

AGENDA ITEM NO.

COUNCIL MEETING

APPROVED BY

DEPARTMENT DIRECTOR

CITY MANAGER

June 12, 2007

FROM: RENE A. RAMIREZ, Director 
Department of Public Utilities - Administration

BY:  GARTH GADDY, Provisional Manager 
Department of Public Utilities – Water Division

SUBJECT: APPROVE FIRST AMENDMENT TO AGREEMENT WITH WEST YOST & ASSOCIATES, FOR PREPARATION OF A WATER MASTER PLAN AND REASSIGN CONTRACT ADMINISTRATION FROM THE DIRECTOR OF PUBLIC WORKS TO THE DIRECTOR OF PUBLIC UTILITIES

KEY RESULT AREA

Resource Management and Customer Service

RECOMMENDATIONS

Staff recommends the City Council:

1. Approve the first amendment to agreement with West Yost & Associates, increasing the contract compensation amount from \$1,625,209 to the amount of \$1,907,009, and increasing the contingency amount from \$165,000 to an amount not to exceed \$190,000, for professional engineering services to prepare a Water Master Plan.
2. Reassign contract administration for this project from the Director of Public Works to the Director of Public Utilities.
3. Authorize the Director of Public Utilities to execute the amendment to the agreement on behalf of the City.

EXECUTIVE SUMMARY

In April 2006, the Department of Public Utilities, Water Division, entered into an agreement with West Yost & Associates to prepare an update to the Fresno Metropolitan Water Resources Management Plan. Through this effort a coarse water system model was developed, which may be further refined to assist in the preparation of a Water Master Plan. The Water Master Plan will establish the size and location of future water transmission mains, water treatment and storage facilities, and smaller distribution mains, throughout the City's Sphere of Influence boundaries. The advantages realized from such advanced planning include efficient and cost-effective conveyance of water across the entire City ensuring our water customer's service needs are met in existing and future areas of development. The Water Master Plan will serve as the means to share with all stakeholders the water system infrastructure needs, so the City may continue successful growth and long-term sustainability.

KEY OBJECTIVE BALANCE

Council action regarding this Amendment satisfies the three Key Objectives of Customer Satisfaction, Employee Satisfaction and Financial Management. Customer Satisfaction is derived from the identification of needed long-term infrastructure to reliably provide potable water and maintain consistent service levels city-wide. Employee Satisfaction is based upon the utilization of technical expertise to complete a project successfully, providing recognition, growth and the satisfaction of accomplishment. Financial Management is realized by the enhanced ability to plan for long-term infrastructure needs and to appropriately budget for their construction.

BACKGROUND

The Department of Public Utilities, Water Division, is presently in the process of having its Fresno Metropolitan Water Resources Management Plan (Metro Plan) updated by West Yost & Associates. As part of this effort, a coarse water system model has been prepared to evaluate the system and explore in general terms, the development of future water supply projects. The Metro Plan will guide the Division on a macro level in identifying water supply projects and the best means of utilizing limited groundwater and surface water supplies to meet projected water demands. This coarse model also provides the fundamental building block to develop a more refined model which can be used to identify needed infrastructure on a micro level for existing and future development areas.

Up until the last decade, the City had been fortunate enough to be able to provide municipal water wells at nearly any location and satisfy water demand needs. As development continues to move outward, the Water Division has encountered regions far less capable of yielding water as was seen in years past. This challenging problem has strengthened our need to further develop surface water as part of our water supply strategy. The utilization of surface water treatment facilities, however, changes the way we plan for water main infrastructure, due to higher water production coming from a single location. That is to say, instead of having water well sites spread throughout the city producing about 1500 gallons per minute (gpm), there will be individual facilities producing 20,800 gpm, which is equivalent to 14 water well sites.

Each individual high water production facility, such as surface water treatment plants and water storage tanks, require larger water transmission mains be constructed to convey the water efficiently and cost-effectively away from such facilities. The construction of these water mains and those constructed by developers require advance planning and diligent coordination with the developers. The Water Master Plan provides the means to share with all stakeholders the infrastructure needs for these and other conveyance, storage, and distribution facilities.

West Yost & Associates progress on the Metro Plan update has been proceeding smoothly, however requires a 218 day extension of time, due to waiting for another consultant under a separate agreement to provide the results of an integrated groundwater and surface water study. The Water Division has been pleased with West Yost & Associates work on this project and has paid them \$466,078.09 to date. The Phase 1 Report is expected to be completed in the next couple of months. The overall contract has four phases of project development, which includes the present effort of Baseline Characterization (Phase 1), followed by Alternative Development (Phase 2), Implementation Plan (Phase 3), and finally Project/Programmatic Environmental Impact Report (Phase 4). The consultant's ability to prepare such an exhaustive report has been well demonstrated and reflects their ability to expertly handle the work outlined in the subject amendment to the agreement. The amendment to the agreement has been approved "as to form" by the City Attorney's Office.

REPORT TO THE CITY COUNCIL

First Amendment to Agreement with West Yost & Associates

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The contract with West Yost & Associates was executed by the City utilizing the Public Work's standard agreement. It is the desire of the Department of Public Utilities to streamline periodic contract administration work by reassigning these duties from the Director of Public Work's to the Director of Public Utilities. Such duties may include the execution of agreement amendments, such as this one, and the authorization of time extensions, if needed, for various phases of the ongoing project. The reassignment of contract administration will keep the maintenance and oversight of the contracted work in the department most familiar with the project and reduce the work load burden on the Public Works Department.

FISCAL IMPACT

Funding for this project has been included in the FY07 Water Enterprise Fund (WC00051). No additional funds will be required.

Attachment:

-First Amendment to Agreement

FIRST AMENDMENT TO AGREEMENT

THIS FIRST AMENDMENT TO AGREEMENT ("Amendment") made and entered into as of this _____ day of June, 2007 amends the Agreement heretofore entered into between the CITY OF FRESNO, a municipal corporation, hereinafter referred to as "CITY," and West Yost & Associates, a California corporation, hereinafter referred to as "CONSULTANT."

RECITALS

WHEREAS, CITY and CONSULTANT entered into an Agreement, dated February 9, 2006, hereinafter referred to as "Agreement," for professional engineering services for updating the Fresno Metropolitan Water Resources Management Plan (Plan); and

WHEREAS, completion of the Phase 1 Report for the Plan has been delayed due to incorporation of additional data not originally anticipated to be included with development of the Integrated Groundwater and Surface water Model (IGSM), where said IGSM development is under a separate reimbursement agreement with Kings River Conservation District (DISTRICT), entered into by CITY and DISTRICT on April 4, 2006; and

WHEREAS, specific information is needed from the completed IGSM to finish the Phase 1 Report of the Plan; and

WHEREAS, CONSULTANT is requesting a 218 calendar day extension to the Agreement due to the additional time required for IGSM development; and

WHEREAS, in the course of conducting work outlined in the scope of work for the Agreement, CONSULTANT has developed a separate hydraulic model (Model) of the existing water system; and

WHEREAS, said Model provides the basis of preparing a Water Master Plan that will identify present and future system improvements needed to assure appropriate levels of

production, conveyance, and delivery of potable water is achieved to meet water system demands; and

WHEREAS, the parties have negotiated an increase in compensation from \$1,625,209 to a total compensation not to exceed \$1,907,009 for completion of work by CONSULTANT under the Agreement, and an increase of the contingency amount from \$165,000 to an amount not to exceed \$190,000 pursuant to the conditions of Section 2(c) of the Agreement; and

WHEREAS, CITY now desires to expand the scope of work by requiring additional services.

NOW, THEREFORE, the parties agree that the aforesaid Agreement be amended as follows:

1. CONSULTANT shall provide additional professional engineering services for the preparation of a Water Master Plan as described in Exhibit "A," attached hereto and incorporated by reference herein.

2. The compensation amount of "\$1,625,209 .00" set forth in Section 2(a) of the Agreement is amended to read "\$1,907,009.00," and the contingency amount of "\$165,000.00" set forth in Section 2(a) of the Agreement is amended to read "\$190,000.00."

3. Wherever in the Agreement the phrase, "CITY'S Public Works's Director," appears, it is hereby amended to read "CITY'S Public Utilities Director."

4. The services of CONSULTANT, as described in this Amendment, shall commence upon execution of this Amendment. Work related to the Agreement and this Amendment shall be undertaken and completed in such sequence as to assure expeditious completion, but in any event: (i) the time in Section 4 of the Agreement for performing the services shall be extended from 617 consecutive calendar days to 835 consecutive calendar days unless an extension of time is approved in writing by the CITY'S Public Utilities Director; and

(ii) the additional services specific to the Water Master Plan in Exhibit "A" of this Amendment shall be completed within 365 consecutive calendar days from the Notice to Proceed, to be issued by CITY separately for this work, unless an extension of time is approved in writing by the CITY'S Public Utilities Director.

5. Except as otherwise provided herein, the Agreement entered into by CITY and CONSULTANT, dated February 9, 2006, remains in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Amendment at Fresno, California, the day and year first above written.

ATTEST:
REBECCA E. KLISCH
City Clerk

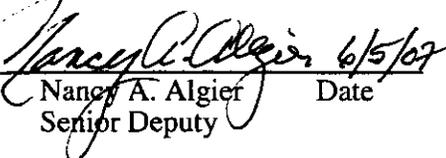
CITY OF FRESNO,
a municipal corporation

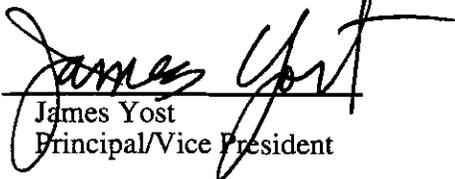
By: _____
Deputy

By: _____
Rene A. Ramirez, Director
Department of Public Utilities

APPROVED AS TO FORM:
JAMES C. SANCHEZ
City Attorney

West Yost & Associates.
a California corporation

By:  6/5/07
Nancy A. Algier Date
Senior Deputy

By: 
James Yost
Principal/Vice President

c. City of Fresno
Attention: Brock D. Buche, P.E.
1910 E. University Avenue
Fresno, CA 93703-2988
Ph.: (559) 621-5325
FAX: (559) 457-1182

EXHIBIT A

SCOPE OF WORK

Task 1. Obtain and Review City Information

Consultant, West Yost & Associates (WYA), will review available materials and supplement or update these materials as needed to gain a complete understanding of the major facilities in the City's water system, the basic operation of the water system and sub-systems, existing water supply sources, demands, and demand trends.

- 1) A kick-off meeting will be held with City staff to identify and collect information, studies, reports, designs and operational data, which have not already been collected as part of our existing work or in preparation of this proposal; these include but are not limited to:
 - "To scale" water distribution system mapping information including system schematic diagram, distribution system map with pressure zones defined, atlas maps and distribution system information in ESRI ArcGIS format, including a parcel level base map with latest revisions (within the last five years). These maps should also contain the following:
 - Pipeline diameters, hydrants and valves
 - Locations of water treatment plants, pump stations, reservoirs, pressure reducing stations, and pressure zone/adjoining system interties.
 - Pump/Well Data—As-built drawings (if available), rated speed, rated discharge, rated head, pump head vs. discharge curve, pump discharge vs. efficiency curve, horsepower rating, manufacturer, constant or variable speed motor. This may require completion of pump tests and water level drawdown measurements by City staff or PG&E for all of City's active and standby wells. Similar data from other facilities may also be required if they are determined to be critical.
 - Well site layouts and individual well construction information and available geologic and e-logs.
 - Groundwater level data and quality from all wells, well discharge pressure, production capacities, drawdown, specific yield changes over time, etc.
 - Tank and Reservoir Data—As-built drawings (if available), tank inlet diameter or altitude valve characteristics, tank diameter and height, bottom and top elevation, and minimum and maximum tank levels which trigger turning pump stations on/off, and time of operation, if not level controlled.
 - Control Valve Data—diameter, loss coefficient (k value or manufacturer), valve position.
 - Regulator Data—As-built drawings (if available), diameter, upstream or downstream control, setpoint, loss coefficient, elevation.
 - SCADA system operational data and system pressure recordings.

- 2) WYA will conduct, with active involvement of key City personnel, a brainstorming session to discuss the City's water system pressure boundaries and how service area demands are met. The purpose of this meeting will be to formally establish the basis for defining the existing City system, the likely expansion of this system to serve additional areas/customers, and the need for improvements (to be defined in the later tasks) to the system in the future to meet these additional needs. System implications of possible future changed water quality and/or changed hydraulic conditions will also be discussed. In addition, an up-to-date and accurate description of the City's water system and existing water service area will be developed. Conducting an in-depth review of the water system with City engineers and operational staff to provide opportunity for staff to exchange their views on system operation, adequacy and known inadequacies. This will include a site reconnaissance of the key facilities within the City's water system, to gain firsthand knowledge of the operation of key facilities within this system.
- 3) WYA will prepare a written description of the existing water system, including a spreadsheet summary and a base map with layering for the individual facilities and a hydraulic profile of the City's water system.

Task 1 Work Products: Submit Draft Chapter which summarizes the information sources, available data, description of existing system and known deficiencies, system map, hydraulic profile, and any recommendations for supplementing existing data, if needed. Seven (7) printed copies and a PDF electronic copy of the Draft Chapter will be submitted to City for review. WYA will then meet with City staff to discuss review comments. Appropriate City comments will then be incorporated into the Draft Water Master Plan (Task 6).

Task 2. Update, Enhance, and Calibrate Hydraulic Model of the City System

The purpose of this task is to enhance the computerized hydraulic simulation system model of City's water system, provide additional calibration and validation, and develop a "Modeling Notebook." This model will accurately reflect the existing January 2007 transmission/distribution main configuration and current operating conditions. From our recent and relevant experience, we have developed an approach which will provide the City with a hydraulic model that can meet all of their current and future needs. To complete this task, WYA will perform the following steps:

Task 2.1. Import Water System Shapefile into Hydraulic Model

WYA will work with City staff to generate a shapefile of City's current water distribution system facilities (pump stations, tanks, wells and control valves), and pipeline infrastructure that has been added or changed in the system since the last model update (summer 2004). WYA will also confirm and update any pipelines and/or facilities that have not been included in the GIS database. WYA will populate the elevation database using MWH Soft's Smart Topography feature, which will allow WYA to directly extract attribute data from the elevation contour shapefiles of the City's service area and allocate them to their corresponding junction in the model.

Task 2.2. Hydraulic Model Calibration and Validation

WYA will work closely with City staff to obtain the necessary data to calibrate the hydraulic model of the City's water distribution system. With the data obtained from the City's SCADA and telemetry (chart recorder) system, the model will be calibrated to field-observed conditions. Validation of the model will be completed for Maximum Day demand conditions in 2006.

With the assistance of City field personnel, WYA will perform hydrant flow testing in selected areas of the existing system to determine/confirm the roughness coefficient (C-factors) used to calibrate the hydraulic model of the City's system. Based on discussions with City staff and WYA's knowledge of the system, a series of hydrants will be selected for flow testing; these tests will be performed over a two (2) day period (approximately 20 hydrant tests). WYA staff (2 persons) will supervise the hydrant testing to be performed by City staff (assume up to five City staff, WYA can provide additional staff to perform these tests if required), evaluate the field data, and determine appropriate C-factors based on age, size and pipeline material. WYA will not be responsible for operating/closing valves, dechlorination, and traffic control during these tests.

WYA will work closely with City staff to obtain the necessary data to validate the updated hydraulic model of the existing City water distribution system. The pump stations will be modeled to match specific operational instructions provided by the City. Pump curves provided by the City will be input into the model for each well, and logic controls will be added to simulate well operations as described by City operations staff. With the data obtained from the City's SCADA system, the model will be calibrated to field-observed conditions. WYA shall obtain from City staff the hourly pressure and flow data over a three (3) consecutive-day period from the following City facilities:

- Flows and pressures from all City pump stations and wells,
- Inflow/outflow and change in storage volume from all City reservoirs/tanks,
- Pressure readings from various areas throughout City's service area (as described below, WYA will collect this data with hydrant pressure recorders); and,
- Results from recent pump efficiency tests.

Since the hydraulic model is required to run under various demand simulations (i.e. average day, maximum day and peak hour demands and fire flows), it will be necessary to perform a validation of the model for a maximum day condition. After the static calibration is completed and the C-factors confirmed, WYA will perform a validation of the model. Using the data collected above, WYA will verify that the newly created model generally mimics the operation of selected reservoirs, the on/off cycle of selected pump stations, flow and discharge pressure, and that the pressures at selected areas throughout the City's service area generally simulate the observed pressures during a simulated demand period.

Task 2.3. Development of the "Modeler's Notebook"

WYA will provide the City with a "modeler's notebook" which will document all of the details for each of the facilities simulated in the hydraulic model. The intent of this notebook is to provide the City with a means to evaluate what WYA has incorporated into the hydraulic model, and also to provide the City with a "living" reference that can be used by future modelers who will be running their model.

Task 2 Work Products: Submit Draft Chapter which summarizes the information and the methodology used to update and refine the model (with the supporting baseline data included in an appendix), a summary of the results from the model calibration/validation and the "Modeler's Notebook." Prior to developing the Draft Chapter, WYA will conduct a meeting to discuss the development and calibration results and will use this meeting to identify any potential fatal flaws. Seven (7) printed copies and a PDF electronic copy of the Draft Chapter will be submitted to City for review. WYA will then meet with City to discuss review comments. Appropriate City comments will then be incorporated into the Draft Water Master Plan (Task 6).

Task 3. Performance Criteria

WYA will consult with City staff and then prepare a Draft Chapter summarizing the issues to be examined in the Water Master Plan. WYA will review the City's previous planning efforts, and other available reports, documents and technical memoranda to compile and summarize a list of the City's existing water facilities planning and system performance criteria. These criteria will include:

- Maximum allowable pipeline velocities (under different demand conditions),
- Maximum allowable pipeline head loss (under different demand conditions),
- Minimum storage volumes required for operational, fire and emergency storage,
- Number of fires to be simultaneously simulated and required fire flows/duration; and,
- Minimum/maximum pressures under different demand conditions and emergency outage planning criteria.

Reliability criteria for current and future supplies will also be developed as part of this task.

Once these City system performance criteria are summarized, they will be compared to generally accepted water industry standards and reviewed with City staff. Recommendations will be made for any planning and/or system performance criteria that should be added or modified.

Task 3 Work Product: Submit Draft Chapter presenting City's existing water facility planning and/or system performance criteria, and any proposed modifications. The contents of this Draft Chapter will provide the formal basis for development of the master plan and resulting capital improvement program. Seven (7) copies and a PDF electronic copy of this Draft Chapter will be submitted to City for review. WYA will then meet with City to discuss review comments. Appropriate City comments will then be incorporated into the Draft Water Master Plan (Task 6).

Task 4. Evaluation of Existing System for Existing and 2025 Buildout Conditions

To simulate system performance during a maximum day demand, average day demand, maximum day demand plus fire flow and peak hour demand conditions for 5-, 10- and 20-year future periods, WYA will use demand forecasts, recommended water supply sources, the system facilities inventory and assessment, the calibrated and verified computerized hydraulic simulation model, and the City's criteria for system operation.

WYA will then assess the adequacy of City's existing system facilities to meet system operation criteria under maximum day demand, average day demand, maximum day demand plus fire flow and peak hour demand conditions for 5-, 10-, and 20-year future periods.

Based on WYA evaluation of the existing water demands, WYA will evaluate the ability of the existing water system to meet the minimum performance criteria. WYA will identify which existing facilities lack capacity or would not be cost-effective to operate to accommodate the City's future demands. WYA will then identify system improvements required so that the City can cost-effectively and reliably provide required flows and pressures, while maintaining storage reserves. WYA will work closely with the City in identifying additional water supply sources including assessing the effectiveness of alternative water treatment plant sites and locating additional water wells primarily west of Highways 41 and 99. Based on forecasted service growth and demand projections, WYA will prepare a detailed, prioritized list of recommended system improvements. WYA's review will include opportunities for off peak pumping operations to minimize energy costs. This analysis will integrate the results of the assessment of the conditions of the City's existing facilities.

Task 4.1. Evaluate Existing Distribution System Layout

To gain a better understanding of the City's water distribution system and modes of operation, WYA will review available materials and supplement or update these materials as needed to match the current operations. Then, using the results from our brainstorming session in Task 1, our review of the existing pressure zone (gates) layout and distribution system, and the completed and refined City model, WYA will determine the most cost-effective layout for pressure zones, considering capital costs, operation and maintenance costs, and customer service. A maximum of three alternative configurations will be evaluated.

Task 4.2. Evaluate Pump Station and Storage Requirements for Existing and Ultimate Buildout Conditions

WYA will evaluate the existing pump stations adequacy to meet both existing and 2025 water demands, and evaluate existing storage facilities to determine if they are adequate in size and at the correct location to meet existing and future water demands. If system deficiencies are identified, the City's updated hydraulic model will be used to hydraulically analyze alternative storage and pump station configurations which will eliminate any deficiency. Pumping and storage facilities will be evaluated and sized to meet the City's pressure and flow requirements under demand conditions including: Maximum Day, Maximum Day plus Fire Flow, and Peak Hour.

A key part of this task will also be to perform an evaluation of the type or configuration of the storage facility that should be constructed. WYA will provide an evaluation of three tank configuration alternatives: elevated, at-grade and buried. As part of this analysis, a life cycle cost of the alternative tank configurations will be provided.

Task 4.3. Evaluate Existing Transmission and Distribution System

WYA will use the completed and refined, calibrated existing system model to evaluate the existing system's ability to meet existing and future demands (2007 land uses, and 2025 buildout). Scenarios will be run to evaluate the potential hydraulic impacts to existing

transmission mains due to increased flow from the water treatment plant and from new water supply sources as created by the need to provide service to meet future demands.

Task 4.4. Evaluation of Redundant Facilities

Additional hydraulic modeling scenarios (two or three) will also be performed to evaluate the reliability/redundancy of the City's water system. Alternative "what-if" scenarios will be used to determine if the system can reliably deliver water in the event of a major transmission main failure or loss of treated water supply. WYA will evaluate the capability within the water distribution system to accommodate "working-around" a major outage or facility failure.

In addition, WYA will perform an emergency standby generator siting analysis. This analysis will involve identifying the needed supply facilities to adequately serve the City under varying demand scenarios from a typical winter day demand to an average day demand. The model will be used to identify the facilities needing reliable power sources to meet the increasing demands while providing acceptable pressures throughout the system. The analysis will take into account those supply facilities that are protected from power outages through PG&E's Block 50 service. A summary list of the facilities needing future emergency standby generators will be provided.

Task 4 Work Product: Submit Draft Chapter presenting the evaluation of the existing system and 2025 Buildout conditions system. The contents of this Draft Chapter will provide the formal basis for development of the Capital Improvement Program. Seven (7) copies and a PDF electronic copy of this Draft Chapter will be submitted to the City for review. WYA will then meet with the City to discuss review comments. Appropriate City comments will then be incorporated into the Draft Water Master Plan (Task 6).

Task 5. Recommended Capital Improvement Program

Using the City's calibrated water system model and results from Task 4 for 2007 land uses and at 2025 buildout, a capital facilities schedule identifying the size and location of required transmission pipelines, pump stations, storage reservoirs and supply sources will be developed. The capital facilities schedule will provide a facility description, size, cost and required timing. The recommended improvements will be listed in five-year increments through 2025 with the first three years (2008 – 2010) summarized on an annual basis.

WYA will also review the City's current capital replacement program and evaluate whether it is adequate and make recommendations on how to improve the program, if needed.

The estimated construction costs for the improvements will be developed based on past cost information and recent bid results. The costs of improvements will be allocated to existing users and future customers. Individual water system CIPs will be described in project data sheets. The project data sheets will be customized to meet the City's needs, including graphical depictees of the improvements in ArcGIS.

Task 5 Work Product: No separate work product will be prepared for this task. The work product and findings will be incorporated into the work product prepared in Task 6.

Task 6. Prepare Water Master Plan

WYA will integrate City comments to the previously submitted draft chapters that have been prepared in the above tasks and integrate these into the appropriate chapters of the Water Master Plan report. The chapters will include comments received from the City during the review and discussion of the individual chapters. Ten (10) copies of the draft report will be submitted to the City.

Following City review of the draft report, a formal meeting will be held to discuss review comments and questions. The report will then be updated to integrate appropriate comments, and ten (10) copies of the final report will be prepared and submitted to the City.

Task 6 Work Product: Ten (10) copies of the Draft Water Master Plan and 10 copies of the Final Water Master Plan will be prepared and submitted. In addition, CDs will be provided with an electronic (PDF format) version of the Draft and Final Water Master Plan. The CD will also include the electronic version of the hydraulic model for use by City staff or others.

Task 7. Project Management and Meetings

WYA shall set up a good system for tracking work progress and expenditures, communications with the City and among the project team members, proper assignment of staff resources, develop a specific quality assurance and quality control (QA/QC) plan before beginning work, develop an outline, standard base mapping, and report format standards at the start of the job so that initial work products are developed on a consistent basis. WYA shall assure that it exercises elements of quality control and project management critical for the successful completion of the project on time and within budget.

At the beginning of the project, WYA's project manager will prepare a Project Management Plan (PMP). This plan will define the formal procedures for communications with the City, and among WYA team members, the scope and objectives, deliverables, budget and schedule for the project, and basic information on the work product (such as preliminary outline, base mapping guidelines, textual format, etc.).

The day-to-day project management activities will include the scheduling of resources to perform the work, coordination between project staff, and communication of project progress with City staff. We will also provide brief status reports with our monthly invoice submittal. Communication of the study results and progress with City staff will also be facilitated by the submittal of technical memoranda or draft report chapters that are prepared as the work product for each task. These documents will summarize the work performed on the task and present the results that will be used in subsequent tasks. The draft chapters will be submitted to inform City staff of the progress made to date and solicit input as the draft report is developed.

WYA will conduct a kickoff meeting (Task 1) with City staff within a week after our notice to proceed. At the kickoff meeting, WYA will present an up-to-date project schedule with key milestones identified for the Project. During this meeting, WYA will provide the City with a data request summarizing the data required to get the project started (Task 1).

WYA will provide the City's project manager with monthly progress reports including:

- Work completed in the latest reporting period,
- Work anticipated to be completed in the next reporting period,
- Identified problems/obstacles that could affect project budget/expenditures and/or schedule,
- Outstanding issues to be resolved; and,
- Action items.

WYA will organize and participate in progress meetings to present interim work products and discuss project issues. These meetings will be scheduled approximately once a month and will focus on the review of completed documents and obtaining input on the development of the draft water master plan report from the City's engineering and operational personnel.

Task 7 Work Products: The results of this work will be presented in a Project Management Plan, monthly invoices and progress reports, and minutes from conference calls and formal meetings.

ADDITIONAL WORK

Any additional work contained herein, as follows, may only be performed upon entry into an amendment to the agreement in accordance with Section 2(c) of the Agreement.

ADDITIONAL MODELING

Additional Modeling Tasks

WYA development of additional modeling scenarios to evaluate system operations to meet seasonal demands. This would entail developing modeling scenarios that are season specific and setting up different operating scenarios to: maximize surface water or groundwater use in different seasons, maximize tank turnover, develop schemes for taking facilities offline in winter months. WYA meeting with City staff to develop up to four additional scenarios to evaluate with the hydraulic model. The final scope and budget for any additional modeling will be determined through discussions with the City.

WATER RATE STUDY

A water rate study and connection fee analysis.

Condition of Facilities

Determination of the general condition of each facility (booster pumps, wells and tanks), through a "desktop" level evaluation using the data available from existing City files. WYA collection of any additional information and discussion of existing well facilities, their current conditions and staff's recommended improvements specifically for same. WYA review of the general condition of the active facilities by using the City's GIS and other databases and the information collected, developed and evaluated in Task 1 above to identify pertinent information to determine useful life and existing capacity of each facility.

SCHEDULE

We anticipate that this project will be completed within twelve (12) months of receiving written authorization to proceed as shown in the attached chart.

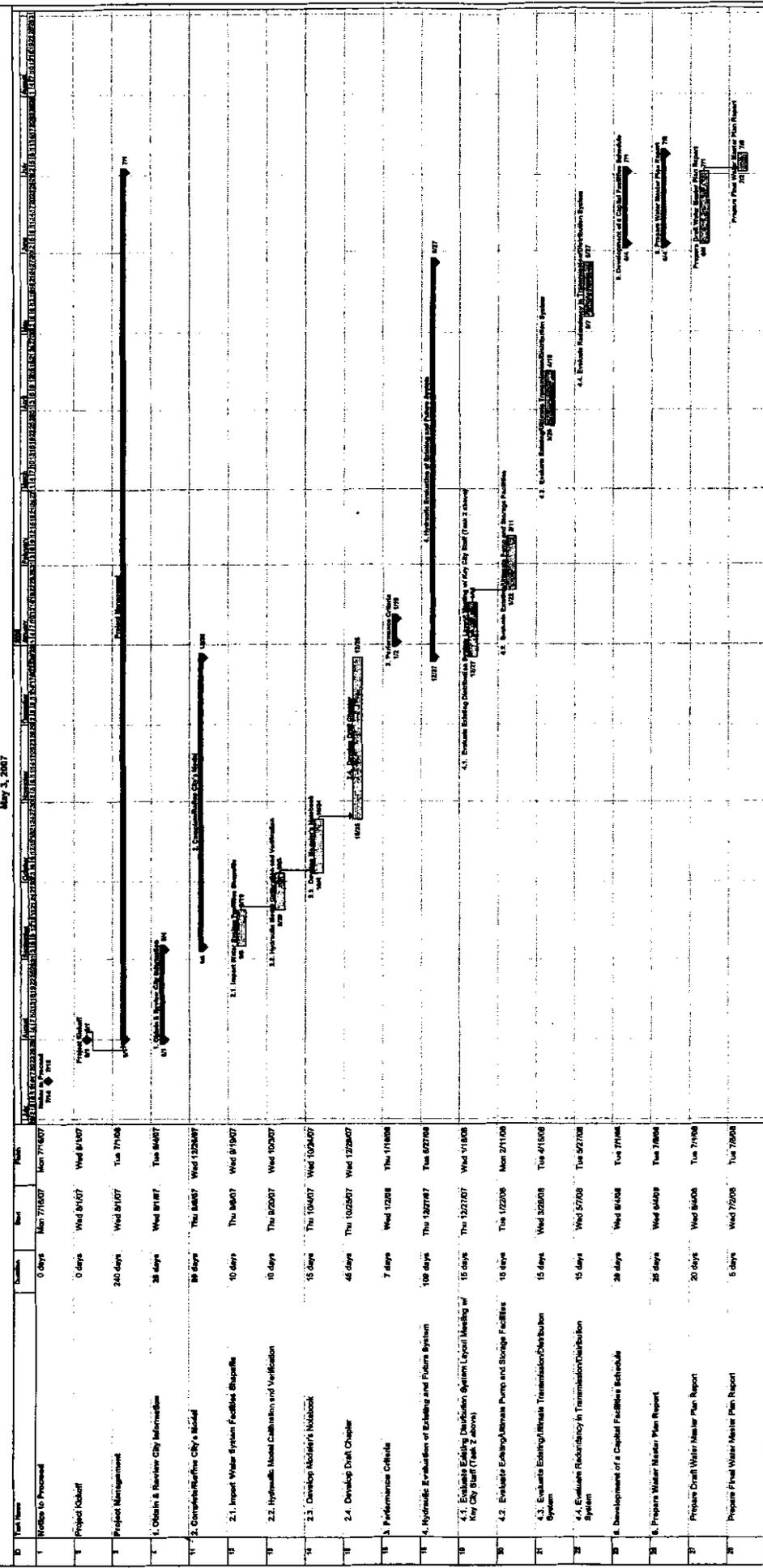
BUDGET

Based on the attached scope of work, WYA will perform the work described in Tasks 1 through 7 for a budget of \$281,800. The level of effort and costs associated with performing each task are provided in the table below.

Table 1. Costs

Tasks	Labor Hours	Labor Costs	Direct Costs	Total Cost
1. Obtain & Review City Information	118	\$19,000	-	\$19,000
2. Complete/Refine City's Model	478	\$76,500	\$7,500	\$84,000
3. Performance Criteria	20	\$3,300	-	\$3,300
4. Hydraulic Evaluation of Existing and Future System	392	\$64,300	-	\$64,300
5. Development of a Capital Facilities Schedule	97	\$15,000	-	\$15,000
6. Prepare Water Master Plan Report	418	\$66,200	\$7,500	\$73,700
7. Project Management and Meetings	120	\$22,500	-	\$22,500
Totals	1,643	\$266,800	\$15,000	\$281,800

City of Fresno
Water Master Plan
May 3, 2007



ID	Task Name	Duration	Start	End	Path
1	Waiting to Proceed	0 days	Mon 7/16/07	Mon 7/16/07	
2	Project Kickoff	0 days	Wed 8/1/07	Wed 8/1/07	
3	Project Management	240 days	Wed 8/1/07	Tue 7/1/08	
4	1. Obtain & Review City Information	28 days	Wed 8/1/07	Tue 8/6/07	
5	2. Complete Review City's Model	18 days	Thu 8/6/07	Wed 12/26/07	
6	2.1. Input Water System Facility Schedule	10 days	Thu 8/6/07	Wed 8/14/07	
7	2.2. Hydraulic Model Calibration and Verification	10 days	Thu 8/23/07	Wed 10/3/07	
8	2.3. Develop Modeler's Notebook	15 days	Thu 10/4/07	Wed 10/24/07	
9	2.4. Develop Draft Chapter	46 days	Thu 10/25/07	Wed 12/26/07	
10	3. Performance Criteria	7 days	Wed 12/26/07	Thu 1/1/08	
11	4. Hydraulic Evaluation of Existing and Future System	108 days	Thu 1/2/08	Tue 5/27/08	
12	4.1. Evaluate Existing Distribution System Layout (Task 2 above)	15 days	Thu 1/2/08	Wed 1/15/08	
13	4.2. Evaluate Existing/Retreat Transmission/Distribution System	15 days	Wed 3/20/08	Tue 4/15/08	
14	4.3. Evaluate Redundancy in Transmission/Distribution System	15 days	Wed 5/7/08	Tue 5/27/08	
15	4.4. Development of a Capital Facilities Schedule	28 days	Wed 6/10/08	Tue 7/1/08	
16	5. Prepare Water Master Plan Report	26 days	Wed 6/26/08	Tue 7/29/08	
17	6. Prepare Draft Water Master Plan Report	20 days	Wed 6/26/08	Tue 7/1/08	
18	7. Prepare Final Water Master Plan Report	5 days	Wed 7/2/08	Tue 7/29/08	

Legend:

- Task
- Milestone
- Summary
- Project Summary

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