ITEM #: 41
DATE: July 14, 2009

COUNCIL ACTION FORM

SUBJECT: WATER TREATMENT PLANT INFRASTRUCTURE AND CAPACITY NEEDS STUDY

BACKGROUND:

At a workshop on May 19, 2009, staff and its consulting team presented the findings and conclusions of a year-long evaluation of the existing Water Treatment Plant (WTP). The evaluation looked at the ability of the existing WTP to provide a safe, dependable drinking water supply for the city over the next 25 years. The evaluation included the following specific tasks.

- A thorough condition assessment of the existing WTP infrastructure to determine the remaining useful life.
- An evaluation of the reliable hydraulic capacity of the existing WTP.
- A determination of the probable demands on the drinking water utility over the next 25 years, including an assessment of demand-side management techniques to mitigate seasonal peak demands.
- An assessment of potential treatment techniques that would be appropriate for either a renovation/modernization of the existing WTP or the construction of a new treatment facility.
- A recommendation for the future of the drinking water treatment infrastructure that takes into account the findings and conclusions of the study.

To arrive at the final recommended design capacity for the new facility, staff and its consulting team used multiple techniques. City staff used a combination of Historical Data Projections, per Capita Estimates, and Peaking Factor methods to arrive at an estimated capacity of 16 MGD in 2038. This is slightly lower than the projected demand contained in the Land Use Policy Plan (LUPP), which anticipated that the 16 MGD peak demand would be reached in 2030.

The consulting team reviewed the City staff's projections and recommended some additional refinements, including extrapolating the population projections beyond 2030 where the current LUPP stops. **Depending on which population projection model was used, the consultants recommended a range of between 12.9 MGD and 13.6 MGD as a base demand projection by the year 2038. To that was added the recommended 1.5 MGD of reserve capacity, giving a capacity range of between 14.4 MGD and 15.1 MGD.**

A copy of the executive summary from the consulting team's final report is attached. Also attached is a capacity-cost sensitivity analysis requested by Council at the May 19 workshop.

DESIGN ISSUES:

Before proceeding with further work on the project, staff is requesting policy direction from Council on the five specific issues presented below.

A. Justification for a major reinvestment in drinking water infrastructure

The scope of work envisioned by this project is significant. Whether the chosen course of action involves a modernization and expansion of the existing WTP or the construction of a new facility, there will be a price tag measured in the tens of millions of dollars. Over the past two weeks, staff has walked the facility with City Council members to allow a first-hand look at the condition of the facility. It is important that before staff proceeds with any option that Council endorse the need.

B. Identification of a preferred alternative

During the Council workshop on May 19, staff presented five alternatives for meeting the long-term drinking water needs for Ames. (NOTE: For comparison purposes, capital costs are based on 15 million gallon per day (MGD) capacity, except as noted.)

	Capital Cost ($Million)	O&M Cost ($/1000 gal.)
Alternative 1 – Reconstruct Plant at Existing Site	54.8	1.18
Alternative 2 – New Lime Softening Plant	48.4	1.17
Alternative 3 – New Membrane Plant	72.0	1.35
Alternative 4A –New Lime Softening Plant w/ Future Addition (10 MGD + 5 MGD)	36.5 + 16.6 53.1	1.17
Alternative 4B – New Lime Softening Plant w/ phased demolition & Admin. offices	43.6 + 5.9 49.5	1.17

At the May workshop, staff offered Alternative 4B as the recommended option over Alternative 2. Both options meet the long-range capacity projections, and were ranked high in regard to operational requirements, reliability, flexibility, expandability, and minimal social and environmental impacts. The decision to

recommend Alternative 4B was based on it having the lowest initial cost, allowing a portion of the rate increases to be deferred. It is estimated that the rate increases needed to fund this option would be 10% for each of the next four years.

Alternative 2 has the lowest overall cost, which could be a rationale for selecting it as the preferred option. In addition, it is possible that the Council will hear concerns from neighbors of the current Water Plant who are apprehensive about aesthetics and safety should the demolition of the abandoned facility be postponed. It is estimated that the rate increases needed to fund this option would be 15%, 15%, 10%, and 0% over the next four years.

	FY 09-10*	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15
Alternative 2	10%	15%	15%	10%	0%	0%
Alternative 4B	10%	10%	10%	10%	10%	0%

* The FY 09/10 Adjustments were approved by Council in April and became effective July 1.

Since staff is comfortable with either alternative, the Council will have to decide which alternative offers that most benefits. However, since our last meeting regarding this subject, the staff has concluded it would be more beneficial to locate the administrative offices at the new plant site than remain at the existing site in a new building. Therefore, regardless of which preferred option is selected, the staff is recommending that we move ahead with the design of the Department's administrative offices at the new plant site. The timing of the construction of the offices will be determined once the bids for the actual cost of the total project are received.

C. Demand-side Management Measures

Staff is now into the third year of the Smart Water promotion, a sustained voluntary conservation program. Currently the program includes: community education, displays and activities at public events, advertising encouraging conservation, and a rain barrel rebate program. Additionally, the seasonally inclined block rate structure adopted by Council last summer is a strong demand-side management tool. **The consulting team has reviewed the City's current program and has offered their opinion that, if the program continues to be successfully implemented on an ongoing basis, the potential peak demand reduction would be approximately 5%, or 0.7 MGD by the design year. This continued effort would reduce the estimated base plant capacity to 12.9 MGD. The projected construction savings would be approximately $520,000.**

Other possible measures that could be implemented vary considerably in their potential for public acceptance and include: mandatory even/odd watering schedules, equipment rebates (toilets/urinals, showerheads, etc.), indoor/outdoor

EXECUTIVE SUMMARY

AMES WATER TREATMENT PLANT
INFRASTRUCTURE AND CAPACITY NEEDS ASSESSMENT

1.0 Introduction

The City of Ames retained the consulting team consisting of FOX Engineering Associates, HDR Engineering, and Barr Engineering to conduct an Infrastructure and Capacity Needs Assessment to form the basis for decisions about the long-range future of the Ames Water Treatment Plant. The Infrastructure and Capacity Needs Assessment is the initial concept development phase for anticipated rehabilitation, replacement, or expansion of the Water Treatment Plant.

The existing water treatment plant is a conventional lime-softening plant. Portions of the plant were originally constructed in 1927. Over the years significant expansions and modifications were made to the treatment facilities in 1931, 1962, 1971, 1988. The major efforts included in the Infrastructure and Capacity Needs Assessment include the consideration and evaluation of the following:

1. Capacity and condition of the existing Water Treatment Plant,
2. Water demands,
3. Water quality needs,
4. Feasible treatment process technologies,
5. Alternatives for upgrade and expansion of the existing facilities,
6. Alternatives for replacement of the existing facilities with a new plant, including phasing.

Care was taken throughout the project to include a cross-section of stakeholders in the evaluation process. To this end the City of Ames staff appointed a Concept Advisory Team to participate in the process. This team included several individuals from throughout the community representing large water customers, the University, other water plants in the region, chamber of commerce and interested citizens. The consulting team and City staff met with the Concept Advisory Team three times throughout the process to seek input, assess assumptions, evaluate the process and share ideas.

In addition to the Concept Advisory Team, three public meetings were held over the course of the project. These meetings were planned and scheduled by the City staff and attended by the consulting team. PowerPoint presentations and posters were used to communicate to the public about the project. The purpose of the public meetings was to inform and seek input and to ensure that public concerns were addressed. In addition, the City staff maintained the latest project information on the City's website so interested citizens could track progress of the project as it developed.

Figure E-1.0 graphically represents the work flow that was executed for the project. The work flow was broken down into four major areas and resulted in four technical memoranda.

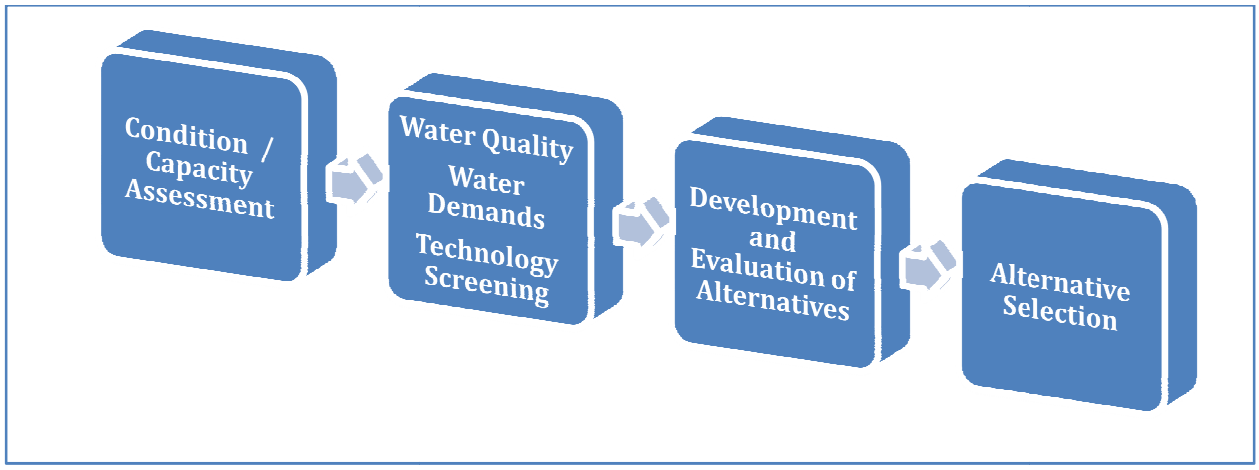


Figure E-1.0 – Work Flow

2.0 Capacity and Condition Assessment

The capacity and condition assessment was described in Technical Memorandum No. 1 and included review of the existing plant's treatment capacity and condition. The existing capacity of the plant was evaluated based on Iowa Department of Natural Resources (IDNR) design criteria, hydraulic limitations and operational considerations. The Ames Water Treatment Plant has a rated nominal capacity of 12 million gallons per day (MGD). Because of certain processes and hydraulic limitations, the actual capacity is probably closer to 11 MGD. Operation beyond 11 MGD for a short period of time may be feasible but would require significant exceptional care and effort. Table E-2.0 summarizes the capacities of process treatment units. Source water supply, finished water storage and elevated storage appear to be adequate for the projected future demands.

Table E-2.0
Treatment Capacity by Process Unit

Treatment Unit	Capacity
Aeration	10 MGD
Coagulation/Flocculation	11 MGD
Clarification	12.5 MGD
Recarbonation	11.5 MGD
Filtration	12 MGD
High Service Pumping	13 MGD

A key finding of the capacity analysis was many parts of the facility lack adequate redundancy and reliability. There are critical portions of the plant that have only one treatment unit or one conveyance pipe resulting in potential points of plant failure. If one of those treatment units were to go offline, the entire plant would be out of operation until repairs could be made. Reliability deficiencies include critical

piping to and from the aerator, the existence of only one rapid mix basin, and a single filtration system backwash pump.

The physical condition of the Ames Water Treatment Plant was assessed by a team of personnel with expertise in architecture, structural engineering, mechanical engineering, electrical engineering, process engineering and plant operations. The assessment was completed during an on-site investigation conducted September 2 through 4, 2008, and included visual reviews of structures, process equipment, mechanical systems, and electrical systems. Interviews with plant staff provided needed information on maintenance history and operational issues. The following paragraphs summarize the condition of the plant.

The plant has limited physical access for safety and maintenance throughout. If modifications are made at the existing facility, certain building code requirements would become applicable and many of the existing building features would be non-compliant and the deficiencies would have to be remedied. This is problematic because the surrounding buildings and structures are critical in keeping the plant operating. Installation of code compliant stairs in the filter galleries, for example, would be extremely difficult while keeping the filters in operation. Also, resolution of the many dead end corridors would be difficult as the current facility does not provide access for exits. Chemical storage is located throughout the facility without secondary containment and is not isolated from the other building functions.

Due to structural issues, there are several structures on site that are in need of immediate replacement or extensive repair. These include:

- Mix Tank No. 1 with the Aeration Tank
- Recarbonation Tank No. 1
- ¾ million gallon reservoir

In general, there has been significant damage and deterioration of the concrete over time due to the freeze-thaw cycle. In addition, many of the concrete structures have shrinkage cracks that are allowing leakage to occur.

From a treatment process perspective, many of the plant components are in fair to good condition in spite of age due to the diligence of the operations and maintenance staff. Several items will need to be replaced due to lack of parts availability. The following items have five years or less of estimated useful life without major overhaul or repair.

- Mixer No. 4
- Middle lime slaker
- Aeration influent piping
- Mix Tank No. 1 mixers
- Clarifier Nos. 1 and 2
- Hypochlorite feed tanks
- Hypochlorite feed pumps

Mechanical plumbing and ventilation systems are in relatively good condition as many items have been replaced or upgraded in the past 20 years. The only items that need attention are the boilers and one unit

heater serving the entrance to the East pipe gallery. In addition, the high service pump diesel day tank size requires fire protection if major modifications are made to that structure.

The supervisory control and data acquisition (SCADA) system is new and in good condition. The general power distribution uses original raceways (conduits) in many locations. The integrity of the electrical conduit system is suspect and in many cases the existing circuitry should be replaced. All of the electrical equipment such as panelboards, motor control centers , starters, signal transmitters and similar devices located in process areas should be relocated to dedicated electrical space with appropriate ventilation and dehumidification systems.

The condition of the existing facility is noted as a key driver for the project. Sustained use of the existing facilities cannot occur without some significant modifications. Furthermore, code requirements that would become effective as the result of such modifications would require extensive rebuilding of the facilities.

3.0 Water Quality, Water Demands and Technology Screening

Water quality, water demands and treatment technology options were summarized in two separate technical memoranda Technical Memorandum No. 2a outlined the water quality and demand requirements. Technical Memorandum No. 2b described available treatment technologies and served as the basis for screening technologies for additional consideration and development of solution alternatives.

Two critical components to any drinking water planning project are the quantity and quality of the water to be provided to the utilities' customers. Of these two planning components, the question of future quantity demands is the most difficult to answer with certainty because it involves projecting future needs. The consulting team reviewed water demand projections prepared by the Ames Water and Pollution Control staff. The Ames staff projection was 16 MGD for peak day design capacity. The consulting team considered two similar forecasting techniques and, with a somewhat more conservative approach to reserve capacity, arrived at a target peak day capacity of 13 to 15 MGD for the design year of 2033. For planning purposes, a design peak day demand of 15 MGD was recommended as the basis for development and evaluation of alternatives. In addition, the consulting team also recommended that any new or expanded plant should provide for a firm capacity (the capacity with any single treatment unit out of operation) greater than the average day demand of 7.54 MGD.

The consulting team also reviewed Ames' current water conservation program, Smart Water, and estimated the potential reduction in the water demand that may be expected from successful implementation of the program.

With regard to water quality, the current untreated source water utilized by the City meets all federally mandated primary and most secondary treatment standards with the possible exception of iron content. Through treatment, the water is softened and disinfected in a way that produces a high quality finished water that meets all chemical, biological, and aesthetic standards. Duplicating Ames' current finished water quality in any new or expanded treatment plant is the primary goal of the planning effort. The following general water quality treatment goals were established for the project:

- Comply with Safe Drinking Water Act and state and federal drinking water quality standards for chemical, microbiological, and radiological contaminants
- Protect the distribution system through proper water treatment
- Maintain the exceptional taste of the finished water
- Provide a softened water similar to the existing level of treatment
- Remove nuisance levels of iron and manganese

Based on the projected water demands and quality goals, available treatment technologies were described and reviewed by the project team to produce possible treatment scenarios to meet the stated goals. Multiple systems were reviewed ranging from conventional to emerging treatment technology. A technical memorandum – Technical Memorandum No. 2b -- summarizing the technology options was prepared and a workshop was conducted with the City staff and the consulting team to review the advantages and disadvantages of applicable technologies and formulate options for incorporation in an upgraded and expanded existing plant or a new treatment plant at a different site. As a result of the technology screening, three basic alternatives were advanced for evaluation and further development. A fourth phasing option was also discussed as a variation on one of the basic alternatives.

4.0 Development and Evaluation of Alternatives

In this portion of the assessment, alternatives were identified for providing upgraded and expanded treatment plant capacity for meeting a peak day water demand of 15 MGD. Technical Memorandum No. 3 describes each of the alternatives and conceptual level details for each. Four basic alternatives were identified in the previous phase of this study. The fourth alternative was broken into two parts which included a phased approach for one of the basic alternatives. Overall five alternatives were identified and evaluated in this part of the study, including:

1. Alternative 1 – Rehabilitation/reconstruction of the existing lime softening plant
2. Alternative 2 – Construction of a new lime softening plant at a new location
3. Alternative 3 – Construction of a new membrane softening plant at a new location
4. Alternative 4A – a phased-construction variation of Alternative 2 consisting of a 10 MGD plant as phase 1 and a 5 MGD plant expansion as phase 2
5. Alternative 4B – a phased-construction variation of Alternative 2 involving postponing certain elements of Alternative 2 to a second phase, including the demolition of the old facilities at the existing site and reconstruction of the existing filter building to provide administrative space at the old site.

Specific conceptual designs were developed and discussed for each alternative. Preliminary opinions of costs, both construction costs and operation and maintenance costs, were prepared, as well as an analysis of life-cycle costs. In addition to the cost analysis, non-monetary factors were also considered. These factors include operating requirements, reliability, flexibility, ability to be implemented, expandability, social impacts, and environmental impacts. The conceptual level opinion of construction costs and non-monetary rankings are summarized in Table E-4.0 below.

Table E-4.0
Opinion of Cost and Non-Monetary Evaluation Summary

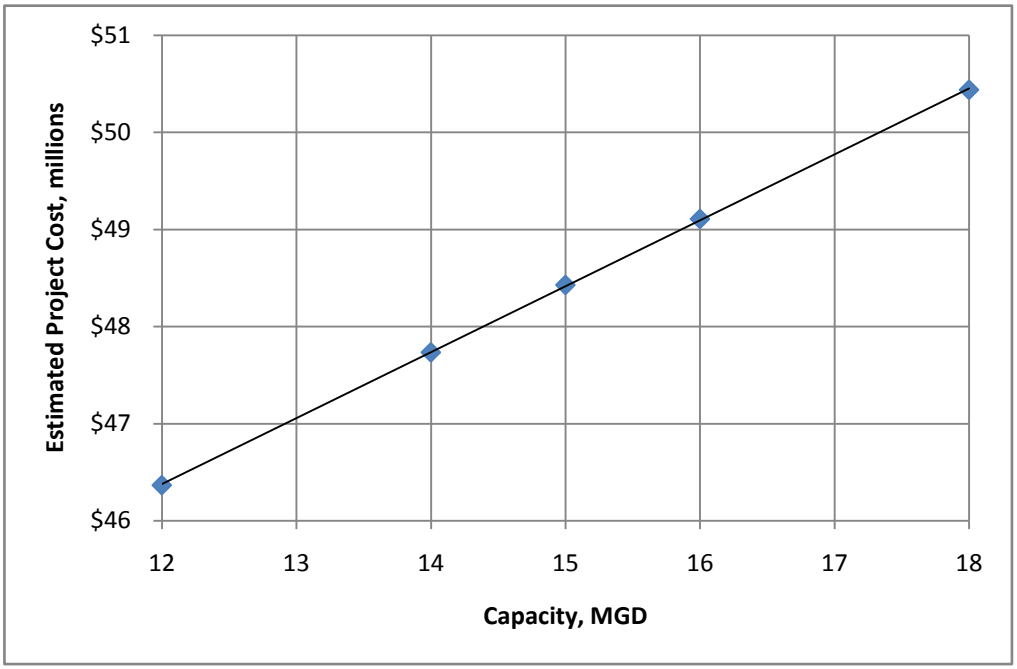
Alternative	Opinion of Costs			Non-monetary ranking (1 highest, 5 lowest)
	Capital ($)	Operation and Maintenance ($/yr)	Life Cycle ($/yr)	
1	$54,786,000	$3,217,000	$6,459,000	5
2	$48,431,000	$3,186,000	$6,038,000	2
3	$72,032,000	$3,756,000	$7,875,000	3
4A	$36,502,000 – Phase 1 $16,572,000 – Phase 2	$3,186,000	$6,103,000	4
4B	$43,588,000 – Phase 1 $5,907,000 – Phase 2	$3,186,000	$6,027,000	1

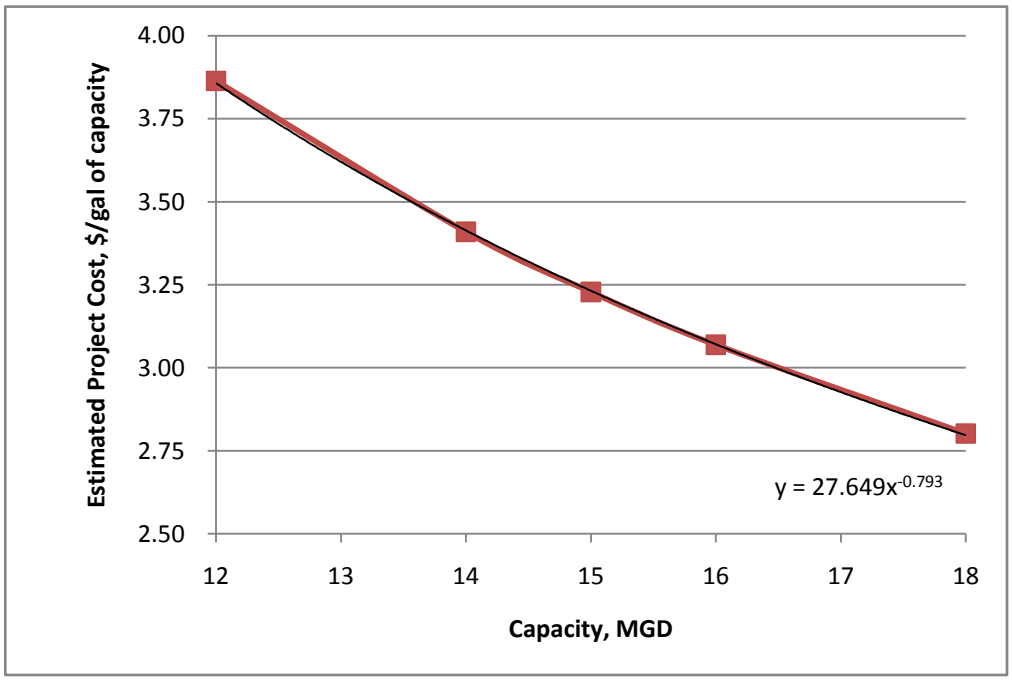
It is important to note that this level of planning is conceptual and has a relatively low level of detail relative to the final design documents. Several assumptions were required to estimate the costs, including the general process scheme, types of equipment, layout, type and materials of construction, and site conditions. The costs presented are based on February 2009 conditions and do not include escalation.

Funding for this significant project will likely be by long-term debt financing such as municipal revenue bonds or the State of Iowa financing program, the Drinking Water State Revolving Fund (DWSRF). The DWSRF has a lower interest rate, 3% + 0.25% administration fee, when compared to revenue bonds. City staff projected water rate increases based on using the DWSRF and concluded that by 2019 the monthly bill of a residential customer will increase about 35% over what would be expected if no project were to be completed.

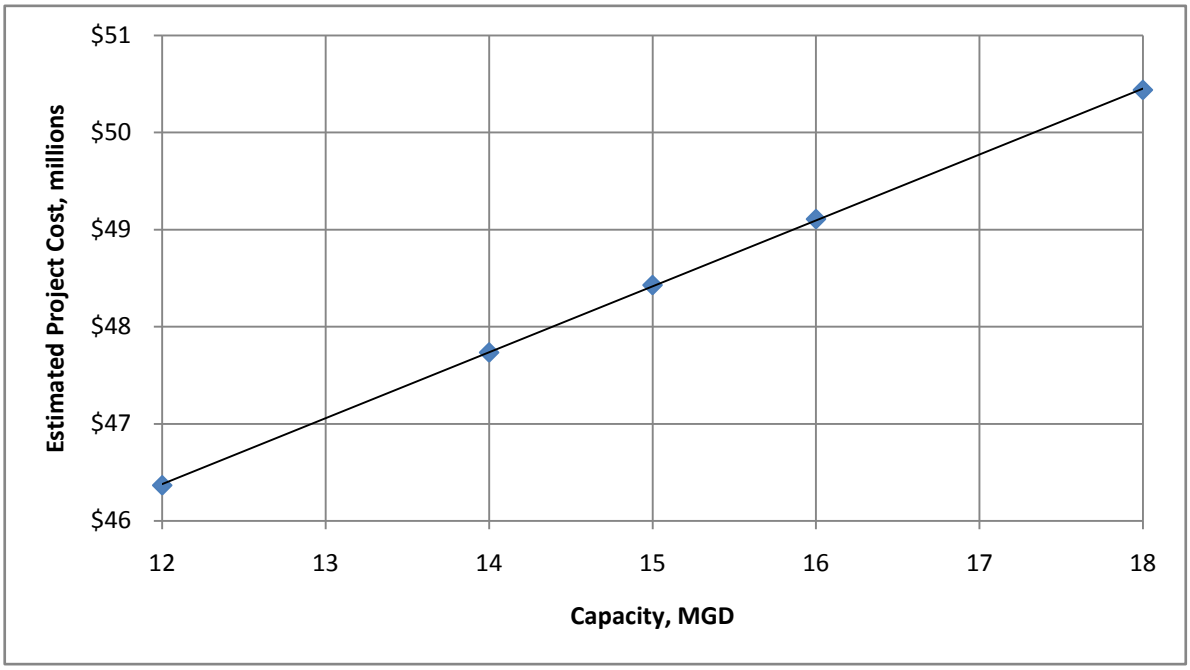
5.0 Alternative Selection

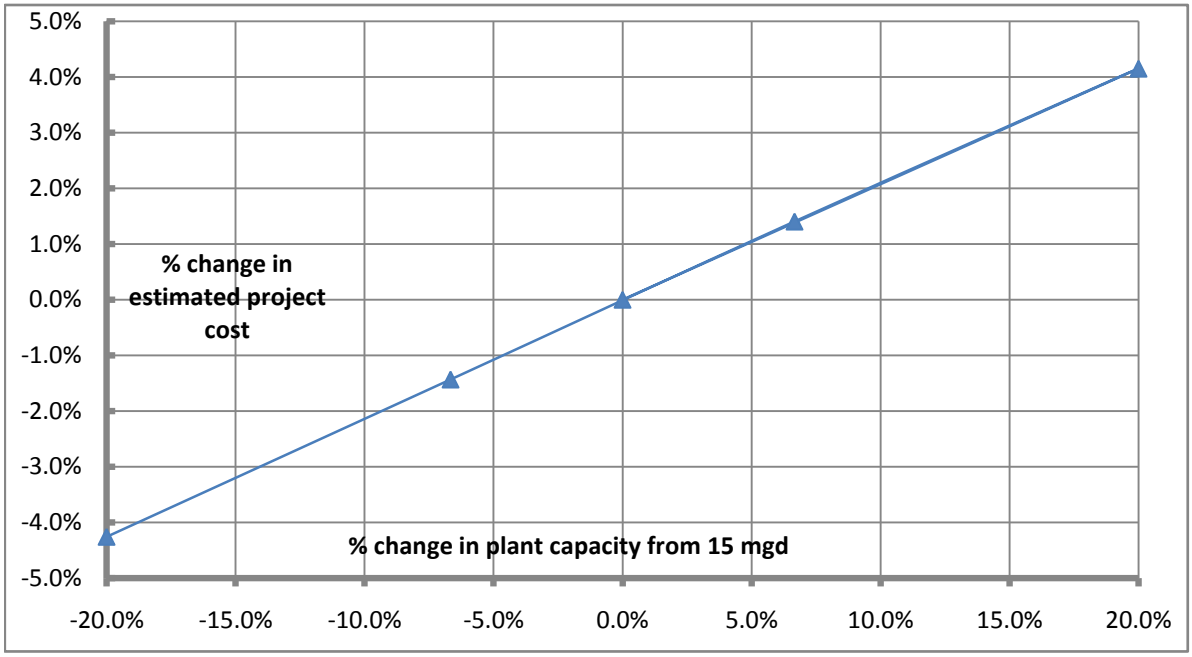
As a result of the cost and non-monetary evaluation of alternatives developed in this needs assessment effort, and considering the level of uncertainty of opinions of cost developed within this process, Alternative 2 - Construction of a new lime softening plant at a new location - and Alternative 4B – phased construction of a new lime softening treatment plant at a new site – emerged as essentially equal as the most favorable alternatives for meeting the City's water treatment project objectives. Therefore, it is recommended to the City Council that they consider, endorse and implement a project for construction of a new lime softening plant at a new location with decisions related to construction of new administrative offices and timing of demolition of the existing plant left to be decided by Council at a later time based on the Water Department's financial position and other mitigating factors at the time of construction of the new plant.





Capacity - Cost Sensitivity
Ames Water Treatment Plant





Capacity - Cost Sensitivity
Ames Water Treatment Plant

water audits, development of irrigation rates that are tied to outdoor water audits, development of "water budget"-based rate structures, mandatory smart irrigation controllers, irrigation controllers that can be remotely controlled from the Water Plant, lawn "buyback" programs, and requirements for water efficiency retrofits upon home sale. Many of these options would require a level of administrative oversight that would exceed available resources. **The consulting team has offered their opinion that it would take widespread participation (over 50% of the population) in a combination of several of these elements to increase the peak day reduction to 10% or a total capacity need reduced to 12.2 MGD. The estimated construction savings would be approximately $1,060,000.**

Staff is recommending that the current conservation program be continued, but that no reduction in the projected peak day design capacity be made. The current program is in its infancy and there has not yet been a dry summer to determine the actual impact of the Smart Water program on summer demands. If the capacity is not reduced and the 5% reduction is actually realized, the net effect will be a longer life for the plant before the next expansion is necessary. If, however, the plant capacity is scaled back and the reductions are not realized, then the utility may be in the position of needing to add additional capacity before the financing instruments are fully repaid.

D. Wholesale Water Sale to Other Municipalities

Throughout the year-long evaluation, staff regularly reviewed its findings and conclusions with an outside Concept Advisory Team. One recommendation from this team was that the City consider selling bulk water on a wholesale basis (i.e. selling water through a single master meter without providing any distribution system operations or maintenance) to neighboring municipalities or rural water districts.

By expanding the customer base of the utility, fixed costs can be spread over a larger number of gallons, thus reducing the cost for individual customers. One way to expand the customer base is to provide water on a wholesale basis to neighboring cities. Staff has not had any discussions with other communities at this time, so it is unknown if there is any interest. However, exploring this option while a new facility is under design would be the most appropriate time. Consideration could also be given to selling additional water to neighboring rural water districts.

There are policy implications for this decision. By selling water to other communities, the City of Ames could provide valuable assistance to other communities that may be struggling with capacity or water quality issues. The overall costs to Ames customers would be slightly lower due to spreading fixed costs over a larger base. Plus, the project could conceivably earn additional

priority points through the state's Drinking Water State Revolving Fund (SRF) as a result of becoming a regional water provider.

On the other side of the issue, the high quality of Ames drinking water is a strong selling point when attracting new residents and businesses to Ames. By making that water available to others municipalities or water districts, one valuable incentive to locate in Ames would be diminished and urban sprawl will be facilitated.

In addition, participating entities must agree to long-term contracts with the City with no cancellation clauses and must agree to subject themselves to our designated annual rate increases regardless of the magnitude. Council should anticipate that negotiations with other entities will take some time as they are likely to object to the type of one-sided contract that this partnership will require.

Finally, there is likely to be minimal positive impact on our customers' bills. To illustrate the potential cost implications of this issue, consider an example of selling 100,000 gallons per day to another city. At the current unit rate of $1.57 per hundred cubic feet, this would generate $76,600 in additional revenue per year. It would also increase the number of gallons over which the debt service can be spread. The net result for a typical Ames residential customer would be a modest savings of approximately $3.50 per year.

Even with these potential drawbacks, staff recommends that Council authorize discussions with surrounding <u>municipalities</u> to determine if there is any interest in purchasing water from Ames. If other communities are interested, staff will return to Council with more detailed information and for additional direction.

E. Reserve Capacity for Future Growth

Our consulting team has advised that we include an additional reserve capacity of 1.5 MGD as we move ahead to build our new facilities. Given the imprecision of the population growth projections, the unpredictability of future industrial growth in our community, and uncertainty of the success of our conservation efforts, this 10% reserve capacity seems reasonable.

It is important to note, however, that should the City elect to fund the project through Iowa's Drinking Water State Revolving Fund (SRF), "speculative growth" capacity is not eligible for SRF funding. The Iowa Department of Natural Resources typically looks at the "speculative capacity" as a percentage of the "total capacity" when determining the amounts that would be ruled ineligible. For this project, that would be the 1.5 MGD reserve capacity compared to the 15 MGD total capacity, or 10% of the total project cost ($4.84 million). However, after being questioned on this point, the SRF administrators agreed that if the City could provide justification of the incremental cost for the "speculative

capacity," then they would accept that amount as the ineligible portion. For this project, the consultant has estimated the incremental cost at approximately 1.4%, or $700,000. The debt to finance this portion of the total project cost will require a higher interest rate for our customers.

ALTERNATIVES:

Council direction and guidance is sought for each of the five issues outlined above. Alternatives for each are offered for consideration.

A. Justification for a major reinvestment in drinking water treatment infrastructure.

1. Conclude that there is a need for an extensive reinvestment in drinking water treatment infrastructure, and direct staff to proceed with planning and design for a new water treatment plant.

2. Conclude that there is not a need for an extensive reinvestment at this time, and direct staff to proceed with an appropriate course of action to prolong the useful life of the existing facility.

B. Identification of a preferred alternative.

1. Select Alternative 2 as the preferred option. This will begin the process to design and construct a new lime softening plant at a new location, including new administrative space. Demolition of the existing facility would begin as soon as practical upon start-up of a new facility. This alternative has the lowest overall capital cost.

2. Select Alternative 4B as the preferred option. This will begin the process to design and construct a new lime softening plant and the administrative offices at a new location. The demolition of the existing plant would be postponed until sometime after completion of the new plant, while a final decision when to construct the administrative offices will be made at the time of letting the contract for the new plant. This alternative has the lowest initial capital cost.

3. Select another alternative as the preferred option.

C. Demand-side Management Measures.

1. Direct staff to continue with the existing demand-side management program, but do not include a demand reduction in the design capacity of the new treatment facility.

2. Direct staff to continue with the existing demand-side management program, and reduce the design capacity of the new treatment facility by 0.7 MGD to account for possible demand-side reductions.

3. Direct staff to expand the existing demand-side management program and reduce the design capacity of the new treatment facility by 1.4 MGD to account for possible demand-side reductions.

   However, before proceeding with Option 3 under this issue, it is critical that a cost/benefit analysis be preformed to justify this action.

4. Conclude that there is not a need to continue with a demand-side management program.

D. Wholesale Water Sale to Other Municipalities.

1. Direct staff to contact surrounding municipalities to see if there is an interest in purchasing water wholesale from the City of Ames.

2. Direct staff to contact surrounding municipalities ***and*** neighboring rural water utilities to see if there is an interest in purchasing water wholesale from the City of Ames.

3. Do not direct staff to pursue wholesale purchase agreements.

E. Reserve Capacity for Future Growth.

1. Direct staff to include an additional 1.5 million gallons per day capacity as a future growth reserve.

2. Direct staff to include some other amount of additional capacity as a future growth reserve.

3. Direct staff to not include any additional capacity beyond the projected design year demand of 13.6 million gallons per day.

MANAGER'S RECOMMENDED ACTION:

Over the past year, staff has completed an extensive evaluation of the existing water treatment plant, and has concluded that the existing plant cannot reliably serve the Ames community for another generation. **Therefore, it is the recommendation of the City Manager that the City Council adopt the following Alternatives.**

- **Conclude that there is adequate justification for a major reinvestment in drinking water treatment infrastructure.**

- **Select Alternative 2 (construction of a new lime softening facility at a new location) or Alternative 4B (construction of a new lime softening facility with phased demolition) as the preferred option.**

  Under either option, the staff will be directed to begin design of the department administrative offices at the new site with a final determination when to construct these offices delayed until after bids for the total project have been received.

- **Continue with the Smart Water Conservation Program, but do not include a demand reduction in the new treatment facility design capacity. This action will necessitate a facility to meet a 13.6 MGD base demand.**

- **Direct staff to contact surrounding municipalities to determine if there is any interest in purchasing water on a wholesale basis.**

- **Include an additional 1.5 MGD capacity for a future growth reserve, bringing the total design capacity of the new facility to 15 MGD.**

Upon Council approval the next steps for the staff will be to develop an engineering services contract with the consulting team for final design, identify and secure a site, determine interest from neighboring municipalities, and develop a financing plan for the project.