AGENDA REPORT

Meeting Date:	September 20, 2016
Item Number:	D-11
To:	Honorable Mayor & City Council
From:	Trish Rhay, Assistant Director of Public Works
	Vince Damasse, Water Resources Manager
Subject:	AMENDMENT NO. 1 FOR THE AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND CIVILTEC ENGINEERING, INC. FOR PREPARATION OF WATER STANDARDS, DEVELOPMENT GUIDELINES, PLAN CHECKING, AND AS-NEEDED SUPPORT SERVICES; AND APPROVAL OF A CHANGE PURCHASE ORDER IN THE AMOUNT OF $308,720 FOR A TOTAL NOT TO EXCEED AMOUNT OF $358,570
Attachments:	1. Amendment No. 1

RECOMMENDATION

Staff recommends that the City Council move to approve Amendment No. 1 to an Agreement between the City of Beverly Hills and Civiltec Engineering, Inc. ("Civiltec") for preparation of water standards, development guidelines, plan checking, and as-needed support services and approve a change purchase order in the amount of $308,720 for a total not to exceed amount of $358,570.

INTRODUCTION

Currently, the City of West Hollywood and the City of Beverly Hills are experiencing unprecedented development growth. Both Cities combined have approximately 70 current and anticipated development projects in various phases of planning, building and safety permitting and construction within the City's Water Service Area which includes the City of Beverly Hills and a portion of the City of West Hollywood. Approximately fifteen of those development projects are currently requesting water service connections via the City's Water Will Serve process from the City of Beverly Hills Public Works Department. Additionally, the development growth rate is consistent with the City's 2015

Urban Water Management Plan which was recently completed in July 2016 and projected the City's Water Service Area growth in the City of West Hollywood to outpace the Water Service Area growth within the City's boundaries by nearly double.

As a result of the current and anticipated development growth, Civiltec was hired to update the City's water standards and work with staff to develop formal Development Guidelines as part of the City's goal to revamp its water "will serve" process. The original Civiltec agreement for $49,850 was primarily for this initial task, however, Civiltec also provided as-needed development support services including the performance of as-needed water feasibility analyses (i.e. hydraulic analyses), plan checking and other extension of staff duties related to development support.

DISCUSSION

The City's Water Master Plan and hydraulic model was last updated in 2002 by the City's Consultant, Black & Veatch. The Water Master Plan, unlike the City's adopted 2015 Water Enterprise Plan, is less strategic in nature and provides operational information regarding the City's infrastructure. The Water Master Plan, with the aid of the hydraulic water model, provides a condition assessment of the City's infrastructure and can be used to recommend capital improvements to the City's existing overall water system. Initially, updating the City's hydraulic water model separately will build the foundation for the City to more accurately conduct its water master planning efforts.

Additionally, the hydraulic water model is a critical tool in performing hydraulic analyses for determining development impacts to the City's water infrastructure. The current model, as well as the model's existing software platform, needs to be updated and overhauled to include a newer version of the software, the City's new Geographical Information System (GIS) layers, hydrant fire flow, pipeline rehabilitation, valves and other associated infrastructure information.

An ongoing updated calibrated hydraulic water model is paramount in performing water system feasibility analyses, determining infrastructure impacts from ultimate development demands, setting conditions of approvals and projecting future development demand growth and its anticipated impacts on the City's water system.

Civiltec is uniquely qualified to perform this work as they have been performing hydraulic analyses and maintaining the City's hydraulic water model as part of their ongoing development support services. Additionally, Civiltec provides similar extension of staff development support services for other comparable sized water utilities throughout Southern California.

FISCAL IMPACT

Funds have been earmarked in the FY16-17 Water Enterprise Plan budget to cover this expense. Approximately $150,000 of the $308,720 total change purchase order will be allocated for as-needed development support services which are anticipated to be reimbursable as the City collects plan check / hydraulic analyses fees for its Consultant's

time. The remaining $158,720 of the total change purchase order will be utilized to update the existing hydraulic model for the aforementioned reasons above.

George Chavez
Approved By

Attachment 1

AMENDMENT NO. 1 FOR THE AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND CIVILTEC ENGINEERING, INC. FOR PREPARATION OF WATER STANDARDS, DEVELOPMENT GUIDELINES, PLAN CHECKING, AND AS-NEEDED SUPPORT SERVICES

NAME OF CONSULTANT:	Civiltec Engineering, Inc.
RESPONSIBLE PRINCIPAL OF CONSULTANT:	W. David Byrum, P.E, President
CONSULTANT'S ADDRESS:	118 West Lime Avenue Monrovia, CA 91016 Attention: W. David Byrum, P.E. President
CITY'S ADDRESS:	City of Beverly Hills 455 N. Rexford Drive Beverly Hills, CA 90210 Attention: George Chavez Assistant City Manager
COMMENCEMENT DATE:	October 1, 2016
TERMINATION DATE:	December 31, 2017
CONSIDERATION:	Original Agreement: Not to exceed $49,850 Amendment No. 1: Not to exceed $308,720 based on the rates set forth in Exhibit B-1 Total: Not to exceed $358,570

AMENDMENT NO. 1 FOR THE AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND CIVILTEC ENGINEERING, INC. FOR PREPARATION OF WATER STANDARDS, DEVELOPMENT GUIDELINES, PLAN CHECKING, AND AS-NEEDED SUPPORT SERVICES

This Amendment No. 1 is to that certain Agreement between the City of Beverly Hills (hereinafter called "CITY"), and Civiltec Engineering, Inc. (hereinafter called "CONSULTANT") dated May 25, 2016 and identified as Contract No. 162-16 ("Agreement").

RECITALS

A. CITY and CONSULTANT entered into the Agreement to provide services to CITY.

B. CITY and CONSULTANT desire to amend the Agreement to include an additional Scope of Services and to compensate CONSULTANT for such services.

NOW, THEREFORE, the parties agree as follows:

Section 1. The Termination Date shall be amended as set forth on the cover page.

Section 2. The Consideration shall be amended as set forth on the cover page.

Section 3. Exhibit A, the Scope of Work shall be amended to include the additional services attached hereto and incorporated herein as Exhibit A-1.

Section 4. Exhibit B, the Schedule of Payment and Rates shall be amended to include the rates and reimbursables attached hereto and incorporated herein as Exhibit B-1.

Section 5. Except as specifically amended by this Amendment No. 1, the remaining provisions of the Agreement shall remain in full force and effect.

EXECUTED the _____ day of _____ 20___, at Beverly Hills, California.

CITY OF BEVERLY HILLS
A Municipal Corporation

_____
JOHN A. MIRISCH
Mayor of the City of Beverly Hills, California

ATTEST:

_____ (SEAL)
BYRON POPE
City Clerk

CONSULTANT:
CIVILTEC ENGINEERING, INC.

_____
W. DAVID BYRUM, P.E.
President

_____
MANNY ACEVES
Corporate Treasurer

APPROVED AS TO FORM:

_____
LAURENCE S. WIENER
City Attorney

APPROVED AS TO CONTENT:

_____
MAHDI ALUZRI
City Manager

_____
GEORGE CHAVEZ
Assistant City Manager / Director of Public Works

_____
SHARON L'HEUREUX DRESSEL
Interim Risk Manager

EXHIBIT A-1

ADDITIONAL SCOPE OF SERVICE

The Scope of Services herein outlines the efforts required to develop a comprehensive water system computer model on a GIS platform. Phase 2 of the Scope is to continue to support CITY with hydraulic analyses and meetings with developers. All of the cost for Phase 2 services is being paid by developers.

PHASE 1 - WATER MODEL CONSTRUCTION

TASK 1 RESEARCH AND DATA ACQUISITION

1.1 Kick-off Meeting

Arrange and coordinate a kick-off meeting with CITY staff to discuss the goals and priorities of the model construction, existing operational issues, and expected deliverables, work plan and schedule. CONSULTANT anticipates that this initial meeting will be a workshop involving the key members of CONSULTANT's team and the operations and management personnel from CITY. It will be helpful to identify and discuss existing design and operating criteria, thoroughly review the system components and all operating procedures and conditions, identify all features that are unique, challenging to operate, worst case conditions experienced, and all areas system performance is in question.

1.2 Request for Information

Following the Kick-off Meeting, CONSULTANT shall issue a comprehensive Request-for-Information (RFI) including all data needed for the model construction. The RFI will indicate the required information and reference it to the Scope of Work. Data collection can be a time-consuming process, and CONSULTANT respectfully requests prompt response by CITY to the RFI.

CONSULTANT shall be responsible for acquiring all publicly available information, such as general plans, specific plans, regional plans, land use data, regulations and guidance documents, population estimates, demographic data, meteorological data, etc.
CITY will be responsible for transferring to CONSULTANT internal information such as maps and drawings of infrastructure and facilities, billing records, SCADA or telemetry records, previous plans and studies, water quality data, maintenance records, pump efficiency tests, etc.
CONSULTANT shall coordinate with CITY to collect field data and inspect facilities as necessary to develop an understanding of the water system and its performance.

TASK 2 LAND USE AND POTABLE WATER REQUIREMENTS

2.1 Sphere of Influence

CONSULTANT shall verify and compare the extent of CITY water service areas relative to the associated Spheres of Influence (SOI), which will include the area that CITY serves in West Hollywood.

2.2 Population Analysis

CONSULTANT shall obtain and review all publicly available data from the United States Census, the State of California, LA County, SCAG and other population projections completed by CITY. This will include CITY's recent UWMP projections, their General Plan, major Specific Plans, and any other information CONSULTANT is able to obtain. Using this information and projections, CONSULTANT shall develop a model for population growth.

2.3 Land Use Analysis

CONSULTANT shall acquire and review the land use elements of the General Plans for CITY and the City of West Hollywood in order to determine the planners' vision for development within the water system SOI. CONSULTANT shall summarize and delineate existing land use designations by acreage and number of parcels. CONSULTANT shall review the latest GIS Land Use Database for La County and CITY with regard to those parcels served by CITY.

2.4 Water Demand Analysis

CONSULTANT shall acquire, review, analyze, and reconcile customer billing data, water production data and telemetry for the Study Period, as available. This analysis will provide an understanding of how demand changes with time and the extent of water loss on a pressure zone by pressure zone basis.

A. Development of Peaking Factors

CONSULTANT shall identify the Average Day Demand (ADD), the Maximum Day Demand (MDD), the Peak Hour Demand (PHD), and the minimum day demand from actual meter readings and consumption data, and develop peaking factors that describe the relationships between these demand conditions. These demand conditions are fundamental to defining system requirements.

B. Development of Diurnal Curves

Diurnal demand fluctuation describes the change in demand throughout the day. An understanding of diurnal demand is important for operational planning, managing storage turnover, and calculating operational storage requirements. At any moment in time, actual demand may be determined by the following relationship:

$$Q = Qin - Qout + \frac{\Delta V}{\Delta t}$$

Where:

Q is demand

Qin is supply entering the system

$Q\text{out}$ is supply leaving the system

$\frac{\Delta V}{\Delta t}$ is the change in storage with respect to time

Based on system theory, CONSULTANT shall use the above relationship to determine the demand every hour during the Study Period in the entire system and in each pressure zone for peak and average demand conditions, to the extent that SCADA or telemetry data are available and complete. Note that demand represents all known and unaccounted-for water uses.

C. Normalization

Water demand is dynamic and varies according to a variety of inherent factors and external stimuli. An understanding of water demand variation may be necessary for predicting demand and for monitoring the implementation of water use reduction (aka water conservation). CONSULTANT shall develop a water demand model that accounts for population growth, temperature, precipitation and economics, as follows:

2.5 Top Water Users

CONSULTANT shall identify top water users based on correlation of land use data and billing data. A map will be created showing the locations of the top users to help develop a sense of system loading.

2.6 Water Duty and Unit Demand Factors

CONSULTANT shall compute Water Duty Factors and Unit Demand Factors based on correlation of land use data and billing data. A Water Duty Factor defines water use for a specific land use in terms of flow rate per acre (e.g. AFY/acre). A Unit Demand Factor defines water use for a specific land use in terms of flow rate per planning unit (e.g. GPM/medium density residential parcel). The planning unit designations will correspond to those described in planning documents published by the two Cities. Factors will be developed for all statistically significant land use designations.

2.7 Impact of Pending Development (aka Near-Term Development)

An understanding of near-term development is important for determining an appropriate level of developer contribution. In addition to onsite improvements, developers should be responsible for mitigating offsite impacts to the system.

CITY and the City of West Hollywood will need to provide details of the pending development Impact of Build-out.

Many system components have a long service life, some in excess of 100 years. An understanding of build-out demand is important for appropriately sizing pipelines, valves and other appurtenances that will eventually experience build-out loading. CONSULTANT shall develop the build-out demand based on maximum occupancy of all buildable land within the SOIs.

TASK 3 ESTABLISHMENT OF EVALUATION CRITERIA

Early in the process, CONSULTANT shall issue a memorandum detailing proposed Design Criteria and Planning Criteria based on research of previous planning efforts, industry standards, compliance requirements and input from CITY staff provided at the Kick-off Meeting. CONSULTANT shall coordinate a follow-up meeting with CITY staff to establish and adopt Design Criteria and Planning Criteria to be used as a baseline for determining the adequacy of existing infrastructure to meet current and build-out demands.

3.1 Design Criteria

Design Criteria deal with parameters related to the proper sizing and configuration of infrastructure from a hydraulic point of view. The concepts of system performance, system redundancy, customer expectations, regulatory compliance, and emergency preparedness will be built into the criteria, which will target the following areas of concern: supply, storage, transmission, system pressure, and fire flow for the water system and collection, transmission, treatment and effluent management for the wastewater system.

3.2 Planning Criteria

Planning Criteria deal with parameters related to cyclical infrastructure replacement due to age and condition. The primary concern of Planning Criteria is to establish the practical service life of each system component and a performance indicator to verify whether maintenance or replacement will result in an economic benefit. These performance indicators may include efficiency, reliability and maintenance history.

TASK 4 GIS BASE MAP

Early in the model construction process, CONSULTANT shall work with CITY GIS personnel to obtain base mapping for CITY water service boundary. This base map will be the platform for the construction of the water system models.

4.1 Base Mapping

CONSULTANT shall work with CITY GIS personnel to obtain and set up shape files for use in the model construction processes. Scale and configuration of the shape files will be confirmed.

4.2 Record Maps

CONSULTANT shall analyze the record maps obtained from CITY and determine if the record data is adequate to construct the model. CONSULTANT shall provide input to CITY so a final decision can be made about any need for survey.

4.3 Field Survey

CONSULTANT shall coordinate with CITY survey personnel to gather field data on all

CITY visible infrastructure including valve can lids, meters, hydrants, blow-offs, wells, reservoirs, pump stations, and pressure reducing stations.

4.4 Final Map

CONSULTANT shall input all field data into the GIS platform for use in model construction. CONSULTANT shall finalize the coordinate with CITY GIS personnel in this process.

TASK 5 WATER SYSTEM HYDRAULIC MODELING

A hydraulic computer model is an important tool for assessing the water distribution system with respect to capacity, compliance, efficiency and surge. It is ideally suited for evaluating alternative solutions to a deficiency and for performing time-based analyses such as emergency storage recovery, disinfectant residual decay and the feasibility of implementing time-of-use energy conservation. A number of tasks are necessary to construct the new Water Model up to a level where CITY can have confidence in the results it generates, as delineated in the following subsections.

5.1 Water Model Construction

- CONSULTANT shall identify all pipes including diameter, length, material, estimated roughness and installation date.

- CONSULTANT shall identify all junctions (i.e. connections between pipe ends) including elevation and designation (e.g. demand node, fire hydrant location, facility, etc.).

- CONSULTANT shall program all well and booster pumps including elevation, design head and flow per the latest efficiency test, operational settings, pumping water surface of aquifer and installation date.

- CONSULTANT shall program all control valves including elevation, size, function (i.e. flow control, pressure reducing, pressure sustaining, etc.), and installation date.

- CONSULTANT shall program all tanks including base elevation, high water line, dimensions, and construction date.

- CONSULTANT shall allocate demand to the nearest demand node based on the water demand analysis.

5.2 Steady State Calibration

Steady state simulation is appropriate for any analysis that may be considered a snapshot in time, such as examining system performance under peak or emergency conditions.

Steady state calibration involves verifying vertical control (i.e. the elevations of junctions, tanks and facilities) and adjusting pipe roughness to match actual flow characteristics. Following Water Model construction, CONSULTANT shall calibrate it against steady state field data to assure that simulation results reflect actual system performance.

Field testing will be performed at locations to be determined in coordination with

CITY staff. A field test will consist of pressure monitoring at two locations before and during a hydrant flow test at a third location. It is assumed that CITY will perform the field testing. Field data collection at each test location will consist of pressure readings at two locations, a pitot tube reading at the flow hydrant, the duration of the flow test, the time of the flow test, observations of the flow stream (i.e. more or less turbulent), and other boundary conditions that would have an impact on the test results (e.g. tanks levels, pump flow and valve flow). Estimated roughness will be assigned to each pipe in the Water Model based on AWWA[1] and/or Army Corps of Engineers[2] recommendations for pipe material and age. Incremental adjustments will be made to the estimated roughness on a global basis until a best fit is achieved. The target tolerance for calibration is plus or minus 5 psi or 5% of static pressure at each test location. The calibration process and the raw field test data will be provided in a final model construction report.

5.3 Demand Allocation for Simulation

CONSULTANT shall develop demand allocation to the Water Model across three dimension: (1) scale, (2) simulation type and (3) projection in time. When testing the capacity of the system against design criteria, an appropriate combination of these demand dimension will be applied to the simulations.

Scale will be designated as peak hour demand (PHD), maximum day demand (MDD), average day demand (ADD), and minimum day demand (Min Day).

Simulation type will be designated as Steady State and EPS. Steady State means a discrete demand allocated to each demand node. EPS means a demand plus a diurnal curve allocated to each demand node.

Projection in time will consider (1) existing conditions, (2) conditions following completion of known development projects (aka near-term), and (3) build-out.

5.4 Scenario Development

In InfoWater, a Scenario is collection of data sets referred to as Alternatives. Each Alternative describes a specific part of the Water Model. The modeler will program Alternatives and combine them into Scenarios as needed to generate results related to design criteria requirements. The Water Model will store the Alternatives and Scenarios which may be rerun or adapted for future use.

Each Scenario may be run under Steady State, EPS, or Fire Flow conditions depending on the desired model output.

5.5 Steady State Simulation

CONSULTANT shall simulate fire flow under MDD conditions at each hydrant location to determine system capacity relative to the fire marshal's requirements. Care will be taken to accurately apply allowances for multiple hydrants providing coverage to

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[1] American Water Works Association. (2012). *Manual of Water Supply Practices-M32: Computer Modeling of WaterDistribution Systems*

[2] Walski et al. (1988). *Predicting Internal Roughness in Water Main: EL-88-2*

commercial, industrial and institutional (CII) areas.

CONSULTANT shall simulate conditions that result in maximum and minimum system pressure to identify vulnerable areas.

CONSULTANT shall simulate conditions that result in high pipe velocities to identify bottlenecks and excessive energy losses.

TASK 6 WATER SUPPLY ANALYSIS

6.1 Review of Sources of Supply

CONSULTANT shall define the supply portfolio serving the needs of CITY based on current agreements, rights and contracts.

6.2 Future Supply Requirements

CONSULTANT shall evaluate the capacity of current sources of supply against design criteria under existing, near-term and build-out demand conditions.

6.3 Supply to Pressure Zones

Based on system theory, supply to a pressure zone is defined by as $Q\text{in}$ in the following relationship:

$$Q = Q\text{in} - Q\text{out} + \frac{\Delta V}{\Delta t}$$

Where:
Q is pressure zone demand
Qin is supply entering the pressure zone
$Qout$ is supply leaving the pressure zone
$\frac{\Delta V}{\Delta t}$ is the change in pressure zone storage with respect to time

For purposes of analysis, supply as $Q\text{in}$ is considered as the sum of all nonemergency sources entering a pressure zone, including wells, treatment facilities, booster stations, and control valves. CONSULTANT shall evaluate the capacity of current supply to each pressure zone against design criteria under existing, near-term and buildout demand conditions.

6.4 Preparation of the Model Construction Report

A. Draft Report

CONSULTANT shall issue and present draft report documenting the model construction for review by CITY. The reports will be in PDF electronic format and hard copies as necessary. CONSULTANT shall respond to comments on the draft report and make revisions as necessary.

B. Final Report

CONSULTANT shall issue and present the final report to CITY. CONSULTANT shall attend a meeting with CITY management to present the final report.

PHASE 2 – SYSTEM ANALYSIS AND AS-NEEDED SUPPORT

CONSULTANT shall assist CITY by analyzing the impacts of individual development projects on the water system, updating the model as necessary, providing modeling results when requested, and augmenting staff as requested by CITY. These services may include meetings with developers and the jurisdictional agencies involved in development approval.

TASK 1 MEET WITH CITY PERSONNEL AND DEVELOPERS

There are several medium to large developments currently coming to CITY requesting water service. The Water Department is looking for CONSULTANT engineers to aid CITY with meeting developers, reviewing their plans, and requesting the information necessary to evaluate the impact of the development on the water system.

TASK 2 PREPARATION OF TECHNICAL MEMORANDUMS

Once we obtain the information necessary to evaluate the development, CONSULTANT shall produce a Technical memorandum. CONSULTANT shall review their water demands, perform hydraulic analyses, and hydraulic modeling as necessary to generate conditions of approvals for the development.

TASK 3 PLAN CHECKING

If water system improvements are necessary, CONSULTANT shall assist CITY by reviewing the design drawings. CONSULTANT shall ensure the drawings meet CITY's requirements. CONSULTANT shall also ensure the drawings meet industry standards and provide CITY with the final product that meets their needs.

TASK 4 COORDINATION WITH FIRE DEPARTMENT

In order to determine the fire flow requirement, the Beverly Hills Fire Department will have to be engaged. CONSULTANT will assist CITY in coordinating with the Fire Department, reviewing the California Fire Code, and determining the fire flow requirement for each development. This may include phone calls, correspondence, and coordination meetings with the Fire Department.

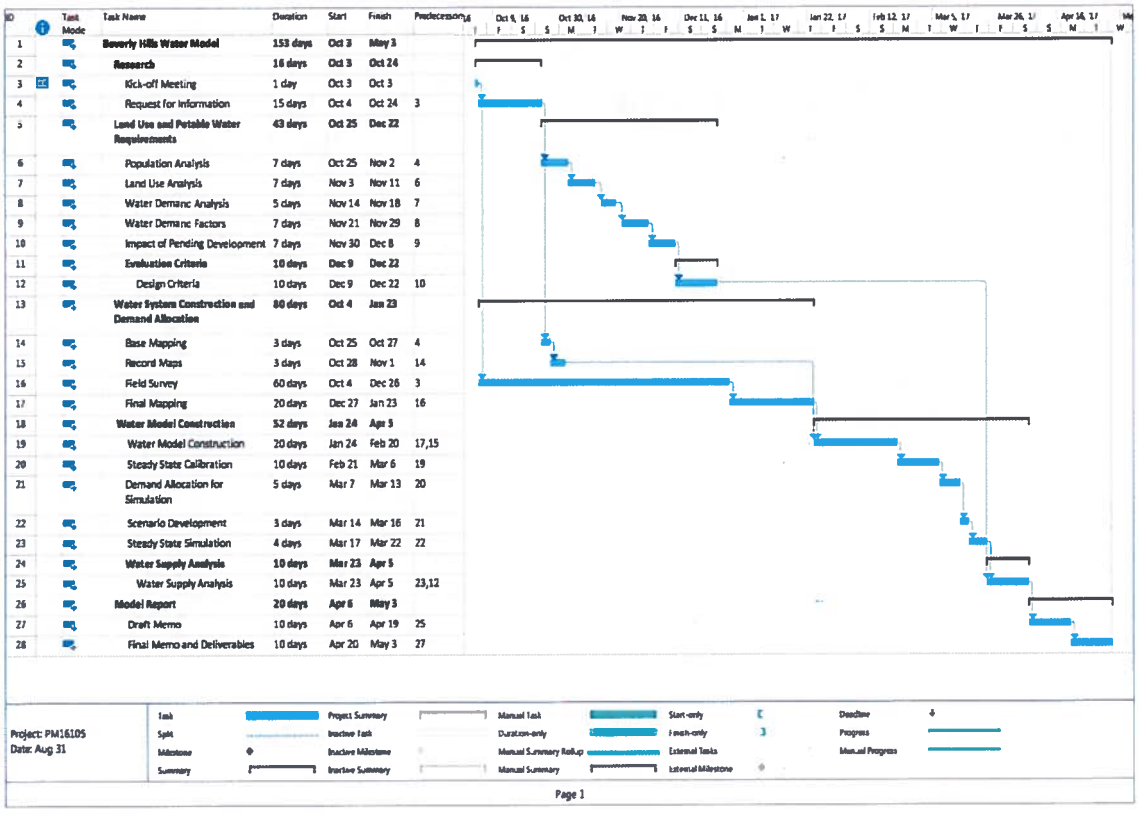
TASK 5 AS-NEEDED DEVELOPMENT SUPPORT

CONSULTANT shall make themselves available to assist CITY or augment CITY staff in any other ways needed. This may include updating the water model to reflect improvements that have been made, performing hydraulic analyses, bid assistance, or assisting CITY with moving developments into construction.

SCHEDULE

The water model update project will take CONSULTANT approximately eight months to complete. This includes approximately 60 days to complete the Field Surveying. Assuming a projected start date of October 3rd, the Water Model Update project will be completed by May 3rd. The full performance schedule is attached as Attachment 1 to this Exhibit.

ATTACHMENT 1 TO EXHIBIT A-1
PERFORMANCE SCHEDULE



ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Beverly Hills Water Model**	153 days	Oct 3	May 3	
2		**Research**	16 days	Oct 3	Oct 24	
3		Kick-off Meeting	1 day	Oct 3	Oct 3	
4		Request for Information	15 days	Oct 4	Oct 24	3
5		**Land Use and Potable Water Requirements**	43 days	Oct 25	Dec 22	
6		Population Analysis	7 days	Oct 25	Nov 2	4
7		Land Use Analysis	7 days	Nov 3	Nov 11	6
8		Water Demand Analysis	5 days	Nov 14	Nov 18	7
9		Water Demand Factors	7 days	Nov 21	Nov 29	8
10		Impact of Pending Development	7 days	Nov 30	Dec 8	9
11		**Evaluation Criteria**	10 days	Dec 9	Dec 22	
12		Design Criteria	10 days	Dec 9	Dec 22	10
13		**Water System Construction and Demand Allocation**	80 days	Oct 4	Jan 23	
14		Base Mapping	3 days	Oct 25	Oct 27	4
15		Record Maps	3 days	Oct 28	Nov 1	14
16		Field Survey	60 days	Oct 4	Dec 26	3
17		Final Mapping	20 days	Dec 27	Jan 23	16
18		**Water Model Construction**	52 days	Jan 24	Apr 5	
19		Water Model Construction	20 days	Jan 24	Feb 20	17,15
20		Steady State Calibration	10 days	Feb 21	Mar 6	19
21		Demand Allocation for Simulation	5 days	Mar 7	Mar 13	20
22		Scenario Development	3 days	Mar 14	Mar 16	21
23		Steady State Simulation	4 days	Mar 17	Mar 22	22
24		**Water Supply Analysis**	10 days	Mar 23	Apr 5	
25		Water Supply Analysis	10 days	Mar 23	Apr 5	23,12
26		**Model Report**	20 days	Apr 6	May 3	
27		Draft Memo	10 days	Apr 6	Apr 19	25
28		Final Memo and Deliverables	10 days	Apr 20	May 3	27

EXHIBIT B-1 – RATE SCHEDULE AMENDMENT NO. 1

EFFECTIVE UNTIL DECEMBER 31, 2016

Principal Engineer	$215.00
Principal Engineer - Expert Witness Testimony	$340.00
Senior Engineer	$200.00
Project Manager	$180.00
Project Engineer	$165.00
Senior Designer	$160.00
Staff Engineer	$145.00
Associate Planner	$130.00
Designer	$125.00
Designer/Drafter	$110.00
Planning Technician	$105.00
Resident Engineer/Observer	$105.00
CAD Technician	.$95.00
Senior Administrative Assistant	$80.00
Administrative Assistant/Clerical	$75.00
Two Man Survey Party	$230.00
Survey Manager	$155.00
Staff Land Surveyor	$125.00
Survey Technician	$105.00
Subcontracted Services	Cost plus 15%
Mileage	$0.575/mile

NOTE: All rates are effective until December 31, 2016. Any increases in rates after that date will be limited to 5% maximum upon giving CITY thirty days prior written notice.

BUDGET PROPOSAL

CONSULTANT shall provide its services on a time and materials basis not to exceed the budget listed below and based on the attached rates.

PHASE 1 – Water Model Construction

	Not to Exceed
TASK 1 - Research and Data Acquisition	$ 3,680.00
TASK 2 - Land Use and Potable Water Requirements	$ 34,970.00
TASK 3 - Establishment of Evaluation Criteria	$ 5,070.00
TASK 4 - GIS Base Map	$ 69,720.00
TASK 5 - Hydraulic Water System Model	$ 22,220.00
TASK 6 - Water Supply Analysis	$ 8,280.00
TASK 7 - Preparation of the Model Report	$ 14,780.00
Phase 1 Subtotal	**$ 158,720.00**

PHASE 2 – System Analysis and As-Needed Support

Phase 2 Services Budget	**$ 150,000.00**
Total Amendment No. 1	**$ 308,720.00**

EXHIBIT B-1

CITY OF BEVERLY HILLS
Water System Computer Model

CITY OF BEVERLY HILLS												
Water System Computer Model												
Engineering Services Cost Estimate												
Date: August 29, 2016												
	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	Civiltec	
	PE	PM	PrE	SE	AP	PT	DD	CADD	AA	SVY CREW	Expenses	BUDGET
RATE	$ 215.00	$ 180.00	$ 165.00	$ 145.00	$ 130.00	$ 105.00	$ 110.00	$ 95.00	$ 75.00	$ 230.00		
TASKS												
TASK 1 Research and Data Acquisition												
1.1 Kick-off Meeting	4	4		4								$ 2,150.00
1.2 Request for Information		2		8								$ 1,520.00
BUDGET FOR Task 1												**$ 3,690.00**
TASK 2 Land Use and Potable Water Requirements												
2.1 Sphere of Influence			2	2								$ 620.00
2.2 Population Analysis.			12	32								$ 6,620.00
2.3 Land Use Analysis.			12	32								$ 6,620.00
2.4 Water Demand Analysis.	2	4	8	16								$ 4,790.00
2.5 Top Water Users			2	4								$ 910.00
2.6 Water Duty and Unit Demand Factors.			12	32								$ 6,620.00
2.7 Impact of Pending Development	2	6	16	32								$ 8,760.00
BUDGET FOR Task 2												**$ 34,970.00**
TASK 3 Establishment of Evaluation Criteria												
3.1 Design Criteria.	2	2	4	8								$ 2,320.00
3.2 Planning Criteria	4	2	4	8								$ 2,750.00
BUDGET FOR Task 3												**$ 5,070.00**
TASK 4 GIS Base Map												
4.1 Base Mapping.		2	4	8								$ 2,180.00
4.2 Record Maps.			4	4			8					$ 2,120.00
4.3 Field Survey										240		$ 55,200.00
4.4 Final Map		8	8	20				48				$ 10,220.00
BUDGET FOR Task 4												**$ 69,720.00**
TASK 5 Water System Hydraulic Modeling												
5.1 Water Model Construction		4	8	40								$ 7,840.00
5.2 Steady State Calibration.		4	4	12								$ 3,120.00
5.3 Demand Allocation for Simulation.		2	12	12								$ 4,060.00
5.4 Scenario Development.		4	4	8								$ 2,540.00
5.5 Steady State Simulation.	4	4	8	12								$ 4,640.00
BUDGET FOR Task 5												**$ 22,220.00**
TASK 6 Water Supply Analysis												
6.1 Review of Sources of Supply	2	2	8									$ 2,110.00
6.2 Future Supply Requirements	2	4	8	10								$ 3,920.00
6.3 Supply to Pressure Zones		4	4	6								$ 2,250.00
BUDGET FOR Task 6												**$ 8,280.00**
TASK 7 Preparation of the Model Report												
7.1 Draft Report	4	4	16	16			12				$ 500.00	$ 8,360.00

EXHIBIT B-1

CITY OF BEVERLY HILLS
Water System Computer Model

CITY OF BEVERLY HILLS												
Water System Computer Model												
Engineering Services Cost Estimate												
Date: August 25, 2016												
	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	HOURS BY	Civiltec	
	PE	PM	PrE	SE	AP	PT	DD	CADD	AA	SVY CREW	Expenses	BUDGET
RATE	$ 215.00	$ 180.00	$ 165.00	$ 145.00	$ 130.00	$ 165.00	$ 110.00	$ 95.00	$ 75.00	$ 230.00		
TASKS												
7.2 Final Report	2	4	10	12			8				$ 1,000.00	$ 6,420.00
BUDGET FOR Task 13												$ 14,790.00
TOTAL HOURS	28	68	170	334	0	0	28	48	0	240		914
TOTAL BUDGET	$ 6,020.00	$ 11,880.00	$ 28,050.00	$ 48,430.00	$ -	$ -	$ 3,080.00	$ 4,560.00	$ -	$ 55,200.00	$ 1,500.00	$ 158,720.00
TOTAL PROJECT BUDGET CONFIRMATION												$ 158,720.00
PE = Principal Engineer PrE = Project Engineer											PHASE 2	$ 158,000.00
DD = Sr CADD Technician PT = Planning Technician												
AP = Associate Planner SE = Staff Engineer											TOTAL	$ 316,720.00
D = CADD Technician AA = Admin Assistant												
PM = Project Manager												