Luhdorff & Scalmanini
Consulting Engineers

Proposal to Provide Engineering Services

City of Colusa
Water Master Plan Update

City of Colusa

MAY 23, 2022

LSCE

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Designated Point of Contact

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Senior Engineer
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Contract Authorization

Vicki Kretsinger Grabert, PH-GW
Senior Principal Hydrologist/President
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May 23, 2022

Jesse Cain, City Manager
City of Colusa
425 Webster Street
Colusa, CA 95932

SUBJECT: Proposal to Provide Professional Engineering Services to Update the City of Colusa Water Master Plan

Dear Mr. Cain,

Luhdorff & Scalmanini, Consulting Engineers (LSCE) is pleased to submit this proposal to the City of Colusa (City) to provide professional engineering services to update the City's Water Master Plan. LSCE is an engineering and hydrogeologic consulting services organization providing public and private entities with hydrogeologic and civil engineering services related to the investigation, development, use, protection, and management of groundwater and surface water resources. LSCE has an established history of successfully completing water master plans, mainline replacement programs, hydraulic modeling, metering programs, well condition assessments, well pump station design, as well as securing funding through state and federal programs.

LSCE has a thorough understanding of local and regional hydrogeologic groundwater conditions and associated water supply challenges based on a long history in the Sacramento Valley and a unique focus on groundwater as well as extensive experience in groundwater supply, pumping, treatment, distribution, and storage systems. LSCE's professionals are knowledgeable in the operation and maintenance of drinking water facilities having completed hundreds of water resource planning studies throughout California, including water master plans, urban water management plans, integrated regional water management plans, asset management plans, capital improvement plans, and groundwater sustainability plans.

This proposal demonstrates the qualifications, experience, and approach LSCE's team will provide to update the City's Water Master Plan efficiently, effectively, and on schedule. LSCE's expertise in groundwater wells and infrastructure planning, particularly with groundwater systems located in the Sacramento Valley region, will enable LSCE to deliver a water master plan to the City that is comprehensive and ensures sustainability of the City's long-term groundwater supply. LSCE's approach will involve a review and update of the 2009 Water Master Plan, an independent assessment of existing conditions of the wells, pumping stations and treatment systems, and an evaluation of water supply alternatives to determine the most cost-effective and economically feasible capital improvement plan (CIP) to guide subsequent actions and funding decisions.

Questions regarding LSCE's proposal can be directed to Oscar Serrano, LSCE's designated contact for correspondence from the City. Vicki Kretsinger Grabert, President, is authorized to enter into a contractual agreement with the City and bind LSCE to this proposal for 90 days from the date of this letter. In addition, LSCE has reviewed and accepts the City's insurance requirements without any exceptions as presented in the Request for Proposal (RFP). Contact information for Oscar and Vicki, who are both located in our main office in Woodland, CA, is provided above.

We appreciate the opportunity to submit this proposal.

Sincerely,

Luhdorff & Scalmanini, Consulting Engineers

Oscar Serrano, PE
Senior Engineer

Vicki Kretsinger Grabert, PH-GW
Senior Principal Hydrologist/President

1. Qualifications

LUHDORFF & SCALMANINI BACKGROUND

LSCE is a consulting company with 50 professionals that was formed in 1980 to fill a recognized need for technical and management expertise in a broad range of issues associated with groundwater resource development. LSCE's main office is located in Woodland with additional offices located in Chico, Fresno, and Daly City. LSCE specializes in the investigation, development, use, protection, and management of water resources with an emphasis on groundwater resources and design of water infrastructure. LSCE's team of engineers, geologists and hydrogeologists are committed to providing our clients with broad water resource engineering and management services based on sound scientific and engineering principles, practical experience, and forward-thinking approaches to today's complex water resources and infrastructure challenges.

TEAM QUALIFICATIONS

LSCE's professional staff are experienced in all aspects of groundwater; hydrogeologic investigations, monitoring and production well design, site characterization, well construction and testing, well rehabilitation, water resources management, permitting, groundwater modeling, hydraulic modeling, pump selection and pump station design, geographic information systems (GIS), database design, and AutoCAD drafting. LSCE also provides a full complement of water resources and engineering services including water master plans, capital improvement plans, urban water management plans, water system supply assessments, AWWA validated water audits, groundwater sustainability plans, conjunctive use planning, and analyses of groundwater/surface water interaction.

LSCE has assembled a team of committed and experienced professionals with expertise in water master planning, water system design, distribution system modeling, water supply and treatment, groundwater resources, and well design. The assigned personnel include a team of LSCE's highest level principals and engineers and caters to the specific engineering scope of work outlined in the RFP. Under the direction of Oscar Serrano, the experienced engineering staff outlined in this proposal will prepare the City's Water Master Plan Update in our Woodland office. Oscar has successfully completed water master plans, asset management plans, and urban water management plans for systems of similar size to the City's. He has extensive local and regional knowledge from over a decade of work in Colusa County. Supervising Water Resources Planner, Jacques DeBra, will also contribute his expertise in utility management, urban water system water solutions, and securing grants and loans to this project.

Project Manager

Oscar Serrano, PE, Senior Engineer – Oscar is a California registered Professional Civil Engineer with over 20 years of experience and brings extensive experience in project management, water master planning, urban water management plans and design of water, wastewater and stormwater facilities. Oscar has worked on numerous water master plans including City of Sacramento, San Juan Water District, a Water Focus Study for the City of Woodland, among others. Recently, Oscar has assisted similarly sized small groundwater systems with water studies including hydraulic analyses for the Town of Discovery Bay, Millview County Water District, and the Del Oro Water Company. Oscar has an in-depth understanding of Colusa County and the Northern Sacramento Valley having worked in Colusa for over a decade and worked with the City Manager to coordinate cultural resource monitors on the Bridge Street project.. Oscar previously served on the Colusa Groundwater Authority Technical Advisory Committee and is very familiar with groundwater in Colusa County. Oscar's experience also includes pipeline, reservoir and pump station design, preparing technical memorandums, grant writing, water rights and hydrologic/hydraulic modeling. Oscar has extensive experience modeling hydraulic systems including the development of static calibration and dynamic verification of hydraulic network models.

PROJECT ROLE:

- Designated point of contact for the City
- Project management
- Team lead for all evaluations
- Ensure the project scope, schedule, and budget remain on track
- CIP and Water Master Plan Update development

Principal-in-Charge

PROJECT ROLE:

- Principal level oversight, and QA/QC for all facets of the Water Master Plan
- Attend progress and board meetings, as necessary

Jason Coleman, PE, Supervising Engineer – Jason has over 14 years of experience in well pump station, water distribution and water treatment design, and related project construction management. Jason's specific experience includes design of vertical turbine and submersible deep well pumps, booster pumps, pipeline distribution systems, storage tanks, surface water and ground water treatment facilities, telemetry and instrumentation, controls, and programming logic of chemical treatment and pumping systems. His experience includes preparation of water supply permits, drinking water source assessments, water use permits, water master plans, system operation plans and emergency response plans, TMF (technical, managerial, and financial) reports, and assistance with CEQA studies.

Jason has contributed to over 20 comprehensive water master plans and water system evaluations for clients located in Anderson, Arbuckle, Yuba City, Pittsburg, Spreckels, Oakley, Sacramento, Woodland and many others.

Jason has also worked on various water resources projects including source of supply analysis, emergency supply studies, hazard mitigation plans, and vulnerability assessments. Jason has repeatedly demonstrated that he possesses the skill set to manage and implement projects, communicate effectively, prepare technical documents, and interface and coordinate work with clients, sub-consultants, contractors, and regulatory and permitting agencies.

Funding

PROJECT ROLE:

- Develop funding strategies/rate impacts
- Identify loan/grant opportunities
- Economically feasible CIP implementation plan development
- Technical review
- Public meetings

Jacques DeBra, Supervising Water Resources Planner – Jacques brings 37 years of water resources experience including: 29 years in managing public water utilities and 8-years as a consultant/AWWA water instructor. He has led regional water management governance responsible for the planning and implementation of watershed groundwater and surface water monitoring programs, conjunctive use projects, preparation of groundwater management and integrated water resource planning reports, and delivery of funding strategies to maximize grant funding for local and regional activities. Jacques managed a groundwater only water system with 21 wells and three water storage facilities for 24 years in the Central Valley. He has prepared water master plans since 1986. His experience includes planning, development and optimization of future water supplies and portfolios, water demand and supply projections, water system evaluations and assessments, developing long range CIP Plans and budgets, establishing enterprise rate structures in accordance with Proposition 218, and securing funding for capital planning and implementation improvements from a variety of State and Federal funding programs. He has worked closely with City Councils and District Boards on public review and approval processes for major water utility policy documents and has a proven ability to work cooperatively with other local, regional, state, and federal agencies.

Professional Engineer

PROJECT ROLE:

- Evaluate existing and future water demand
- Evaluate distribution and metering systems and source/storage capacity
- CIP and Water Master Plan Update development

Allison Cronk, PE, Project Engineer – Allison is an environmental civil engineer with 5 years of experience in water distribution, treatment, storage, and pumping system design, reporting, and related construction management. She has led the development of detailed engineering drawings using AutoCAD, developed project specifications, and completed field surveys. Allison has experience with stormwater management, groundwater sustainability plan development, state regulatory requirements for drinking water systems, including completion of several EPA compliant Watershed Sanitary Surveys, and water system permitting and reporting. She has also reviewed water production and demand data and system water losses for several groundwater systems during her work as a certified Water Audit Validator.

Professional Engineer

Lucy Li, PE, PHD, Project Engineer – Lucy has 7 years of experience in civil and environmental consulting, including stormwater management, permit application, construction plans, regulation and standards drafting, and over 10 years of experience in water treatment research. Lucy has expertise in analysis and consulting for water resources, demand, and supply systems for various regions in California. She is skilled in water/wastewater infrastructure design, including water distribution and sewer system design, water/wastewater treatment processes, and plants/pump station design.

PROJECT ROLE:

- Evaluate future water demand
- Hydraulic Modeling
- CIP development

Professional Engineer

Philip L'Amoreaux, PE, Project Engineer – Philip has 13 years of well pump station design, hydraulic calculation, local and state agency technical specifications/submittal review, and lead well pump equipment performance testing experience. Philip prepared numerous well pump station condition assessments and developed recommended improvement plans to bring well stations back into acceptable operation. He is familiar with well station operation and maintenance and assists in design and review of well stations and groundwater treatment systems. His experience includes well pump station operational performance testing, collecting well water level, flow rate, pressure, and electrical data, and evaluating overall pump efficiency. Philip also has a deep understanding of groundwater well specific capacity and pumping water levels and their effect on the well structure/screens and overall well performance.

PROJECT ROLE:

- Evaluate existing wells and treatment systems
- Identify deficiencies and recommendations based on the current and future system needs
- CIP Development

RELATED PROJECT EXPERIENCE

LSCE has completed water master plans for similar sized water systems including the Town of Discovery Bay, Blue Lake Springs Mutual Water Company and the Millview County Water District to name a few. LSCE is currently working on an asset management plan for the Town of Discovery Bay, an evaluation of 28 water systems in Madera County, the City of Patterson Water Meter replacement project for which LSCE obtained SRF funding, and the Palermo Clean Water Consolidation Project for Butte County for which LSCE recently submitted an SRF application. The following projects are representative of LSCE's water master plan related experience. References are included for each of the projects.

Water Master Plan and Related Services – Millview County Water District

REFERENCE: Jared Walker, General Manager, Millview County Water District, 151 Laws Ave, Ukiah, CA 95482, Phone: 707.462.2666;
TEAM: Oscar Serrano, Jason Coleman, Lucy Li

Key Work Related to RFP

- Water Master Plan
- Water Supply Verification Study
- Hydraulic Modeling

LSCE has assisted the Millview County Water District (MCWD) on numerous water resource projects for over 25 years; including design and improvements of wells, pump stations, water treatment systems, and pipelines, and general engineering and planning services such as water reliability studies. LSCE completed the last update of the District's Water Master Plan which evaluated the water system (serving a population of 5,500 residents) including: water demands, supply capacity, storage capacity, water quality, surface water treatment (shallow well supplies, clarifiers, filters, chemical dosing and clearwell contact time), booster plants, and the distribution system. Specific tasks included: condition assessment of equipment, evaluation of regulatory compliance with supply, treatment, and distribution, development of a water system hydraulic model and evaluation of distribution system performance, and preparation of Draft and Final technical plans with a CIP. Recently, LSCE assisted MCWD with a Water Supply Verification study which looked at the existing water supply, existing and build-out water demands, and risk during drought to assess the impacts from proposed development.

Palermo Clean Water Consolidation Project – Butte County Department of Water and Resource Conservation

REFERENCE: Kamie Loeser, Director, Bute County Department of Water and Resource Conservation, 308 Nelson Avenue, Oroville, CA 95965-3302, Phone: 530.552.3590; *TEAM:* Oscar Serrano, Allison Cronk, Jacques DeBra, Lucy Li

Key Work Related to RFP

- Consolidation Analysis
- Water Supply and Demand Analysis
- Water Distribution System Design
- Grant Funding Application

In 2021, LSCE performed the first phase of the Palermo Clean Water Consolidation Project for the Palermo community. For over a decade, the community has continued to face health and safety concerns due to possible groundwater contamination issues. Through this project, LSCE identified the preferred project for consolidation, managed the CEQA process, developed the project design, and identified the ideal funding opportunity for the project through the Drinking Water State Revolving Fund (DWSRF). Subsequently in 2022, LSCE completed the 100% design plans and specifications for the water system consolidation project with the South Feather Water and Power Agency and recently submitted the DWSRF Fund application. A portion of the funding for construction of the project has already been secured through American Rescue Plan Act and Integrated Regional Water Management funds with construction expected to commence in the summer of 2022.

Water Master Plan and Related Services – Town of Discovery Bay CSD

REFERENCE: Dina Breitstein, General Manager, 1800 Willow Lake Road, Discovery Bay, CA 94514, Phone: 925.634.1131; *TEAM:* Jason Coleman, Oscar Serrano, Allison Cronk, Philip L'Amoreaux, Lucy Li

Key Work Related to RFP

- Water Master Plan
- Meter Retrofit Program
- Well Pump Station Design
- Rehabilitation Programs
- Hydraulic Modeling
- Asset Management Plan
- Regulatory Compliance

LSCE has been providing engineering and hydrogeologic services for the Town of Discovery Bay (TODB) for over 30 years. LSCE prepared the TODB's last Water Master Plan, which evaluated the improvements needed for planned developments over a 10-year planning horizon. The TODB is a residential community of 16,000 people providing water and wastewater services to 6,000 connections. The TODB utilizes groundwater as the exclusive source of water supply operating two centralized water treatment, storage, and booster plants. LSCE provides annual engineering services that involve project planning, asset management development, hydraulic modeling, water audit services, regulatory compliance, and Board of Directors presentations to the to provide project updates and possible water system actions.

In 2021, LSCE completed the 7th biennial well testing program used to track performance and assess the need for proactive upgrades to prolong the life of the wells. Additional TODB projects include: the Water Meter Retrofit program that installed 3,500 water meters, two well rehabilitation programs, and a horizontal drilling project to replace a recently ruptured critical mainline crossing beneath a lake. LSCE is currently embarking on the design of a new well pump station project, a pipeline replacement project, and a comprehensive asset management plan including assessment and identification of deficiencies for the six groundwater wells and two treatment plants.

Water Master Plan – Blue Lake Springs Mutual Water Company

REFERENCE: David Hicks, General Manager, 1011 Blagen Road, Arnold, CA 95223, Phone: 209.795.7025; *TEAM:* Jason Coleman

Key Work Related to RFP

- Water Master Plan
- Capital Improvement Plan
- Prioritize 10 miles of pipeline replacement

LSCE conducted a study of the Blue Lake Springs Mutual Water Company (BLSMWC) water system and prepared a water master plan that evaluated water demand, supply, storage, and distribution culminating in a 10-year capital improvement plan. Blue Lake Springs, a cabin community in the Sierra Nevada's near the town of Arnold, owns and operates a water system serving 2,024 cabins. BLSMWC produces water from a combination of wells completed in a fractured hard rock formation environment with supplemental water from the Calaveras County Water District (CCWD). LSCE developed a program for groundwater exploration which identified sufficient new water sources enabling BLSMWC to become fully independent from CCWD. During development of the mainline replacement program, LSCE prepared and calibrated the existing hydraulic system model and developed a future vision of the distribution system simplify operation

by reducing pressure zones in the BLSMWC systems widely varied topography. A combination of GIS, model simulations, and alternative pipeline analysis was used to develop the optimal future system. LSCE ranked existing mainlines on performance factors such as age, material, condition, leakage, fireflow, and hydraulic performance to establish replacement priorities. For feasibility and affordablity the pipeline replacements were divided into manageable project sizes scheduled over a 10 years.

Metering System Replacement Project – City of Patterson

REFERENCE: Maria Encinas, Public Works Management Analyst, 1 Plaza, P.O. Box 667, Patterson, CA 95363, Phone: 209.895.8061; *TEAM:* Oscar Serrano, Allison Cronk, Jacques DeBra

Key Work Related to RFP

- Grant Funding Application
- Construction Bid Package
- Engineering services during bidding and construction
- Water Meter Replacement

LSCE is currently working with the City of Patterson on replacement of approximately 6,000 water meters for the City with new Advanced Metering Infrastructure (AMI) meters. LSCE assisted the City with preparing the design documents, funding application, construction bid package, field surveys and securing project funding through the State Water Resources Control Board Division of Drinking Water - DWSRF. LSCE is currently providing engineering services to the City during the bid process with engineering services during construction to follow; submittal review, field surveys, updating water GIS mapping, meter inventory tracking, and quality control support.

2. Scope of Work

APPROACH

LSCE's approach to completing water master plans similar to those described in the City's RFP has been developed through successful completion of numerous water master plans and water planning documents. LSCE will coordinate with the City throughout the development of the Water Master Plan Update to ensure the analysis and conclusions are cost-effective and consistent with the City's vision.

Proposed improvements will be developed by identifying deficiencies in the water system and evaluating alternatives, including the need to replace or upgrade aging facilities. LSCE will identify the alternatives that result in the most practical and cost-effective CIP and identify the required improvements and CIP elements necessary to reliably meet future water system capacity requirements over the planning horizon. Cost estimates will be developed for these recommended actions based on timing and improvement type resulting in identification of the City's future water system funding needs. LSCE will provide recommendations on funding opportunities including federal, state, regional, and market-based funding programs. Low interest financing and grant funding opportunities will be delineated in the funding strategy.

SCOPE OF SERVICES

LSCE's project approach is integrated into the following tasks. Each task description includes a summary of deliverables and key activities on which the cost estimate is based. LSCE will provide email updates to the City followed by discussion (if needed) with the City upon completion of each key technical analysis to present preliminary findings and receive input from the City prior to proceeding with subsequent tasks.

Task 1 – Review Existing Data and Project Management

The project will begin with a kick-off meeting to make introductions, discuss project objectives, establish correspondence procedures, and discuss particular problem areas in the system.

LSCE will conduct a review of land uses in the City, water production data, water metering data, well construction information, distribution system, regulatory correspondences from State Water Resources Control Board - Division of Drinking Water (DDW), and planning documents (see data request below).

LSCE will manage the project to maintain project schedule and budget. LSCE will communicate with the City's project manager throughout the development of the Water Master Plan update and hold virtual meetings, if necessary, following the submission of each Technical Memorandum (TM) to discuss City comments.

Task 1 Deliverables

- Kick-off Meeting Summary
- Tabulation of All Project Records and Assets

Task 1 Meetings

- Kick-off Meeting (virtual)

City Data Request Includes:

- City of Colusa General Plan
- City of Colusa Water permit dated 1981
- City of Colusa Source Water Assessment January 2000
- City of Colusa Water Master Plan 2009
- Hydraulic Model
- Distribution System Map
- Existing developments/service area served by the distribution system
  - Existing developments/service areas not yet served by the distribution system
  - Planned/proposed developments
  - Annexed Areas
  - Delineation of service area boundary
  - Existing pipeline diameters, materials, and locations
  - Identification of improvements to water system facilities not depicted on the map
- Distribution System Information - Pipe locations, size, age, material, any noted maintenance issues or customer complaints
- Meter System Information - Meter sizes, age, any noted maintenance issues or customer complaints
- Well Information - Well Completion Reports, pump information, maintenance records for wells and pump, any noted maintenance issues
- Treatment System Information - Treatment type, capacity, age, size, any noted maintenance issues
- Storage System Information - Tank material, capacity, age, any noted maintenance issues
- Booster Station Information - Capacity, age, size, any noted maintenance issues
- Water Production & Consumption Data
  - Water production from wells and/or treatment systems from 2012-present
  - All available water meter data, meter study
  - A list of current customers and types (residential, commercial, industrial, etc.)
  - SCADA reporting – if possible, daily records on production
  - Water Rate Fee information
  - Connection Fee information
- Regulatory correspondences from State Water Resources Control Board - Division of Drinking Water (DDW)

Task 2 – Evaluate Existing and Future Water Demands

Task 2 Deliverable

- TM : Existing and Future Water Demands

Existing and future water demands serve as the basis for assessing the adequacy of the City's water supply and distribution system to meet future demands over the planning horizon. LSCE will review the City's water production, metering, and land use to evaluate and summarize the existing system. LSCE will develop water usage factors including Average Day Demand, Maximum Day Demand, and Peak Hour Demand. As required in the California Waterworks Standards (Title 22), determination of water demands must consider the previous 10 years of water production history. If daily water production records are available, these can be used to provide accurate water demand factors and avoid the use of safety factors mandated by regulations that can overestimate water demand.

LSCE will develop unitized water requirements for each customer classification (residential, multi-family, commercial, industrial, irrigation, other) to establish a method for projecting future water demand requirements (10- and 20-year planning horizon) or water savings based on future changes to the system. Demand changes from factors such as population density changes, reduction in outdoor water use from conservation, and leak reduction will be assessed. LSCE will also review system fire demand requirements with the local fire suppression agency for inclusion in the water flow requirement analysis including changes in fire flow requirements that may result from new development.

This information will be integrated into the system hydraulic model and subsequent tasks to evaluate the adequacy of the distribution system to meet future fire flow and water demand for the 10- and 20-year planning horizons. LSCE assumes the City has an existing calibrated hydraulic model of the City's water distribution system. Update or calibration of the existing model can be performed as an optional task if needed.

Task 3 – Evaluate Water Distribution and Metering Systems

Task 3 Deliverable

- TM: Evaluate Distribution and Metering Systems

An evaluation of the distribution system will be completed to identify existing conditions and to prioritize mainline replacements over the project planning horizons. LSCE will use the City's existing hydraulic model to identify potential hydraulic deficiencies in the current and future systems. LSCE will also evaluate historical operational information such as development records, leak repairs, customer complaint records, operating pressures, age and material types, etc. to identify any particular areas of concern or deficiencies.

Under this Task, LSCE recommends an additional review of the City's metering system. LSCE understands that the AMI metering project is high priority for implementation under the City's Capital Improvement Program. This review would include an evaluation of the age, maintenance, testing, replacement, and customer complaints. This is recommended because the metering system is an important part of a system's water consumption and loss accounting and should be included in the Water Master Plan and Capital Improvement Plan.

LSCE will develop a ranking system to prioritize the most beneficial mainline and meter replacements first. Criteria used in this ranking analysis will be developed during the assessment, however, possible criteria could consist of existing pipeline conditions, pipe size, material, susceptibility to leakage, access limitations for maintenance and repair, hydraulic performance, projected system growth, existing and future regulatory requirements, and ability to provide fire flows. Risk, benefits, and cost for each option will also be considered. LSCE will use this evaluation to provide replacement, maintenance, and mitigation recommendations for the system.

Task 4 – Evaluate Wells and Treatment Systems

Task 4 Deliverable

- Evaluate Wells and Treatment Systems

Task 4 Meetings

- Field Reconnaissance with City Operations Staff

A comprehensive evaluation of the existing groundwater wells and treatment systems will include a review of well and treatment system construction information, operational records, prior rehabilitation records, water quality information, and pumping equipment. LSCE will also provide recommendations to develop additional well information where data gaps are identified (i.e., video and other downhole surveys to assess well structural condition). The evaluation of well condition will serve as the basis for recommendations for well development, rehabilitation, or upgrades as warranted. LSCE will inspect and evaluate the City's existing pump station and treatment facilities, consider existing and future State regulations, and provide recommendations to improve reliability and efficiency. If repairs are required to mitigate current operational issues, LSCE will assess the costs to make repairs and likelihood of success and estimate the remaining service life and cost.

LSCE will also conduct a field reconnaissance of the City's water system. LSCE will request an onsite meeting with the City's operator/staff to discuss technical questions relating to the equipment, operation settings, and process control logic.

LSCE will summarize current operational and regulatory compliance issues and perform a field inspection of each well and treatment facility to observe infrastructure condition and operation. LSCE will evaluate historical well performance trends and evaluate conditions of wells, pumping equipment, motor control equipment, well construction and rehabilitation information, and performance of treatment systems. LSCE will identify necessary upgrades to all facilities for efficient operation and to meet current standards. LSCE will develop a list of the potential candidates for improvement and/or enhancement, along with a comparative operating analysis of operating costs for existing wells and treatment systems subsequent to a rehabilitation effort and estimated capital costs for upgrades, development, or rehabilitation efforts, for inclusion in the CIP.

Task 5 – Source Capacity and Storage Analysis

Task 5 Deliverable

- TM: Source Capacity and Storage Analysis

LSCE will evaluate the adequacy of the existing water supply to meet the average-day, maximum-day, peak-hour, and fire-flow requirements. The analysis will be conducted based on the requirement to meet maximum-day demand with the largest well offline (as set forth under the provisions of Chapter 16, Title 22, the "California Waterworks Standards") and as dictated by good engineering practice. The impacts of peak and emergency demands will also be considered. The impact of a well station failure (power outage, pump service, etc.) will be assessed relative to maximum-day demand scenarios.

This assessment will consider the system's ability to cope with drought and water conservation measures that may be implemented by the State. The adequacy of the system to meet existing and future demands, under existing and drought conditions, will be used to determine if there is a need for additional storage or source capacity in the system. Present and/or future regulations related to water supply will also be identified and included in the analysis.

Task 6 – Capital Improvement Plan

Task 6 Deliverable

- TM: Recommended CIP

Based on the evaluation of the City's facilities under the previous tasks, LSCE will synthesize the analyses and recommend the most cost-effective improvements to address system deficiencies on both a short and long term planning horizon. Prioritizations will be recommended based on relative system risk and failure potential, following AWWA Asset Management standard principles and practices, the ability of the system to meet the year round existing and projected demands including summer and winter demands, and regulatory considerations. An implementation schedule for these recommendations will be developed, and this information will be included in the CIP.

Cost estimates will be provided for all recommended improvements to the water system including sufficient detail to show the major improvement components. Present worth cost of a complete installation will be provided, including engineering, environmental, right-of-way, contingency, and construction administration. Capital project cost sub-totals will be presented based on the breakdown of planning, design (including environmental and permitting), construction, and funding cost categories. Lifecycle costs (the sum of capitalized and O&M costs) will be presented for the primary improvement projects. The CIP will examine connection fees based on the City's current projected growth and examine current water rate schedules as they relate to operation and maintenance.

Three funding opportunities will be presented in the CIP including low interest financing and grant funding opportunities.

Task 7 – Draft and Final Water Master Plan Update Preparation

Task 7 Deliverables

- Preliminary Draft Water Master Plan Update (3 hardcopies)
- Draft Water Master Plan Update (7 hardcopies)
- Final Water Master Plan Update (5 hardcopies, electronic PDF copy)
- Hydraulic Model (electronic copy)

Task 7 Meetings

- Presentations to City Staff (2)
- Presentations to City Council (2)

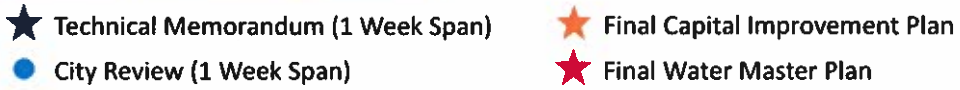
LSCE will compile the technical memorandums from the previous tasks into the Draft 2022 Water Master Plan Update. LSCE will provide copies of the Preliminary Draft, Draft and Final 2022 Water Master Plan Update to the City so that the documents can be reviewed by the City, City Council, stakeholders, and the public.

LSCE will conduct four presentations to the City and City Council. Presentation #1 will be to present the Preliminary Draft Water Master Plan which will be a combination of all the technical memorandums submitted in the study and the preliminary findings, recommendations, and CIP with possible funding strategies. Following the presentation, LSCE will develop the Draft Water Master Plan Update, which will be presented in Presentation #2. For Presentation #3, LSCE will discuss and present the process to develop the Draft Water Master Plan Update at a City Council Workshop. LSCE will also discuss the deficiencies identified and the prioritization of improvements at the Council workshop. Following review and comments received from the City Council, LSCE will develop and present (Presentation #4) the Final Water Master Plan Update making any adjustments to the analysis necessary to ensure the analysis represents the City's future vision.

3. Work Program/Schedule

LSCE reviewed the anticipated project schedule in the RFP and is prepared to commence work immediately. The project schedule presented below is based on our understanding of what the Master Plan will require and the City's schedule. LSCE is committed to providing the resources needed to complete the Final Master Plan for City adoption by December 20, 2022.

Task	Duration	2022 Jun	Jul	Aug	Sept	Oct	Nov	Dec
Award Contract	6/7/22							
Work Commencement	6/21/22							
Task 1. Review Existing Data and Project Management	6/21/22 - 12/20/22							
Task 2. Evaluate Existing and Future Water Demand	7/21/22 - 8/24/22							
Task 3. Evaluate Water Distribution and Metering Systems	8/25/22 - 9/21/22							
Task 4. Evaluate Wells and Treatment Systems	8/25/22 - 9/9/22							
Task 5. Source Capacity and Storage Analysis	8/25/22 - 9/21/22							
Task 6. System Evaluation and Capital Improvement Plan	9/22/22 - 10/26/22							
Task 7. Draft and Final Water Master Plan	10/27/22 - 12/20/22							



4. Project Budget

LSCE has included in a separate sealed envelope the Project Cost Estimate that provides the detailed breakdown of the costs for each task described in our proposal to Update the Water Master Plan. Services will be billed on a monthly basis for labor, materials, equipment, professional services, travel and all other costs incurred, in accordance with our regular Schedule of Fees for Engineering and Field Services. The Project Cost Estimate includes costs under each task as described in the Scope of Work. Each task cost estimate includes descriptive detail for the activities and estimated hours for each team member. This proposed fee is a Not to Exceed Cost based on the Scope of Services. If LSCE is directed by the City to deviate from the Scope of Services, or is required by unforeseen conditions, LSCE will provide notice to the City before proceeding with work that may be out of scope.

LSCE provides QA/QC and cost control at the principal level of the firm to ensure the scope is delivered within budget and on schedule. Project managers report to firm principals and conduct reviews of staff time and progress on a weekly and monthly basis.

BOTTOM LINE: LSCE is a smaller proven full service water engineering and groundwater resource firm that specializes in assisting small disadvantaged communities meet their water sustainability goals using local staff from our Woodland and Chico offices to support the City. Our funding expertise will ensure cost effective project delivery.