MINUTES OF THE SPECIAL MEETING
OF THE AMES CITY COUNCIL

AMES, IOWA **MAY 19, 2009**

The Ames City Council met in special session at 7:05 p.m. on May 19, 2009, in the Council Chambers of City Hall, 515 Clark Avenue, pursuant to law with Mayor Campbell presiding and the following Council members present: Doll, Goodman, Larson, Mahayni, and Rice. Council Member Popken was absent. *Ex officio* Member Keppy was also present.

DISCUSSION OF OPTIONS FOR WATER PLANT EXPANSION: John Dunn, Director of Water and Pollution Control, advised that a team of employees from all levels has been working for 18 months on this project. He gave a brief history of the existing facility. The oldest piece of infrastructure still in operation at the Plant is a 3/4-million-gallon reservoir originally installed in 1924. The last expansion of the facility occurred in 1988. According to Mr. Dunn, what is currently occurring is due to the normal life cycle of such a facility; it is not unique. He cited an article published in the Ames Tribune 50 years ago that describes the need for expansion of the Plant that is seemingly like the process currently being undertaken by the City.

Mr. Dunn advised that one of the first questions that needs to be answered pertains to the quantity of source water. Dr. Bill Simpkins from Iowa State University Department of Geological and Atmospheric Sciences was present and gave the Council information on the Ames Aquifer. His major points were:

1. The unconfined aquifer is very large. The Ames Aquifer and the region around it consists of four well fields with 22 wells. The amount of water in the aquifer at any one time is 125 billion gallons. Its recharge volume is 5.1 billion gallons/year. The water "turns over" (its renewal period) approximately every 25 years.

   Mr. Simpkins described the relationship between the stream and the Ames Aquifer. He explained the difference between a "gaining" stream and a "losing" stream. The "gaining" comes from ground water and the "losing reach" comes from the Skunk River. Mr. Simpkins advised that, even under dry conditions when the rivers have dried up, Ames could still get 16.1 MGD from the Aquifer.

2. The proposed 15 million gallons/day (MGD) would be attained by continually rehabilitating existing wells, which is needed due to their corrosiveness, and by adding at least one new well field.

3. The Ames Aquifer interacts with rivers. It responds quickly to river levels.

Director Dunn introduced Dale Watson, from FOX Engineering. Mr. Watson explained the four steps that the analysis team has undertaken to get to this point:

1. Condition/Capacity Assessment
2. Water Quality Goals
3. Development/Evaluation of Alternatives
4. Water Demand Projections

According to Mr. Watson, one of the existing deficiencies of the current Plant is reliability; there

are reliability deficiencies. He identified several single points of failure without bypass options and described the multiple cases where this could occur in the Ames Plant. Mr. Watson acknowledged that much of the existing equipment is in good condition due to the diligent care and maintenance provided by City staff.

Eric Berggren, HDR Engineering, summarized the condition and capacity assessments. He named the architectural concerns and the structural concerns if rehabilitation of the Plant were pursued. Mr. Berggren said that some structures are over 80 years old and several are near the end of their useful life periods, i.e., Mix Tank No. 1, Aeration Tank, Recarbonation Tank No. 1, and 3/4-MG Reservoir. The condition of the mechanical equipment was given by Mr. Berggren. He said that there are two items that currently require attention: (1) new boilers are needed, and (2) a new unit heater is needed in the East Pipe Gallery. Under the process condition, Mr. Berggren advised that there are several items that have fewer than five years of estimated life, including: (1) two rapid mix mixers, (2) one lime slaker, (3) aeration influent piping, (4) clarifier mechanism, and (5) hypochlorite (disinfection) tanks and pumps. He emphasized that many items are old enough that repair parts are difficult to obtain.

Paul Kaeding, Barr Engineering Company, described the electric condition of the Plant. Regarding power distribution, much conduit and wiring needs to be replaced. Mr. Kaeding showed pictures illustrating the crowded spaces where electrical and equipment devices now reside. He emphasized that those conditions present very valid safety concerns.

Mr. Watson pointed out that water quality and water quantity are important to the citizens of Ames. Three items to be considered are: (1) providing consistently safe drinking water and complying with all regulations; (2) maintaining the distribution system through treatment, and (3) maintaining exceptional taste. He listed the following water quality goals:

1. Consideration of existing and anticipated regulations
2. Compliance with the Safe Drinking Water Act
3. Softened water (finished water hardness 150 - 170 mg/L)
4. Iron (Fe) and manganese (Mn) removal
5. Pathogen destruction
6. Hydrogen sulfide removal
7. Total organic carbon reduction
8. pH target 9.5+/-
9. Exceptional taste

Mr. Watson noted that all of the above goals are currently being met with the existing facility.

Development/Evaluation of Alternatives. Mr. Watson explained how design capacity is projected. It is affected by changes in population, customer base, and water use characteristics as well as by City/utility policies.

Mr. Berggren offered four alternatives that should be considered:

1. Rehab the existing lime softening plant
2. Construct a new lime softening plant at a new location
3. Construct a new membrane plant at a new location
4. Construct a satellite/phased new plant

Concept development considerations were listed as follows:

Treatment goals
Available technology
Operational requirements
Reliability
Flexibility to handle changing conditions
Implementation
Expandability
Social impacts
Environmental impacts/sustainability

Mr. Berggren advised that cost estimates would include capital (construction, land, engineering, and administration), operation and maintenance (labor, chemicals, electricity, and sludge disposal) and life-cycle (total present worth or total annual equivalent, and capital, operation and maintenance, replacement, and salvage value).

Each of the alternatives was detailed by Mr. Berggren. Pros and cons for each option were given. Mr. Berggren gave the following estimates of probable costs:

Alternative 1: Rehabilitation of the Existing Lime Softening Plant:
Capital Cost: $ 54,786,000
O & M Cost: 1.18/1000 gallons

Alternative 2: New Lime Softening Plant:
Capital Cost: $ 48,431,000
O & M Cost: 1.17/1,000 gallons

Alternative 3: New Membrane Softening Plant:
Capital Cost: $ 72,032,000
O & M Cost: 1.35/1,000 gallons

Alternative 4a: 10 MGD Lime Softening Plant with 5 MGD Later:
Capital Cost: $ 53,072,000 (total)
O & M Cost: 1.17/1,000 gallons

Alternative 4b: 15 MGD Lime Softening Plant, Phased Demo and Administration:
Capital Cost: $ 49,495,000 (total)
O & M Cost: 1.17/1,000 gallons

It was noted that the current annual operation and maintenance costs equate to $1.18/1,000 gallons.

Mr. Berggren noted that the costs presented were based on February 2009 estimates. The amounts presented do not include escalation. The escalation is based on the: bidding climate, overall economy, bid date, and construction duration. Historically, this fluctuates by approximately 3% per year. Mr. Berggren also stated that the O & M costs do not include administrative costs. The alternative costs are based on an average production rate of 7.5 MGD; the current plant costs are actual at average rate of approximately 6.5 MGD. Current plant

equipment and capital replacements are low due to the expectation of an upcoming replacement project.

Jim Merideth, FOX Engineering Associates, explained how they projected design capacity. The following items must be considered:

1. Projected changes in population
2. Projected changes in customer base (residential, commercial, and industrial)
3. Projected changes in water use characteristics
4. City/utility policies

He stressed that design is not based on "average" usage; peak demands must be considered.

Mr. Merideth advised that they used population information from the City's planning documents as a starting point and extending projections to the Year 2033 (20 years from anticipated completion of project in 2013). They also allowed for capacity to accommodate time required to implement further expansion at the end of the original design life.

Regarding allowance for industrial demand, Mr. Merideth advised that the demand projections given accounted for general commercial activity related to population growth (restaurants, shopping centers, light industry, etc.). Other industrial uses (not accounted for by general population growth) were not taken into account. There are several levels of capacity to be considered:

Level 1: No additional industrial allowance
Level 2: Would allow five industries at 100,000 GPD
Level 3: Would allow for 1 or 2 very-large water users

Mr. Merideth noted that this is a policy area that needs to be set by the City Council.

Mr. Berggren pointed out things that might add to the City's capacity and those that could reduce it. He reviewed the City's current conservation measures and pointed out more aggressive conservation measures that could be undertaken. Director Dunn stated that if any of the more aggressive measures were being supported by the City Council, he asked for that directive to be given to staff.

Mr. Watson presented four scenarios for the Council's consideration when deciding on a design capacity. These were based on:

1. Base demand (population x per capita use)
2. Conservation efforts
3. Industrial allowance

Mr. Dunn advised that a cost not included in the cost projections was providing additional source water.

Mr. Watson advised that they were recommending the City Council approve Alternative 4b, which is the phased construction of a new lime softening plant on a new site. He gave the following reasons for this recommendation:

1. It meets the water quality needs for Ames residents
2. It ranks high in regard to: operational requirements, reliability, flexibility, ability to implement, expandability, and social/environmental impacts
3. It is the most-cost-effective and would have a lower rate impact

The consultants are also recommending:

1. Provide 1 to 2 MGD of capacity allowance for the following reasons:

    a. Regarding industrial reserve:
    b. Several industrial customers with moderate water use
    c. One or two industrial customers with large water use
    d. Compensate for population growth uncertainties
    e. Compensate for not achieving peak-day demand reduction with conservation efforts
    f. Given the small expected initial cost differential, conservative sizing may be more economical than minimal-sizing

Mr. Dunn presented a potential rate impact comparison between Alternative 2 and 4B. He also gave sample residential and commercial customer bills for each Alternative. The residential sample was based on 600 cu. ft./month and the commercial was based on a customer using 20,000 cu.ft./month.

It was also noted by Mr. Dunn that the cost estimates are based on the City being able to receive funds provided by State Revolving Fund Program. That Fund provides monies at an interest rate of 3.25%. If the City would have to bond for the improvements, costs would increase dramatically.

Kris Evans, Environmental Engineer II, explained the activities of the Concept Advisory Team, which was comprised of seven members of the community who could provide different perspectives:

1. Dan Culhane, Ames Chamber of Commerce
2. Tim Ellis, ISU Profession of Civil and Construction Engineering
3. Marty Hoffert, Newton Water Works Superintendent
4. Erv Klaas, Ames Resident
5. Dean Ulrichson, Ames Resident
6. Clark Thompson, ISU Facilities Planning & Management
7. Diana Whipple, National Animal Disease Center

This Team held three meetings. One area they worked on was to come up with ways to keep the public involved in this process. Ms. Evans noted that there were conflicting opinions regarding the amount of capacity that should be planned for.

Matt Hawes, Environmental Engineer I, said a major goal of staff was to provide information to the public on this project. He advised that three public input sessions were held, and he gave a summary of the topics discussed at each meeting.

Mr. Dunn told the Council that the next steps in this process will be:

1. To present the final draft of the report, which is planned to be presented to the Council in July
2. Staff will develop a recommendation for Council
3. That recommendation will be presented to the City Council on July 14

Staff members want to make sure that they have painted a compelling picture for the City Council proving that something needs to happen. They also need to know what factors the Council members believe could influence the design capacity.

Mr. Dunn said that staff will also attempt to arrange opportunities for the City Council to walk through the Plant.

Council Member Goodman asked for a graph showing incremental costs for increases in the GPD usage.

ADJOURNMENT: Moved by Doll, seconded by Goodman, to adjourn the meeting at 9:47 p.m. Vote on Motion: 5-0. Motion declared carried unanimously.

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Diane R. Voss, City Clerk Ann H. Campbell, Mayor