were being negotiated were:

1) The extent to which the cities could, pursuant to the Agreement refuse to deliver effluent to Palo Verde when the cities critically needed the water;

2) the amount, if any, available for cooling purposes for Palo Verde Units 1, 2 and 3;

3) Permissible uses of the effluent other than for cooling purposes for Palo Verde;

4) Cost of effluent for Palo Verde Units 1, 2 and 3;

5) Source of effluent for Palo Verde Units 1, 2 and 3.

On April 7, 1982, Intervenor moved for an extension of time on the ground that she had discovered new evidence which indicated that Applicants could not ensure an adequate supply of water of an adequate quality for use at Palo Verde. She submitted, in support of that motion, a legal brief of the Salt River Project which argued that City of Phoenix was not entitled to sell effluent outside the Salt River Project boundaries, precisely what the cities propose here in their sale of effluent to Applicants for use at Palo Verde. She also submitted a letter from the Solicitor of the Department of Interior, dated February 25, 1980, which states that United States government maintains control over all water, including all return flow within the boundaries of the Salt River Project boundary, and therefore its use at Palo

erde is illegal, especially in light of possible prior claims of Indians residing within the Project area.

The Board, on April 13, 1982, denied Intervenor's request for a 30-day postponement on the ground that it should not subordinate its licensing process to issues which were the subject of litigation. However the Board did request that counsel present argument on Intervenor's new evidence which suggested that the City of Phoenix was not legally entitled to sell effluent outside the Project boundaries.

On April 22, 1982, Ms. Hourihan retained counsel to represent her in the licensing hearing.

For about 90 minutes on April 23, 1982, and in a second short session on April 26, 1982, Intervenor deposed Mr. Van Brunt, vice-president of the Arizona Public Service Company. Applicants' counsel also provided some of the documents relevant to the water issue formerly presented to Intervenor for inspection, but which were not copied for financial reasons.

II. INTERVENOR HAS MET THE STANDARD SET OUT IN 10 C.F.R. 2.713 FOR GRANT OF LEAVE TO FILE NEW, OR IN THE ALTERNATIVE, AMENDED CONTENTIONS ON THE CRUCIAL WATER ISSUE.

Petitioner has met the standard set out in 10 C.F.R. 2.714 for leave to file in an untimely manner new contentions or amendments to petitions to intervene.

Intervenor, prior to April 22, 1982, did not have legal

counsel, to aid her in phrasing contentions in legal terms, with specificity and basis. More importantly, the information upon which Intervenor bases her water-related contentions was discovered only recently through her own initiative. Applicants, although cognizant of the importance of the water issue, failed to inform the Board of the possible legal restrictions on their use of effluent from the 91st Avenue Treatment Plant at Palo Verde. Furthermore, the NRC staff did not adequately investigate the matter to inform the Board of the crucial conflicting claims to this effluent. The Staff also failed to bring to the Board's attention the position of a coordinate branch of the government, the Department of the Interior, whose position appears to be that the contract between Applicants and Phoenix for effluent is illegal.

Under these circumstances, the public interest in ensuring that Palo Verde Units 1, 2 and 3 can be operated efficiently and safely can be protected only by a full examination of the possible legal restriction on Applicants' use of effluent from the 91st Avenue Treatment Plant.

It is clear that Intervenor appears to be the only party in the proceeding willing to bring the matter to the Board's attention, and that Intervenor has attempted thus far, with few financial resources, to develop a full record on the entire water issue for the Board.

Finally, Intervenor is attempting, in submitting new contentions, to focus the Board's attention on probably the

most important issue this Board will consider in deciding whether to license for operation Palo Verde Units 1, 2 and 3. Applicants' ability or inability to obtain adequate water for operation and safe shutdown of the reactors should be determined now, before the reactors go on line.

This Board, in its prior rulings, has focused broadly on the "water issue," especially in its consideration of evidence from Bill Stephens, involving not only the operation of Unit 3 during peak summer months, but the safe operation and shutdown of all three units at any time.

Because Intervenor did not retain counsel until a few days ago, she requests an extension of time for discovery on her new contentions. In the alternative, Intervenor requests that she be allowed to present direct testimony of witnesses on the contentions even though she failed to file such testimony 15 days prior to the hearing date, as required by 10 C.F.R. 2.743.

Intervenor has presented today a motion for two subpoenas, to Philip Shea, Esquire, and to Bill Stephens. Intervenor also requests leave to present direct testimony from water resource engineer William Lorah, who can testify as to the adequacy of the quality and quantity of water to be used at Palo Verde.

In addition, Intervenor requests that the Board order the NRC staff to present testimony subject to cross-examination of an official of the Department of the Interior, who can

state the position of the Department as to the validity of the contract between Applicants and the City of Phoenix regarding the sale of effluent for use at Palo Verde.

Finally Intervenor requests leave of this Board to submit the following new, or amended, contentions:

CONTENTION 1:

1. (a) Applicant has not demonstrated that it has an adequate assured supply of water to ensure that it can operate Palo Verde Units 1, 2 or 3 during the periods when the reactors need the greatest quantity of water.

1. (b) Applicant has not demonstrated that it has an adequate assured supply of water to ensure that it can safely shut down Palo Verde Units 1, 2 and 3 during normal, non-accident shutdown conditions during the period when the reactors need the greatest quantity of water.

1. (c) Applicant has not demonstrated it has an adequate assured supply of water to ensure that it can bring Palo Verde Units 1, 2 or 3 to safe shutdown after a serious accident during the period when the reactors need the greatest quantity of water.

BASIS:

In subsections 3.3 and 5.6 of the Applicants' ER-OL submitted to the NRC, Applicants claim that they have adequate water to operate Palo Verde Units 1, 2 and 3 through a contract AFS has with the Arizona Municipal Water Users Association ("AMWUA"), the organization which represents the Cities of Phoenix, Glendale, Mesa, Scottsdale and Tempe in water matters. Applicants state simply that they can obtain sufficient effluent through their contract for effluent from the 91st Avenue Treatment Plant. In Applicants' Motion for Summary Disposition, Applicants submitted the Affidavit of

William Bingham which states that the effluent necessary for cooling Palo Verde Units 1, 2 and 3 will come from the Tolleson Plant as well as the 91st Avenue Treatment Plant. The Bingham affidavit, the latest submission by the Applicant on the water issue, claims that the amount of effluent needed per year per unit will be about 21,350 acre-feet of treated wastewater effluent, based on the following assumptions:

a) Each unit will operate at a capacity factor of 95 percent of rated power for eleven months each year:

b) The blowdown water will not be retreated and re-used;

c) Concentrations of total dissolved solids in the effluent will increase no more than by a factor of 15.

Mr. Van Brunt, in a deposition taken by Intervenor on April 23, 1982, stated that "average meteorological conditions" meant that 21,350 acre-feet was reached by assuming average temperature and humidity conditions, and average wind direction. Tr. at 40-41.

Mr. Van Brunt also stated that any increase in the TES in the effluent required would require an increase in the quantity of effluent required. Tr. at 57-58.

Applicants have not demonstrated that they can ensure an adequate assured supply of water for the three nuclear plants during period of peak demand, through their current contracts for effluent from the 91st Avenue Treatment Plant

and from the Tolleson Plant for the following reasons:

(a) The Applicants' present estimates of "need" are based on "average meteorological conditions," not need during months with peak temperatures and unfavorable humidity and wind conditions. Nor do Applicants' estimates take into account hot or drought years.

APS has in the past attempted to obtain contractual commitments for amounts far in excess of 21,350 acre-feet per year per unit when it used assumptions of need based on peak period temperature and humidity conditions. For example, Mr. Van Brunt said in November, 1977 that effluent requirements during adverse summer months would be 2,600 acre-feet per unit per month. See also July 12, 1978 Van Brunt letter to Worthington; August 10, 1978 Van Brunt letter to Worthington. Attachments A, B and C.

(b) Bill Stephens, the executive director of the Arizona Municipal Water Users Association (AMWUA) with whom Applicants have contracted for effluent from the 91st Avenue Treatment Plant in Agreement No. 13904, has indicated that AMWUA and Applicants are currently renegotiating the following terms of the contract:

(1) the cities' right to refuse to deliver effluent when they critically need the water for domestic purposes;

(2) the amount of effluent, if any, available for cooling purposes at Palo Verde Units 1, 2 and 3:

(3) cost and source of effluent for use at Palo Verde Units 1, 2 and 3.

Mr. Stephens subsequently has said that he believes the current contract allows the cities represented by AMWUA to withdraw as much water as they need at times of critical need.

Thus the Applicant cannot demonstrate it has an assured supply of effluent from the 91st Avenue Treatment Plant, much less the 140,000 acre-feet per year for which it claims it has a definite contract right.

(d) The amount of effluent treated and available at the 91st Avenue Treatment Plant is dependent on so-called satellite treatment plants built. The location of the treatment plants to be built, and the source of sewage wastes flowing to them have long been a subject of dispute between APS and those agencies developing the MAG plan for water management since 1978. If certain satellite treatment plants are built, the 91st Avenue Treatment Plant may not produce the projected increasing quantities of effluent able to be supplied to Palo Verde. See July 20, 1978 letter from Worthington; Notes apparently from August 23, 1978 APS meeting; Letter dated September 20, 1978 from APS and Salt River Project to Worthington. Attachments D, E and F.

(e) The Salt River Pima-Maricopa Indian Community filed suit against the Department of the Interior and the Secretary of the Interior on January 19, 1982 claiming that it is entitled to be provided water by the Salt River Project since it resides within the Salt River Project boundaries before water is transported outside the Project boundaries.

The plaintiff requests that the court mandamus the Secretary of the Interior to assert his authority over the federal reclamation waters to ensure their distribution according to the law. If the Indians prevail in their suit the contract to provide effluent outside the Project boundaries to Palo Verde may be declared invalid by the Secretary, at least until the needs of the Indian Community for water have been met.

(f) Mr. Van Brunt stated that the amount of water or effluent required by Palo Verde for use in the cooling towers depends to some extent on the quality of water provided. Therefore, if the quality of the effluent were to change, either due to an unanticipated increase in the TDS level or an accumulation of new chemicals not currently in the effluent, the three units' need for water could increase beyond supposedly available supplies. See November 17, 1977 Van Brunt oral presentation. Att. A.

CONTENTION 2:

Applicants have not demonstrated the Water Reclamation Plant located at the Palo Verde site will provide a sufficient quantity of water of an adequate quality to meet the needs for cooling water for Palo Verde Units 1, 2 and 3.

BASIS:

In the affidavit of Mr. Bingham submitted by Applicants as an attachment to their Motion for Summary Disposition, it is stated that the Water Reclamation Plant (WRF) is designed

to treat effluent containing TDS within a certain range. See also Van Brunt Deposition at 56: Van Brunt Oral Presentation of November 17, 1977.

Applicants have done analyses of the TDS levels and characteristics of effluent for the 91st Avenue Treatment Plant beginning only in 1973 or 1974. See Bingham Affidavit and Van Brunt Deposition at 53. Applicants have assumed in designing their on-site WRP that the quality of effluent will remain substantially the same over the life of the plant, and therefore designed the treatment plant to that quality level. See Bingham Affidavit. However, the Applicant has failed to consider the following factors which may increase the TDS, chemical, or salinity levels in effluent from the 91st Avenue Treatment Plant;

(a) The cities may use sources of water, such as water from the Central Arizona Project or the Colorado River which are likely to increase the salinity level in the effluent from the 91st Avenue Treatment Plant:

(b) At least some of the water feeding into the 91st Avenue Treatment Plant will come from aquifers which historically tend to greater salinity over time;

(c) Applicants have not considered the following factors in designing their WRP:

(1) plans or measures to conserve water required of and undertaken by city and regional governments;

(2) an economic decline which affects water usage;

- (3) a decreasing rate of population growth;
- (4) A widespread change in life-styles which encourage use of less water;
- (5) greater amounts of industrial wastes flowing into the 91st Avenue Treatment Plant.

### III. CONCLUSION

For the foregoing reasons, Intervenor requests that the Board grant her leave to submit new contentions, grant her a period of time in which to conduct discovery relevant to these contentions, and allow her an opportunity to present direct testimony from the witnesses named above about the unavailability of effluent for use at Palo Verde, and the inadequate design of the onsite effluent treatment plant.

Respectfully submitted,



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DATED: April 26, 1982

11/17/77

ARIZONA NUCLEAR POWER PROJECT  
PALO VERDE NUCLEAR GENERATING STATION  
USE OF EFFLUENT AT PALO VERDE

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We at Arizona Public Service, along with every responsible utility executive in Arizona, fully appreciate the need for prudent, comprehensive management of our limited water resources. Without water we simply cannot generate the electric power that the public needs. We also recognize that other sectors of our economy and the public at large have demands on our water resources that are just as legitimate as ours. We understand that if these other demands for water are not met, there won't be much need for electric power because there won't be any public around to use it.

Consequently, we are anxious to assist and cooperate with MAG and every other organization that is concerned with the use and management of water in Arizona. We offer our assistance not because we want to establish a claim for priority status though we hope everyone recognizes that reasonably priced electric power is an important ingredient in irrigation, commerce and industry and the pleasant amenities of life such as swimming pools.

Therefore, we offer assistance and cooperation not to get a leg up on somebody else, but to assure that informed judgments are made on the use and management of water -- judgments that are founded upon correct information with goals that are achievable in the real world.

Attachment A

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Today, we are concerned more with the information required to make those informed judgements rather than with the establishment of specific goals, such as water for recreation. As we see it, in order to make sound judgments in this very complex subject, you must have sound information. What they say about computer programs -- "Garbage in, garbage out" -- is equally applicable to water use and management studies.

Unfortunately, several misconceptions have surfaced that need correction if we are to avoid confusion and uninformed judgments that could lead to serious consequences not only for Palo Verde and other generating projects, but for other elements of our society as well.

Before addressing Palo Verde directly, let me explain briefly how water considerations enter into a utility's planning and operations. It all starts with siting -- where do we put our new generating resources? Immediately, we are faced with a choice -- Will it be coal or nuclear? Each alternative has its own special considerations, but both require water.

In selecting a site for a coal electric generating plant, the prime parameters are (1) the source of the coal and (2) the availability of water. In mountainous Arizona with almost non-existent north-south rail connections it is far more economical to move energy by wire than by rail. Consequently, today Arizonans rely for the bulk of their electric requirements on long transmission lines to coal plants generally situated near or in the northeast corner of the State, some 200-400 miles away from the major load centers where the electric power is needed.

Another characteristic of Arizona coal generating plants is that each one involves the first and sole use of water. The sources are the Colorado River or some tributary or a gathering system of wells tapping underground reservoirs. There is no other choice. There are no large sewage treatment plants on the Indian reservations. Nor is there any tailwater or drainage from irrigation farming. So, reuse of water for coal generating plants is out of the question.

When it came to siting our Palo Verde nuclear plant, we were presented with some different problems and also some new opportunities. Transportation of uranium fuel presents no restraints on the location of nuclear plants so we could reduce reliance upon very long transmission lines and locate the plant near our load centers.

We found a new restraint, however. We had to be able to prove for the most questioning minds that the nuclear site was seismically stable. Our geological siting studies, started in the Spring of 1972, told us that there were two areas in the State where we would be most likely to find a site with demonstrable evidence of seismic stability: (i) the Navajo plateau in the northeast corner and (ii) a relatively narrow band lying to the west of Phoenix running in a northwesterly-southeasterly direction. This was precisely what we were looking for -- a site near the Phoenix metropolitan area, the load center where more than half of the power to be generated would be used and where a previously unused water resource - sewage effluent - was available.

The 91st Avenue Sewage plant presented not only a new potential source, but the opportunity to reuse a resource which was then going largely to waste. This is a prime example of good water management undertaken by private industry at substantial expense without any governmental or bureaucratic prodding.

Obviously, if we were going forward with a multi-billion dollar project, it was vital that we do what was necessary to secure a commitment of the needed water supply. Here, we found that we had no alternative but the reuse of effluent. There was and there is now no unappropriated surface water available. There was then and is now no irrigation tailwaters or drainage water available in sufficient dependable quantities to meet our needs. And there was not and is not sufficient groundwater available which, if appropriated for our use, would not severely dislocate agricultural activities over a very large area.

Accordingly, in early 1973 we started negotiations to acquire effluent, and in April, 1973 we signed a contract with the six cities which own the 91st Avenue Sewage Treatment Plant.

Having acquired the right to use such effluent we then had to learn how to use it. There really was not much experience to fall back on with only a few instances where sewage effluent has been used for cooling electric generating plants. But we did know that tertiary treatment -- or what we call a reclamation facility -- would be required. We also knew that this facility would have to be designed to handle the quality of water that would be delivered to Palo Verde.

To determine the kind of tertiary treatment and the functional requirements of our reclamation facility, we built a pilot plant at the 91st Ave. plant in 1973 and operated it for about 15 months at a

cost of \$1,100,000. One of the things we learned from this pilot operation was that the tertiary treatment had to be designed to handle water within a certain range of chemical characteristics and total dissolved solids (TDS). We learned that it is more practical to design a facility to process water with a limited range of TDS - say from 500 to 1500 ppm - than a very wide range of 0 to 5,000 ppm. We also learned that it is not feasible to process water with TDS in the range of 3,000 to 4,000 ppm in a facility designed to treat water in the 500 to 1500 ppm range.

Using the criteria established by the pilot operation, we then proceeded with the design of our reclamation facility and it is dependent upon the receipt and processing of water with the quality approximating the effluent from the 91st Avenue plant.

The design is now virtually complete and some purchase orders have been placed. Grading of the water reclamation area is complete and a portion of the on site underground distribution system has been installed. Construction of the water reclamation pipeline from 91st Avenue and construction of the water reclamation plant is scheduled to start April, 1978. Completion of those systems is required in 1980 in order to meet the schedule for operation of Palo Verde Unit 1. In all, the reclamation facility and the transport system represent an investment of about \$150,000,000.

Any redesign effort undertaken at this late date in order to process water beyond the design range of TDS or with new characteristics such as pesticides and new organics would not only cause extensive delays bringing about exorbitant increases in cost, they could also seriously

impair our ability to meet the electric energy needs of our customers. Each of the Units at Palo Verde is important in meeting the State's energy needs in the time frame in which they come on line. Any delay in that schedule would raise the prospect of electrical shortages for Arizona.

There is another part of our story that should be of interest to you.

Because the total cost of the reclaimed effluent will be great and because there are limits on the availability of effluent, we were compelled to design our cooling system to maximize the use of the available effluent. The result is that we have been able to design our system to operate at TDS concentrations up to 14-15 times the original levels.

In contrast, four other electric generating plants that use effluent for cooling, two in Las Vegas, one in Amarillo, and one in Lubbock only achieve a level of 4-5 concentrations.

A more dramatic way of getting this point across is to cite the progress we have made since we started. When we started, we estimated we would consume about 35,000 A-F/yr. for each of the Palo Verde Units. When we had completed our preliminary design, we were able to reduce this estimate to about 25,000 A-F/yr. Now with our design substantially complete our best estimate is that our effluent requirements will only be 21,000 A-F/yr/unit.

Accordingly, for the first three units at Palo Verde, total effluent requirements would be about 63,000 A-F/yr. This annual amount will not be required until 1987, the first full year, when all three units are operating. This would

amount to about one-third of all of the effluent discharged from the 23rd and 91st Avenue plants in 1987.

If Units 4 & 5 are built then our needs will be about 105,000 A-F/yr. in the year 1991 and beyond. This would be 51% of all the effluent expected to be discharged in 1991 and a smaller percentage each year as the amount of effluent grows. (4,400 A-F/yr. is the projected growth rate in the 90's).

We think it is very important that you get these numbers clearly in mind --- 63,000 A-F/yr for three units in 1987 and 105,000 A-F/yr. for five units in 1991. We consider them to be conservative, but realistic estimates.

We also want to make clear to you the distinction between the amounts of effluent we expect to consume annually and the amount that must be contracted for on an annual basis.

The average monthly usage will be about 1,750 A-F per unit. But Mother Nature does not permit us to use averages. Evaporation rates increase with rises in temperatures. Consequently, in the average adverse summer months we expect our effluent requirements to peak at about 2,600 A-F/unit. These months also coincide with the period when the public needs electric power the most. Therefore, it is prudent, and necessary to avoid cutting back electric generation when it is needed most, to contract for effluent, which is done on an annual basis, in sufficient quantities to cover our peak month requirements with a sufficient allowance to account for expected variations from average atmospheric conditions.

Thus, we see a need to secure commitments for about 93,600 A-F/yr. for three units at Palo Verde and 156,000 A-F/yr. for five units. But, I want to stress that irrespective of the

contract amounts, actual consumption annually will be approximately 63,000 A-F for three units and 105,000 A-F for five units. The difference between the contracted amount of effluent and the actual amount used will be available for other uses.

With these facts in mind, you will recognize that the statement in the Corps of Engineers' September 28, 1977 report that "the current plans call for PVNGS to consume some 75,000 acre-feet per year of sewage effluent in 1982 and about 1990 increase their consumption to 140,000 acre-feet' is absolutely erroneous.

There are several other misconceptions contained in this report which must be clarified. First, it is reported that we feel we "have no mandate or authority to investigate groundwater use any further". We categorically deny this statement. In our studies for Units 1, 2, & 3 which are described in the Palo Verde Environmental Report and the Final Environmental Statement, we considered several alternative water sources and concluded that the use of sewage effluent was the best choice for Palo Verde Units 1, 2, & 3. In our present activities relating to Palo Verde Units 4 & 5, we are continuing to investigate the quantities and qualities of groundwater available, the feasibility of its use at Palo Verde and the impact of such use. In this context we do maintain that changing our reclamation facility design for units 1, 2 and 3 at this late date to handle saline water would be disastrous to the utilities and the public who will need the Palo Verde power.

The report goes on to state that 'Mr. Weigold mentioned that about 150,000 acre feet of water per year are pumped out of the ground in the Buckeye area through their combined irrigation and dewatering programs". We deny that Mr. Weigold ever said any

such thing, and we add that the facts are substantially different.

The records show that in 1974 groundwater pumped for irrigation was 53,600 acre-feet and pumped drainage water amounted 11,500 acre-feet, or a total of about 65,000 acre-feet. It has been reported to us that in 1976 drainage pumping had increased from 11,500 acre-feet to about 20,000 acre-feet. Thus, it is clear that all of the irrigation and drainage water in the Buckeye Irrigation District (BID) is not sufficient to meet our requirements.

The Corps of Engineers report also represents that Mr. Weigold stated that BID would prefer effluent in exchange for groundwater if this were possible. Mr. Weigold said no such thing. The facts are (1) Buckeye has offered its drainage water for use at Palo Verde, and (2) Buckeye has never suggested or proposed to substitute effluent for the groundwater it uses for irrigation. Buckeye must continue to pump this groundwater in order to maintain a proper hydrological balance.

It is also purported that "Mr. Weigold expressed the opinion that the fertilizer value of the effluent is indeed recognized by the farmers of the BID, some of whom farm with no additional fertilizer." Even if it were true, this statement is grossly misleading.

The facts are that the irrigation wells in Buckeye area have generally produced water with a high nitrate content. Indeed, a comparison of samples of the water diverted from the river into the Buckeye Canal (mostly effluent) with samples from the Buckeye irrigation wells shows that the nitrate content of the well water to be the same as in the effluent.

A study is currently being conducted by the University of Arizona to determine whether sewage effluent used in the

Buckeye Valley has had significant or substantial effect on crop yields or farming practices. This study is not complete. However, we can say that, since 1967 when effluent first became available in significant amounts, there has been no report of any dramatic increase in yields.

Finally, we were somewhat concerned by two statements made in the letter of October 26, 1977, inviting us to this meeting. The first of these was to the effect that the quality of the groundwater in the Buckeye area is deteriorating. We were concerned by this statement, because it was directly contradictory to the data which we had reviewed in 1974 and advice we had more recently received from our water consultants whom we consider to be eminently qualified experts.

Since we received your letter, we have done some more checking and this is what we have been told.

1. The groundwater quality in the Buckeye Area has always been bad.
2. From 1935 to 1955 there was a gradual deterioration of quality.
3. From 1955 to the present the quality has improved.

The second statement in the letter which concerned us was to the effect that the only solution to improving the quality of the Buckeye groundwater was to use this low quality water as coolant for the Palo Verde generating units. The letter goes on to state that your engineers do not have sufficient information to conclude whether such a plan would be feasible and requested us to give you such information today.

We have attempted to comply with this request by asking Mr. Leonard Halperny to prepare a report on this subject. He is present with us today and is available to answer any questions you may have.

This gist of his report is (1) continuance of groundwater pumping is and will continue to be necessary to maintain the hydrological balance in the Buckeye Valley, and (2) there would be no significant benefits to the Buckeye farmers in exchanging their irrigation groundwater for effluent.

The second part of the feasibility equation is what would the use of the Buckeye groundwater do to the Palo Verde plant.

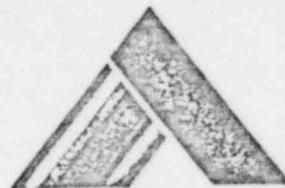
One result is that we cannot achieve 14-15 levels of concentrations with highly saline water. Instead, the maximum levels of concentrations would probably be in the range of 4-5 concentrations at best. This would mean that our consumption of water would increase two or three fold. Consequently, our water requirements for Units 4 & 5 would increase from about 42,000 A-F/yr. to about 80,000 to 120,000 A-F/yr -- substantially more than the Buckeye wells can supply.

Other impacts of changing the water source for Units 4 & 5 would be changes in the design and result in increased costs for the following:

1. Evaporation ponds - they would have to be enlarged.
2. Cooling towers - they would have to be redesigned and the size or number may have to be increased.
3. Reservoir - a larger size would be required because of the increase in the cooling water requirements.
4. Reclamation facility - a new pilot operation may have to be conducted and a new design developed.
5. Gathering system - for collecting and transporting groundwater separate from the effluent would have to be developed.

6. Operation would be more difficult and complex, because the cooling water for Units 4 & 5 would have to be controlled separately from the cooling water for Units 1, 2 & 3.

I hope that what I have said and the information I have given or corrected will be useful to the Committee. If you have any questions at this time, either I or Mr. Halpenny will try to be responsive. If there are questions which occur to you later, we will do our best to answer those too. As I said earlier, we share your interests in sound water management. Since our interests are mutual, we want to be helpful and cooperative.



July 12, 1978  
ANPP-11340

Mr. H. W. Worthington  
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Phoenix, Arizona 85004

Dear Mr. Worthington:

Thank you for your letter of June 20, 1978, apprising us of the status of the MAG 208 studies and planning. Obviously, we are vitally interested in the wastewater management planning for Phoenix metropolitan area since our ability to meet the public's demand for electric service is tied directly to the availability of wastewater effluent at the 91st Avenue and 23rd Avenue plants. Accordingly, we appreciate receipt of any planning information which may have any impact upon effluent availability or the ability of the six cities who are obligated to supply such effluent. For example, we are very concerned over the comment in your letter that it is quite possible that the Regional Council will adopt a final plan which would make effluent unavailable at the 91st Avenue and 23rd Avenue plants for Palo Verde Unit 5 until after the year 2000. If this possibility arises from the potential installation of new subregional plants, it clearly raises some serious legal issues.

Your letter requests our opinion respecting "the amount of effluent that is legally committed for power plant cooling by the existing contract." Our view on this matter is that the contract is unmistakably clear that the Cities are obligated to sell and deliver wastewater effluent from the 91st Avenue and 23rd Avenue plants in the total amount of 140,000 acre-feet per year. This commitment is irrespective of the number of units to be constructed at the Palo Verde Station or any other location.

The contract is subject to the following conditions:

1. Such amount of effluent is available after prior commitments for effluent have been satisfied;
2. Construction of ANPP units shall have commenced prior to December 31, 1995;

Attachment B

Mr. H. W. Worthington  
Chief, Urban Studies  
Department of the Army  
Phoenix Urban Study Office  
ANPP-11340  
July 12, 1978  
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3. The options granted shall have been exercised on or before December 31, 2000; and
4. The options granted shall not have been released or surrendered in whole or in part.

The contract further explicitly provides Arizona Public Service Company (APS) and Salt River Project (SRP) may transfer all or any portion of the options for use in connection with the construction, operation and maintenance of any other electric generating units wherever located, but subject to the same terms as are applicable to the ANPP units (e.g., construction of any other generating unit for which any portion of the option effluent may be transferred must be commenced not later than December 31, 1995.) The right of transfer given to APS and SRP would be meaningless, of course, if the amount of option effluent committed were limited to the requirements of the Arizona Nuclear Power Project (ANPP) units only.

Your letter also inquires whether we could use the effluent available from subregional wastewater treatment plant in the vicinity of Reams/Citrus Roads and the Gila River. The answer to this question is that we know of no reason why we could not use such effluent.

There would, of course, be some engineering problems to be resolved and additional construction and pumping costs incurred to tie an effluent pipeline from the Reams/Citrus plant into the pipeline now under construction. Nevertheless, we don't consider the problems to be insurmountable and we would be willing to evaluate and discuss this possibility with any interested parties.

With respect to the study involving alternate sources of water for the Palo Verde plant, we will do our best to furnish you a copy before the end of this month.

Your letter also asks the question respecting the likelihood that Palo Verde will operate at an annual capacity factor lower than 75%, and, if so, to what extent will it affect the average annual water consumption. The annual water consumption will vary directly with the annual capacity factor in any year, though not precisely in the same amount because of changing efficiency at different periods of the year. The same principles apply equally to the relationship of monthly capacity factors and monthly water consumption. In our view, the requirements for effluent are controlled by our needs during the summer months when the demands for electric capacity are the greatest and evaporation losses are also the largest. Consequently, we consider any analysis

Mr. H. W. Worthington  
Chief, Urban Studies  
Department of the Army  
Phoenix Urban Study Office  
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based upon either an average annual or average monthly water consumption to be inadequate if it does not also evaluate peak month requirements.

With respect to the 75% capacity factor we have used for the Palo Verde units for some purposes, it is an annual average for the life of the plant. It is not an arbitrary number, but is based on reasoned judgments covering a substantial amount of experience and recognizes that during the early years of plant operation the capacity factor will be less than average because of normal shakedown problems which should be expected.

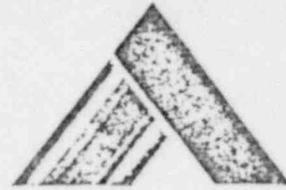
If you have any questions relating to this letter, please don't hesitate to contact me.

Very truly yours,



E. E. Van Brunt, Jr.  
APS Vice President,  
Construction Projects  
ANPP Project Director

EEVBJr/ACG/mw



August 10, 1978  
ANPP-11535

Mr. H. W. Worthington  
Chief, Urban Studies  
Department of the Army  
2721 North Central Avenue  
Suite 800  
Phoenix, Arizona 85004

Dear Mr. Worthington:

Your letter of July 20, 1978, and the status report of your studies is appreciated very much. The list of potential wastewater treatment plants which have been selected for further study is of considerable interest, particularly since it includes some alternatives which we were not aware were under consideration. In order that we may more clearly understand their potential impacts we would like to have additional information respecting each of these alternatives, particularly their contemplated capacities, the schedules for development and a more definitive description of the areas which each of them would serve.

We would also like to explore with you the bases for your estimates of high and low flows of effluent from the 91st and 23rd Avenue wastewater treatment plants since such estimates are substantially different from the projections which the City of Phoenix has given us.

The comment in your letter that "even under the option which produces minimum flow at 91st and 23rd Avenues there will be sufficient effluent to meet the average annual requirements of 5 reactors by the year 1990 using the currently estimated needs of 21,400 acre-feet per year per reactor" indicates a possible misunderstanding of the effluent requirements of the five Palo Verde units. The 21,400 acre-feet is an estimate of the annual requirement not an "average annual" statement of the amount of effluent that will be consumed by each Palo Verde unit over a 12-month period.

This estimate of annual requirements, however, does not reflect the peak requirements for cooling water which will occur during the summer months when atmospheric conditions result in highest evaporation rates. During these periods we estimate that the effluent required for each Palo Verde

*Attachment C*

Mr. H. W. Worthington  
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unit will be in the range of 2,200 - 2,600 acre-feet per month. In order to supply effluent at such monthly rates to five units, one or more wastewater treatment plants with total effluent capacity of 11,000 - 13,000 acre-feet per month, or 130,000 - 156,000 acre-feet per year, will have to be available.

Your letter includes two questions relating to the terms of the contract between the six cities that are participants in the 91st Avenue Plant and APS and SRP. Assuming all of the options are duly exercised before December 31, 2000, this contract requires the six cities to deliver to APS and SRP, after first satisfying prior commitments to Buckeye Irrigation District and Arizona Game and Fish Department, all of the effluent available at the 91st and 23rd Avenue plants up to the maximum amount of 140,000 acre-feet per year. The contract expressly disclaims any warranty that 140,000 acre-feet will become available at any time or in any year. But, whenever that quantity does become available, either before or after the year 2000, the obligations to deliver such amount are clear.

In lieu of a warranty as to the amount and time when effluent would become available, the six cities committed not to install any new plants that would impair the ability of the cities to deliver effluent pursuant to the Agreement. The contract specifically exempts from this commitment the new treatment facilities planned for installation in the Gila and lower Litchfield tributary basins as identified and described in the "Wastewater Report for the Valley Metropolitan Area of Phoenix, Arizona," by John Carollo Engineers, dated December, 1968. The contract further provides it is not intended to grant to APS and SRP "any rights or interests in wastewater collected in the Gila and lower Litchfield Tributary Basins, and treated at such envisioned new facilities," which are clearly identified and described on Plates 1 and 2 of the Carollo Report.

Accordingly, the contract commitment respecting new facilities relates to defined boundaries of tributary basins, rather than political boundaries of municipalities. Since we do not have any specific information respecting the subregional plants included in your on-going studies, we are unable to give a direct answer to your question relating to "flows from existing county lands which are planned . . . to be part of Glendale or Mesa."

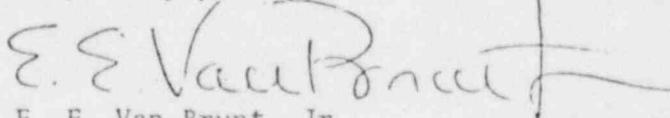
As a final comment related to your questions, once the amount of effluent available from the 91st Avenue and 23rd Avenue Plants is sufficient to satisfy the 140,000 acre-feet annual commitment and the prior commitments to B.I.D. and Arizona Game and Fish, the restrictive covenant on new facilities would be satisfied, assuming that the 91st Avenue and 23rd Avenue Plants continue to be operated and maintained to keep these commitments.

Mr. H. W. Worthington  
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If the 1977 projections of the City of Phoenix prove to be accurate, this point would be reached in 1985.

We will be pleased to furnish you any additional information that we have and which you might find useful. In this connection, we understand that a meeting has been scheduled between Arizona Public Service Company, Salt River Project and your office on August 23, 1978 for an exchange of information.

Very truly yours,



E. E. Van Brunt, Jr.  
APS Vice President,  
Construction Projects  
ANPP Project Director

EEVBJr/mw



DEPARTMENT OF THE ARMY  
LOS ANGELES DISTRICT, CORPS OF ENGINEERS  
PHOENIX URBAN STUDY OFFICE  
2721 NORTH CENTRAL AVENUE, SUITE 800  
PHOENIX, ARIZONA 85004

SPLED-WU

20 July 1978

Mr. E. E. Van Brunt, Jr.  
APS Vice President, Construction Projects  
ANPP Project Director  
Arizona Nuclear Power Project  
Post Office Box 21666  
Phoenix, Arizona 85036

Dear Mr. Van Brunt:

Thank you for your letter of July 12, 1978. I would like to bring you up to date on the progress of the Maricopa Association of Governments (MAG) 208 study, particularly as it might affect or be affected by water available for cooling at ANPP.

On July 12, 1978, the Regional Council reviewed our work to date and selected the following plants for further study:

1. A northeast area plant to be located on the Salt River Pima Maricopa Indian Community to treat wastewater from Phoenix, Paradise Valley, and Scottsdale and to provide effluent for farming on the Indian Community in exchange for fresh water;
2. A plant in Gilbert to treat Gilbert's and possibly some of "future" Mesa's wastewater and provide effluent for farming;
3. A plant either in Chandler or on the Gila Indian Reservation to treat Chandler's wastewater and provide effluent for farming;
4. A plant located near Luke Air Force Base to treat wastewater from Luke, El Mirage, Surprise and "future" Glendale and to provide effluent for farming the clearzone of the Air Force Base;
5. A plant at either Reams or Citrus roads to treat wastewater from Goodyear, Avondale, Litchfield Park and Luke AFB for farming or power plant cooling;
6. A plant in Tolleson to treat wastewater from Tolleson, Peoria, and Sun City East or Glendale and provide effluent for a turf growing operation;

Attachment D

20 July 1978

7. A plant at 23rd Avenue to treat wastewater from Phoenix and provide effluent for farming, for power plant cooling, or for exchange;

8. Finally, a plant at 91st Avenue to treat wastewater from the multi-city partners and provide effluent for farming, power plant cooling, or exchange.

Following further study we will return to the Regional Council in October and ask them to make a final selection. Since the Tolleson, Gilbert, and Chandler plants appear in all the alternatives selected by the Regional Council on July 12, they will necessarily become part of the final plan. The other subregional plants may or may not be included in the adopted plan. Nevertheless, we are able to estimate a range of possible flows from the 91st and 23rd Avenue plants. The picture looks like this:

	Year 1990	Year 2000
High estimate, total flow	150 mgd	175 mgd
Low estimate, total flow	135 mgd	150 mgd

As you know, the Buckeye Irrigation District has entitlement to approximately 27 mgd of effluent from the 91st Avenue wastewater treatment plant and the Arizona Game and Fish Department has a commitment for an additional 6.5 mgd. Thus, another set of numbers reflecting the amount of effluent available for coolant purposes can be estimated:

	Year 1990	Year 2000
High estimate, available for coolant	116.5 mgd	141.5 mgd
Low estimate, available for coolant	101.5 mgd	116.5 mgd

These figures are of particular interest as they relate to the full option amount for ANPP coolant of 125 mgd (140,000 acre feet per year). Under the alternative producing a maximum amount of effluent at 91st and 23rd Avenue, the multi-city partners can not deliver the full 125 mgd option amount of effluent until sometime after 1990 and it would be beyond the year 2000 before 125 mgd would be available under the alternative which provides the minimum flow to 91st and 23rd Avenues. On the other hand, however, it should be pointed out that even under the option which produces minimum flow at 91st and 23rd Avenues there will be sufficient effluent to meet the average annual requirements of 5 reactors by the year 1990 using the currently estimated needs of 21,400 acre feet per year per reactor.

20 July 1978

Mr. E. E. Van Brunt, Jr.

I feel that we must advise the MAG Regional Council as to how their decision in October will be affected by the existing effluent option contract between the Arizona Public Service Company, the Salt River Project and the cities of Phoenix, Glendale, Mesa, Scottsdale, Tempe, and Youngtown. Your letter of July 12, 1978 states that in your opinion the cities who are party to the contract are "obligated to sell and deliver wastewater effluent from the 91st Avenue and 23rd Avenue plants in the total amount of 140,000 acre feet per year". You have also pointed out that the options granted must be exercised on or before December 31, 2000. Does this mean then that the MAG Regional Council may not adopt any subregional plant which treats the flows of one of the signatories to the option contract if that subregional plant contributes to the inability of the multi-city partners to deliver the full option amount by the year 2000? Does this also mean that flows from existing county lands which are planned before the year 2000 to be part of Glendale or Mesa may similarly not be planned to flow to either the Gilbert or Lake AFB plants if the overall flows from 91st and 23rd Avenues can not meet the full 125 mgd by the year 2000?

These are important questions because they will impact on not only the long range regional wastewater planning but also the long range land use planning and annexation policies of a number of the cities who are signatories to the option contract. Your opinions and the needs of ANPP should be clarified for the benefit of the Regional Council as they make their decision in October.

Please call if you have any questions.

Sincerely,

cc: Mayor Salem, Chairman  
MAG Regional Council

H. W. WORTHINGTON  
Chief, Urban Studies

DIST:

MSA

Reading file thru DE

ED

WRE

Urban Studies Sec

## TOPICS FOR APS MEETING

1. BASIS FOR ESTIMATES OF FLOWS:
  - a. Show 1990 & 2000 flows table by plants + high & low flows @ 23rd & 91st
  - b. Show existing MAG projections & flows @ 23rd & 91st
  - c. Compare to City of Phoenix growth of 30 MGD/5 yrs
  - d. Compare to other projections - old MAG, DES, OBEERS (discuss other determinations ie. employment, trans, air)
  - e. Discuss our use of flow reduction & MAG's plans for flow reductions
2. SHOW AREAS WHICH ARE TRIBUTARY TO EACH PLANT (approximate service areas)
3. DISCUSS OPPOSITION & SUPPORT FOR EACH PLANT:
  - a. Economics
  - b. Wastewater reuse
  - c. Indian water claims
  - d. Ability to control own growth
  - e. Timing of construction
4. GROUNDWATER QUALITY STUDY:
  - a. Long term trends in BIC
  - b. Long term trends east & north of BIC
  - c. Solutions to latter problem:
    - 1) Do nothing
    - 2) Do nothing + CAP to Goodyear & Avondale
    - 3) Modify irrigation:
      - . cease
      - . use effluent
      - . use CAP
      - . use other

Attachment E

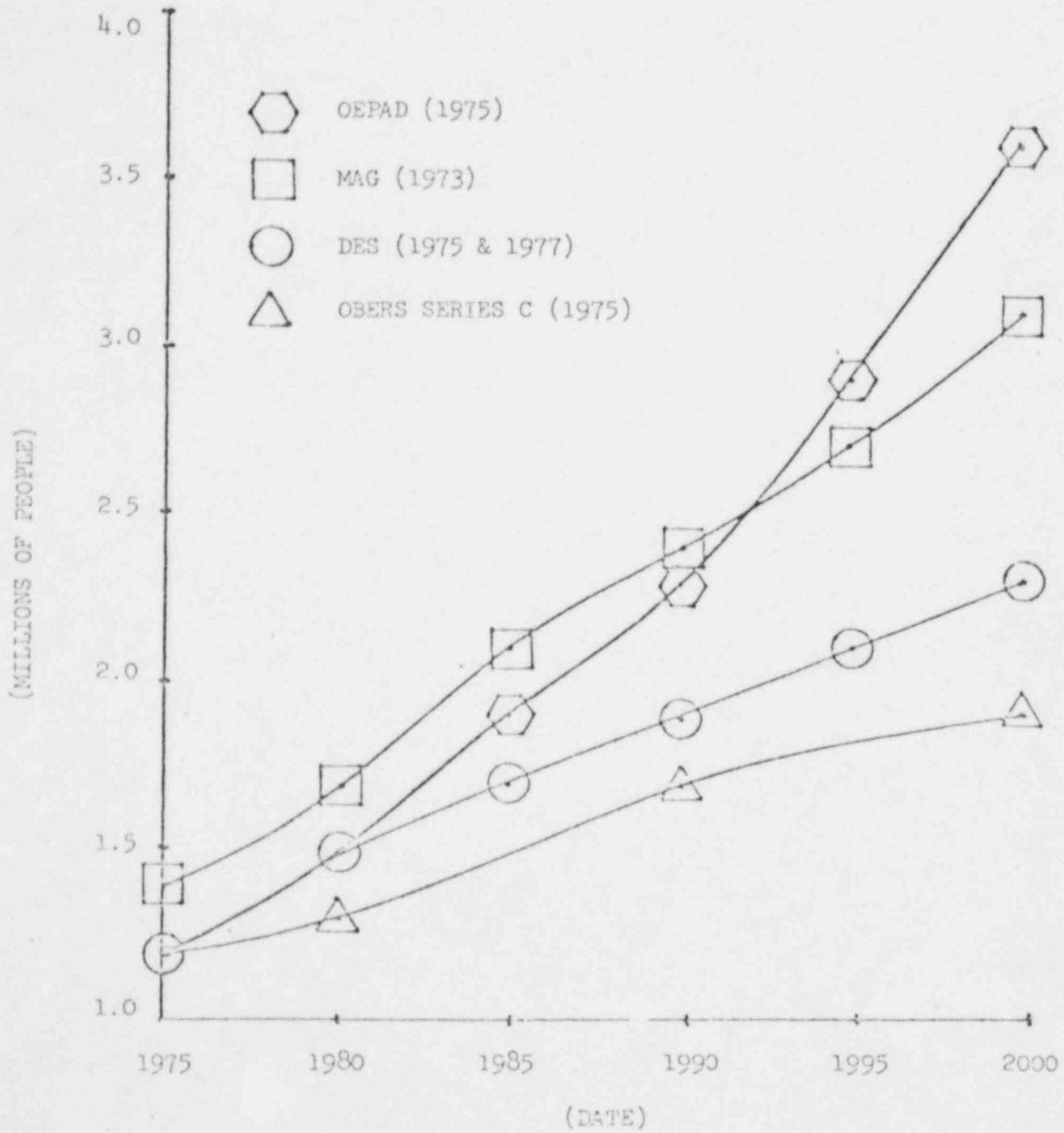
4) Dewater south of Goodyear Farms

- . ANPP
- . Irrigation
- . Effluent + Groundwater for irrigation

5. ANPP PLANT OPERATION VS OTHER REUSES

6. ALTERNATE SOURCES FOR ANPP:

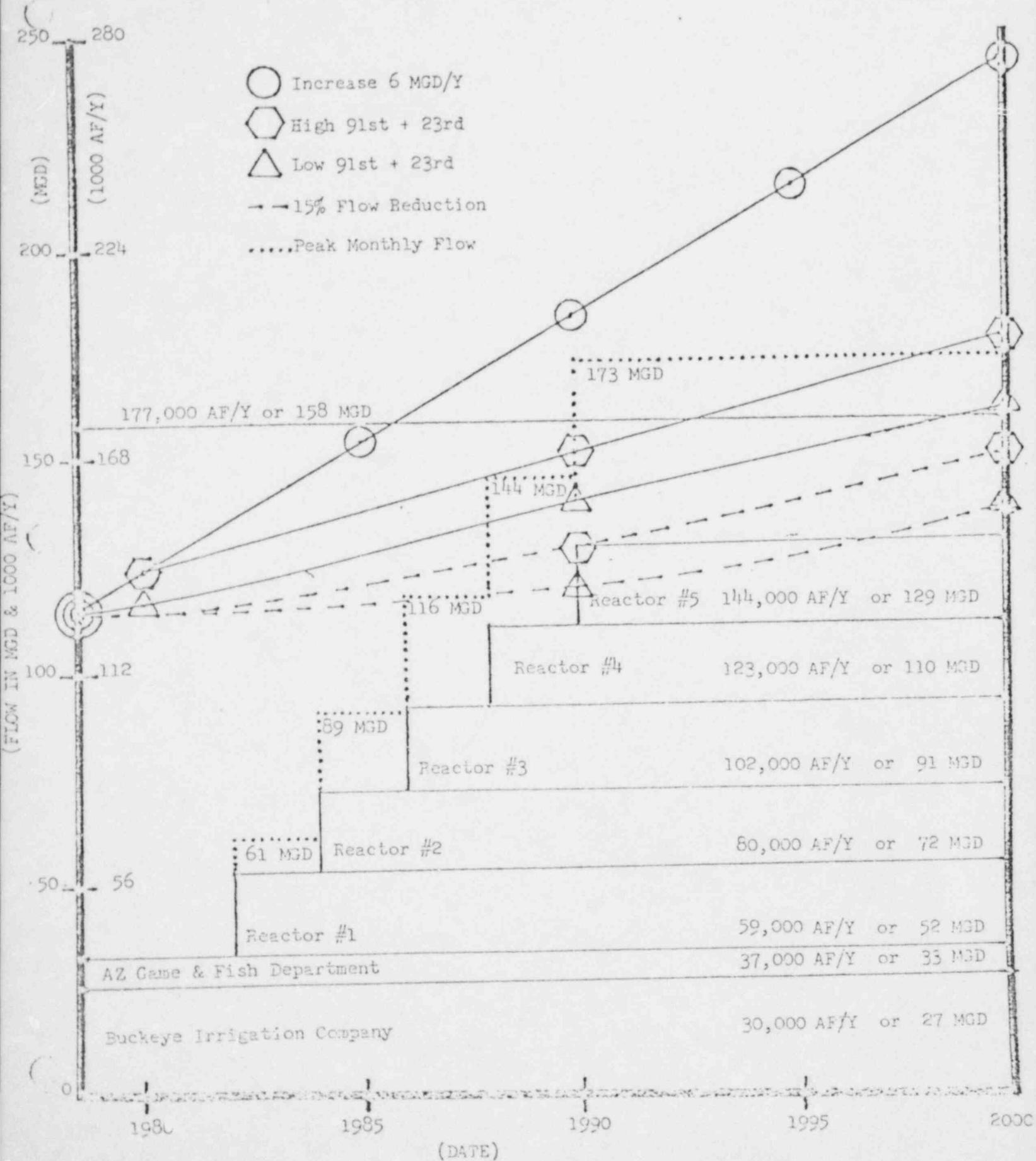
- a. Tail waters & drainage water from Buckeye Irrigation Company, Arlington Irrigation District & other Irrigators expected to be approximately 50,000 ac-ft/yr (Mgt Research Inc Report, Jun 78)
- b. Dewater high TDS water north of Gila River & south of Goodyear Farms

POPULATION PROJECTIONSMARICOPA COUNTY

PLANT FLOWS (MGD):

<u>PLANTS</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
Total E	117.0	139.1	162.9
Total W	15.9	23.8	34.4
TOTAL	132.9	162.9	197.3
<u>Committed</u>			
Tolleson	5.4	4.0	7.2
Chandler	3.0	5.4	8.2
E. County	.5	.8	1.0
Gilbert	1.1	2.3	3.6
TOTAL	10.0	12.5	20.0
<u>Uncommitted</u>			
NE	5.5	7.4	9.1
SW	1.3	2.9	5.4
NW	.8	1.0	1.2
TOTAL	7.6	11.3	15.7
<u>High</u>			
91st & 23rd	122.9	150.4	177.3
<u>Low</u>			
91st & 23rd	115.3	139.1	161.6

WASTEWATER FLOWS AT 91st & 23rd  
VERSUS WASTEWATER REUSE DEMANDS



SUBREGIONAL PLANTS

<u>Plants</u>	<u>2000 Flow (MGD)</u>	<u>Uses</u>	<u>Support</u>	<u>Opposition</u>	<u>Comments</u>
<u>COMMITTED:</u>					
Chandler	8.2	Bogle Farms SRP RWCD Gila Indians	Chandler (strong) Gilbert	None	<ul style="list-style-type: none"> <li>- Most expensive off Indian land</li> <li>- Least expensive on Indian land</li> <li>- Revenue for reuse</li> <li>- Satisfy future Indian claims</li> <li>- Lagoon + Land treatment good \$</li> <li>- Plant expansion needed soon</li> </ul>
Gilbert	3.6	Irrigation	Gilbert (strong) Chandler	None	<ul style="list-style-type: none"> <li>- Gilbert needs plant soon</li> <li>- Revenue for reuse</li> <li>- Lagoon + Land treatment good \$</li> <li>- Possible nuisance</li> <li>- Gilbert must operate</li> </ul>
Tolleson	7.2	Turf production	Everyone	None	<ul style="list-style-type: none"> <li>- Relieves 91st Ave Plant</li> <li>- Relieves westside sewers</li> <li>- Additional Plant near major metro plant</li> </ul>

SUBREGIONAL PLANTS

<u>Plants</u>	<u>2000 Flow (MGD)</u>	<u>Uses</u>	<u>Support</u>	<u>Opposition</u>	<u>Comments</u>
<u>BEING CONSIDERED:</u>					
NE	9.1	Exchange w/ Salt River Indians	Scottsdale (strong) Paradise Valley	Phoenix (undecided)	<ul style="list-style-type: none"> <li>- Provides future fresh water</li> <li>- Chromium in Scottsdale groundwater</li> <li>- Increased treatment \$ (\$52/ac-ft)</li> <li>- Requires negotiation w/Indians</li> <li>- Also trade CAP water</li> <li>- Chromium in Scottsdale groundwater</li> <li>- Possible problem w/ANPP</li> <li>- Scottsdale or Phoenix must operate</li> <li>- Possible nuisance</li> </ul>
NW	1.2 to 2.6	Luke AFB Buffer Discharge to Agua Fria	El Mirage Luke AFB Surprise (?)	Unknown	<ul style="list-style-type: none"> <li>- Protects Luke AFB from encroachment</li> <li>- Lagoon + Land treatment good \$</li> <li>- Use EPA \$ Buy land</li> <li>- Possible nuisance</li> <li>- El Mirage must operate</li> </ul>
SW	5.4	RID Local IRR ANPP	Goodyear (strong) Avondale (?) Litchfield Park (?) Multi-city Partners will support	Unknown	<ul style="list-style-type: none"> <li>- Lagoon + Land treatment good \$</li> <li>- Provides for future growth</li> <li>- Use EPA \$ Buy land</li> <li>- Possible nuisance</li> <li>- Goodyear or Avondale must operate</li> <li>- Revenue from reuse</li> <li>- May be used to satisfy ANPP needs</li> </ul>

SUBREGIONAL PLANTS

<u>Plants</u>	<u>2000 Flow (MGD)</u>	<u>Uses</u>	<u>Support</u>	<u>Opposition</u>	<u>Comments</u>
<u>CONSIDERED &amp; DROPPED:</u> (*Primary reasons for dropping)					
SW	34.4	Goodyear Farms BIC RID ANPP	Goodyear (strong) El Mirage (strong) Avondale (?) Goodyear Farms (strong)	Multi-City Partners (strong) Tolleson-Peoria (strong)	<ul style="list-style-type: none"> <li>- Can be used to reduce Saltwater Intrusion Problem w/pumpback of \$30/ac-ft</li> <li>* Loss of \$18M grants to Multi-City Partners @91st Ave</li> <li>* No Tolleson Plant</li> <li>- Provides for future westside growth</li> <li>- May be used to satisfy ANPP needs</li> <li>- Goodyear or Avondale must operate</li> </ul>
NW	18 or 23	Goodyear Farms	Goodyear Farms (strong) Goodyear	Multi-City Partners (strong) Tolleson/Peoria (strong 23 MGD) Litchfield Park Avondale	<ul style="list-style-type: none"> <li>- Can be used to reduce Saltwater Intrusion Problem w/o major pumping</li> <li>* Loss of \$9M to \$14M EPA grants to Multi-City Partners @ 91st Ave.</li> <li>* Large size interferences w/Tolleson plant</li> <li>* Possible nuisance to Glendale, Litchfield Park and Peoria</li> </ul>
48th St	15 to 75	Rio Salado Groundwater Recharge Exchange	Valley Forward Salt River Indians Scottsdale (?) (exchange) Mesa (?) (exchange)	Tempe (strong) Phoenix (strong) Multi-City Partners (strong)	<ul style="list-style-type: none"> <li>* Reduces EPA \$ for Southern Ave Interceptor</li> <li>* Possible nuisances</li> <li>* Reduces EPA \$ for 91st Ave expansion</li> <li>* Interferes with ANPP</li> <li>* Increased treatment \$ due to higher level required</li> <li>- Saves water for metro area</li> <li>- Provides water to Rio Salado</li> </ul>

ARIZONA



PUBLIC SERVICE COMPANY

P. O. BOX 21666 • PHOENIX, ARIZONA 85036

September 20, 1978

Mr. H. W. Worthington  
Chief, Urban Studies  
Department of the Army  
2721 North Central Avenue  
Suite 800  
Phoenix, Arizona 85004

Dear Mr. Worthington:

At our meeting with you and representatives of the Maricopa Association of Governments (MAG) on August 23, 1978, you requested our views concerning certain alternatives being considered to provide additional sewage treatment capacity needed to serve the growing communities in the Phoenix metropolitan area, extending from Chandler on the South to El Mirage and Surprise on the north and from Mesa on the east to Goodyear on the west. The alternatives which you identified at such meeting are:

1. Expansion of the 91st Avenue and/or 23rd Avenue plants.
2. Expansion of the Tolleson plant.
3. A new subregional plant to serve Chandler.
4. A new subregional plant to serve eastern portions of the area, principally Sun Lakes.
5. A new subregional plant to serve Gilbert.
6. A new subregional plant to serve northeast portions of the area, including Phoenix, Scottsdale and Paradise Valley.
7. A new subregional plant to serve southwest portions of the area, including Goodyear, Avondale and Litchfield Park (Reams Road Plant).
8. A new subregional plant to serve northwest portions of the area, principally El Mirage and Surprise.

Attachment F

Mr. H. W. Worthington  
page Two  
September 20, 1978

At such meeting, as well as in Mr. E. E. VanBrunt's letter to you, dated August 10, 1978, letter no. ANPP-11535, we expressed our views respecting Agreement No. 13904 between the Cities of Phoenix, Glendale, Mesa, Scottsdale and Tempe and the Town of Youngtown (the "Six Cities") and Arizona Public Service Company (APS) and Salt River Project Agricultural Improvement and Power District (SRP). Specifically, we stated that such agreement -

1. Obligates the Six Cities to deliver up to 140,000 acre-feet of wastewater effluent from the 91st Avenue and 23rd Avenue Plants when available;
2. Disclaims any warranty that such amount of wastewater will become available at any time; and
3. In lieu of such warranty, commits each of the Six Cities not to install any new sewage treatment plants that would impair the ability of such cities to deliver effluent pursuant to Agreement No. 13904.

We also acknowledged that the latter commitment not to build new plants did not apply to plants envisioned in the 1968 Carollo Report, entitled Wastewater Report for the Valley Metropolitan Area, to treat wastewater collected from the Gila and lower Litchfield Tributary Basins as defined in that report. Accordingly, APS and SRP have no objection to the development of either the proposed Chandler plant to treat sewage collected from the Gila Tributary Basin or the proposed Reams Road plant to treat sewage collected from the lower Litchfield Tributary Basin.

On the other hand, the Gila and lower Litchfield Tributary Basin exception clearly does not apply to the proposed northeast plant which, we were advised, would not only treat sewage collected from new areas being developed in Phoenix and Scottsdale, but would also divert sewage presently being treated at the 91st Avenue Plant. Accordingly, APS and SRP will vigorously oppose development of the northeast plant until such time as (i) the capacity of the 91st Avenue and 23rd Avenue Plants has been expanded to permit fulfillment of all outstanding commitments for

Mr. H. W. Worthington  
Page Three  
September 20, 1978

delivery of wastewater effluent from such plants and (ii) effluent flows are sufficient to meet such commitments.

Our position with respect to the remaining proposed alternatives is not so clear cut, primarily because we do not fully understand them or because their proposed function has not been finally fixed. For example, your letter of July 20, 1978, to Mr. E. E. VanBrunt, Jr., describes the northwest plant as "a plant located near Luke Air Force Base to treat wastewater from Luke, El Mirage, Surprise and 'future' Glendale . . . ." However, at our meeting on August 23, 1978, it was stated that this proposed plant would serve only El Mirage and Surprise. To the extent that this plant would serve only the existing communities of El Mirage and Surprise, which would appear to be in the Litchfield (if not the "lower" Litchfield) Tributary Basin, we would not oppose its development. However, if its purpose is expanded to treat sewage collected from areas east of the Litchfield Tributary Basin, and particularly "future" Glendale, then APS and SRP would object to it.

Similarly, the proposed Gilbert plant has been described as designed "to treat Gilbert's and possibly some of 'future' Mesa's wastewater." Again, if the Gilbert plant would result in the diversion of sewage collected from areas north of the Gila Tributary Basin (e.g. "future" Mesa), APS and SRP would consider that the development of this plant would contravene Agreement No. 13904.

The plans for the Tolleson sewage treatment plant are unique. It is our understanding that there is presently excess capacity at this plant because operation of the meat packing plant that supplied a major portion of the load on the treatment plant has been terminated. We also understand that this excess capacity is sufficient to meet the present needs of both Tolleson and Peoria and, at least for some period of time, of Sun City-East and portions of Glendale, as well. We have also been told that an expansion of the Tolleson plant is contemplated to meet the future needs of Tolleson and Peoria and also those of Sun City-East, but that Glendale's use of existing capacity would only be temporary.

With respect to these plans for the Tolleson plant, we appreciate the desirability of fully utilizing

Mr. H. W. Worthington  
Page Four  
September 20, 1978

existing capacity, particularly since by doing so, currently critical needs of Glendale and Sun City-East can be met and the demands on the 91st Avenue Plant can be eased until its expansion can be accomplished. Nevertheless, we have serious reservations about any "temporary" solution which might become permanent. Specifically, we are concerned about expansion of the Tolleson plant which would permanently divert sewage from Glendale or sewage collected from Sun City-East that is presently being treated at the 91st Avenue Plant. In summary, our positions respecting the plans for the Tolleson plant are (i) we have no objections to the "temporary" diversion of the wastewater collected from Glendale and Sun City-East, provided we can obtain either an assurance that such diversion will not become permanent or a right to acquire wastewater effluent from the Tolleson plant equivalent to that diverted from the 91st Avenue Plant, and (ii) we are opposed to the expansion of Tolleson plant to permanently divert Sun City-East wastewater until the effluent flows from the 91st Avenue and 23rd Avenue Plants are sufficient to meet all outstanding commitments.

In closing, we wish to make the following points respecting water conservation and management and the reuse of water.

1. The growth in the Phoenix metropolitan area that requires increases in sewage treatment capacity also requires increases in electric generation capacity.
2. The required increases in electric generation capacity cannot be achieved without water.
3. The reuse of wastewater effluent for electric generation permits the maximum conservation of the only other water sources available, i.e. groundwater and surface water.
4. The reuse of wastewater effluent for electric generation will provide more economic benefits to Maricopa County and the State of Arizona than any other potential reuse.
5. Apart from the conservation and economic benefits achievable from the reuse of effluent for electric generation, the revenues to the Six Cities from the sale of

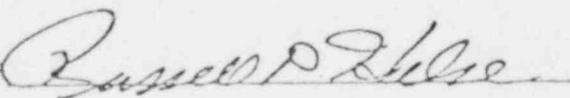
Mr. H. W. Worthington  
Page Five  
September 20, 1978

effluent will significantly reduce the sewer use charges which the residents of the Six Cities would otherwise have to pay.

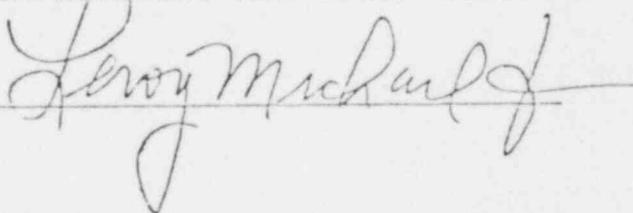
If you have any questions respecting our positions or the several alternative plans under consideration, we will be pleased to respond to them.

Respectfully submitted

ARIZONA PUBLIC SERVICE COMPANY

BY 

SALT RIVER PROJECT AGRICULTURAL  
IMPROVEMENT AND POWER DISTRICT

BY 

cc: Jack DeBolske  
Ken Driggs  
Marvin Andrews  
City Managers of Scottsdale - Frank D. Aleshire  
Tempe - Kenneth A. McDonald  
Glendale - Stanley F. Van de Putte  
Mesa - J. A. Petrie  
Mayor of Youngtown - Norman B. Shrenk  
Bill Stephens

United States of America  
Nuclear Regulatory Commission

Before the Atomic Safety and Licensing Board

APR 28 1982  
emp

In the Matter of )

ARIZONA PUBLIC SERVICE )  
COMPANY, et al )

(Palo Verde Nuclear Generating )  
Station, Units 1, 2 and 3) )

Docket Nos. STN 50-528  
STN 50-529  
STN 50-530

Certificate of Service

I hereby certify that copies of Intervenor's Supplemental Response to Intervenor's Response to Joint Applicants' Request for Admissions, Application for Issuance of Civil Subpoena Duces Tecum (to Philip Shea), Application for Issuance of Civil Subpoena Duces Tecum (to Bill Stephens), Motion of Intervenor to add New Contentions or Alternately Amend Her Current Contention on Inadequate Assurance of Water, have been served on the following individuals by deposit in the U.S. Mail, properly addressed and with postage prepaid, this 26th day of April, 1982.

Docketing and Service Section  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

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Chairman, Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

\* Dr. Richard F. Cole  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
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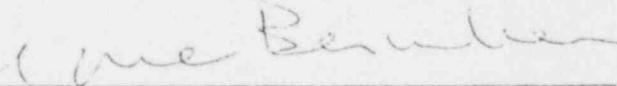
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Lynne Bernabei

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