Item #6

City of Carson City
Agenda Report

Date Submitted: July 9, 2007

Agenda Date Requested: July 19, 2007
Time Requested: 10 Minutes

To: Mayor and Supervisors

From: Public Works Department - Operations

Subject Title: Action to approve and authorize the Mayor to sign a contract in the amount of and not to exceed $394,932.00 and a contingency amount of $59,239.80, with Black and Veatch for Evaluation and Mitigation of Water Quality and Distribution Issues for the Carson City Water System.

Staff Summary: This contract will provide for a full evaluation of our water system needs which will produce plans and technical documents to address the mitigation of water quality and distribution issues related to our water system.

Type of Action Requested: (check one)
(____) Resolution (____) *Ordinance*
(XXX) Formal Action/Motion (____) other (No action required))

Does This Action Require A Business Impact Statement: (____) Yes (XX) No

Recommended Board Action: I move to approve and authorize the Mayor to sign a contract in the amount of and not to exceed $394,932.00 and a contingency amount of $59,239.80, with Black and Veatch for Evaluation and Mitigation of Water Quality and Distribution Issues for the Carson City Water System.

Explanation for Recommended Board Action: Black and Veatch was chosen through the Public Works Departments Request for Qualifications process. They have the expertise and the required resources to undertake and resolve Carson City's numerous water quality and distribution issues in the limited time frame necessary.

Carson City must achieve full compliance with the Arsenic regulations by January 1, 2009. This process is underway with the design and construction of a treatment plant for the combined flows of Wells 4 and 49, however there are approximately five additional wells that need to be considered.

Uranium regulations must be met now. Currently, staff is working to meet peak demands while limiting the use of certain wells impacted by the new Uranium limits imposed by the Federal EPA. In order to comply with these regulations, a number of wells, predominantly in the northwest area of Carson City, will require treatment and appropriate blending. These wells may be combined at a centralized facility. This contract will allow for an investigation of the potential sources contributing to this problem and the methods to mitigate the issue.

The water system must be thoroughly reviewed to determine distribution and pressure issues. Currently, there are sections of the system that are not operating at optimum efficiency. A complete understanding of each pressure zone and the inter-relationship of pressure zones is necessary to maximize our system and balance the supply and demand during peak season usage. This will also enable staff to ensure proper blending of sources to achieve quality compliance, where blending is appropriate. This study and resulting report will also provide a benefit is defining strategies associated with energy savings during pumping operations.

The water system must be thoroughly reviewed to determine distribution and pressure issues. Currently, there are sections of the system that are not operating at optimum efficiency. A complete understanding of each pressure zone and the inter-relationship of pressure zones is necessary to maximize our system and balance the supply and demand during peak season usage. This will also enable staff to ensure proper blending of sources to achieve quality compliance, where blending is appropriate. This study and resulting report will also provide a benefit is defining strategies associated with energy savings during pumping operations.

Applicable Statue, Code, Policy, Rule or Regulation: N/A

Supporting Material: ~~N/A~~ Proposal from Consultant ZG

Fiscal Impact: ~~$395,000.00~~ $454,171.80 ZG

Explanation of Impact: Reduces the amount from water bonds by ~~$395,000.00~~ $454,171.80 ZG

Funding Source: Water Capital

Alternatives: Do not approve and direct staff otherwise.

Prepared by: Ken Arnold, Public Works Operations Manager

Reviewed By: _____ **Date:** 7/9/07
(Department Head)

Concurrences: _____ **Date:** 7/10/07
(City Manager)

_____ **Date:** 7/10/07
(District Attorney)

_____ **Date:** 7/10/07
(Finance Director)

Board Action Taken:

Motion _____ **1:** _____ **Aye/Nay**
2: _____

_____
_____
_____
_____
_____

_____
(Vote Recorded By)

PROFESSIONAL SERVICES AGREEMENT RELATED TO CONSTRUCTION PROJECTS

THIS AGREEMENT, made and entered into this 19th day of July, 2007, by and between the City and County of Carson City, a political subdivision of the State of Nevada, hereinafter referred to as the **"CITY"**, and Black & Veatch Corporation, a qualified firm, licensed in the State of Nevada and Carson City, with an office located at 10995 Gold Center Drive, Suite 100, Rancho Cordova, California, 95670, hereinafter referred to as the **"CONSULTANT"**.

W I T N E S S E T H:

WHEREAS, the Contracts Division for the City and County of Carson City is authorized to approve and accept the agreement as set forth in and by the following provisions; and

WHEREAS, no contract or agreement concerning the duties, responsibilities, and/or scope of work by the **CONSULTANT** presently exists; and

WHEREAS, the **CITY** desires to employ the services of the **CONSULTANT** for the intended work of hereinafter referred to as **"CONTRACT # 2007-003"**, and titled **"Evaluation and Mitigation of Water Quality and Distribution Issues"**; and

WHEREAS, the **CONSULTANT** shall be compensated for all services rendered as herein agreed.

NOW, THEREFORE, in consideration of the premises, mutual promises, covenants and undertakings hereinafter set forth, the parties agree as follows:

ARTICLE 1

1 **SCOPE OF WORK:**

1.1 **Description of Work:**

1.1.1 See attached proposal from **Consultant** dated July 9, 2007.

1.2 The **CONSULTANT**, as promptly and as economically as practicable, shall perform the services as described in the ***Description of Work.***

1.3 This agreement represents the entire understanding between the parties. Any amendments to this agreement shall be agreed upon in writing between the **CITY** and **CONSULTANT**.

PROFESSIONAL SERVICES AGREEMENT RELATED TO CONSTRUCTION PROJECTS

ARTICLE 2

2 **TIME OF COMPLETION:**

2.1 **CONSULTANT** shall complete the ***Scope of Work*** on or before July 31, 2010, however, this contract continues as long as funding exists to continue. The contract may be terminated after this date by either party giving five (5) days written notice to terminate the contract.

2.2 If, however, the **CONSULTANT** is delayed in the performance or completion of the work under this Agreement by labor strikes, lock-outs, fire, unavoidable casualties, or other causes beyond the control of the **CONSULTANT** and without his fault or negligence, then the time for the performance or completion of said work may be extended for a reasonable period to allow therefore.

ARTICLE 3

3 **COMPENSATION:**

3.1 **CITY** agrees to pay the **CONSULTANT** upon performance of the work described in ***Scope of Work***.

3.2 **CITY** shall pay **CONSULTANT** compensation based upon time and materials not to exceed a maximum amount of $394,932.00 hereinafter referred to as the **CONTRACT SUM**.

3.3 The compensation named herein is for the completed work, and includes the furnishing of all materials, and all labor, equipment, tools, and appliances, and all expenses, direct or indirect, connected with the proper execution of the work.

3.4 CITY agrees to make payments within thirty (30) days after acceptance of the completed work or from the date the correct invoice is received by the ***Contact Person***, whichever is the latter date. Payment is deemed to be made on the date payment is mailed to the **CONSULTANT**.

3.5 The **CITY** reasonably believes that funds can be obtained sufficiently to make all payments during the term of this agreement. If the **CITY** does not allocate funds to continue the function performed by the **CONSULTANT** obtained under this Agreement, this Agreement shall be terminated when appropriated funds expire.

3.6 None of the sums due or to become due, nor any of the work to be performed under this Agreement shall be assigned, nor shall the **CONSULTANT** subcontract any substantial portion of this Agreement without the **CITY'S** prior written consent.

PROFESSIONAL SERVICES AGREEMENT RELATED TO CONSTRUCTION PROJECTS

ARTICLE 4

4 **PERMITS AND REGULATIONS:**

4.1 Before commencing with the performance of any work under this Agreement, the **CONSULTANT** shall obtain all necessary permits and licenses as may be necessary.

4.2 Before and during the progress of work under this Agreement, the **CONSULTANT** shall give all notice and comply with all the laws, ordinances, rules and regulations of every kind and nature now or hereafter in effect promulgated by any Federal, State, County, or other Governmental Authority, relating to the performance of work under this Agreement.

4.3 If the **CONSULTANT** performs any work that is contrary to any such law, ordinance, rule or regulation, he shall bear all the costs arising therefrom.

4.4 **CONSULTANT** agrees to obtain a Carson City Business License and provide a copy of same to Carson City Public Works - Contracts Division prior to commencing work.

ARTICLE 5

5 **CITY'S RESPONSIBILITIES:**

5.1 The **CITY** shall provide requested information to the **CONSULTANT** in a timely manner.

5.2 The **CITY** shall designate three (3) representatives who are authorized to act on the **CITY'S** behalf with respect to the Project. These authorized representatives shall render decisions on documents submitted by the **CONSULTANT** in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of the services.

5.2.1 **Contract Administrator:**
Sandy Scott, Contract Coordinator
Carson City Public Works - Contracts Division
3505 Butti Way
Carson City, NV 89701
775-887-2355 x1101 / FAX 887-2112

5.2.2 **Project Manager:**
Ken Arnold, Public Works Operations Manager
Carson City Public Works Department
3505 Butti Way
Carson City, NV 89701
775-887-2355 / FAX 887-2112

5.2.3 **Detailed Invoices using the City's format shall be mailed to:**
Karen White, Management Assistant
Carson City Public Works Department
3505 Butti Way
Carson City, NV 89701
775-887-2355 x 1023 / FAX 887-2112

ARTICLE 6

6 **INSURANCE:**

6.1 **GENERAL LIABILITY:**

6.1.1 The **CONSULTANT** agrees, as a condition precedent to any duty of the **CITY** to make any payment under this Agreement, to furnish and maintain throughout the term of the Agreement at no cost to the **CITY**, such general liability and property damage insurance as shall protect the **CONSULTANT** and any subconsultant performing work covered by the Agreement from claims for, but not limited to, bodily injury, sickness, disease, death, or property damage arising or resulting from the **CONSULTANT'S** performance, or by any subconsultant, person, firm or employee directly or indirectly employed by him.

6.1.2 The **CONSULTANT** agrees that the City of Carson City, 3505 Butti Way, Carson City, Nevada 89701 shall be listed as an additional insured in the amount of Two Million Dollars ($2,000,000.00) and One Million Dollars ($1,000,000.00) per occurrence.

6.2 **PROFESSIONAL LIABILITY:**

6.2.1 The **CONSULTANT** agrees, as a condition precedent to any duty of the **CITY** to make any payment under this Agreement, to furnish and maintain throughout the term of the Agreement at no cost to the **CITY**, errors and omissions insurance in the amount of Two Million Dollars ($2,000,000.00) and One Million Dollars ($1,000,000.00) per occurrence.

6.3 **INDUSTRIAL INSURANCE:**

6.3.1 The **CONSULTANT** agrees, as a condition precedent to any duty of the **CITY** to make any payment under this Agreement, to furnish and maintain throughout the term of the Agreement at no cost to the **CITY**, worker's compensation insurance as required by the provisions of Chapter 616 of the NRS.

6.4 **ADDITIONAL INSURANCE REQUIREMENTS:**

6.4.1 Upon failure to provide insurance, the **CITY** may, at its sole option, order the **CONSULTANT** to stop work, suspend the Agreement, or terminate the Agreement.

6.4.2 The **CONSULTANT** shall furnish to the City of Carson City, 3505 Butti Way, Carson City, Nevada 89701, the certificates of said insurances prior to commencing work.

6.4.3 Within 24 hours of any suspension, cancellation, reduction, or termination of coverage, the **CONSULTANT** agrees to provide the **CITY** written notice of same.

6.4.4 In the event the **CITY** must pay any premium(s) on behalf of the **CONSULTANT**, after the execution of this Agreement, the **CONSULTANT** shall reimburse the **CITY** for all such payment(s). Said payment(s) shall be deducted from any compensation due, or about to become due the **CONSULTANT** by the **CITY**.

ARTICLE 7

7 **INDEMNIFICATION:**

7.1 This agreement does not create an employee/employer relationship between the parties. It is the parties' intention that the **CONSULTANT** will be an independent contractor and not Carson City's employee for all purposes, including but not limited to the application of the Fair Labor Standards Act, The Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, Nevada State revenue and taxation law. The **CONSULTANT** will remain sole and absolute discretion in the judgment of the manner and means of carrying out the **CONSULTANTS** activities and responsibilities hereunder. The **CONSULTANT** agrees that it is a separate and independent enterprise from the public employer, that it has full opportunity to find other business, that it has made its own investment in its business, and that it will utilize a high level of skill necessary to perform the work. This agreement shall not be construed as creating any joint employment relationship between the **CONSULTANT** and the City, and the City will not be liable for any obligation incurred by the **CONSULTANT**, including but not limited to unpaid minimum wages and/or overtime premiums.

7.2 The **CONSULTANT** hereby agrees to indemnify, hold harmless and defend, not excluding the City's right to participate, the City, its officers, agents and employees, from and against all liability, claims, actions, damages, losses and expense, including but not limited to reasonable attorneys' fees and costs arising out of any alleged negligent or willful acts or omissions of the Consultant, its officers, agents and employees.

7.3 The **CITY** hereby agrees to indemnify, hold harmless and defend, not excluding the Consultant's right to participate, the Consultant, its officers, agents and employees, from and against all liability, claims, actions, damages, losses and expense, including but not limited to reasonable attorneys' fees and costs arising out of any negligent or willful acts or omissions of the City, its officers, agents and employees.

ARTICLE 8

8 **TERMINATION:**

8.1 Anything in this Agreement to the contrary notwithstanding, if the **CONSULTANT** should fail to make progress as to endanger performance of this Agreement in accordance with its terms, or if he should fail to make prompt payments to subconsultants for material or labor, or if he should violate any laws, ordinances or regulations, or otherwise violate any provision of this Agreement; then the **CITY** may, without prejudice to any other right or remedy, terminate

this Agreement in whole or from time to time in part upon written notice and proceed to complete or cause the work to be completed.

8.2 The **CITY** may deduct the cost of completing the said work from payments then or thereafter due to the **CONSULTANT**, who shall pay the **CITY** any amount by which such cost of completion shall exceed the unpaid monies due or to become due to the **CONSULTANT**.

8.3 In addition to the provisions of the preceding paragraph, the **CITY** shall have the right to terminate this Agreement without cause upon five (5) days' written notice to the **CONSULTANT**. In that event, the **CITY** shall pay to the **CONSULTANT** a proportionate amount of the **CONTRACT SUM**, as amended, based upon the percentage of the completion of the work under this Agreement and any amendment hereto.

ARTICLE 9

9 **USE OF CONSULTANT'S DRAWINGS, SPECIFICATIONS & OTHER DOCUMENTS:**

9.1 The Drawing, Specifications and other documents prepared by the **CONSULTANT** for the Project are instruments of the **CONSULTANT'S** service for use solely with respect to the Project and, unless otherwise provided, the **CONSULTANT** shall be deemed the author of these documents and shall retain all common law statutory and other reserved rights, including the copyright.

9.2 The **CITY** shall be permitted to retain copies, including reproducible copies, of the **CONSULTANT'S** Drawings, Specifications, and other documents for information and reference in connection with the Project.

9.3 The **CONSULTANT'S** Drawings, Specifications and other documents shall not be used by the **CITY** or others without expressed permission of the **CONSULTANT**.

ARTICLE 10

10 **MISCELLANEOUS:**

10.1 This Agreement shall be construed, interpreted, and the rights of the parties determined in accordance with the laws of the State of Nevada.

10.2 Causes of action between the parties to this Agreement pertaining to acts or failures to act shall be deemed to have accrued and the applicable statutes of limitations shall commence to run not later than either the date of Substantial Completion for acts or failures to act occurring prior to Substantial Completion, or the date of issuance of the final Certificate for Payment for acts or failures to act occurring after Substantial Completion.

10.3 The **CITY** and **CONSULTANT**, respectively, bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this Agreement.

10.4 *This Agreement* represents the entire and integrated agreement between the **CITY** and **CONSULTANT** and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both **CITY** and **CONSULTANT**.

10.5 Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the **CITY** or **CONSULTANT**.

10.6 **CONSULTANT** shall be required to maintain telephone service such that the **CITY** may contact or leave a message for the **CONSULTANT** or their designee at any time. **CONSULTANT** shall provide advance notice to the **CITY** of any change in telephone number.

10.7 Written notice under this Agreement, shall be deemed to have been duly served when delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if sent by registered mail to the **CONSULTANT** at the address shown on page 9, or to the **CITY** at the address shown herein.

10.7.1 Notice to **CITY** *shall be addressed to:*

Carson City Public Works - Contracts Division
C/O Sandy Scott, Contract Coordinator
3505 Butti Way
Carson City, NV 89701
775-887-2355 x1101 / FAX 887-2112

10.8 Failure of either party to this Agreement to enforce any provision of this Agreement shall not be deemed a waiver of such provision or of subsequent failures to comply with any such provision.

ARTICLE 11

11 **COST ACCOUNTING AND AUDITS:**

11.1 If required by the **CITY**, the **CONSULTANT** agrees to make available to the **CITY** within two (2) years after the completion of the work under this Agreement, such books, records, receipts, vouchers, or other data as may be deemed necessary by the **CITY** to enable it to arrive at appropriate cost figures for the purpose of establishing depreciation rates for the various materials and other elements which may have been incorporated into the work performed under this Agreement.

PROFESSIONAL SERVICES AGREEMENT RELATED TO CONSTRUCTION PROJECTS

12 **ACKNOWLEDGMENT AND EXECUTION:**

12.1 This **AGREEMENT** entered into as of the day and year first written above.

CITY'S CONTRACTING AGENT

BY: Sandy Scott
Title: Contract Coordinator
Carson City Public Works
Contracts Division
3505 Butti Way
Carson City, Nevada 89701
Telephone: 775-887-2355 x1101

_____
Signature

DATED this ____ day of _____, 2007

CITY CONTACT PERSON

NAME: Ken Arnold, Public Works Operations Manager

PHONE: (775) 887-2355

BY: Kim Belt
Title: Capital Program Manager
Carson City Public Works
Capital Improvement Program
3505 Butti Way
Carson City, Nevada 89701

Telephone: 775-887-2355 x 1016

CITY DEPARTMENT:

Public Works

I hereby concur with the initiation of this Agreement and I certify that the consultant will not be given authorization to begin work until this agreement has been signed by all parties.

BY: Andrew Burnham

Title: Public Works Director

Address: 3505 Butti Way

Carson City, NV 89706

Telephone: 775-887-2355 x 1001

_____
Signature

DATED this ____ day of _____, 2007

I certify that the funds are available for this project.

FUNDING SOURCE:

BUDGET ALLOCATION: $

By:

_____
Signature

PROFESSIONAL SERVICES AGREEMENT RELATED TO CONSTRUCTION PROJECTS

STATE OF NEVADA)
) ss
CARSON CITY)

David Carlson deposes and says: That he is the Consultant, or authorized agent of the Consultant, for whom the aforesaid described work is to be performed by; that he has read the foregoing Agreement and understands the terms, conditions, and requirements thereof.

I further understand that I must not begin work on this project until this agreement has been signed by the Contracts Division.

CONSULTANT

BY: David Carlson
TITLE: Vice President
FIRM: Black & Veatch Corporation
BUSINESS LICENSE #: 07-24336
Address: 10995 Gold Center Drive, Ste 100
City: Rancho Cordova
State/Zip Code: 95670
Telephone: 916-851-0260
Fax#

_____
(Signature of Consultant)

DATED this ____ day of _____, 2007

WITNESS
NAME: _____
(printed name of witness)

L.S.

_____
(signature of witness)

DATED this ____ day of _____, 2007

PROFESSIONAL SERVICES AGREEMENT RELATED TO CONSTRUCTION PROJECTS

SAMPLE INVOICE

Carson City
Attn: Karen White
3505 Butti Way
Carson City NV 89701

Invoice Number:
Invoice Date:

Carson City Contract Number:
Carson City Contract Name (as it appears in the Agreement):
Service Period: From January 1, 2007 through January 31, 2007

Task	Title	Hours This Cycle	Rate	Total $$	Hours To Date	Total $$ To Date
Name of task (per scope of work)	Title or professional category of person performing the task	Total hours billed this cycle for this title or category	Hourly rate in $/hr.	$$	Total hours for this task for this title or category from notice to proceed to date	$$
ditto	Title or professional category of **NEXT** person performing this task	Total hours billed this cycle for this person	Hourly rate in $/hr.	$$	Total hours for this task for **NEXT** title or category from notice to proceed to date	$$
	Continue for all persons performing on this task					
NEXT task	Fill in all personnel and task information as above					

Invoice Amount this cycle $$
Budgeted Amount $$
Bill to date (incl. This inv.) $$
Dollars remaining on Contract $$

% of project complete %
% of budget billed to date %

Status of Tasks (as described in scope of work)

- List of Tasks Completed
- List of Tasks in Progress
  - Current status of tasks in progress and % complete
  - Expected date of completion
  - *Critical path/action/items that may impact expected date of completion*
- List of Future Tasks
  - Expected date of completion
  - Critical path/action/items that may impact expected date of completion

ENCLOSE COPIES OF ALL SUPPORTING DOCUMENTATION INCLUDING TIME SHEETS, RECEIPTS, INCLUDING THOSE FOR INVOICES FOR EXPENSES & OUTSIDE SERVICES

END OF DOCUMENT

BLACK & VEATCH
building a world of difference™

ENERGY WATER INFORMATION GOVERNMENT

July 9, 2007

Mr. Andy Burnham, P.E.
Department of Public Works
3505 Butti Way
Carson City, NV 89701

Dear Mr. Burnham:

Attached is a SOW and budget for the Carson City water program. This SOW includes the following tasks designed to address the current issues we have discussed:

1. Project Management: This task is for development of the project plan, monthly meetings, etc. associated with the assessment of arsenic and uranium treatment and the system model.
2. Development of Preliminary Strategy to meet Long Term water supply demands: This will provide scope and budget to meet with the City, Mike Turnipseed, Bruce Scott and others to develop a strategic approach to meeting the summer peaking issue for the projected City build-out population. This would be the basis for the development of a City Water Supply and Quality Plan that will match the demands for the build-out population.
3. Meet with Regulatory Agency Staff: This will provide budget for meetings with NDEP and the City on the arsenic and uranium and other regulatory issues.
4. Review and Evaluate Available Water Data: This will provide the data base for the modeling efforts to assess the groundwater quality and the potential incursions beyond drinking water MCLs.
5. Identify and Analyze Alternatives for Contaminant Mitigation: Based on the data from Task 4, this task will identify and analyze potential alternatives for mitigation of high levels of arsenic and uranium in the groundwater wells.
6. Evaluate Distribution System Hydraulic Performance: This task will use the WaterGEMS model to delineate areas in the City water distribution system that have underlying storage and/or pressure issues, identify underlying causes, and propose potential alternatives to mitigate these issues.
7. Develop an Integrated Strategy to Mitigate Water Quality and distribution Issues: This task will use the results of Tasks 4, 5 and 6 to develop an integrated strategy to mitigate the contaminants of concern and address storage and pressure issues.
8. Bond Expenditure Plan: This task utilizes the results of Task 7 to develop a plan that will match expenditures on the water system with the constraints associated with the revenue associated with the current City bonds.
9. Energy Assessment and Optimization: This task will evaluate the potential for energy cost reductions associated with the optimization of operating the booster pumping stations and well pumps.

Black & Veatch is looking forward to assisting the City in developing adjustment and improvements to the water system. If you have any questions please do not hesitate to contact Ira Rackley (702-808-6078) or David Carlson (916-858-2424).

Best Regards,

Ira Rackley, P.E.
Project Director
Black & Veatch

cc: Ken Arnold, Public Works Operations Manager

Evaluation and Mitigation of Water Quality and Distribution Issues

Scope-of-Work

Carson City, Nevada
July 9, 2007

Introduction

Carson City (the City) owns, operates, and maintains a public water system supplied by surface water and groundwater from wells located across the City. As a community water system that serves a population of approximately 58,000, the City is required to conduct routine water quality monitoring throughout its system for microbial pathogens, organic contaminants including industrial and agricultural chemicals, and inorganic contaminants including heavy metals and radionuclides.

Water quality monitoring results indicate that water from a number of the City's wells exceeds the current USEPA maximum contaminant level (MCL) for arsenic (10 μg/L), and several other wells exceed the MCL for uranium (30 μg/L). In addition, the City's distribution system experiences storage and pressure issues at several locations, particularly during high demand periods.

The City has requested Black and Veatch to prepare a Scope-of-Work (SOW) including the following services:

- Participate in general management reviews of the City's water supply system and recommend actions to improve its distribution system ability to meet peak supply demands as well as long term demands.

- Assess the City's water supply system for regulatory compliance and recommend actions to meet drinking water regulations. Within this context, the City needs to address the following water quality and distribution performance issues:

  - Water quality associated with Wells No. 6, 10, 46, 51, and 55.
  - Water quality associated with Wells No. 24 and 47.
  - System storage and pressure issues associated with the Prison Hill and East Carson tanks.

In response to this request, Black & Veatch has prepared the following SOW to assist in the long term planning of the City's water system and develop an integrated strategy to mitigate elevated arsenic and uranium levels in the City's drinking water and provide adequate storage and pressure across its

distribution system. The specific tasks included in this Scope-of-Work are described below.

Task 1 – Project Management

Objective: Perform general administration duties associated with the project, including progress monitoring, scheduling, general correspondence, office administration, invoicing, and communication with City staff to execute work in accordance with scope, budget, and schedule.

Approach: Black & Veatch will prepare a Project Plan outlining methods, schedules, and lines of communication to facilitate an efficient and cost effective project. The plan will include:

- Project organization chart.
- Communication plan.
- Scope of work.
- Budget.
- Schedule.
- Deliverable status checklist.

The Project Plan will be provided to the City's Project Manager for comment. Upon completion, the Project Plan will provide the basis for the execution of the project.

B&V Responsibilities

- Develop a Project Plan at the outset of the project.
- Maintain continuous and regular communication with City's Project Manager.
- Notify the City of any potential schedule changes or critical issues as soon as detected.
- Execute work according to contracted scope, schedule, and budget.

City Responsibilities

- Timely response to all inquiries, data request, and reviews.
- Timely response to invoices.
- Open and early communication of issues arising on the client side.

Deliverables

- A detailed Project Plan
- Monthly status reports and invoices.

Task 2 – Development of a Preliminary Plan to Meet Long Term Demands

Objective: Participate in general system management meetings of the City's water supply and distribution system including meetings with the City, regulatory agencies, and others to provide recommendations to solve the City's summer peaking issues. These recommendations will be the basis for identifying the elements of a water supply plan to meet the City population projections (build-out population). The details of the water supply plan are not included in this SOW.

Approach: Over a period of 6 months, Black and Veatch will meet with the City and others to address a series of issues and develop potential solutions to meet diurnal summer supply peak demands and meet the projected needs for water supply and distribution to meet the build-out population. The propose solutions will consider current and potential future water quality requirements.

B&V Responsibilities

- Maintain continuous and regular communication with City's Project Manager.
- Participate in meetings related to water system management.
- Identify issues and potential solutions associated with current and future water demands.

City Responsibilities

- Timely response to all inquiries, data request, and reviews.
- Open and early communication of issues arising on the client side.

Deliverables

- A memorandum with an outline of the issues and recommendations for a system-wide supply and distribution plan for meeting the current (2007-2012) peaking demands and the build-out population system demands.

Task 3 – Meet with Regulatory Agency Staff

Objective: Review the terms and conditions of existing and pending regulatory compliance requirements to meet the Nevada Division of Environmental Protection's (NDEP) compliance expectations.

Approach: Concurrent with the evaluation of the available data (Task 4), Black & Veatch will meet with NDEP to review the requirements for approving an arsenic and uranium mitigation strategy. The goal of this meeting is to coordinate regulatory compliance and avoid future drinking water regulatory violations.

B&V Responsibilities

- Coordinate scheduling and facilitate a meeting with appropriate regulatory, City, and Black & Veatch staff.
- Prepare meeting agenda.
- Review conditions and expectations of existing and pending regulatory compliance.
- Prepare meeting minutes.

City Responsibilities

- Attendance at the meeting by appropriate City staff.

Deliverables

- Meeting minutes.

Task 4 – Review and Evaluate Available Water Quality Data

Objective: Review available water quality data of the City's drinking water wells to assess the magnitude and spatial and temporal trends associated with potential incursions beyond drinking water primary MCLs.

Approach: Black & Veatch will review and evaluate historical water quality data for all City drinking water wells, as well as other relevant groundwater quality data that may be available in the public domain, including State and USGS databases, to understand the sources and system distribution of contaminants that exceed or have the potential to exceed current and anticipated primary and Secondary MCLs. This task will focus on the identification of the regions within the City's system with elevated arsenic and uranium concentrations.

B&V Responsibilities

- Review historical water quality data provided by the City.
- Review groundwater quality data available in the public domain, including available well logs and State and USGS databases.

- Summarize all available historical data and evaluate the need for additional water quality monitoring data in a technical memorandum.

City Responsibilities

- Provide all available historical water quality data of the City's drinking water system wells and well logs for applicable wells.
- Provide scaled drawings with City's water distribution system.
- Provide technical memorandum review comments.

Deliverables

- Technical memorandum on occurrence and extent of regulated contaminants in the City's drinking water.

Task 5 – Identify and Analyze Alternatives for Contaminant Mitigation

Objective: Identify and analyze potential alternatives for mitigating high levels of arsenic and uranium in the City's drinking water wells.

Approach: Black & Veatch will evaluate operational and treatment alternatives for mitigating high levels of arsenic and uranium in the City's water system. Operational practices such as blending and selective seasonal use of wells with elevated contaminant levels will be considered. Both individual well-head and centralized regional treatment schemes will also be considered. This task will require knowledge of the system's hydraulic capabilities as determined in Task 5 below.

B&V Responsibilities

- Evaluate the feasibility of operational alternatives for arsenic and uranium mitigation including blending and seasonal well use.
- Evaluate the feasibility of treatment alternatives for arsenic and uranium mitigation including mineral phase adsorption, ion exchange, and coagulation assisted filtration.
- Develop conceptual level cost estimates for operational and treatment mitigation alternatives.
- Document arsenic and uranium mitigation alternatives in a technical memorandum.

City Responsibilities

- Provide guidance on desired and acceptable system operation.
- Provide historical flow data for all City drinking water wells.

- Provide technical memorandum review comments.

Deliverables

- Technical memorandum on potential alternatives for arsenic and uranium mitigation.

Task 6 – Evaluate Distribution System Hydraulic Performance

Objective: Delineate areas in the City's drinking water distribution system that have inadequate storage and/or pressure, identify underlying causes, and propose potential alternatives to mitigate these issues.

Approach: Black & Veatch will evaluate the distribution system operation using a previously developed and calibrated hydraulic model. The proposed system's evaluation will include modifying pressure zone boundaries, piping, and valve locations (pressure relief valves, etc.).

B&V Responsibilities

- Review the existing hydraulic model to verify that all key components of the distribution system (pump stations, control valves, major distribution mains, and reservoirs) are included and that associated operational controls are appropriately described. Modify the hydraulic model as necessary to reflect current operations of the City's distribution system.
- Modify the existing model data to run on the latest version of WaterGEMS.
- Review supply/demand conditions and associated operating scenarios for both current and future system operations.
- Run the validated model for scenarios provided by the City. This task will include a possible 5 scenarios from the City.
- Perform hydraulic analyses for prescribed supply/demand conditions and operational modes in the City's drinking water system. Demand conditions shall be evaluated for up to three future target years.
- Delineate areas in the City's distribution system with inadequate pressure and identify underlying hydraulic causes.
- Propose modifications or improvements to address identified system pressure issues.

City Responsibilities

- Provide the City's calibrated hydraulic model in WaterCAD or WaterGEMS compatible format.
- Provide information describing system's control (pumps start/stop and valves settings) and system's operation philosophy.

- Provide most current water demand projections.
- In consultation with Black & Veatch, define the scenarios to be evaluated including demand conditions and system operating modes.
- Provide technical memorandum review comments.

Deliverables

- Technical memorandum with hydraulic evaluation of City's water storage and distribution system.

Task 7 – Develop an Integrated Strategy to Mitigate Water Quality and Distribution Issues

Objective: Provide an integrated strategy to mitigate contaminants of concern and address storage and pressure issues.

Approach: Black & Veatch will use the results of Task 4 (Identify and Analyze Alternatives for Contaminant Mitigation) and Task 5 (Evaluate Distribution System Hydraulic Performance) to determine which contaminant mitigation alternatives and hydraulic modifications or improvements are compatible. Contaminant mitigation alternatives and hydraulic improvements will be ranked based on projected implementation time, potential for public and regulatory acceptance, operational implications, cost, and compatibility/synergy with other alternatives and improvements. .

B&V Responsibilities

- Rank the desirability of contaminant mitigation alternatives and hydraulic improvements using the K-T® structured decision analysis process.
- Develop an integrated strategy that, when possible, integrates the solutions to contaminant and hydraulic issues.
- Document contaminant mitigation alternatives and hydraulic improvements ranking and propose an integrated contaminant mitigation and hydraulic improvements strategy in a technical memorandum.
- Assist the City is preparing for and holding a public workshop to review the results of Tasks 4, 5 and 6.

City Responsibilities

- Provide technical memorandum review comments.

Deliverables

- Technical memorandum describing an integrated strategy to mitigate the City's water quality and distribution issues.

Task 8 – Bond Expenditure Plan

Objective: Develop a plan to match expenditures with the constraints associated with the City's bond issue

Approach: Black & Veatch will evaluate the required improvements and develop a plan to expend funds within the timelines imposed by the bond issue. Alternatives for early expenditure of funds such as the prepurchase of equipment will be evaluated.

B&V Responsibilities

- Develop timelines showing required improvements and necessary expenditures that complies with the bond issue.

City Responsibilities

- Provide information on bond issue.
- Review proposed expenditure plan.

Deliverables

- Technical memorandum summarizing expenditure plan and bond issue.

Task 9 – Energy Assessment and Optimization

Objective: Evaluate the potential for energy cost reductions associated with the optimization of the operation of the booster pumping stations and well pumps.

Approach: Black & Veatch will use the hydraulic model from Task 5 to identify storage availability to simulate pumping strategies that will meet water demands at reduced energy costs. Hydraulic simulations will be used to optimize the timing and the duration of pumping operations to maximize energy consumption during off-peak diurnal periods.

B&V Responsibilities

- Identify incentives for off-peak energy consumption proposed by the electric utility.
- Update hydraulic model to extract the time of pump operation and associated costs.
- Perform hydraulic analyses simulating a range of various pump control strategies (scenarios) with potential for energy cost reductions.
- Propose modifications or improvements to the distribution system with potential to reduce energy expenditures associated with pumping operations.

City Responsibilities

- Provide information describing power demands produced by the different pumping systems within the City's water distribution system.
- Provide cost incentives proposed by electric utility for energy consumption during off-peak periods.
- Provide operation/control restrictions or preferences for pumping station operation and storage/turnover in reservoirs.

Deliverables

- Technical memorandum describing operational strategies associated with reduced energy costs during pumping operations.

BLACK & VEATCH
Building a world of difference

Budget

Evaluation and Mitigation of Water Quality and Distribution Issues

Carson City, Nevada
July, 2007

Task	Task Description	Labor Hours	Sub Expenses	Total Fee
			NCS	
1	**Project Management**	117	$0	$23,893
1.1	Project Plan Development	17		$3,273
1.2	Progress Meetings, Monthly Status Reports, and Invoicing	100		$20,620
2	**Development of Preliminary Strategy to Meet Long Term Demands**	182	$0	$38,248
2.1	Meetings	66		$14,684
2.2	Information Gathering and Research	40		$9,000
2.3	Memorandum with Preliminary Strategy Outline	56		$12,564
3	**Meet with Regulatory Agency Staff**	51	$0	$10,809
3.1	Meeting Coordination	10		$1,490
3.2	Meeting Attendance	32		$7,608
3.3	Meeting Minutes	9		$1,711
4	**Review and Evaluate Available Water Data**	152	$0	$23,869
4.1	Data Collection	12		$1,808
4.2	Data Analysis	68		$10,092
4.3	Technical Memorandum	72		$11,768
5	**Identify and Analyze Alternatives for Contaminant Mitigation**	332	$24,000	$77,328
5.1	Analysis of Operational Alternatives	104	$0	$16,456
5.2	Analysis of Treatment Alternatives	74	$24,000	$36,746
5.3	Development of Opinions of Probable Cost	40		$7,880
5.4	Technical Memorandum	114		$16,246
6	**Evaluate Distribution System Hydraulic Performance**	698	$0	$88,582
6.1	Data Collection and Model Updating	286		$33,634
6.2	Model Simulations	244		$30,156
6.3	Technical Memorandum	168		$24,792
7	**Develop an Integrated Strategy to Mitigate Water Quality and Distribution Issues**	308	$0	$53,272
7.1	K-T Structured Decision Analysis	66		$11,714
7.2	Integrated Strategy Development	62		$11,118
7.3	Public Workshop Organization	60		$10,540
7.4	Technical Memorandum	120		$19,900
8	**Provide Bond Expenditure Plan**	120	$0	$21,920
8.1	Development of Timeline for Capital Expenditures	56		$10,424
8.2	Technical Memorandum	64		$11,496
9	**Provide Energy Assessment and Optimization Plan**	348	$0	$59,212
9.1	Data Collection and Model Updating	128		$20,032
9.2	Model Simulations	108		$18,232
9.3	Technical Memorandum	112		$20,948
	TOTALS	2,298	24,000	394,932