The City of
NORMAN

201 West Gray, Bldg. C • P.O. Box 370
Norman, Oklahoma 73069 • 73070

UTILITIES ENGINEERING
Phone: 405-366-5443
Fax: 405-366-5447

June 18, 2012

Mr. Michael Graves, P.E.
Garver, LLC
1016 24th Avenue NW
Norman, OK 73069

Re: Norman Utilities Authority
Amendment No. 1 to Contract K-1011-148
Design of Phase 2 WRF Improvements

Dear Mr. Graves:

On June 12, 2012, the Norman Utilities Authority (NUA) approved Amendment No. 1 to Contract K-1011-148. The contract authorizes your firm to perform final design and bidding services for the above project in two phases with Phase 2A containing the new disinfection and post aeration processes, among others. One original is enclosed.

The amendment authorizes completion of the project in accordance with the schedule contained in Appendix A and summarized below.

Task	Completion Time	Completion Date
Phase 2A Preliminary Design	90 days	September 2012
Phase 2B Preliminary Design	180 days	December 2012
Phase 2A Final Design	300 days	April 2013
Phase 2B Final Design	450 days	September 2013

Please advise when we can schedule a Kickoff Meeting for the final design process. As you are aware, the NUA must design and construct the disinfection facility as quickly as possible. If you have questions or need additional information, please call at 405-366-5377

Sincerely,
CITY OF NORMAN

Mark Daniels, P.E.
Utilities Engineer

cc. Ken Komiske, Director of Utilities
Steve Hardeman, Acting Utilities Superintendent (with contract)
Ryan Bart, Acting Utilities Supervisor
Ed Dihrberg, ODEQ (with contract)
Tony Mensah, OWRB (with contract)
Office of the City Clerk

AMENDMENT NO. 1
AGREEMENT
FOR
ENGINEERING SERVICES

This is an amendment, AMENDMENT NO. 1, attached to and made a part of the AGREEMENT, dated March 8, 2011, between the NORMAN UTILITIES AUTHORITY (Owner) and GARVER, LLC. (Engineer) for professional engineering services as necessary to complete the design and bidding phase services for the Norman Wastewater Treatment Plant Phase 2 Improvements.

WHEREAS, the Owner has determined the need for additional engineering design services for the project;

WHEREAS, Engineer is prepared to provide additional services in support of the project,

NOW THEREFORE, in consideration of the promises contained in said AGREEMENT and this AMENDMENT NO. 1, Owner and Engineer agree as follows:

ARTICLE I5 - COMMUNICATIONS

Any communication required by this AGREEMENT shall be made in writing to the address specified below:

ENGINEER: Michael Graves
Garver, LLC.
1016 24th Ave NW
Norman, OK 73069
405-329-2555
mjgraves@GarverUSA.com

OWNER: Mark Daniels
Norman Utilities Authority
201-C West Gray
Norman, OK 73070
405-366-5377
mark.daniels@normanok.gov

SCOPE OF SERVICES

Engineer shall provide additional design services associated with the Wastewater Treatment Plant (WWTP) Phase 2 Improvements as described in APPENDIX A.

COMPENSATION

For the work described under SCOPE OF SERVICES the Owner will pay the Engineer on a lump sum basis. The Owner intends to pay the Engineer and represents that funds are available, or funds will be borrowed as necessary to pay the Engineer.

If any payment due the Engineer under this agreement is not received within 60 days from date of invoice, the Engineer may elect to suspend services under this agreement without penalty or liquidated damages assessed by the Owner.

The lump sum amount to be paid under this agreement is $3,687,000. For informational purposes, a breakdown of the Engineer's estimated costs is included in Appendix B with approximate current hourly rates for each employee classification.

The Owner will pay the Engineer on a monthly basis, based upon statements submitted by the Engineer to the Owner indicating the estimated proportion of the work accomplished for Phases 2A and 2B as identified in Appendix B. Payments not received within 60 days of date invoice is received by the Owner will be subject to a one percent monthly simple interest charge.

IN WITNESS WHEREOF, Owner and Engineer have executed this Amendment No. 1.

DATED this _____ day of _____, 2012.

Garver, LLC. (ENGINEER)

By: _____
Title: Michael Graves – Regional Office Manager

ATTEST:

STATE OF OKLAHOMA)
) SS
COUNTY OF CLEVELAND)

This instrument was acknowledged before me on this 12th day of June 2012 by Michael J. Graves as Regional Office Manager of Garver, LLC.

_____
Notary Public

AUDRA J. SMITH
STATE OF OKLAHOMA
NOTARY PUBLIC
11011478
EXP 12/23/15

My Commission Expires/Commission Number:

12-23-15 / 11011478

Norman Utilities Authority (OWNER)
APPROVED as to form and legality this 7th day of June, 2012.

_____
City Attorney

APPROVED by the Trustees of the Norman Utilities Authority this 12th day of June, 2012.

By: _____
Title: Chairman – N.U.A.

_____
Secretary – N.U.A.

APPENDIX A – SCOPE OF SERVICES

1.1 General

Generally, the scope of services includes Design and Bidding services necessary for the Phase 2 Expansion and Improvements to the ***Norman Utilities Authority Wastewater Treatment Plant***.

These capital improvements include modification and refurbishment of existing facilities as well as construction of new facilities to meet the targeted capacity and treatment criteria for improvements to the existing Wastewater Treatment Plant (WWTP). These improvements are being designed to meet full build-out, capacity and treatment goals identified in Plan B of the Engineering Report (November 2011) as described in Exhibit No.1 to this Amendment. Engineer will develop separate preliminary and final design documents for two (2) construction contracts as identified in Exhibit No. 2 to this Amendment.

Subsequent construction and operations phase services required for successful completion of this project will be provided by subsequent amendment to the Agreement. As such, the facility improvements covered by this Amendment No. 1, as approved by the Owner, will serve as the basis for development of the level of effort and schedule for the subsequent project phases. Subsequent services required for completion of these phases must be specifically authorized by amendment to the Agreement, separate from this Amendment No. 1, following (or near) completion of Design Services when the appropriate level of effort, schedule, and associated compensation for those services can be determined.

2.1 Preliminary Design

2.1.1 Project Administration
Provide for the preparation of monthly invoicing with percent completes by task and monthly progress report.

2.1.2 Kickoff Meeting
A kickoff meeting will be scheduled and attended by Engineer and Owner. The purpose of the kickoff meeting will be to review the objectives of the project, review the scope of work, present the schedule including workshops and meetings, and to highlight the deliverables.

2.1.3 Monthly Meetings
Engineer will attend monthly coordination meetings with Owner. These meetings will provide updated information on the Engineer's status of the project and provide a forum for Owner input and review of Engineer's work. Engineer will provide meeting minutes for Owner review and approval within 7 calendar days after the meeting.

2.1.4 Predesign
Based on the project concepts documented in the Engineering Report, dated November 2011, the Engineer will prepare, for approval by the Owner, a Predesign submittal (30% Design) for the proposed Phase 2 WWTP Improvements. Engineer will develop the Predesign submittal for two (2) construction contracts as identified in Exhibit No. 2. The Predesign will refine the project concepts and develop them in further detail for later use in preparing Contract Documents for bidding and construction.

Process design criteria will be documented to identify basis of unit sizing and verification of ODEQ regulatory conformance. In the event a variance request is recommended, Engineer will

provide necessary justification.

The project opinion of cost will be updated from the Engineering Report estimate of construction costs for project components based on information obtained during the preliminary design phase.

Engineer anticipates the Predesign drawings will include a site plan, yard piping plan, hydraulic profile, mass balance, demolition plans, preliminary process and instrumentation diagrams (P&IDs), preliminary layouts of the proposed improvements such as liquid and solids treatment process units, associated equipment, major piping and valves, and preliminary electrical one-line diagram. The level of detail presented will vary for each concept as needed to adequately analyze specific issues and envision improvements that can be accomplished.

Engineer will furnish five (5) copies of these preliminary design (30%) documents, and cost estimates to Owner for distribution, review, comment and approval.

2.1.5 Predesign Workshops

At the end of Predesign for Phase 2A and 2B, the Engineer will lead and participate in two (2) separate workshops to include:

- Review and refinement of preliminary P&IDs and preliminary selection of instrumentation.
- Review and refinement of preliminary electrical one-line drawings.
- Review and refinement of the preliminary site plan hydraulic profile and facilities layouts.
- Review and finalize major equipment selection.
- Review proposed construction sequencing.

3.1 Final Design

3.1.1 Project Administration

Provide for the preparation of monthly invoicing with percent completes by task and monthly progress report.

3.1.2 Plans and Specifications

Based upon the results of the Owner approved preliminary design, Engineer will develop the detailed plans and specifications as a part of the Final Design for two (2) construction contracts as identified in Exhibit No. 2. The two (2) construction contracts for the WWTP may include up to two (2) deductive alternates for each construction contract. The deductive alternatives will be defined in the preliminary design. Prior to project advertisement, Engineer will prepare an opinion of project cost. Plans and specifications will be submitted to ODEQ for review, approval and issuance of a construction permit.

3.1.3 Final Design Meetings

Engineer will attend monthly coordination meetings with Owner. These meetings will provide updated information on the Engineer's status of the project and provide a forum for Owner input and review of Engineer's work. Engineer will provide meeting minutes for Owner review and approval within 7 calendar days after the meeting.

3.1.4 Design Value Review and Workshop

At approximately 75 percent complete drawings and specifications, the Engineer and Owner will

meet to accomplish a "design value review" of the plans and specifications to ascertain any areas of the project where cost savings can be achieved, as mutually agreed to by the Owner and Engineer. The Engineer will incorporate design value review decisions made into the drawings and specifications as appropriate. This meeting will be incorporated into a final design monthly meeting as described in section 3.1.3 above.

3.1.5 Contract Documents

Engineer will prepare final drawings and specifications for each of two (2) phases of construction as identified in Exhibit No. 2. Engineer will submit five (5) copies to the Owner's staff for review and comment. Engineer will incorporate review comments into drawings and specifications and prepare final Contract. The Contract Documents will consist of drawings and specifications that set forth requirements for construction of the improvements, and shall include proposal forms, notice to bidders, bid forms, bond forms, and other information as required by the Owner to competitively bid the work. The Engineer's standard contract forms including General Conditions will be used along with Engineer's standard drawing format and technical specifications according to Construction Specifications Institute (CSI) standards.

In the event that Clean Water State Revolving Fund (CWSRF) funding is utilized by the Owner, Engineer will include bidding documents required to obtain OWRB approval of Contract Documents.

3.1.6 Regulatory Review and Coordination

Engineer will coordinate and respond to regulatory review comments as directed by the Owner.

4.1 Bidding

During the bidding phase of the project, the Engineer will:

- Prepare and submit Advertisement for Bids to newspaper(s) for publication as directed by the Owner. Owner will pay advertising costs outside of this contract.
- Dispense construction contract documents to prospective bidders (at the approximate cost of reproduction and handling).
- Support the contract documents by preparing addenda as appropriate.
- Participate in a pre-bid meeting.
- Attend the bid opening.
- Prepare bid tabulation.
- Evaluate bids and recommend award.
- Prepare construction contract.

Owner and Engineer anticipate two (2) phases of construction with two separate bid phases occurring at separate times as identified in Exhibit No. 2.

5.1 Schedule

The Engineer shall begin work under this Agreement within ten (10) days of a Notice to Proceed and shall complete the work in accordance with the schedule below:

Phase Description	Calendar Days
Phase 2A:	
Preliminary Design	90 days from start date
Final Design	180 days from approval of Preliminary Design
Phase 2B:	
Preliminary Design	180 days from start date
Final Design	240 days from approval of Preliminary Design

6.0 Additional Services

The following items are not included under this agreement but will be considered as Additional Services and necessary for successful completion of the project. Additional Services will be as directed by the Owner in writing for an additional fee as agreed upon by the Owner and the Engineer.

- Geotechnical Services
- Environmental Services
- Sludge Management Plan
- Construction Phase Services
- Construction Observation Services
- Operation and Maintenance Manuals
- Treatment Process Start-up Assistance
- Warranty Assistance
- Water Reuse Master Plan

6.1 Extra Work

The following items are not included under this agreement but will be considered as Extra Work. Extra Work will be as directed by the Owner in writing for an additional fee as agreed upon by the Owner and the Engineer.

1. Redesign for the Owner's convenience or due to changed conditions after previous alternate direction and/or approval.
2. Submittals or deliverables in addition to those listed herein.
3. Preparation of a Storm Water Pollution Prevention Plan (SWPPP).
4. Construction materials testing.
5. Environmental Handling and Documentation, including wetlands identification or mitigation plans or other work related to environmentally or historically (culturally) significant items.
6. Coordination with FEMA and preparation/submittal of a CLOMR and/or LOMR.
7. Funding application.

APPENDIX B

NORMAN UTILITIES AUTHORITY
WWTP PHASE 2 IMPROVEMENTS

FEE SUMMARY

Title I Services	Estimated Fees
Surveys	*Completed*
Conceptual Design	*Completed*
Preliminary/Final Design	$ 3,514,000
Bidding Services	$ 173,000
Subtotal for Title I Services	$ 3,687,000

Title II Services	
Construction Administration	*TBD*
Construction Observation	*TBD*
Subtotal for Title II Services	$ -

Title III Services	
Operations Start-up Assistance	*TBD*
O&M Manuals	*TBD*
Warranty Assistance	*TBD*
Subtotal for Title III Services	$ -

APPENDIX B

NORMAN UTILITIES AUTHORITY
WWTP PHASE 2 IMPROVEMENTS

FEE SUMMARY

Facility/Process Pre and Final Design	Estimated Fees
PHASE 2A	
40 - RAS/WAS Upgrades	$124,500
45 - UV/Post Aeration	$628,000
50 - Outfall Pipe	$125,100
55 - WAS Thickening	$297,500
65 - Thickend Sludge Blend/Pumping	$139,500
70 - Anaerobic Digestion	$94,300
85 - Standby Power / Site Electrical	$186,700
95 - PLC/SCADA Arch	$32,500
Subtotal for Design Services	$1,628,100
Bidding Services	$83,000
Phase 2A Total	$1,711,100

Facility/Process Pre and Final Design	Estimated Fees
PHASE 2B	
10 - Headworks	$48,700
15 - Inf Flow Metering and Split	$54,000
20 - PC Upgrades	$210,000
25 - A-Basin Upgrades	$583,800
35 - SC Upgrades	$395,900
75 - Odor Control	$291,700
85 - Standby Power / Site Electrical	$280,100
95 - PLC/SCADA Arch	$21,700
Subtotal for Design Services	$1,885,900
Bidding Services	$90,000
Phase 2B Total	$1,975,900

AMENDMENT NO 1. TOTAL	$3,687,000

EXHIBIT NO. 1 – WWTP Phase 2 Recommended Plan

Section 7.0
Proposed Project

7.1 Recommendation

Plan B is recommended as the best available option to meet the needs of the Norman WWTP. Plan B completes the system expansion of the facility to the full build-out treatment capacity of 17 mgd, as identified in the Norman Wastewater Master Plan. The proposed upgrades are able to meet all current treatment objectives and effluent discharge requirements. Furthermore, all of the identified improvements are fully compatible with future phasing of the Biological Nutrient Removal process described in Plan C. Therefore, at a future time, the facility can easily be upgraded to a BNR plant, should future discharge permits or the desire to re-use water dictate the need for nutrient removal.

7.1.1 Treatment

The components of Plan B are described in detail in Section 6. In general, the following processes are recommended to upgrade all liquids and solids components to handle an annual average daily flow of 17 mgd and a peak daily flow of 36 mgd. The City of Norman may choose to complete these improvements in one or more phases. In any event, the new UV disinfection and post-aeration improvements will be constructed in the first phase and be implemented by July 1, 2013 in order to obtain compliance with the new fecal coliform permit limits effective that date.

- Redundant screening conveyors
- New influent flow measurement and screening
- Replacement primary clarifier mechanisms
- Aeration basin expansion
- Replacement secondary clarifiers
- Expanded RAS/WAS pumping
- New UV disinfection
- New post-aeration
- Parallel discharge line
- New centrifuge thickening
- New sludge blend tank
- Anaerobic digester improvements
- New odor control treatment

- New standby power system

Figures 7.1 and 7.2 summarize the percentage of full build-out capacity that is provided by existing infrastructure and new infrastructure.

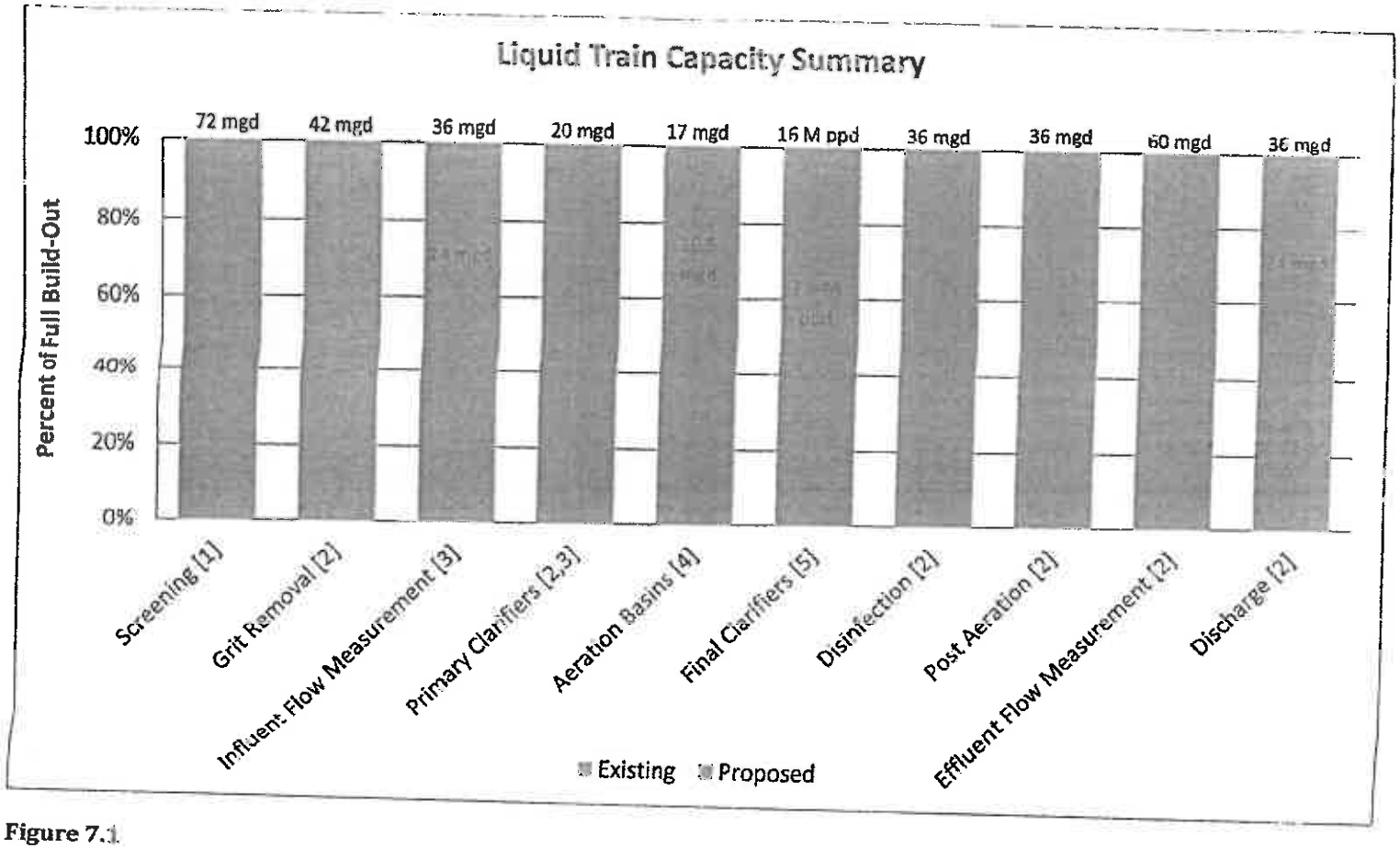

Figure 7.1
Liquid Train Capacity Summary

Notes: [1] Based on peak flow
[2] Based on max day flow
[3] Minus bypass flow
[4] Based on average day flow
[5] Based on max day solids loading

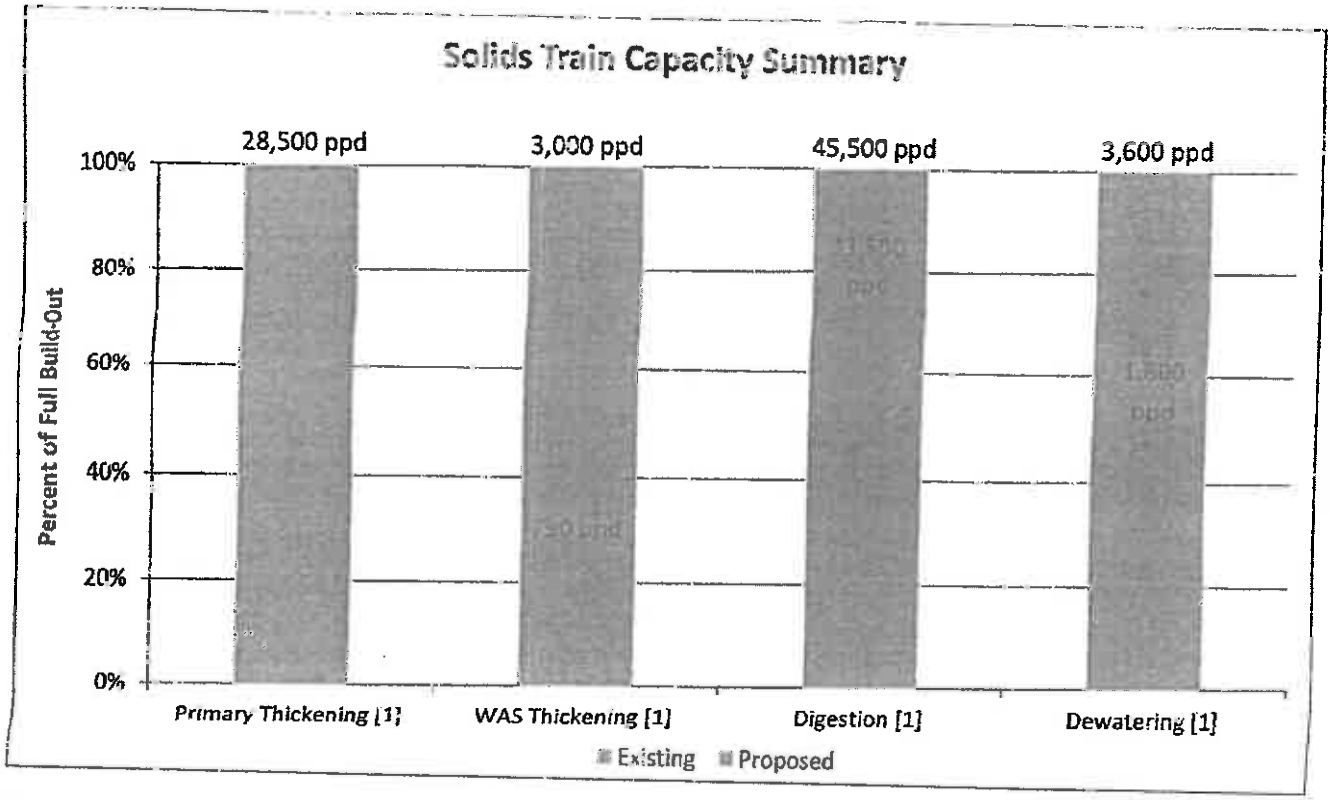

Figure 7.2
Solids Train Capacity Summary
Notes: [1] Based on solids loading at 17 mgd and max month BOD /TSS concentrations

7.1.2 Hydraulic Calculations

The water surface elevations, or the hydraulic grade line (HGL), through the WWTP following the proposed improvements were estimated with the use of a hydraulic model. As with the existing system assessment, the model estimates the HGL by calculation of head loss through the hydraulic elements. Existing elements were field verified through a detailed level survey and new elements are proposed at an elevation to allow flow through the system under the design peak flow. Two flow rates were used in the hydraulic analysis of the proposed system, which are described further in Section 6.2:

- Design Maximum Day Flow 36 mgd
- Design Average Day Flow 17 mgd

The following hydraulic design features are proposed to accommodate the HGL, as calculated by the hydraulic model and depicted on Drawing 15. The listed improvements are the minimum expected upgrades. Additional improvements to the yard piping throughout the site may be identified during detailed design.

- New 72" Influent Flume
- Upsize piping to Primary Clarifiers No. 3 and 4
- Provide UV disinfection and post-aeration downstream of existing effluent flume
- New 36" parallel discharge line from post aeration effluent to discharge point

7.2 Cost Estimate

A detailed cost estimate of Plan B is shown in Table 6.22. The total estimated project cost, including equipment, structures, electrical, instrumentation, site improvements, contractor profit, professional services, and inflation is approximately $ 52 Million. The City currently has over $15 Million available for this project from sales and excise tax. The City will seek loan funds or bonds for the remaining work.

As shown in Table 6.23, the improvements are expected to add approximately $ 579,000 in annual operating expenses at full build-out. The total expected annual O&M following the implementation of the proposed project at an average daily design flow of 17 mgd is just over $ 11 Million.