

City Council Action Report

To: Mayor and Council  
Submitted by: Amy L. Ward, P.E.  
Date: January 25, 2007  
Subject: Wastewater Treatment Plant Headworks and Lift Station A Modifications  
Strategic Council Goal(s): Upgraded City Infrastructure and Facilities – Objective #1

**Recommended Action and Major Considerations:**

- Authorize the Mayor to execute the attached contract between the City of Northglenn and Carollo Engineers, P.C. of Broomfield, Colorado, for an amount of \$78,310.00. It is further recommended the City Council authorize \$3,916 as a 5% contingency and authorize the City Manager to approve minor changes in the scope of work and execute relevant change orders up to the approved expenditure limit of \$82,226.00.
- This project is being performed to meet the effluent limits required by the Colorado Department of Public Health and Environment, Water Quality Control Division (WQCD) in accordance with the Environmental Protection Agency’s National Pollutant Discharge Elimination System.

**Background and Other Information:**

- Shortly after the completion of the Wastewater Treatment Plant, operations staff began noticing trash throughout the new mechanical plant. Based on the original design of the new wastewater treatment plant it was assumed that the trash, such as rags dental floss and syringes, would settle out of the waste stream in the existing WWTP lagoons that are also part of the new WWTP process. However, due to the aeration in the lagoons for odor control, pieces of trash are remaining in suspension, thereby preventing the items from settling out. These items are consistently making their way through the new WWTP plant and into the effluent channel where the treated effluent is discharged to Big Dry Creek. Trash is classified as a pollutant and discharging trash into the Waters of the State is in violation of the WQCD’s “Basic Standards and Methodologies for Surface Water – Regulation 31”.
- During the past year, the Water and Environmental Services Department has received several complaints regarding the Wastewater Treatment Plant in regards to odors. The project includes an evaluation of the entire wastewater system between Lift Station A and the Wastewater Treatment Plant to identify a permanent solution for controlling these odors.
- Proposals were solicited from six consulting firms. The firm selected based on the Request for Proposal was Carollo Engineers, P.C.
- Copies of the bid tabulation, agreement, references, and proposed fee are attached.

**Legal Considerations:**

- The Council is within its legal purview to accept bids and approve contracts.


**Policy Considerations:**

- Adding permanent odor control features at the Wastewater Treatment Plant will reduce the frequency of future odor complaints for the surrounding communities.
- Addition of a Headworks as currently proposed in the 2008 CIP will assist in odor control and eliminate migration of trash through the new WWTP process.
- This project meets the City Council’s Goal of Upgraded City Infrastructure and Facilities.

**Budget Information:**

- The 2007 Capital Improvement Budget includes an appropriation of \$250,000 for design of a Headworks at the new WWTP. \$82,226 of that amount is currently being committed for evaluation and preliminary design reports. These funds are available from account #510.69272.3999.908. Additional funds will be engaged at a later date to proceed with final design documents.

Respectfully Submitted:

  
Amy L. Ward, P.E.  
Civil Engineer II

Approved for Submittal:

  
A.J. Krieger  
City Manager

Funding Available:

  
Brent Worthington  
Finance Director

**COUNCIL ACTION TAKEN:** \_\_\_\_\_

### Reference Check

Project: Wastewater Treatment Plant Headworks and Lift Station A Modifications

Contractor: Carollo Engineers P.C.

Date: January 16, 2007

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<b>Project Location:</b>	<b>Contact for Reference:</b>	<b>Contact Phone Number:</b>	<b>Reference:</b>
Northwest Wastewater Treatment Plant Expansion	Robert R. Schaefer	(417) 864-1920	Performed very well, project management was key. They would employ the firm again.
Orange County Sanitation District Headworks No. 2 at Plant No. 1	Jim Herberg	(714) 593-7310	Did a great job and a very complex project. Did a good job with the permitting. Good track record.
Cave Creek Water Reclamation Plant Phase I	Paul Kinshella	(602) 534-9839	Very interactive. The project was set with pretty high goals that the firm was able to meet. Worked with the firm for the past sixteen years.



**CITY OF NORTHGLENN  
FORMAL BID SUMMARY**

**BID NUMBER: 2006 RFP-24**

**PAGE 1 OF 1**

**BID NAME: NG Water Wastewater Treatment Plant Headworks and**

**DEPARTMENT: Logistics**

	The Engineering Company	Farnsworth Group, Inc.	Jacobson Helgoth Consultants Inc.	Carollo Engineers	Integra Engineering
<b>DATE DUE: 11/16/06</b>	<b>BID RECEIVED:</b>	<b>BID RECEIVED:</b>	<b>BID RECEIVED:</b>	<b>BID RECEIVED:</b>	<b>BID RECEIVED:</b>
	<b>DATE: 11/15/06</b>	<b>DATE: 11/16/06</b>	<b>DATE: 11/16/06</b>	<b>DATE: 11/16/06</b>	<b>DATE: 11/16/06</b>
<b>TIME: 3:00 P.M.</b>	<b>TIME: 5:08 PM</b>	<b>TIME: 11:51 am</b>	<b>TIME: 2:10 pm</b>	<b>TIME: 2:44 pm</b>	<b>TIME: 2:48 pm</b>
Addendum Acknowledged:					

*Kathy Krasnicka* 11/16/06  
Buyer

*[Signature]*  
City Clerk

11/16/06  
Date



## AGREEMENT FOR PROFESSIONAL SERVICES

THIS AGREEMENT is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2007, by and between the City of Northglenn, State of Colorado (hereinafter referred to as the "City") and Carollo Engineers, P.C. (hereinafter referred to as "Consultant").

### RECITALS:

A. The City requires professional services.

B. Consultant has held itself out to the City as having the requisite expertise and experience to perform the required work for the Project.

NOW, THEREFORE, it is hereby agreed for the consideration hereinafter set forth, that Consultant shall provide to the City, professional consulting services for the Project.

### I. SCOPE OF SERVICES

Consultant shall furnish all labor and materials to perform the work and services required for the complete and prompt execution and performance of all duties, obligations, and responsibilities for the Project which are described or reasonably implied from **Exhibit A** which is attached hereto and incorporated herein by this reference.

### II. THE CITY'S OBLIGATIONS/CONFIDENTIALITY

The City shall provide Consultant with reports and such other data as may be available to the City and reasonably required by Consultant to perform hereunder and Consultant shall be entitled to use and rely upon all such reports and other data in the performance of their duties under this Agreement. No project information shall be disclosed by Consultant to third parties without prior written consent of the City or pursuant to a lawful court order directing such disclosure. All documents provided by the City to Consultant shall be returned to the City. Consultant is authorized by the City to retain copies of such data and materials at Consultant's expense.

### III. OWNERSHIP OF WORK PRODUCT

The City acknowledges that the Consultant's work product is an instrument of professional service. Nevertheless, the products prepared under this Agreement shall become the property of the City upon completion of the work. Documents, including drawings and specifications, prepared by Consultant pursuant to this Agreement are not intended or represented to be suitable for reuse by City or others for this Project or on any other project. Any reuse of completed documents or use of partially completed documents without written verification or concurrence by Consultant for the specific purpose intended will be at City's sole risk and without liability or legal exposure to Consultant.

### IV. COMPENSATION

A. In consideration for the completion of the services specified herein by Consultant the City shall pay Consultant an amount not to exceed Seventy-Eight Thousand Three Hundred and Ten

dollars (\$ 78,310.00 ). Payment shall be made in accordance with the schedule of charges in **Exhibit B** which is attached hereto and incorporated herein by this reference. Invoices will be itemized and include hourly breakdown for all personnel and other charges. The maximum fee specified herein shall include all fees and expenses incurred by Consultant in performing all services hereunder.

B. Consultant may submit monthly or periodic statements requesting payment. Such request shall be based upon the amount and value of the work and services performed by Consultant under this Agreement except as otherwise supplemented or accompanied by such supporting data as may be required by the City.

1. All invoices, including Consultant's verified payment request, shall be submitted by Consultant to the City no later than the twenty-fourth (24th) day of each month for payment pursuant to the terms of this Agreement. In the event Consultant fails to submit any invoice on or before the twenty-fourth (24th) day of any given month, Consultant defers its right to payment pursuant to said late invoice until the twenty-fourth (24th) day of the following month.
2. Progress payments may be claimed on a monthly basis for reimbursable cost: actually incurred to date as supported by detailed statements, including hourly breakdowns for all personnel and other charges. The amounts of all such monthly payments shall be paid within thirty (30) days after the timely receipt of invoice as provided by this Agreement.

C. The City has the right to ask for clarification on any Consultant invoice after receipt of the invoice by the City.

D. In the event payment for services rendered has not been made within forty-five (45) days from the receipt of the invoice for any uncontested billing, interest will accrue at the legal rate of interest. In the event payment has not been made within ninety (90) days from the receipt of the invoice for any uncontested billing, Consultant may, after giving seven (7) days written notice and without penalty or liability of any nature, suspend all work on all authorized services specified herein. In the event payment in full is not received within thirty (30) days of giving the seven (7) days written notice, Consultant may terminate this Agreement. Upon receipt of payment in full for services rendered, Consultant will continue with all authorized services.

E. Final payment shall be made within sixty (60) calendar days after all data and reports (which are suitable for reproduction and distribution by the City) required by this Agreement have been turned over to and approved by the City and upon receipt by the City of Consultant's certification that services required herein by Consultant have been fully completed in accordance with this Agreement and all data and reports for the Project.

## **V. COMMENCEMENT AND COMPLETION OF WORK**

Within seven (7) days of receipt from the City of a Notice to Proceed, Consultant shall commence work on all its obligations as set forth in the Scope of Services or that portion of such obligations as is specified in said Notice. Except as may be changed in writing by the City, the Project shall be complete and Consultant shall furnish the City the specified deliverables as provided in Exhibit A.

## **VI. CHANGES IN SCOPE OF SERVICES**

A change in the Scope of Services shall constitute any material change or amendment of services or work which is different from or additional to the Scope of Services specified in Section I of this Agreement. No such change, including any additional compensation, shall be effective, or paid unless authorized by written amendment executed by the City. If Consultant proceeds without such written authorization, then Consultant shall be deemed to have waived any claim for additional compensation, including a claim based on the theory of unjust enrichment, quantum meruit or implied contract. Except as expressly provided herein, no agent, employee, or representative of the City shall have the authority to enter into any changes or modifications, either directly or implied by a course of action, relating to the terms and scope of this Agreement.

## **VII. PROFESSIONAL RESPONSIBILITY**

A. Consultant hereby warrants that it is qualified to assume the responsibilities and render the services described herein and has all requisite corporate authority and professional licenses in good standing, required by law.

B. The work performed by Consultant shall be in accordance with generally accepted professional practices and the level of competency presently maintained by other practicing professional firms in the same or similar type of work in the applicable community.

C. Consultant shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all designs, drawings, specifications, reports, and other services furnished by Consultant under this Agreement. Consultant shall, without additional compensation, correct or resolve any errors or deficiencies in his designs, drawings, specifications, reports, and other services, which fall below the standard of professional practice, and reimburse the City for construction costs caused by errors and for a portion of construction costs caused by omissions which fall below the standard of professional practice.

D. Approval by the City of drawings, designs, specifications, reports, and incidental work or materials furnished hereunder shall not in any way relieve Consultant of responsibility for technical adequacy of the work. Neither the City's review, approval or acceptance of, nor payment for, any of the services shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement, and Consultant shall be and remain liable in accordance with applicable performance of any of the services furnished under this Agreement.

E. The rights and remedies of the City provided for under this Agreement are in addition to any other rights and remedies provided by law.

## **VIII. COMPLIANCE WITH LAW**

The work and services to be performed by Consultant hereunder shall be done in compliance with applicable laws, ordinances, rules and regulations.

A. **UNLAWFUL EMPLOYEES, CONTRACTORS AND SUBCONTRACTORS:** Contractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract. Contractor shall not knowingly contract with a subcontractor that (a) knowingly employs or contracts with an illegal alien to perform work under this Contract or (b) fails to certify to the Contractor that the subcontractor will not knowingly employ or contract with an illegal alien to perform work under this Contract. [CRS 8-17.5-102(2)(a)(I) & (II).]

B. **VERIFICATION REGARDING ILLEGAL ALIENS:** Contractor has verified or attempted to verify through participation in the basic pilot program of the United States Government that Contractor does not employ any illegal aliens or Contractor verifies that Contractor has not been accepted into the basic pilot program prior to entering into this Contract. Contractor further verifies that if Contractor has not been accepted in to the basic pilot program of the United States Government, Contractor will apply to participate in the basic pilot program of the United States Government every three months until Contractor is accepted or this Contract is completed, whichever is earlier. [CRS 8-17.5-102(2)(b)(I).]

C. **LIMITATION REGARDING BASIC PILOT PROGRAM:** Contractor shall not use basic pilot program procedures to undertake preemployment screening of job applicants while performing this Contract. [CRS 8-17.5-102(2)(b)(II).]

D. **DUTY TO TERMINATE A SUBCONTRACT; EXCEPTIONS:** If Contractor obtains actual knowledge that a subcontractor performing work under this Contract knowingly employs or contracts with an illegal alien, the Contractor shall, unless the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien:

- (a) notify the subcontractor and the City within three days that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and
- (b) terminate the subcontract with the subcontractor if, within three days of receiving notice that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien, the subcontractor does not stop employing or contracting with the illegal alien. [CRS 8-17.5-102(2)(b)(III)(A) & (B).]

E. **DUTY TO COMPLY WITH STATE INVESTIGATION:** Contractor shall comply with any reasonable request of the Colorado Department of Labor and Employment made in the course of an investigation pursuant to C.R.S. 8-17.5-102 (5). [CRS 8-17.5-102(2)(b)(IV).]

F. **DAMAGES FOR BREACH OF CONTRACT:** In addition to any other legal or equitable remedy the City may be entitled to for a breach of this Contract, if the City terminates this Contract, in whole or in part, due to Contractor's breach of any paragraph numbered one (1) through five (5) inclusive, Contractor shall be liable for actual and consequential damages to the City.

## **IX. INDEMNIFICATION**

Consultant agrees to indemnify and hold harmless the City, its officers, employees, and insurers, from and against all liability, claims, and demands, on account of injury, loss, or damage, including without limitation claims arising from bodily injury, personal injury, sickness, disease, death, property loss or damage, if such injury, loss, or damage is caused in whole or in part by, or is claimed to be caused in whole or in part by, the negligent act, omission, error, professional error, mistake, negligence or other



fault of Consultant, any subconsultant of Consultant, or any officer, employee, representative, or agent of Consultant or of any subconsultant of Consultant, or which arise out of any workmen's compensation claim of any employee of Consultant or of any employee of any subconsultant of Consultant. Consultant agrees to investigate, handle, respond to, and to provide defense for and defend against any such liability, claims or demands at the sole expense of Consultant, or at the option of the City, agrees to pay the City or reimburse the City for the defense costs incurred by the City in connection with, any such liability, claims, or demands. Consultant also agrees to bear all other costs and expenses related thereto, including court costs and attorney fees, whether or not any such liability, claims, or demands alleged are groundless, false, or fraudulent. If it is determined by the final judgment of a court of any competent jurisdiction that such injury, loss, or damage was caused in whole or in part by the act, omission or other fault of the City, its officers, or its employees, the City shall reimburse Consultant for the portion of the judgment attributable to such act, omission, or other fault of the City, its officers, or employees.

## **X. INSURANCE**

A. Consultant agrees to procure and maintain, at its own cost, a policy or policies of insurance sufficient to insure against all liability, claims, demands, and other obligations assumed by Consultant pursuant to paragraph A. above. Such insurance shall be in addition to any other insurance requirements imposed by this Agreement or by law. Consultant shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to Section IX. Indemnification, above, by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

B. Consultant shall procure and maintain, and shall cause any subconsultant of Consultant to procure and maintain, the minimum insurance coverages listed below. Such coverages shall be procured and maintained with forms and insurers acceptable to the City. All coverages shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by Consultant pursuant to Section IX. Indemnification, above. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workmen's compensation insurance to cover obligations imposed by applicable laws for any employee engaged in the performance of work under this Agreement, and Employer's Liability insurance with minimum limits of five hundred thousand dollars (\$500,000) each accident, one million dollars (\$1,000,000) disease - policy limit, and one million dollars (\$1,000,000) disease - each employee. Evidence of qualified self-insured status may be substituted for the workmen's compensation requirements of this paragraph.
2. Commercial general liability insurance with minimum combined single limits of six hundred thousand (\$600,000) each occurrence and one million dollars (\$1,000,000) general aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, products, and completed operations. The policy shall contain a severability of interests provision.

3. Professional liability insurance with minimum limits of six hundred thousand dollars (\$600,000) each claim and one million dollars (\$1,000,000) general aggregate.
4. The policy required by paragraph 2. above shall be endorsed to include the City and the City's officers, employees, and consultants as additional insureds. Every policy required above shall be primary insurance, and any insurance carried by the City, its officers, its employees, or its consultants shall be excess and not contributory insurance to that provided by Consultant. No additional insured endorsement to the policy required by paragraph 1. above shall contain any exclusion for bodily injury or property damage arising from completed operations. Consultant shall be solely responsible for any deductible losses under any policy required above.
5. The certificate of insurance provided for the City shall be completed by Consultant's insurance agent as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be reviewed and approved by the City prior to commencement of the Agreement. No other form of certificate shall be used. The certificate shall identify this Agreement and shall provide that the coverages afforded under the policies shall not be cancelled, terminated or materially changed until at least thirty (30) days prior written notice has been given to the City. The completed certificate of insurance shall be sent to:  
City of Northglenn  
11701 Community Center Drive  
Northglenn, Colorado 80233-8061  
Attn: Eve Craven
6. Failure on the part of Consultant to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of agreement upon which the City may immediately terminate this Agreement, or at its discretion, the City may procure or renew any such policy or any extended reporting period thereto and may pay any and all premiums in connection therewith, and all monies so paid by the City shall be repaid by Consultant to the City upon demand, or the City may offset the cost of the premiums against any monies due to Consultant from the City.
7. The City reserves the right to request and receive a certified copy of any policy and any endorsement thereto.
8. The parties hereto understand and agree that the City, its officers, and its employees, are relying on, and do not waive or intend to waive by any provision of this Agreement, the monetary limitations (presently one hundred fifty thousand dollars (\$150,000) per person and six hundred thousand dollars (\$600,000) per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, Colo. Rev. Stat. §24-10-101 et seq., 10 Colo. Rev. Stat., as from time to time amended, or otherwise available to the City, its officers, or its employees.

**XI. NON-ASSIGNABILITY**

Neither this Agreement, nor any of the rights or obligations of the parties hereto, shall be assigned by either party without the written consent of the other.

**XII. TERMINATION**

This Agreement shall terminate at such time as the work in Section I is completed and the requirements of this Agreement are satisfied, or upon the City's providing Consultant with seven (7) days advance written notice, whichever occurs first. In the event the Agreement is terminated by the City's issuance of said written notice of intent to terminate, the City shall pay Consultant for all work previously authorized and completed prior to the date of termination. If, however, Consultant has substantially or materially breached the standards and terms of this Agreement, the City shall have any remedy or right of set-off available at law and equity. If the Agreement is terminated for any reason other than cause prior to completion of the Project, any use of documents by the City thereafter shall be at the City's sole risk, unless otherwise consented to by Consultant.

**XIII. CONFLICT OF INTEREST**

The Consultant shall disclose any personal or private interest related to property or business within the City. Upon disclosure of any such personal or private interest, the City shall determine if the interest constitutes a conflict of interest. If the City determines that a conflict of interest exists, the City may treat such conflict of interest as a default and terminate this Agreement.

**XIV. VENUE**

This Agreement shall be governed by the laws of the State of Colorado, and any legal action concerning the provisions hereof shall be brought in the County of Adams, State of Colorado.

**XV. INDEPENDENT CONTRACTOR**

Consultant is an independent contractor. Notwithstanding any provision appearing in this Agreement, all personnel assigned by Consultant to perform work under the terms of this Agreement shall be, and remain at all times, employees or agents of Consultant for all purposes. Consultant shall make no representation that it is the employee of the City for any purposes.

**XVI. NO WAIVER**

Delays in enforcement or the waiver of any one or more defaults or breaches of this Agreement by the City shall not constitute a waiver of any of the other terms or obligations of this Agreement.

**XVII. ENTIRE AGREEMENT**

This Agreement and the attached Exhibits A and B is the entire Agreement between Consultant and the City, superseding all prior oral or written communications. None of the provisions of this Agreement may be amended, modified, or changed, except as specified herein.

**XVIII. NOTICE**

Any notice or communication between Consultant and the City which may be required, or which may be given, under the terms of this Agreement shall be in writing, and shall be deemed to have been sufficiently given when directly presented or sent pre-paid, first class United States Mail, addressed as follows:

PROSPECTIVE CONTRACTOR'S CERTIFICATE REGARDING EMPLOYING OR CONTRACTING WITH AN ILLEGAL ALIEN

FROM: CAROLLO ENGINEERS  
(Prospective Contractor)

TO: City of Northglenn  
11701 Community Center Drive  
Northglenn, CO 80233

Project Name Northglenn Wastewater Treatment Plant Headworks and Lift Station - Modification

Bid Number \_\_\_\_\_

Project No. \_\_\_\_\_

As a prospective contractor for the above-identified bid, I (we) do hereby certify that, as of the date of this certification, I (we) do not knowingly employ or contract with an illegal alien and that I (we) have participated in or attempted to participate in the basic pilot program of the state of Colorado in order to verify that I (we) do not employ any illegal aliens.

Executed this 18 day of JANUARY, 2007.

Prospective Contractor CAROLLO ENGINEERS

By: [Signature]

Its: Partner  
Title

(Insert the Individual, Corporate or Partnership Certificate as appropriate)

The City: City of Northglenn  
11701 Community Center Drive  
Northglenn, Colorado 80233-8061

Consultant: Carollo Engineers, P.C.  
390 Interlocken Crescent, Suite 800  
Broomfield, CO 80021

IN WITNESS WHEREOF, the parties hereto each herewith subscribe the same in triplic: te.

**CITY OF NORTHGLENN, COLORADO**

By: \_\_\_\_\_  
Kathleen M. Novak, Mayor



ATTEST:

\_\_\_\_\_  
Diana L. Lentz, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney

**CONSULTANT**

By:   
 1/18/07  
Title Date

ATTEST:

\_\_\_\_\_  
\_\_\_\_\_  
Title Date

## EXHIBIT A

City of Northglenn, Colorado  
OWNER

AND

CAROLLO ENGINEERS, A Professional Corporation

This Exhibit A is issued by the OWNER and accepted by ENGINEER pursuant to the mutual promises, covenants and conditions contained in the Agreement between the above named parties dated the \_\_\_\_\_ day of January, 2007 in connection with:

Northglenn Wastewater Treatment Plant Headworks and Lift Station-A Modifications.  
(Project)

**PURPOSE**

The primary purpose of this Exhibit A is to:

- 1) Perform WWTP Process Simulation Modeling and Capacity Evaluation
- 2) Identify a WWTP Short term and Long term Expansion Strategy (*Optional Services*)
- 3) Prepare a Preliminary Design of New Headworks

**ENGINEER'S SERVICES**

In general, the engineering services include: reviewing existing plant data, conducting a project Kick-Off Meeting, performing a process evaluation of the anticipated capacity and performance of existing and reconfigured WWTP facilities, and providing a preliminary design of the Northglenn WWTP Headworks and Lift Station A Modifications. Final Design, Bidding Services, and Construction Services of the recommended improvements will be included in a future Task Order under this Agreement.

The scope of this Exhibit A includes the following Tasks:

1. Task 1 - Review existing facilities data and Utility Plan, prepare a Project Procedures Manual, and Conduct a Project Kickoff Meeting.
2. Task 2 - Perform process simulation modeling and capacity evaluation to provide recommendations for optimizing the operation of the existing wastewater treatment facility.
3. Task 3 - Select equipment and layout for the preliminary design of a new headworks treatment facility including mechanical screening, grit removal, raw wastewater pumping, material handling, and odor control to be located that the existing City of Northglenn WWTP Facility.
4. Task 4 - Identify preventative measures, mitigation and odor control measures for Headworks and at Lift Station A.
5. Task 5 - Prepare Preliminary Design Report (Headworks and Odor Control).

## **Task 1 - Review of Existing Facilities Data, Attend Site Visit, Prepare PPM, and Conduct Meetings**

**Task 1.1 Existing Facilities Data Review and Site Visit** - ENGINEER will review the most recent Utility Plan indicating flow projections and timing for future plant flows and loads, design criteria for each existing unit process, and current and anticipated future discharge criteria. ENGINEER will review existing plant drawings and other relevant information associated with recent WWTP Upgrades. The OWNER will provide a copy of the most recent Utility Plan, Drawings and Specifications. OWNER will provide a copy of the current NPDES permit requirements including seasonal or monthly effluent discharge criteria for Big Dry Creek/Thompson Ditch/Bull Canal. ENGINEER will review historical wastewater characteristics: including monthly influent flows, pollutant concentrations and loads, monthly wastewater temperatures, and diurnal flow patterns. An initial site visit will be conducted and the scope, schedule, budget and project goals will be reviewed and discussed with the City Staff.

The data will be analyzed to determine plant specific design flows, loads, and peaking factors. ENGINEER will review historical plant operating and performance data including: activated sludge and lagoon effluent quality, plant design criteria, and other operational data as available. The OWNER will provide 2 years of historical operating data on lagoon plant influent and effluent parameters, activated sludge operating data since start-up, and other plant operations data as available.

**Task 1.2 Prepare Project Procedures Manual** - ENGINEER will prepare a Project Procedures Manual (PPM) outlining team assignments, scope of services, project budgets, schedules, communication and coordination procedures, project reporting, and other pertinent project execution procedures.

**Task 1.3 Conduct Meetings** - ENGINEER will conduct a Project Kickoff Meeting to review Project Procedures Manual and to coordinate and discuss critical elements of the work. ENGINEER will meet with OWNER and present findings of Technical Memoranda (TM) No.1, No.2, and No. 3.

## **Task 2 - Perform Process Simulation Modeling and Capacity Evaluation**

ENGINEER will conduct desktop process simulation modeling for the City of Northglenn WWTP. This analysis will evaluate the capacity of the existing plant configuration using standard activated sludge and aerated lagoon coefficients combined with historical performance data (where available) to calibrate the model. The calibrated process model will be used to assess the capacity and predicted performance of a reconfigured aerated lagoon/activated sludge secondary treatment system. Evaluation will identify possible process capacity constraints and allow development of a headworks design that supports required pretreatment and flow diversion systems to accommodate short and long-term operational changes required to meet the most current stringent NPDES effluent discharge criteria. ENGINEER will prepare a brief TM summarizing the findings of the process simulation and capacity modeling.

**Task 2.1 Process Simulation Model and Calibration** - ENGINEER will configure and calibrate a process simulation model based on the existing plant configuration, physical dimensions, and historical plant performance data as provided in Task 1.1. Raw wastewater flows and loads and lagoon effluent quality will be identified from the Utility Plan and historical plant performance data and used as process simulation model inputs. Additional modeling coefficients and kinetic



parameters will be estimated based on ENGINEER'S experience with other comparable wastewater treatment plants. The calibrated process simulation model will be used to predict WWTP capacity and performance using a reconfigured activated sludge/aerated lagoon process.

**Task 2.2 Assessment of Maximum Treatment Capacity of Existing Activated Sludge System**

- ENGINEER will use the calibrated process simulation model to identify the anticipated maximum treatment capacity of the existing activated sludge system using the current aeration basin configuration. The maximum capacity will be evaluated to meet current discharge requirements for BOD, TSS, Ammonia, and Nitrate to Big Dry Creek for the four conditions identified below.

- Case 1A - Screened Raw Wastewater Directly to Activated Sludge
- Case 2A - Blend of Screened Raw Wastewater and Aerated Lagoon Effluent to Activated Sludge
- Case 3A - Blend of Screened Raw Wastewater/Aerated Lagoon Effluent with Supplemental Carbon Addition (Methanol)
- Case 4A - Raw Wastewater to Aerated Lagoon Followed by Effluent Polishing with Activated Sludge with Supplemental Carbon Addition (Methanol).

**Task 2.3 Assessment of Capacity Increase after Aeration Basin Modifications**

- The current activated sludge configuration consists of three, parallel aeration basins divided into three compartments: anaerobic, anoxic, and aerobic zones. The current configuration was established to reduce ammonia (nitrification in aerobic zone), convert nitrate and nitrite to nitrogen gas (denitrification in anoxic zone), and provide biological phosphorus removal (Bio-P in anaerobic zone). The system includes recycle of MLSS from the end of the third compartment or aerobic zone into the second compartment or anoxic zone. The first compartment or anaerobic zone provides only Bio-P removal and does not provide the plant with the flexibility to use this volume for denitrification. ENGINEER will assess the increase in treatment capacity by converting the anaerobic zone into an anoxic zone by routing the MLSS return flow back to the first zone. The capacity increase will be evaluated to meet current discharge requirements for BOD, TSS, Ammonia, and Nitrate to Big Dry Creek for the four conditions identified in Task 2.2. Optimization of anoxic and aerobic zone sizes and improvements in baffle wall design to prevent back-mixing will be evaluated under a future design tasks, if necessary.

- Case 1B - Screened Raw Wastewater Directly to Activated Sludge
- Case 2B - Blend of Screened Raw Wastewater and Aerated Lagoon Effluent to Activated Sludge
- Case 3B - Blend of Screened Raw Wastewater/Aerated Lagoon Effluent with Supplemental Carbon Addition (Methanol)
- Case 4B - Raw Wastewater to Aerated Lagoon Followed by Effluent Polishing with Activated Sludge with Supplemental Carbon Addition (Methanol)

**Task 2.4 Evaluation of Flow Equalization using Existing Aerated Lagoons** - If the maximum capacity of the activated sludge system under Tasks 2.2 and 2.3 Cases A, B, and C is less than the projected peak flow under current, 5 year, and 10 year projections, ENGINEER will evaluate the use of the existing aerated lagoons for peak flow equalization during diurnal and seasonal

peaks. Task 2.4 will identify the optimal flow split and the headworks screening, grit removal, and pumping requirements necessary to support use of the aerated lagoons for equalization.

***Optional Task 2.5 Evaluation of Long-Term Treatment Capacity Expansion Alternatives -***

ENGINEER will evaluate long-term alternatives to expand the treatment capacity of the plant, continue to phase-out the use of the aerated lagoons, and accommodate potential effluent phosphorus requirements. This evaluation will use the calibrated process model developed during Task 2.1. Expansion alternatives will be developed to treat build-out flow and load established in the existing Utility Plan with and without biological phosphorus removal. ENGINEER will compare the following three options to increase overall plant capacity:

- a) Continued long-term use of aerated lagoons
- b) Addition of primary clarification
- c) Addition of aeration basins and secondary clarifiers

ENGINEER will determine recommended design criteria, sizing and basic layout of additional treatment elements for each alternative. The capital and O&M costs for each alternative will be estimated and compared. Alternatives will be compared in terms of cost and non-cost criteria. Alternative comparison criteria and importance factors will be developed in collaboration with the OWNER'S staff. Alternatives will be ranked to identify the best apparent approach for providing future plant capacity. This task will be authorized in writing, if necessary, depending on the findings of Task 2.1 to 2.4.

### **Task 3 - Preliminary Design of New Headworks**

As part of the preliminary design of new Headworks, ENGINEER will review alternate screening equipment, screenings washers, grit removal systems, grit classifiers, and odor control technology with the OWNER and determine the most applicable systems to satisfy the OWNER'S needs and budget. A preliminary layout of the selected equipment will be provided, as well as preliminary hydraulic profile, design criteria summary cost estimate and brief pre-design summary report.

#### **Task 3.1 Evaluation and Selection of Headworks Equipment**

ENGINEER will review and select appropriate headworks processes and equipment.

**Task 3.1.1 Review and Select Screening Equipment -** ENGINEER will confirm design criteria for appropriate raw wastewater screening including screen location, number of screens, and screening channel dimensions based on Utility Plan and other design drawings previously developed for the OWNER. Fine screens will provide significant benefits for the OWNER when considering activated sludge treatment without primary clarifiers. ENGINEER will evaluate the advantages and disadvantages of smaller screen openings and identify appropriate design criteria for screen sizes, ancillary components, and hydraulic parameters. Three types of fine screening technology will be reviewed as part of the preliminary design effort:

- 1. Climber Screens
- 2. Step Screens
- 3. In-Channel Screen

Comparison and selection of the most appropriate screens will be based on wastewater characteristics (anticipated quantity, and size of screenings, organic content), hydraulics (available headloss), foot-print requirements, support equipment, and cost.

**Task 3.1.1.a Review and Select Screenings Washer/Compactor-** ENGINEER will confirm design criteria for appropriate screenings washer/compactors including screenings quantity and return flows. Evaluation of screenings compactors will include:

1. Piston Type
2. Screw Type
3. With and Without Baggers

Ancillary components including conveyors, storage bins and truck loading will be identified. Comparison and selection of the most appropriate screenings washers will be based on preferred screenings product, foot-print requirements, support equipment, and cost.

**Task 3.1.2 Review and Select Grit Removal Alternatives -** ENGINEER will confirm design criteria for appropriate grit removal systems including grit chamber location, number of grit chambers, and grit chamber dimensions. ENGINEER will evaluate the advantages and disadvantages of alternate grit chamber design and identify appropriate design criteria for basin sizes, ancillary components, and hydraulic parameters. Two types of grit chamber technology will be reviewed as part of the preliminary design effort:

1. Vortex Type
2. Aerated Grit Chambers

Comparison and selection of the most appropriate grit removal process will be based on type of wastewater characteristics (anticipated quantity, and size of grit, organic content), hydraulics (available headloss), foot-print requirements, support equipment, and cost.

**Task 3.1.2.a Review and Select Grit Classifiers -** ENGINEER will confirm design criteria for appropriate grit classifiers including hydraulic flow and pressure requirements and grit quantities. Evaluation of grit classifiers will include:

1. Hydrocyclones
2. Grit Rakes
3. Tea Cup type Vortex Separators

ENGINEER will identify classifier space requirements, grit pumping, dewatered grit conveyance, handling, storage, and loading/hauling. Comparison and selection of the most appropriate grit classifier will be based on hydraulics (available headloss), foot-print requirements, support equipment, and cost.

**Task 3.1.3 Evaluate Combined Screening and Grit Removal Systems** - ENGINEER will evaluate the potential for use of an all in one preliminary treatment unit that includes bar screens and grit removal in one package. ENGINEER will review available products and confirm design criteria for package screening and grit removal systems including number of units, footprint dimensions, Building sizes and support equipment and cost. ENGINEER will evaluate the advantages and disadvantages of package units.

Comparison of custom headworks and package unit headworks will be based on type of wastewater characteristics (anticipated quantity, and size of grit, organic content), hydraulics (available headloss), foot-print requirements, support equipment and buildings, and cost.

**Task 3.1.4 Determine Flow Distribution, Hydraulics, and Pumping Needs** - ENGINEER will determine appropriate flow distribution between headworks, aerated lagoons, and activated sludge system. A preliminary hydraulic profile will be developed. Based on the flow split and hydraulic profile the pumping needs, if any, for lifting screened and dewatered raw wastewater to the aerated lagoons. The pump size and general head and horsepower will be defined and a designation as temporary or permanent pumps will be made.

**Task 3.2 Preliminary Layout of Headworks** - Based on the findings of Task 3.1, and using the equipment selected, ENGINEER will provide basic preliminary layout of new Headworks incorporating hydraulic stilling well, screening channels, grit chambers, and pump wet well, if necessary. Preliminary layout sketches will indicate selected screenings and grit handling systems including storage and loading. General electrical rooms and HVAC equipment areas will be identified. Placement of the Headworks on the Northglenn WWTP site will also be determined.

ENGINEER will provide a brief technical memorandum summarizing evaluated screenings, grit removal, and screening and grit handling systems, a preliminary layout, and cost estimate for the selected headworks system.

#### **Task 4 - Preliminary Design of Odor Control Systems**

Wastewater data will be collected and analyzed by the City staff at Lift Station A and the Northglenn WWTP. Data would include diurnal flow pattern, temperature, pH, BOD. ENGINEER will collect limited (H<sub>2</sub>S) gas sampling at Lift Station A and the Northglenn WWTP. ENGINEER will review that data to evaluate odor control for Lift Station A, the force main, and the headworks. The selection of the odor control system (s) will be guided by the need to find the best combination of odor control strategies for the overall conveyance and treatment system, including lift station, force main, and headworks. If the decision to use chemical pre-treatment is deemed viable during preliminary design, additional sampling of the wastewater such as dissolved sulfur-containing compounds, and other data may need to be collected and analyzed by a specialized laboratory under an amendment to this Exhibit A.

The detention time of raw sewage in the 27-inch Force Main between Lift Station A and the Northglenn WWTP can promote septic wastewater conditions and release of hydrogen sulfide (H<sub>2</sub>S) as well as other odor generating compounds created by the decomposition of organic matter in raw sewage.

ENGINEER will review the following approaches to odor control:

1. Chemical Treatment at Lift Station A and/or Headworks
2. Stripping in an Aerated Grit Chamber
3. Containment, Ventilation, and Scrubbing

ENGINEER will identify a recommended combination of odor control methods to provide an adequate, reliable, and cost effective odor control system.

**Task 4.1 Chemical Odor Control** - ENGINEER will investigate the use of chemical oxidizers including hydrogen peroxide, chlorine (hypochlorite), Bioxide, and chemical precipitants including ferric chloride and PRI-SC™ (Peroxide Regenerated Iron - Sulfide Control™) for odor control in the lift station, force main, and/or headworks. ENGINEER will identify potential injection points, anticipated chemical doses, equipment needs, and capital and O&M costs associated with these chemicals. The advantages and disadvantages of each chemical will be compared along with costs. ENGINEER will work with OWNER to determine if chemical odor control should be incorporated in to the Northglenn system.

If chemical odor control is selected as a part of the preferred approach, ENGINEER will provide basic design criteria and capital cost estimate.

**Task 4.2 Stripping in an Aerated Grit Chamber** - ENGINEER will evaluate the use of aerated grit chambers to strip the H<sub>2</sub>S and other volatile organics and add dissolved oxygen to reduce septicity and downstream odor generation. Aerated grit chamber stripping will include grit chamber covers, ventilation, and scrubbing.

**Task 4.3 Containment, Ventilation, and Scrubbing** - ENGINEER will evaluate containment, ventilation, and scrubbing for odor control in screen area, grit chamber area, screenings and grit handling areas and wet wells, if applicable. ENGINEER will identify required covers, air handling fan sizing and horsepower. ENGINEER will evaluate the following odor scrubber technologies for use in the Headworks.

1. Adsorption Scrubbers including: granular activated carbon, biological towers, soil bed scrubbers.
2. Wet Scrubbers including: packed towers, mist scrubbers, and cross flow scrubbers. Wet scrubbers using strong oxidizing liquid chemicals (sodium hypochlorite, potassium permanganate, caustic or hydrogen peroxide) will be considered. ENGINEER will identify chemical doses and storage and feed equipment necessary to support chemical scrubbing.
3. Biological Scrubbing: ENGINEER will investigate potential for discharging foul air through aeration basins for biological oxidation of odorous compounds.

**Task 4.4 Comparison and Selection of Odor Control Systems** - ENGINEER will work with the OWNER to identify criteria for selecting an appropriate odor control system for the new headworks. The following approach will be used to identify a reasonable number of alternatives for comparison.

- Estimate foul air flow emissions rates and influent H<sub>2</sub>S concentrations
- Determine relevance of non-H<sub>2</sub>S (organic) odors
- Pre-screen the potential odor mitigation strategies as well as type and number of scrubbers

- Determine the design criteria and preliminary design details for chemical addition facilities and scrubbers showing unit volume, packing type/density, and gas/liquid contact parameters; recirculation and blow-down rates for the scrubbing solution;
- Outline operating and control parameters (e.g., pH and ORP)
- Estimated chemical use-rates, costs, and provide list of advantages and disadvantages
- Develop a odor control alternative comparison matrix

ENGINEER may identify an odor control alternative based on a combination of systems described in Tasks 4.1 through 4.3.

ENGINEER will compare headworks odor control alternatives based on ranking criteria and importance factors for advantages, disadvantages, and costs.

ENGINEER will provide a brief technical memorandum summarizing evaluated odor control technologies and a preliminary layout and cost estimate for the selected odor control system.

### **Task 5 Headworks and Odor Control Preliminary Design Report**

ENGINEER will prepare a brief preliminary design report that includes a project summary and copies of TMs No. 1, No.2, and No. 3. The pre-design report will also include a design criteria summary, hydraulic profile, preliminary cost estimate, and design and construction schedule. Four copies of Preliminary Design Report will be provided.

### **TIME OF PERFORMANCE**

Upon issuance of Notice to Proceed (NTP), ENGINEER will provide deliverable items based on the following schedule:

1. Task No. 1: PPM, Data Review, Site Visit, and Kickoff Meeting - 2 weeks after NTP
2. Task No. 2: Process Simulation and Capacity Evaluation and Draft TM No. 1 - 4 weeks after Kickoff Meeting
3. Task No. 3: Headworks Pre-design and Draft TM No. 2 - 2 weeks after TM No. 1
4. Task No. 4: Odor Control Pre-design and Draft TM No.3 - 2 weeks after TM No. 2
5. Task No. 5: Preliminary Design Report - 2 weeks after TM No. 3

**EXHIBIT B**

For ENGINEER'S SERVICES according to the scope items in Exhibit A, excluding Optional Task 2.5 Evaluation of Long-Term Treatment Capacity Expansion Alternatives --Standard Hourly Rates Method of Payment

A. OWNER shall pay ENGINEER on a monthly basis for Basic Services set forth in Task Order No. 1 as follows:

1. An amount equal to the cumulative hours charged to the Project by each class of ENGINEER's employees times Standard Hourly Rates for each applicable billing class for all services performed on the Project, plus Reimbursable Expenses and charges (See Exhibit A Fee Schedule and Standard Hourly Rates).
2. ENGINEER's Consultant's Expenses at cost plus 10%.
3. The total compensation for services under this Task Order No. 1 is \$ 78,310 based on the following assumed distribution of compensation:

<u>Task No.</u>	<u>Task Description of Services</u>	<u>Estimated Hours</u>	<u>Fee</u>
1	Review of Existing Facilities Data, Attend Site Visit, Prepare PPM, and Conduct Meetings	70	\$ 10,680
2	Perform Process Simulation Modeling and Capacity Evaluation	251	\$33,720
3	Preliminary Design of New Headworks	145	\$ 20,510
4	Preliminary Design of Odor Control Systems	56	\$ 7,850
5	Headworks and Odor Control Preliminary Design Report	38	\$ 5,550
	<b>Total</b>	<b>532</b>	<b>\$ 78,310</b>

4. Compensation for Optional Task 2.5 Evaluation of Long-Term Treatment Capacity Expansion Alternatives if adopted as described herein shall be an additional \$15,520.
5. ENGINEER may alter the distribution of compensation between individual subtasks of the work noted herein to be consistent with services actually rendered, but shall not exceed the total estimated compensation amount unless approved in writing by OWNER.
6. The total estimated compensation for ENGINEER's services included in the breakdown by subtasks as noted above under Scope of Services incorporates all labor, overhead, profit, Reimbursable Expenses and ENGINEER's Consultant's charges.
7. The amount billed for ENGINEER's services under EXHIBIT A will be based on the cumulative hours charged to the Project during the billing period by each class of ENGINEER's employees times Standard Hourly Rates for each applicable billing class, plus Reimbursement Expenses and ENGINEER's Consultant's charges.
8. The Standard Hourly Rates and Reimbursable Expenses Schedule will be adjusted annually (as of March 1, 2007) to reflect equitable changes in the compensation payable to ENGINEER.

9. The Standard Hourly Rates Method of Payment is conditioned on Contract Times to complete the Project not exceeding 6 months. Should the Contract Times to complete the Project be extended beyond this period, the total compensation to ENGINEER shall be appropriately adjusted.

**FEE SCHEDULE (As of January 1, 2007)**

	<u>Hourly Rate</u>
<b>Engineers/Scientists</b>	
Assistant Professional	\$114.00
Professional	152.00
Project Professional	182.00
Lead Project Professional	198.00
Senior Professional	218.00
<b>Technicians</b>	
Technicians	89.00
Senior Technicians	130.00
<b>Support Staff</b>	
Word Processing / Clerical	80.00
<b>Project Equipment Communication Expense (PECE) Per DL Hour</b>	<b>9.50</b>
<b>Other Direct Expenses</b>	
Travel and Subsistence	at cost
Mileage	.445/mile
Subconsultant	cost + 10%
Other Direct Cost	cost + 10%
Expert Witness	Rate x 2.0

This fee schedule is subject to annual revisions due to labor adjustments.