

RESOLUTION NO. 5329

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SOLEDAD
APPROVING A TASK ORDER WITH HARRIS AND ASSOCIATES FOR A WATER
MASTER PLAN IN THE AMOUNT OF \$104,135**

WHEREAS, on March 6, 2013, Council awarded a contract to Harris and Associates to provide on-call engineering services as needed and since authorized amendments to continue Harris services through 2019; and

WHEREAS, Infrastructure Master Plan updates are performed periodically to ensure the current highest priority projects are determined and prioritized and commenced as intended with collected funds; and

WHEREAS, the City of Soledad's most recent WMP was completed in 2005;
and

WHEREAS, a new WMP is needed to ensure that the current water system is analyzed and the highest priority water projects are programed to sustain the City's water system; and

WHEREAS, the City's contracted water resources engineering firm, Harris & Associates, has proposed a Task Order (attached) in the amount of \$104,135 to prepare an updated WMP.

BE IT HEREBY RESOLVED, by the City Council of the City of Soledad that the Task Order #66 from Harris & Associates for a Water Master Plan update, a copy of which is attached hereto as **Exhibit A** and by reference incorporated herein, is hereby approved in an amount not to exceed \$104,135 and the City Manager is authorized and directed to execute the same on behalf of the City.

PASSED AND ADOPTED by the City Council of the City of Soledad at a regular meeting duly held on the 2nd of August, 2017, by the following vote:

AYES, and in favor thereof, Councilmembers: Christopher Bourke, Mayor Pro Tem Alejandro Chavez, Anna Velazquez, Carla Stewart and Mayor Fred Ledesma

NOES, Councilmembers: None

ABSENT, Councilmembers: None

ABSTAIN, Councilmembers: None


FRED J. LEDESMA, Mayor

ATTEST:



MICHAEL MCHATTEN, City Clerk



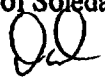
TASK ORDER FOR ENGINEERING SERVICES

Task Order No. 66

1. Pursuant to the Non Exclusive Consulting Service Agreement for engineering services dated March 7, 2015 ("Agreement") between the City of Soledad and Harris & Associates ("Engineer"), City hereby requests that Engineer provide engineering services for the following Project: **Develop Water Master Plan and Water Capital Improvement Program (CIP)**
2. Engineer shall provide the following engineering services for the Project: See Attached proposal.
3. Engineer's services for the project are to commence on August 2, 2017, with anticipated completion by March 2018.
4. Engineer shall be compensated for its services for the project as follows: See Attached Fee Schedule.


City and Engineer agree to the terms and conditions of this Task Order, and upon execution of this Task Order by both parties, this Task Order shall be approved, subject to all terms and conditions contained herein and in the Agreement, and this Task Order shall be appended to and become a part of the Agreement.

City of Soledad



By: Michael McLatten
Date: 9/3/15

Harris & Associates



By: Frank S. Lopez
Date: 8/3/2017





July 20, 2017

Don Wilcox, Public Works Director
City of Soledad
P.O. Box 156
Soledad, CA 93960

Subject: Scope and Fee to Develop Water Master Plan and Water Capital Improvement Program (CIP)
Engineering Contract - Task #66

Harris & Associates is pleased to submit this proposal to prepare a Water Master Plan for the City of Soledad. This work builds on the water system evaluation that was performed by Harris and MKN & Associates in November 2015, as well as the current maintenance efforts associated with the City's water wells and storage tanks.

A Water Master Plan is a critical document that serves as the basis for planning and budgeting capital improvements aimed at meeting current residential and commercial customer demands and ensuring suitably designed infrastructure for future growth. The primary tasks associated with preparing a Water Master Plan would be as follows:

- ✓ Research and GIS mapping of City water system
- ✓ Review current water demands, develop projections, and identify use patterns
- ✓ Develop and calibrate a water hydraulic model
- ✓ Use model to identify system improvements to meet current and future needs
- ✓ Prepare Capital Improvement Program with construction cost estimates and phasing

To deliver on these tasks, Harris will be working closely with NCS Engineers in preparing the City's Water Master Plan. NCS is an engineering consulting firm specializing in water and wastewater treatment, hydraulic modeling, and water quality research studies. NCS will be prepare the water model associated with the Water Master Plan with oversight by Harris. Roger Kohne, a Senior Director at Harris with over 25 years of water and wastewater planning, design, and construction experience, will be the Project Manager.

The following lists our scope for work for this assignment:

TASK 1: PROJECT MANAGEMENT

This task will include oversight of the project budget and schedule, and coordination with City staff and sub-consultant. Harris will attend staff and council meetings as requested by the City.

Deliverable: Weekly Progress Reports and Meeting Agendas

TASK 2: WATER INFRASTRUCTURE DATABASE

This task is currently being performed under a separate task order, which includes mapping the City's water system based on as-built plans and an existing GIS database for use in the master plan model. For

the purposes of this task order, the work includes verification of the water mapping through coordination with City operation staff and further development of the water system database.

Deliverable: GIS Database of the City's Water System

TASK 3: WATER MASTER PLAN

The effort associated with this task is defined in the NCS proposal, which is included as Attachment 1.

Deliverable: Refer to Attachment 1

TASK 4: CIP DEVELOPMENT

Harris and NCS will work closely with City staff to develop a 10-year CIP based on the modeling effort associated with Task 3. The CIP will serve as a guide to sustain growth and maintain water supply services for the Soledad Community. The CIP will prioritize water system improvements based on City direction and a cost and schedule for implementation. The intent is to assist City staff with the development of the water budget each fiscal year.

Deliverable: 10-year CIP with Schedule and Cost Estimates

TASK 5: PRESENTATION TO COUNCIL

Upon approval of Tasks 3 and 4, Harris will present the results to the City Council at a regular council meeting. The presentation will summarize the effort associated with this task and present the 10-year water CIP.

Deliverable: PowerPoint Presentation

Our proposed fee for this effort is shown in Exhibit A, which will be provided on an "hourly not-to-exceed" basis. Additional efforts unforeseen at the authoring of this task order will be provided under a subsequent authorization.


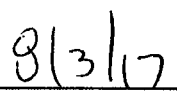
We look forward to working with the City on this important task. Please feel free to call me directly should you have any questions.

Regards,
HARRIS & ASSOCIATES, Inc.



Frank S. Lopez, PE, QSD, CFM
Director, Engineering Services

Accepted:

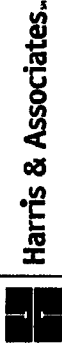
 

By: City of Soledad

Date

EXHIBIT A

City of Soledad Water Master Plan
Cost of Services Worksheet



Harris & Associates

Project Schedule	2017					2018				
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Calendar days	31	30	31	30	31	31	28	31		
Work days	23	21	22	22	21	23	20	22		
Hrs	184	168	176	176	168	184	160	176		
Project Management										
Water Infrastructure Database										
Water Master Plan										
CIP Development										
Council Presentation										

Staffing	
Project Director	\$215
Project Engineer	\$135

Task	Hours												Total Fee		
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul			
Task 1: Project Management															
Project Director	6	8	8	8	8	8	8	8	8	8	8	8	8		\$13,760.00
Task 1 Subtotal															\$13,760.00
Task 2: Water Infrastructure Database															
Project Director	8	8													\$3,440.00
Project Engineer	24	24													\$6,480.00
Task 2 Subtotal															\$9,920.00
Task 3: Water Master Plan															
Project Director			6	6	6	6	6								\$6,450.00
Project Engineer				8	8	8									\$3,240.00
NCS (Sub Consultant)															\$56,200.00
Sub Markup (7.5%)															\$4,215.00
Task 3 Subtotal															\$70,105.00
Task 4: CIP Development															
Project Director									8	8					\$3,440.00
Project Engineer									24	16					\$5,400.00
Task 4 Subtotal															\$8,840.00
Task 5: Presentation to Council															
Project Director													4		\$860.00
Task 5 Subtotal															\$860.00
TOTAL HOURS =	40	46	22	22	22	46	32	12							
Total Fee (includes Sub)													\$103,486.00		



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Revised July 12, 2017

Frank S. Lopez, PE, QSD, CFM
Director, Municipal Services
Harris & Associates
Salinas, California

Re: City of Soledad - Water System Model Development and Master Plan
Scope of Work and Fee

Dear Mr. Lopez:

NCS Engineers, in association with Harris and Associates, is pleased to submit this proposal to the City of Soledad to provide engineering services for the City's Water Master Plan and Hydraulic Model Development project.

PROJECT BACKGROUND AND UNDERSTANDING

The City supplies water to a population of approximately 25,000 along with their commercial customers. The City utilizes four wells to provide potable water to their customers.

This master plan will assess a majority of the water system and facilities and address issues related to Water Resources, Water Distribution, Water Quality, and System Improvements for the City. The City currently does not have an established master plan. The City is responsible for the administration, design, operations, and maintenance of the water system. To meet these goals, the City needs to develop a calibrated model for the water distribution system. This project will use the proposed model and provide the City with an analysis of the distribution system and its impact on sources, pumping, storage, piping operations, and operational costs.

The Water Master Plan will provide guidance for the orderly expansion of the water service system, including both production and distribution system facilities, and identifies the need for system improvements.

The Water Master Plan will be broken down into three planning periods: Current (Short-Term), Intermediate, and Build-Out. The resulting recommendations for the first period will be specific. Recommendations for the second and third planning periods will be more general and conceptual.

SCOPE OF WORK

Task 1 - Project Initiation & Kick off Meeting

The kick off meeting will focus on identifying data sources and needs associated with the water system master plan preparation. Key personnel will discuss goals and objectives of this project with the City and typical uses of the water distribution model will be identified. NCS will prepare a data request for any key information that is not currently in NCS' possession. The request will encompass all required information for the water production, and distribution system and will include as-built facility drawings, existing engineering reports and studies, operations data, water quality data, etc.

Information related to other ongoing projects will be requested, reviewed and incorporated into the Master Plan by reference and/or appendices. These include, but are not limited to:

- City's water resource reports and planning and policy documents.
- Ongoing and prior engineering studies prepared by other consultants.

Task 2 - Site Visits and Data Review

In this task, the data identified as a part of Task 1 will be collected and reviewed and summarized for key concerns and will serve as baseline information in preparing the facility assessment reports. Our team will perform site visits to all PRVs, Wells, Booster Stations, Disinfection Facilities to gain an understanding of system operations and controls.

Interviews with the personnel familiar with the water system as well as operations and maintenance staff will be carried out to identify historical operating issues and concerns and other information that should be included as a part of the Master Plan Report. Additionally, other relevant information sources identified during Task 1 will also be evaluated, as appropriate.

Task 3: Model Validation, Model Update and GIS Synchronization, Evaluation of Software

Task 3.1: Model Validation and Model Update

NCS will develop the water model with all known new distribution pipelines and any new master planned distribution water networks that need to be included. This will be performed in GIS through the model builder and a seamless water model update will be performed. The model will be developed using the current version of *WatedCAD* by Bentley.

The model update would consist of importing the GIS network and CAD files, and performing a Network Clean-up and Review. Harris/NCS will use GIS data for the distribution system network and valve positions. Once the network has been configured from GIS it is important to clean up the water distribution system. The chosen water modeling software has several network clean-up

tools including tools to identify potentially duplicate pipes, disconnected nodes, pipe split candidates, network tracing features, etc. These tools help identify network issues that could potentially prevent running the model or provide inaccurate results. NCS will identify all such discrepancies, and discuss with City's staff to provide suggestions for their resolution.

Pump Information: Correct pump curves are essential for good models. The City will provide all current pump curves that relate to the City's model. Operational settings from the booster stations will be requested to review, any changes will be updated in the controls for the hydraulic model.

C-Factors and Minor Losses: Based on the system characteristics, (i.e., age of the pipe and material) an initial estimate of C-Factor will be allocated. This will be fine-tuned during the steady state calibration process if needed.

Task 3.2: Elevation Extraction

Elevation information is also critical to the process and is necessary to identify a data source that represents elevations for the system with acceptable accuracy. The scope of this project involves obtaining the correct elevation data set from the utility, County or USGS and using the data to allocate elevations. The chosen elevation data will be added to the water model using the TREX elevation extraction tool from WaterGEMS. This step will apply to all new development areas.

Task 3.3: Determine Existing Demands

Demand allocation involves identifying the locations of consumption and the quantity of consumption. Consumption data will be used to allocate the demands into the water model accordingly for new areas. Demand allocation factors for the period of calibration will be utilized, along with the application the Thiessen Polygons Approach using Billing and Meter Data.

Task 3.4: Model Validation

In order to validate the existing model NCS will collect SCADA data in order to compare against model outputs. Validation will be performed at one location per zone, and the data will be compared against the water model.

Deliverables for Task Series 3:

Current Hydraulic Water Model, with updated network, demands and facility information within the software.

Summary of validation data - SCADA information versus the existing model output.

Task 4: Field Data Collection for Calibration of Potable Water System Model

Calibration of the water distribution model requires a reasonable level of confidence in the demands. Furthermore, it is critical that demands are high for the calibration period. It is essential to be able to calculate the demands of the system at the time of modeling. To conduct calibration with accuracy, the NCS Team proposes the following sub tasks:

Task 4.1: Calibration Plan

NCS will identify six to eight locations in the water system, where additional field data will be collected. This includes identifying the locations where the pressure recorders will be installed. These are typically away from pumps, reservoirs and boundary conditions and usually defined by identifying locations that have highest sensitivity to the section of the system being calibrated. The calibration plan will be given to the utility to exercise the plan.

Even though fire flow tests are a regular exercise for all utilities, the fire flow tests performed for steady state modeling can have more stringent requirements. The calibration plan will list the minimum pressure drop required during a test. The calibration plan will also provide details on the boundary conditions that are required for the model and therefore ensuring that all appropriate data is collected to accurately calibrate the model. Our team will define a thorough approach to develop a calibration plan that will be applicable to the model.

Task 4.2: Data Collection

The field data collection effort would involve hydrant testing, installing pressure recorders, downloading data, and collecting SCADA data. The City will assist in conducting hydrant testing and installing pressure recorders at six locations across the City. NCS will supply their own calibration equipment (pressure recorders and hydrant pressure and flow gauges). Field hydrant testing will be conducted by the City and witnessed by NCS.

Deliverables for Task Series 4:

Summary of data collected for the flow testing, SCADA data and pressure recorded data.

Task 5: Model Calibration

Steady state calibration will be performed using Darwin Calibrator for identifying appropriate pipe roughness (C-Factors) that correspond to the pressure drop observed in the field. Any known issues will be modeled in the system. If the data does not match and no reasonable calibration can be identified based on the modeling, additional tests would be required to confirm the model data collection. If the problem persists then closed valve conditions will be identified. If a closed valve is identified in the model, this will have to be verified in the field.

NCS recommends the following calibration standards or higher:

Flow Criteria: Modeled flows should be within 5% of the measured flows at all locations of measurements.

Pressure Criteria:

1. 85% of the field test measurements should be within 5% or three feet of the maximum head loss across the system, whichever is greater.
2. 95% of the field test measurements should be within 7.5% or four feet of the maximum head loss across the system, whichever is greater.
3. 100% of the field test measurements should be within 15% or five feet of the maximum head loss across the system, whichever is greater.
4. The total difference between the measured and modeled data at all points should be within 5%.

Tank Level Criteria: Difference in Turnover of the tank (between observed and modeled) should be within 5% of the total turnover.

Steady State Simulations will be performed under this task.

Deliverables for task Series 5:

Calibrated Water Distribution System Model - Steady State Conditions

Task 6 - Develop Demand Patterns

Future development is through primarily residential and some industrial and commercial activity. It is anticipated that the projection of demands would be determined population increases as well as variations in land use. Working with Harris and the City, NCS will identify projections for Current and Build-out conditions for the City's water system.

Task 5.1 - Consumption/Demand Diurnal Patterns and Monthly Variation

As a part of this task, NCS will analyze the billing and metering record as well as SCADA data to develop a monthly ratio of system wide demands. This ratio will help in defining modeling scenarios by using it to globally adjust the system-wide demands. It is anticipated that the consumption and demand diurnal patterns may also vary across the year for the City.

Deliverable: Letter report summarizing the findings of this task

Task 5.2 - Production Requirements and Analysis

Based on the future demand forecasts, current and future water resources available, as well as agreements that govern water rights, will be reviewed to develop a sustainable water resource strategy. The master plan will focus on financial and technical aspects for recommending additional wells or water sources based on estimated demands.

NCS proposes an approach that is based on demands as triggers for additional water sources versus just time-based approach. This will allow the City to adapt its CIP program on actual demands of the system versus long term projections during the master plan.

Task 6 - Conduct Workshop #1

In this workshop, NCS proposes to cover the following topics:

- Discuss the findings of demand projections.
- Provide an approach and framework for water system scenario analysis and master planning.
- Discuss the design standards and criteria such as pressure and storage criteria within the system.
- The scenarios required for analyzing the system will be discussed during this workshop.

These decisions will be utilized for water system master planning and water modeling.

Deliverable: Meeting minutes

Task 7 - Water Distribution System Analysis

The current model, developed as a part of the calibration task, will be used for this analysis. NCS proposes the following eight (8) scenarios (to be discussed and finalized in Workshop #2) for identifying any existing issues within the system and proposed solutions:

- Operational Steady State scenarios to validate and calibrate model through information from SCADA and the workshops.
- Fire Flow scenario for current maximum day condition.
- Maximum Day condition for current, intermediate and build-out conditions.
- Peak Hour steady state scenario for current, intermediate and build-out conditions.

Task 8 - Prepare Water System Master Plan Engineering Report

Information, conclusions, and recommendations from all previous tasks and related modeling efforts will be documented in a Draft Water System Master Plan Engineering Report. The Report will include short term (< five years), intermediate and build-out conditions. Tables, maps, schematic diagrams, and charts will be used to present this information. The water system facility improvement listing will be incorporated into the Draft Water System Master Plan Report. A Capital Improvement Plan and cost estimates in terms of 2017 dollars for the recommended water system infrastructure improvements will be provided for all the three conditions. NCS will prepare the Final Water System Master Plan Report based on City review comments. NCS assumes that the City may request two revisions of the draft report prior to the final submission. The City will also be provided with a CD containing the final report in indexed PDF format. A separate 10 year CIP report will be developed with costing and prioritization for all improvements

The Master Plan Report will include the following:

- The water distribution system analysis and optimization modeling includes identification of future pipelines and costs.
- Similarly, storage criteria will be developed.
- Additional wells will be considered as the system expands.
- Future improvements will use unit cost basis.
- The Master plan will include staffing recommendations by division.
- A summary of Capital Improvements by facility.

Deliverables:

- 1) Draft and Final Master Plan Reports, incorporating information from prior Technical Memoranda and review comments.
- 2) A 10-year infrastructure plan to implement proposed facilities.

Task 9 – Project Meetings

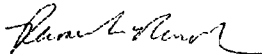
In addition to the workshops and kickoff meeting discussed above, two project progress meetings will be conducted. NCS will prepare the agenda and handouts for each meeting, and prepare meeting minutes with action items.

SCHEDULE AND FEES

The project duration is 150 days for NCS to issue the draft final report. NCS' Fee for this project is **\$56,200**, in accordance with the above Scope of Work and Exhibit A (attached).

We look forward to working with you and the rest of the team on this critical project. Please call me at (602) 629-0206 if you have any questions or need any additional information.

Sincerely,



Ramesh "Ram" Narasimhan, P.E. - CA51059
President

SOLEDAD MASTER PLAN

EXHIBIT A - FEE BREAKDOWN

LABOR HOURS BY PERSONNEL CLASSIFICATION

Paradise Valley Hydraulic Modeling Update	Project Manager	Senior Engineer	Staff Engineer	Technician	Total Task Labor Costs
TASK NO. AND DESCRIPTION					
Task 1 - Project Initiation & Kick off Meeting	4	4	8		\$1,900
Task 2 - Site Visits and Data Review	8		16		\$2,760
Task 3: Model Validation, Model Update and GIS Synchronization, Evaluation of Software	8	12	80		\$10,400
Task 4: Field Data Collection for Calibration of Potable Water System Model	8	8	40	40	\$9,280
Task 5: Model Calibration	8	12	100		\$12,300
Task 6 - Develop Demand Patterns			16		\$1,520
Task 7 - Water Distribution System Analysis	4	8	80		\$9,260
Task 8 - Prepare Water System Master Plan Engineering Report	8		24		\$3,520
Task 9 - Project Meetings	12	8	8		\$3,660
LABOR TOTALS - BASE SERVICES					\$54,600
LABOR TOTALS - BASE SERVICES	56.00	48.00	364.00	40.00	
Direct Labor Rate (\$/hr including overhead and profit)	\$ 155.00	\$130.00	\$95.00	\$ 80.00	
Direct Labor Cost Sub Totals	\$ 8,680.00	\$ 6,240.00	\$ 34,560.00	\$ 3,200.00	
NCS LABOR TOTALS	\$ 52,700.00				
Calibration Equipment	3500				
TOTAL PROJECT COSTS - TASKS AND DIRECT EXPENSES					\$56,200

