NORTH AMERICAN WATER AND POWER ALLIANCE (NAWAPA)

K. D. McFarland

Gentlemen.....It is certainly a pleasure for me to be here today and to present to you the North American Water and Power Alliance concept. We in the Southwest know of the criticality of water, particularly to this section of our country. I am convinced that the NAWAPA concept offers a solution to the water problems here and throughout the major part of our country. For the opportunity to present the NAWAPA concept to this important group, we, of The Ralph M. Parsons Company, thank you.

Those of us who are close to water resource development are inclined to think of water as worth its weight, literally, in gold. This is because we know it means so much to our economic development. While it is one of the most vital elements on a dollar basis, it has a surprisingly low value. For example, the estimated cost of all water used in the United States in any one year is about $5 billion. This figures out to about $10 to $20 an acre-foot on an average. The largest tanker ever built holds less than $1,000 worth of water. You can compare this to the wholesale price for an acre-foot of petroleum at $22,000, an acre-foot of milk at $100,000, and an acre-foot of bourbon whiskey for $8,000,000.

Although I joke briefly about water, we all know it is no joking matter, for never before in the history of our country has water become so critical. Never before have we as a nation been so conscious of water's scarcity, its pollution, its use, its reuse, its recreational benefits, and its devastation by flooding.

As a natural resource, water is unique. It cannot be exhausted. Once iron ore is extracted from the ground and refined into steel, nothing can take its place. Crude oil pumped from the earth is replaced by gas or water, but not oil. But regardless of what man does with water, it always returns to him. Nature ensures this through the hydrologic cycle. However, some serious built-in problems afflict this system. These include variability, supply, contamination and distribution, to name a few, and unless overcome, they could lead to man's outgrowing the amount of water nature has allotted. Even though these difficulties are staggering enough in themselves, civilization has managed to compound them.

One of the most serious of the water problems facing us is distribution. The problem of distribution is intensified when the mobile American decides to embark on a new life, preferably in an area blessed by an ideal climate. Where nature provides ideal weather, however, she sometimes forgets to add a well-distributed water supply. This is nowhere more apparent than in the Southwest.

But today the problems are as great, or even greater, in other parts of the country. The drought in the Northeast is a prime example, to name only one critical area.

Generally speaking, most Americans do not realize that today we use three times as much water as was used in 1900, not solely because the population has nearly tripled in that time, but also because industrial technology and the affluence of our times have demanded and consumed new water supplies at an almost unbelievable rate. Nor do we pay much heed to the fact that our population will double again by the year 2000 and at that time water needs will at least triple present day requirements.

As I mentioned before, one of the most serious water problems facing us today is water distribution. In this respect, isn't it unfortunate that nature did not take our political boundaries into account when she bestowed her resource treasures upon our continent--for if she had, distribution of water supplies would be a relatively simple matter. But since the water resources of the continent were placed by nature without regard to political boundaries, it seems logical, at least from an objective and practical viewpoint, to figure out a distribution system maximizing the use of water resources also without regard to these boundaries. This we have done with the North American Water and Power Alliance concept.

In simple terms, NAWAPA is a concept which utilizes the geographical and climatological features of the North American continent to collect and store the excess water of the subarctic areas of the continent and distribute it to the water-deficient areas of Canada, the United States, and Northern Mexico in sufficient quantities to assure adequate water supplies for generations to come.

In presenting the NAWAPA concept, we fully recognize it represents but part of the total water management problem--conservation and distribution--although in providing this element it certainly affects many other elements quite substantially.

The NAWAPA concept poses many problems which must be solved before work can begin. There are first and foremost the political problems. Then, of course, there are engineering problems, legal, sociological, financial, etc.

We are making no attempt at this time to offer solutions to these problems but are merely presenting a concept for utilizing surplus water now flowing unused into the sea. We are trying to solve one of the water-management problems--the problem of proper distribution.

Now I would like to show you a film which describes the NAWAPA concept far better than I can in the time allotted. First of all, I want to call your attention to a few points covered by the film. NAWAPA is a concept. NAWAPA is envisioned as a bulk supplier of water and power. Water will be sold at the ditchside and power at the bus bar. The sale of power will keep water costs within reason.

Our studies at Parsons have determined three things. One: the water is available. Two: it is feasible from an engineering viewpoint to transport it. And three: it is economically realistic to do so.

After the film I will discuss the concept in more detail and report on its current status.

FILM

We are often asked how the NAWAPA concept was developed. It was brought to our attention through our Foreign Operations Division which has been actively engaged in water development projects in Taiwan, India, Iran, Iraq, Kuwait, and many other foreign countries. It was this general knowledge of water and mankind's need for water which lead to a study of means of augmenting the supply of water in the United States. Several years ago we started development of the NAWAPA project, then continued to expand it. After engineering studies had developed sufficiently, and in order to stimulate further study and actual field investigation, Parsons released the plan for public examination and appraisal on March 17, 1964. Acceptance of the concept by the general public, elected officials, and the engineering profession has been heartening.

As a result of the public announcement and subsequent briefings to Government officials in Washington, D. C., a Senate subcommittee under the chairmanship of Senator Frank E. Moss of Utah was formed to study the NAWAPA concept and recommend appropriate follow-up action. A report was published in October 1964. The subcommittee said that "without NAWAPA, the supply of water, particularly in the western United States, will be substantially below the need."

The report discloses that federal and nonfederal interests have considered more than 3,000 projects for development of the water resources of the Western United States. These projects have a total cost of about $60 billion and provide 2.8 billion acre-feet of stored water.

The NAWAPA concept has a total of 369 projects, costing from $80 to $100 billion providing in excess of 4 billion acre-feet of stored water. The NAWAPA concept would provide nearly twice the water storage for use in the United States as is provided in current federal planning.

If a direct comparison could be made between present thinking and the NAWAPA concept, it would be said that it would cost $60 billion for one-half the water that could be had for $80 billion.

This is a degree of overlap between NAWAPA and federal projects, and two things are readily apparent: 1 - The combined water supply after eliminating duplication is greater than either individual approach, and 2 - A number of the largest and more expensive projects now authorized or contemplated relate to the NAWAPA concept, thereby indicating that incorporation of the NAWAPA concept with present plans would reduce the total cost of NAWAPA. Best estimates now available indicate that about 20 percent of $16 billion in projects are authorized or contemplated by federal agencies which can be adapted to the NAWAPA concept.

Benefits from NAWAPA accruing to the United States and in particular to the Southwest are interesting.

1. NAWAPA would deliver 67 million acre-feet of water to the United States for industrial, municipal and agricultural use.

2. NAWAPA would make 38 million kilowatts of power available for use in the United States.

3. NAWAPA would provide a north-south seaway from the northern part of the United States to Alaska. It would create a navigable waterway from Big Stone Lake, Minnesota-South Dakota, to the Canadian-Great Lakes Waterway and would connect the existing waterways of the United States to Hudson Bay, the Arctic, and all of Canada.

4. NAWAPA would increase irrigable land by some 20 million acres.

5. NAWAPA would stabilize and control the level of the Great Lakes by delivering to the Great Lakes more than 40 million acre-feet of water annually, thus increasing and stabilizing the power production of the Niagara hydroelectric complex, optimizing navigation of the St. Lawrence Seaway, and allowing maximum shiploads in and out of Great Lakes ports.

6. NAWAPA would increase the national income from agriculture, livestock, mining, and manufacturing by approximately $30 billion annually.

7. NAWAPA and related equipment, engineering, construction, supply, and services investments would be approximately 1.5 to 2.0 billion dollars annually to the United States during the period of construction.

8. NAWAPA would increase recreation and wild life assets throughout the far western, mountain, and plains states.

9. NAWAPA would contribute substantially to flood control in many river valleys of the Northwest and Southwest.

10. NAWAPA would open large areas for industrial and agricultural development.

Closer to home, the benefits from NAWAPA are most striking.

1. NAWAPA would deliver more than 50 million acre-feet of water annually to California, Arizona, Nevada, New Mexico, Colorado, Utah, and Texas for agriculture, industry, and municipal development.

2. NAWAPA would provide 15 million kilowatts of electrical power for expansion and development.

3. NAWAPA would create some nine lakes which may be used for recreation and fishing.

4. NAWAPA would provide for placing into production some 15 million acres of irrigable land.

5. NAWAPA would regulate and stabilize river flows throughout the Southwest.

6. NAWAPA would create a chain of lakes and canals which would be conducive to far-reaching and farsighted conservative programs.

On September 1, 1965, Senator Moss introduced a concurrent resolution in the United States Senate calling on the President to refer the NAWAPA concept to the International Joint Commission with the request that an economic and engineering feasibility study be made and that the respective governments...Canada and the United States...be informed of the results of such study by December 31, 1966, and further that the President of the United States invite the Government of Canada to join in such referral.

This action by Senator Moss is a step in the right direction toward solution of this nation's and, in fact, this continent's water problems.

We must use every tool at our command. We must expand water storage facilities, purify brakish and salt water, increase stream flow by eradication of worthless vegetation, control snow melt, and expand all the phases of water research. We must achieve optimum development of what water we have underground and above ground.

In closing, I would like once again to draw from Senator Moss' statement which sums up the requirements incumbent upon us as a nation: "We must begin now to put our imagination and skills together and do what has to be done to assure that the entire nation will always have enough water, no matter what pranks nature pulls, to allow each state and each section to achieve its share of our national growth now and in the years to come. Let us take our lead time and make the most of it."

We, of the Ralph M. Parsons Company, believe the North American Water and Power Alliance concept takes a giant step toward solving a large segment of the Continent's water problem.