

AMENDMENT NO. 6

CITY OF CHICO - PROFESSIONAL SERVICES AGREEMENT

AGREEMENT DATED APRIL 7, 2021

BETWEEN CITY OF CHICO

AND

WOOD RODGERS, INC.

Consultant

STORM WATER MASTER PLAN

Project Title

309-000-8801/13025-309-4120

Budget Account No.

THIS PROFESSIONAL SERVICES AGREEMENT AMENDMENT (Amendment) is entered into on February 06, 2024, between the City of Chico, a municipal corporation under the laws of the State of California (City), and Wood Rodgers, Inc., (Consultant). On April 7, 2021, City and Consultant entered into “City of Chico - Professional Services Agreement” (Agreement). The provisions of the Agreement are hereby amended as follows:

1. Exhibit B is hereby superseded and replaced by revised Pages B1-R6 through B27-R6 attached hereto.
2. Exhibit C is hereby superseded and replaced by revised Pages C1-R6 through C6-R6 attached hereto.
3. All other provisions of the Agreement shall remain in full force and effect.

CITY:

CONSULTANT:

Mark Sorensen

Mark Sorensen (Feb 6, 2024 08:37 PST)

Mark Sorensen, City Manager*

Jonathan Kors

Jonathan Kors (Feb 5, 2024 09:09 PST)

Jonathan Kors

By:

Title Vice President

*Authorized pursuant to Section 3.08.060 of the Chico Municipal Code

APPROVED AS TO FORM:

John W. Lam
John W. Lam (Jan 31, 2024 09:38 PST)

John Lam, City Attorney*

*Pursuant to The Charter of the
City of Chico, Section 906(D)

REVIEWED AS TO CONTENT:

Barbara Martin

Barbara Martin, Administrative Services Director*

*Reviewed by Finance and Information Systems

APPROVED AS TO CONTENT:

Brendan Ottoboni
Brendan Ottoboni (Feb 5, 2024 09:03 PST)

Brendan Ottoboni, Public Works Director,
Engineering

AMENDMENT NO. 6

CITY OF CHICO - PROFESSIONAL SERVICES AGREEMENT

WOOD RODGERS, INC.
Architect/Consultant/Engineer

STORM WATER MASTER PLAN
Project Title

309-000-8801/13025-309-4120
Budget Account Number

AMENDED
EXHIBIT B

SCOPE OF PROFESSIONAL SERVICES - BASIC; COMPLETION SCHEDULE

Amendment No. 6 Services (in Bold):

Scope of Professional Services - Basic

The Consultant shall provide professional services as follows:

Task A Project Management

Consultant shall provide oversight to produce a thorough, living document, for a new SWMP from the existing plans that models and documents current conditions and meets state and federal requirements for permitting the City's current storm water system. The intent is that this new document should tie the many plans the City has that support the storm drain system into a single document, ensure the recommended SWMP complies with the City of Chico's Statewide Trash Amendments: Track 1 Implementation Plan and Track 1 Operations & Maintenance Plan (Trash Master Plan), make recommendations to help reduce peak flows where necessary to achieve a desired level of protection, and provide recommendations that achieve goals for pollutant load reductions in the system.

Consultant shall work diligently to meet the schedule milestones indicated on the Gantt chart included as Attachment A to this Scope of Services. Milestone meetings at 50%, 75% and 100% stages of the SWMP development as defined below shall be in-person in Chico at the Fred Davis Municipal Center with the consultant and City staff present. When applicable, these milestone meetings shall replace regular monthly progress meetings. The project schedule shall be

validated and/or updated before monthly update meetings. The attached schedule provides an initial baseline objective timeline. The Consultant shall notify the City of any conditions that arise that put delivery of the Final SWMP within 578 calendar days following notice of award at risk. The schedule change notification, if needed, shall detail the causes of the delays and potential remedies. Monthly progress updates with updated schedule information shall be provided to communicate less significant schedule changes that do not impact the ability to deliver the Final SWMP within 578 calendar days.

Consultant shall perform the various elements of project management necessary to successfully complete the Storm Water Master Plan (SWMP). The Project Management task includes:

1. Meetings and coordination
 - a. Kick-off meeting (in-person)
 - b. Monthly status updates (phone or in-person)
 - c. Milestone meetings (in-person)
 - i. Baseline model results (50%)
 - ii. Buildout conditions (75%)
 - iii. SWMP Review (100%)
2. Schedule updates
3. Internal quality assurance reviews

The Project Management Task shall also include preparing the sections of the SWMP that shall not be prepared as part of the scope of the listed tasks (as indicated, below), the compilation of the document, and addressing comments on the overall document. The following list outlines the sections that shall be included in the SWMP according to the requirements of the RFP and identifies the Scope of Services tasks that shall prepare the various report sections. The drafts of the report sections shall be provided within the various technical memoranda in the indicated tasks.

1. Executive Summary (Task A)
2. Introduction (Task A)
3. Summary of Past Plans (Task B)
4. Existing Conditions (Task A using information from Tasks B, C, D, E, F and J)
5. Design Criteria (Task B)
6. Storm Water Quality (Task B)
7. Model of System Both Hydrologic and Hydraulic (Task F)
8. Analysis of System (Current, Future, Pipework, and Capacity) (Task G)
9. Recommended Improvements (Tasks G & K)
10. Phased Capital Improvement Program (Tasks G & H)
11. Recommend Phased Storm Water Master Plan Implementation (Task H)
12. New Fee Schedule Recommendations (Task I)
13. Update current GIS Mapping System (Task J)
14. O&M Annual Maintenance Plan and Cost (Task H)
15. Financial Analysis of Future Recommendations (Task H)
16. Proposed Phased Future Projects List (Tasks F & H)

17. Review of Catch and Detention Basins, Creeks, and Channels (Task A will use information from Tasks C, D & E)
18. Municipal Code Update Recommendations (Task B)

Consultant shall review the report outline with the City as the plan develops in order to ensure that the organization of the document shall be clear and concise and appropriate for the various audiences that will be using the SWMP. For example, depending on the City's preferences, some of the detailed background and technical elements that are not critical to understanding the SWMP recommendations could be included in appendices. Recommendations for revisions to the organization of the SWMP shall be presented to the City for review and approved revisions shall be followed.

The Consultant shall prepare and deliver a draft SWMP for City review upon completion of Task G, address City comments and provide a draft for public review. Public comments shall be addressed, and a second draft shall be provided. Comments on the second draft shall be addressed and a final SWMP shall be delivered to the City. The SWMP documents shall be provided in Portable Document Format (pdf). Source files (Word, Excel, ArcGIS, etc.) of the final work products and interim deliverables, when requested by the City, shall also be provided.

Task A.1: Meetings and Monthly PM Tasks

Project Management effort corresponding to additional work and schedule extension.

Task A.2: SWMP Draft Final

Consultant shall document additional background information, data collection, and various aspects of plan development that was more complicated than originally anticipated. Consultant shall address questions and comments on Draft SWMP.

Task A Deliverables

- *Meeting notes*
- *Updated schedules*
- *Draft, Second Draft, Final Draft and Final Storm Water Master Plan*
- *Source files*

Task B Data Collection + Review

Consultant shall research, gather, and review all available documentation related to the City's storm drain system within the City of Chico's Sphere of Influence (SOI). The SWMP shall be updated using all current local, state, and federal requirements as well as referencing the data in the SWRP, Trash Master Plan, and the FEMA Flood Maps and to include at a minimum: flood mapping to generate planimetric data, land use, hydrology, historical high groundwater levels, storm drain systems data, and all applicable codes and laws. Consultant shall ensure National Pollutant Discharge Elimination System (NPDES) requirements and water quality objectives are being met. Consultant shall review the federal, state, and local flood management plans and studies as they apply to the City of Chico and surrounding areas. Consultant shall also review systems such as basins and diversions to ensure they meet current needs, plan for future

requirements, and recommend solutions to correct any findings. Conduct the necessary site visits, gather new and existing data to develop a comprehensive SWMP. The development of the SWMP shall require Consultant to acquire a thorough understanding of the existing storm water system, including the operation and maintenance practices. Consultant shall review and evaluate available City data and information, in the field, and in both written and electronic format; and provide a list of all information and available data gathered and reviewed, including location of materials, in an electronic Word format to the City.

In addition to any other available records and data necessary to develop the SWMP, Consultant shall review the following:

- Current City Storm Water Plans, regulatory requirements, amendments, and provisions
- Chico 2030 General Plan
- Storm Water Resource Plan
- Capital Improvement Plan (CIP)
- NPDES/MS4 Current City Storm Water Permit
- O&M Annual Maintenance and Costs
- City Code and Fees for Storm Water Systems
- Trash Master Plan
- Current City Drain Detention and Channel System
- Existing System Maps and Studies that Impact the SWMP
- RWQCB City of Chico Annual Storm Water Reports
- Levee Certification Documentation
- Record Drawings
- Drainage or Watershed Studies
- Butte County Storm Water Plan
- FEMA Flood Plain Mapping
- NOAA Storm Data

Use public domain street view and aerial imagery and topographic data, in addition to site visits, to ground truth storm water system information/infrastructure, and interview City staff to gather storm water system history, operations, and maintenance activities.

Consultant shall collect available data related to storm drainage within the City's Sphere of Influence (SOI) and its tributary watersheds and compile it into formats necessary for presentation and application in the SWMP. Useful GIS data from these sources shall be compiled into a geodatabase. Relevant sources, in addition to those listed above, include:

1. FEMA Flood Insurance Study (FIS)
2. Butte County Local Hazard Mitigation Plan, Annex B City of Chico (LHMP), dated October 2019.
3. LiDAR Topographic Data (CA FEMA-R9-Keefer 2017, 2007 CA DWR CVFED and USGS 2018 Wildfire)
4. Groundwater Level and Contamination Data

5. Aerial Imagery
6. USDA NRCS SCS Soil Data including Hydrologic Soil Group, Saturated Hydraulic Conductivity, Erosivity
7. National Land Cover Database (NLCD) ground cover and imperviousness
8. Building footprints from <https://github.com/Microsoft/USBuildingFootprints>
9. Central Valley Hydrology Study (CVHS)
10. Central Valley Floodplain Evaluation and Delineation Program (CVFED) work products
11. 2015 CA DWR FloodSAFE Refine/Calibrate Combined Sacramento River and San Joaquin River Systems – Sacramento River System Study Area
12. 2017 Central Valley Flood Protection Plan – City of Chico State Plan of Flood Control Levees
13. 2013 CA DWR Urban Level of Protection Criteria
14. Current Storm Drainage Master Plan (adopted 2001)
15. City Storm Drainage System GIS
16. NOAA Atlas 14 Precipitation Frequency Data
17. Local Precipitation Records

Consultant shall review the collected data and summarize aspects that are relevant to the SWMP. Recommendations based on background material shall be provided to the City for review. The deliverables for this task shall be provided as draft memoranda. Comments on the draft memoranda will be addressed and final versions will be submitted. The final memoranda shall be compiled into the draft SWMP in Task A.

Consultant shall coordinate with the City to collect data to resolve system configuration issues identified during the process of reviewing preliminary model results. Examples include the Bell-Muir area and the Airport area (including Cohasset Road improvements) which had an extensive missing and inaccurate system data in the GIS. Consultant shall review additional data associated with existing BMPs identified during plan development to date.

Task B Deliverables

- *Draft & Final Technical Memorandum: Summary of Past Plans*
- *Draft & Final Technical Memorandum: Design Criteria Recommendations*
- *Draft & Final Technical Memorandum: Storm Water Quality Summary*
- *Draft & Final Technical Memorandum: FEMA, ULOP and NPDES Municipal Code Update Recommendations*
- *Digital Reference Folder of Source Data*

Task C Review Catch Basins in the System

Review the current catch basins in the system. Based on the review, the SWMP shall have recommendations for new basins and/or or upgrades to achieve target pollutant load reductions in the system. Consultant shall coordinate with the City to identify data and parameters that can be used to perform a GIS process that results in identification of potential sites for stormwater quality retrofit elements for further study in future green streets projects. The complexity and extent of the screening will depend on available data, City input and budget. Forty (40) hours of

effort has been allotted for identifying potential sites for retrofit elements. The intent of this task is for better operation of the storm water system through improvements and/or the additional of catch basins and addressing pollutant reductions as required by the City of Chico MS4 Permit.

The City's GIS of inlet locations shall be reviewed with the topographic data in order to refine the spatial accuracy of the existing inlet points and to identify locations where there are inlets that are not in the current GIS. The catch basin review shall include identification of locations where:

1. Maintenance records and interviews indicate likely deficiencies,
2. Inadequate configurations are prevalent in particular neighborhoods,
3. Locations of inlets connected to dry wells,
4. The Trash Master Plan calls for projects, and
5. The SWMP analysis identifies excessive tributary area to a single inlet.

Neighborhoods that are found to experience excessive standing water due to a lack of inlets shall be identified. GIS features and attributes shall be used as determined to be appropriate to record the findings of the review of the catch basins. Field review shall be performed consistent with the approved budget.

Additional effort for review of catch basins due to more catch basins than originally anticipated.

Consultant shall coordinate with the City to complete a map showing locations that lack curb and gutter in order to improve data about where new catch basins would be beneficial and/or necessary for construction of curb and gutter. Additional effort to identify which inlets are connected to leach trenches and dry wells because only seven (7) were identified in the City's GIS, but approximately 90 inlets connected to dry wells and infiltration trenches associated with modeled systems have been identified in the review process. Most of the inlets that are connected to dry wells and infiltration trenches are associated with nineteen (19) systems that are capped.

Task C Deliverables

- *Draft & Final Technical Memorandum: Known and Potential Issues with Catch Basins*
- *Map showing potential sites for stormwater quality retrofit elements*

Task D | Review Detention Basins in the System

Consultant shall review the current detention basins in the system. Based on the review, the SWMP shall have recommendations for new basins and/or or upgrades to optimize pollutant load reductions and to help reduce peak flows throughout the system and address requirements of the City of Chico MS4 Permit in order to provide greater protection from flooding. The recommendations shall consider basin projects that are sized for future capital projects. The intent of this task is for better operation of the system through improvements and future growth planning for the storm water system and to address the requirements of the City MS4 Permit.

Consultant shall review all of the detention basins (~~approximately 17~~) 68 basins, (approximately 40 of which provide some storm water detention) within the City's drainage system. This review shall include developing stage versus storage curves for each basin. The geometry of the outlet controls for each basin shall be established from record drawings or survey data. All of the detention basins shall be included in the hydraulic modeling that shall be developed in Task F. The physical configuration of each basin and function of each basin during high flow storm events shall be reviewed to determine if improvements would be worthwhile. Additionally, each basin shall be reviewed to determine if retrofits could provide significant downstream pollutant load reductions.

Additional effort for review of detention basins due to the fact that there are 33 storm water basins to include rather than the 17 as originally scoped.

Consultant shall review underground detention system plans including identification of 24 locations where underground runoff storage configurations were necessary to complete drainage system modeling. Fifteen of the 24 modeled underground storage locations include infiltration. These 24 locations do not include leach trenches and dry wells associated with the 19 capped systems (which were modeled as outfalls that remove the tributary runoff from the model) and 8 other small infiltration systems that were identified but not modeled.

Task D Deliverables

- *Draft & Final Technical Memorandum: Known and Potential Issues with Detention Basins*

Task E | Review the Creeks + Channels in the System

Consultant shall review the design capacity of the creeks and channels in the system. With the review, record problems/issues identified, such as signs of overgrowth of vegetation, encroachment, degradations, or failures in creeks or channels, to allow the City to comply with state and federal requirements. Consultant shall identify and map areas of scour, erosion, sediment, and vegetation buildup in the channels and creeks that may impact the system. The review shall validate issues, report any new issues, recommend solutions/projects to address issues, and note if any issue may delay permitting for future projects. If the design capacity is not being met, Consultant shall recommend solutions to any impediment. Consultant shall use existing conditions to update channel capacity model runs and identify any areas of flooding and or where required freeboard is not being met.

Consultant shall prepare a HEC-RAS model of the streams in the City of Chico sphere of influence that were included in the "2017 Existing Baseline Conditions" model used for Sacramento River Routing in the preparation of the 2017 Central Valley Flood Protection Plan (CVFPP). Consultant shall prepare a subset model extracted from the large area model and update this model from HEC-RAS version 4.2 to 5.0 (or newer). The subset model shall include Mud Creek, Sycamore Creek, Sheep Hollow Creek, Dry Creek, Sycamore Creek Diversion-South Sycamore Creek, Lindo Channel and Big Chico Creek. A terrain shall be included in the HEC-RAS model that uses 2017 topographic data where it is available. (Though

the CVFPP model is identified as “2017,” this is because it is part of the 2017 CVFPP. It is actually based on 2007/2008 topographic data.) The cross sections shall be reviewed to determine where the sections should be updated with FEMA 2017 LiDAR topographic data. In most areas, it shall not be appropriate to update the model because field survey data was used and the channel has not changed significantly. The one-dimensional storage areas in the CVFPP model that are within the City’s sphere of influence shall be updated to two-dimensional flow areas. The effort to update the model involves georeferencing lateral structures and detailed manipulations of critical points in the domain to satisfy meshing rules. The model shall be run with 100- and 200-year flows, without breaching levees.

Consultant shall compare the design capacities of the creeks and channels included in the HEC-RAS model from State Plan of Flood Control descriptive documentation to previous assessments found in Task B and flow capacities determined by reviewing water surface profiles and channel discharges from the updated model. The available data from FEMA and DWR shall be reviewed to identify reaches where it would be beneficial to obtain updated imagery and LiDAR. Imagery and LiDAR shall be obtained using UAS along stream and channels where determined to be necessary and approved by the City. The new and/or available imagery shall be reviewed to identify areas of excessive vegetation, encroachments or evidence of failures. Any known problem areas identified by City staff shall be investigated. A comparison of 2007 DWR topography to the 2017 FEMA topography shall be made to identify areas of significant scour and sedimentation. Locations of known issues shall be reviewed and other locations where potential issues are identified shall be reported. Recommendations for solutions/projects to address issues shall be provided. It shall also be noted if any issues are found that may delay permitting for future projects.

For survey determined to be needed, ground control and photo identification points shall be established and measured by Consultant. The horizontal control shall be California State Plane Zone 2 and the North American Datum of 1983 (NAD83). The vertical control shall be per the North American Vertical Datum of 1988 (NAVD 88). A strip of topographic mapping covering a width of approximately 100 feet along the approved reaches shall be obtained to show the relevant drainage ditch/canal conditions. Relevant channel features such as outfalls and culverts shall be shown. Planimetric features such as fence lines, buildings, etc. shall not be depicted in this scope. Ortho-rectified imagery shall be provided with a resolution of approximately 1 inch per pixel. Project accuracy shall conform to generally accepted professional specifications established by the ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014). The estimate shall be based on collecting and processing data along a total length of four miles of channel.

If it is determined to be necessary, Consultant shall supplement the aerial survey with ground survey to provide information where the ground is obscured by vegetation or water. If additional ground survey is determined to be necessary for channel data beyond what is budgeted in this task, then additional budget shall be requested.

Consultant reviewed the cross-section data in the available stream models. This review has revealed potentially significant differences between LiDAR and modeled cross sections at a

number of locations as described in the draft Technical Memorandum (TM), *Known and Potential Issue with Creeks and Channels* dated October 6, 2021. Because many of these cross sections are in areas with dense vegetation where challenging field survey would be needed to obtain accurate cross section elevation data. This field survey would be in lieu of unmanned aerial survey along channels that had been originally included in the contract scope.

Net reduction of effort due to less survey effort being required than originally authorized in Amendment No. 1, but more effort to create profiles that identify locations of freeboard deficiencies.

Task E Deliverables

- *Draft & Final Technical Memorandum: Known and Potential Issues with Creeks and Channels*

Task F Hydrologic + Hydraulic Modeling

Based on information and data collected and analyzed, develop hydrologic and hydraulic computer models for existing land use conditions and future development. Delivery of the model software to the City shall not be required and providing training on the use of the software shall not be a part of this SOW. Consultant shall prepare hydraulic and hydrologic modeling for the City's storm water system to evaluate the storm water flow capacity. Consultant shall provide a recommendation on the improvements to the system based on the hydraulic modeling. The model shall be able to estimate direct runoff and peak storm water flow rates and volumes from precipitation data. The model shall assess current and future storm water capacities.

For this task, Consultant shall use most current rainfall intensity duration frequency curves, "C" factors (runoff coefficient currently used by the City), and design standards per state and federal requirements, regulations, permits, codes, or laws. Review current "C" factor' to ensure it reflects actual factors, such as the residential lot "C" factor of ".5". Review current City rainfall data requirements and recommend improvements to update the data projections, such as using NOAA rainfall data for storm water modeling.

Before completing submittal review of the draft SWMP, compare and validate the model presented in the SWMP to ensure SWMP compares favorably to forecasted capabilities in the system. Look for vegetation issues, encroachments, bank erosion, revetments, bank caving, over topping, and capacity issues that might impact the system's service to the City. A submittal of a detailed draft technical memo of all updates shall be required for City review (Word and PDF).

Task F.1: Drainage System Modeling Software Demonstration

Consultant shall use Innovyze's InfoWorks Integrated Catchment Modeling (ICM) software for the hydrologic and hydraulic modeling that will provide the foundation for the SWMP. The ICM software uses and produces GIS data thereby streamlining model development and presentation of results. Hydraulic modeling is fully dynamic and supports one-dimensional modeling of pipe systems and channels integrated with flexible mesh two-dimensional overland flow.

Consultant shall provide a demonstration of the modeling system to City staff once a region of the City is modeled in order to show the details that go into the model and the types of results that the model can provide.

Task F.2: Open Channel Modeling

The updated HEC-RAS models prepared in Task E shall provide design downstream boundary conditions for the ICM models. In some cases, reaches of the streams modeled in HEC-RAS shall be included in an ICM model in order to connect proximate outfalls. Open channels within the City's sphere of influence tributary to the reaches covered by the HEC-RAS model shall be included in the ICM models. Typically, the open channels shall be modeled as one-dimensional features connected to the two-dimensional mesh by bank lines. Cross sections for the open channels that are in the Task E HEC-RAS model shall be cut using the available elevation data or terrain data collected in Task E.

Task F.3: Precipitation

Consultant shall compare current City rainfall standards which were approved in 1981 to NOAA Atlas 14 precipitation values and provide recommendations to update the standards. NOAA Atlas 14 precipitation data provides expected values and 90 percent confidence limits of depths for a wide range of durations and recurrence intervals. These depths are spatially varied, generally increasing from west to east. Therefore, a single standard for the entire City may not be appropriate. Western Weather Group (WWG) shall provide local rainfall data that will be used to support recommendations for updated design precipitation. These recommendations shall incorporate more local data and 10 years of recent data that was not available when NOAA Atlas 14 was developed. It shall be anticipated that the recommendations shall provide regions within the City where specific design storm depths shall apply. Temporal distributions shall be recommended to provide appropriate timing of local inflows relative to the peak flows in the streams.

Task F.4: Flow Data Review

Consultant shall review stream gage data for Lindo Channel from the California Data Exchange Center and identify a storm event for which the flows are predominantly from the City's storm drainage system in order to select appropriate flow data for model calibration. Rainfall data for the selected event will be reviewed.

Task F.5: Loss Rates and Calibration

Consultant shall review the runoff coefficients from the City Standards and make appropriate recommendations for values to use for design and for loss rate methods for SWMP development. Consultant shall provide recommendations for what precipitation losses should be applied that will be appropriate for design peak flows as well as runoff hydrographs for detention basin flow routing and other applications. Consultant shall plan to use the Snyder Unit Hydrograph method for rainfall to runoff transformations and the HortonSWMM method for determining loss rates based on prior evaluations of various methods and how well the methods could be calibrated to approximate measures conditions. Once the model is calibrated, a sample location shall be selected to compare Rational Method calculation values to model results.

Consultant shall review available data sources and make recommendations for imperviousness to be used in the hydrologic modeling. GIS boundary data shall be used to establish the limits of roadway right-of-way to accurately define the limits of a large portion of directly connected impervious surfaces. The National Land Cover Database (NLCD) provides estimates of imperviousness. NLCD shall be compared to existing land use designations and aerial imagery. Factors shall also be considered to reduce effective imperviousness because large residential lots that are mostly pervious generally have a significant amount of the runoff from impervious areas directed onto pervious areas, thereby reducing runoff. Newer developments that incorporate LID measures can also effectively reduce the effective impervious area. Consultant shall recommend a method to assign effective imperviousness to each watershed using a GIS process that takes advantage of the best available information to accurately compute runoff. Time of concentration for each watershed shall be computed using flow path data generated using GIS terrain mapping and reviewed and adjusted as determined to be appropriate. By using a relatively large number of small watersheds, the significance of assumptions related to timing of runoff from upstream watersheds shall be relatively small because most flow routing times are based on the hydraulic routing simulation rather than hydrologic routing. Consultant shall use local precipitation data in a model of the drainage areas tributary to the Lindo Channel gage location. The results of the model shall be compared to the gage record. Model parameter development methodology shall be adjusted, as determined to be appropriate, in order for the model to reasonably reproduce observed flow and level conditions. Potential causes for significant differences between modeled and measured conditions shall be provided, if necessary. The calibration parameters developed for the Lindo Channel model shall be applied to the entire study area.

Task F.6: Existing Conditions Modeling

Consultant shall model the existing drainage system once the pipe and channel system in the GIS database has been adequately refined. Interrelated and proximate drainage areas shall be grouped together into model domains. Modeling more area than necessary at one time can result in excessive model run times. Having too many model domains can result in unnecessary data management steps. Consultant shall develop model domain recommendations and present these to the City.

Additional effort determined to be needed due to complexities with modeling the existing storm drainage system conditions, particularly in the older areas of the City.

Consultant shall perform various steps to create the models. These steps shall include importing the digital surface elevation data, pipe system data, watershed parameters, and rainfall distributions. Node types, such as manholes, storage nodes, break nodes (junctions that are not manholes), and outfalls will be set. Pipe system profiles shall be reviewed and missing and erroneous elevations shall be set. Detention basin elevation versus area curves and pump station parameters shall be entered into ICM. The channel reach and cross section lines shall be imported into HEC-RAS where required. The cross sections shall be cut and refined in HEC-RAS and then imported into ICM. Bank lines shall be created and the two-dimensional mesh areas shall be defined with areas blocked out for buildings using publicly available approximate

building outlines. Once all of the data has been entered into ICM, any internal model validation issues shall be resolved and the model shall be run.

As each of the models (for each domain) has been run, the results shall be reviewed for instabilities and unusual conditions. Consultant shall resolve any significant issues by applying model corrections or refinements, or providing explanations, as determined to be appropriate. Once the models have been adjusted for calibration parameters, the models shall be run for the 10-year and 100-year storm events.

Additional effort is needed to resolve details to get the models to run. Numerous complexities in the Chico drainage system where there are parallel pipe systems needed to be investigated and resolved. Due to the complex systems and inconsistent elevation data on plans, it took more effort than anticipated to set pipe and detention basin outlet control elevations in the model. It also took more effort than anticipated to resolve issues with the two-dimensional mesh in order to incorporate various details without resulting in excessive model run times.

Consultant shall incorporate system details identified in the additional data collection effort in the Bell-Muir area and Airport area and the Consultant shall incorporate the underground storage and infiltration system data.

Task F Deliverables

- *Draft & Final Technical Memorandum: Existing Conditions Hydrologic and Hydraulic modeling*

Task G Listing of Proposed Future Projects to Upgrade the System

The goal of this task shall be to have a substantial and complete proposed project list for the City's storm water system. Consultant shall list potential and planned projects on public areas to both upgrade and improve the system. The rank order list shall define future projects, estimate peak reduction to the system, and estimate project cost. These projects can include replacement piping projects, projects for future growth consideration, projects that reduce peak flow, projects that increase ground water recharge, and projects that would improve maintenance of the system. Where possible prioritize storm water projects and rank order them into groups to be considered for the CIP and similar projects shall have the ability to be designed so they can be awarded in a group. At a minimum, Consultant shall consider the following when suggesting projects: public retrofits and upgrades, wells, diversion, infiltration, reuse, curbs, permeable systems, bio-filtration, and capture systems. Identify issues/concerns to getting projects started, such as permitting processes through higher agencies. Consultant shall list tributary areas, peak flow rates and/or runoff volumes used for sizing potential projects identified in the SWMP. Review and analyze the condition and capacities of existing storm drain facilities, flooding history, and identify isolated flooding locations. Working with City staff from O&M, Engineering, and Planning, Consultant shall coordinate with local utilities and meet to identify potential opportunities for partnering on projects. The intent of the coordination shall be to reduce impact, eliminate overlap, and avoid damage or rework to city roads.

Task G.1: Existing Conditions Deficiency Identification

Consultant shall use inundation results from 10-year and 100-year storm model runs to help identify where projects are needed to correct inadequate drainage. Consultant shall illustrate flood depths on base mapping and highlight locations with significant potential flooding next to structures. Locations where there are clusters of structures that could be impacted by flooding due to drainage system deficiencies will be identified and reviewed. Consultant shall prepare a memorandum that describes the locations where potentially significant drainage system deficiencies were found along with discussions about notable factors that contribute to the potential problem.

Task G.2: Identification of Measures to Alleviate Existing Deficiencies

Consultant shall evaluate options to alleviate significant existing deficiencies. Options may include additional pipe capacity, detention, infiltration systems, pumping capacity, floodwalls or channel enlargement. Models will be prepared to demonstrate the expected effectiveness of the identified measures to alleviate existing deficiencies.

Task G.3: Future Conditions Modeling

Consultant shall use existing conditions imperviousness and General Plan build out data to identify where future conditions modeling should include increased impervious area. Future conditions models that include imperviousness consistent with buildout conditions shall be developed. Concept level improvements that would be needed to meet current drainage standards with build out to General Plan land use conditions shall be identified and modeled.

Identification of future measures to accommodate curb and gutter improvements. Master plan for connection of capped systems identified in data collection.

Task G.4: Integration of Storm Water Quality Measures into Projects

Consultant shall identify opportunities to incorporate capture and reuse systems and bio-filtration into projects. Identified issues with existing infiltration systems shall be investigated. Proposed projects shall incorporate infiltration as determined to be appropriate. Recommendations shall consider methodology to establish design infiltration rates, long-term maintainability of infiltration rates, known groundwater contamination and protection of groundwater quality. Storm water quality measures shall be included in future conditions modeling where the proposed measures could impact flows.

Effort to determine where to efficiently incorporate storm water quality measures to meet trash amendment requirements based on there being many more existing BMPs to consider as part of the potential solutions that originally anticipated. Address complexities associated with developing recommendations based on revised understanding of the potential CIPs.

Task G.5: Cost Estimates

Consultant shall prepare planning level opinions of probable costs (OPCs) for projects to alleviate identified existing deficiencies and to accommodate future development. The SWMP shall explain uncertainties associated with OPCs for projects developed prior to preliminary

design studies. Factors shall be used to account for various project costs. For example, rather than include line items for manholes and inlets, a factor shall be included in the unit cost per length of pipe to account for typical manhole and inlet costs. It shall be anticipated that the City will be able to provide appropriate planning level land acquisition and easement costs. Additional factors shall be applied to the base OPCs for construction to account for planning and design, construction management, program administration and a contingency.

Task G.6: Project Prioritization and Coordination

Consultant shall group related projects and identify prerequisites, such as a where a separate downstream project may need to be built before and upstream one. Priorities related to the severity of the deficiencies to be corrected may be considered. Additionally, interrelationships with other planned capital improvements shall be used to establish the timeline for construction.

Consultant shall integrate NPDES Permit requirements into project prioritization.

Task G Deliverables

- *Draft & Final Technical Memorandum: Existing Conditions Deficiency Analysis*
- *Draft & Final Technical Memorandum: Projects to Alleviate Existing Deficiencies*
- *Draft & Final Technical Memorandum: Projects to Accommodate Future Development*
- *Draft & Final Technical Memorandum: Cost Estimates and Project Prioritization*

Task H Financial Analysis

Consultant shall work with City staff to develop funding strategies and an optimal financial plan for implementation of recommended capital projects including initial and future operational costs. Consultant shall evaluate current O&M storm drain maintenance practices to make recommended change and additions to its current practices including additional personnel. Consultant shall evaluate existing pipe data such as age, material, selected field observations to develop a replacement schedule for existing storm drain lines. Create framework to communicate and prioritize financial resources required to sustain current and desired assets at appropriate levels of service. From this framework, develop a list of capital improvement projects and include estimated costs and prioritization. The recommended projects for the SWMP shall include the project's cost, subsequent annual operations and maintenance costs, and any associated cost with the Trash Master Plan.

Next, a variety of potential funding mechanisms shall be evaluated including special taxes, user taxes, transient occupancy taxes, sales taxes, balloted property-related-fees (P218-compliant), non-balloted property-related fees (P218-compliant and consistent with SB231), benefit assessments, regulatory fees (P26-compliant), impact/new development fees (AB1600-compliant), service fees and other non-balloted fees and revenues such as loans and grants.

Each potential source shall be studied and evaluated along with important attributes such as political viability, legal rigor, reliability, legislative factors, costs of implementation and maintenance, future reliability, timeline, and compatibility with other funding mechanisms. Consultant shall also estimate the revenue potential and the estimated implementation cost of

the most viable options. The options shall include potential incentives such as on-site stormwater management methods.

Consultant shall review this analysis with the City, along with recommendations (including capital costs, subsequent annual operations and maintenance costs, and any associated cost with the Trash Master Plan) and then at the conclusion of this Task, the Team shall prepare a plan to implement the optimal path forward for funding the proposed storm drainage services.

Task H Deliverables

- *Draft & Final Technical Memorandum: Storm Water Program Costs, Prioritization, Funding Options and Recommendations*

Task I Recommend a Revised Fee Schedule for Storm Water Program

The City of Chico Fee Schedule may be outdated, not overall encompassing, and is based on current drainage basins. Consultant shall review the Fee Schedule and recommend a revised Fee Schedule, that reflects the current storm water program and required CIP projects.

Consultant shall first review the City's current storm drainage fee program, applicable ordinances, the City General Plan, and other technical studies and plans related to funding of the proposed improvements. Consultant's Team and the City shall discuss the City's goals and objectives and the proposed methodologies and approaches that shall be used in the determination of the fee program. A detailed timeline, subtask list, and deliverables for this task shall be established in consultation with the City during the kick-off meeting, or other time, as requested by the City.

Consultant shall then prepare a Draft Storm Drainage Fee Study Report (Fee Study) for administrative review and comment. The Fee Study will establish the legal and policy basis for imposing the revised fees. The Fee Study will include a summary of fee methodology and approach along with technical analysis and documentation to support the proposed fee schedule. After review by City staff, Consultant shall address comments and provide a Final Storm Drainage Fee Study Report.

Task I Deliverables

- *Draft & Final Storm Drainage Fee Study Report*

Task J Make Revisions + Update the Current GIS Maps for Storm Water Program to include Piping + Surface Flow

Update pipe and surface flow GIS digital maps so that maps are complete and up to date to the extent feasible within the available budget. Use these updated digital maps for modeling the system and validate current conditions. Provide updated digital GIS maps to the City to allow for future planning as part of this product. If storm drain maps are in a different datum, update the maps to match the City's currently used datum to the extent that the datums are identified and appropriate adjustments can be readily determined. The GIS maps are missing data that will need to be included and are known to contain inaccuracies. Prioritized improvements to the GIS

shall be made as determined to be appropriate considering modeling needs, data availability and format, and available budget.

The GIS database includes information on the storm drainpipe size, age, location, and material. However, the information on the storm drain system is not complete. Consultant shall conduct a GIS inventory of the City's storm drain assets (known, unknown, and discovered). Consultant shall update the databases and address these information gaps by reviewing record drawings, requesting information from the City, and performing site visits to the extent feasible within available budget. The inventory of the City's storm drain system assets shall be submitted to the City in Excel format.

Update the existing GIS databases with the location and acquired storm system asset attributes. The data collection format shall be compatible with the City's existing GIS configuration. This task includes providing the information to update and the City's GIS storm drain database, which at a minimum shall include storm drains, manholes, inlets, outlets, CDS, units, urban diversion system, watershed delineations, identified gaps, proposed system additions, deletions, and improvements.

Task J.1: Topographic Base Map

A digital topographic base map shall be prepared for the study area. Most of the City is covered by LiDAR acquired by FEMA in 2017. The southern part of the City that is not covered by the FEMA LiDAR is covered by DWR LiDAR acquired in 2007. Other USGS LiDAR data (from 2018 Wildfires) is available for the remainder of the study area watersheds. The available FEMA and DWR LiDAR data covers the areas where detailed hydraulic modeling shall be performed. Topographic data collected in Task E shall be incorporated. Consultant shall also use any georeferenced digital surface data provided by the City for project areas constructed subsequent to LiDAR acquisition. The topographic base map shall include the most current available data at each location. An automated contour generating routine shall be used to create one-foot contours for the area with the City's Sphere of Influence. The compiled terrain data shall provide the surface that will be used in the hydraulic models.

Task J.2: Surface Flow Paths and Watershed Delineations

Surface flow paths and preliminary drainage boundaries shall be delineated for the study area. Significant points along the streams and drainage channels shall be selected as concentration points. The drainage inlets in the City's GIS shall be reviewed and locations will be adjusted to an appropriate proximate low point. The topographic data shall be reviewed to identify sumps without inlets. Sumps identified as detention basins shall be classified, accordingly. The other sumps shall be reviewed to determine if inlets are missing from the GIS and revisions to the GIS will be made as determined to be appropriate. Inlets determined to be connected to infiltration systems shall be classified as such so that the tributary areas can be classified as being self-retained. (A subsequent decision will be made as to whether or not self-retained areas shall be modeled for potential overflow into the conveyance system.) A version of the topographic base map shall be modified by hydro-enforcing surface flow paths where determined to be appropriate, such as where there are culverts. Consultant shall follow an established workflow

using a flow accumulation routine to define surface flow paths and to delineate catchments. The delineations shall be reviewed and adjusted as determined to be appropriate.

Additional effort determined to be needed to delineate watersheds due to there being more inlets than anticipated.

Identification of the drainage areas tributary to the higher numbers of detention basins, underground storm water detention systems, capped systems, and BMPs associated with meeting trash capture requirements. Addition of attributes to previously delineated catchments for planning and presentation purposes. Addition of watersheds corresponding to details added in the Bell-Muir area and Airport area.

Task J.3: Pipe System Naming and Continuity Refinement

Pipe flow directions shall be defined, and locations of apparent missing pipe data shall be identified. The catchments, surface flow paths, pipe data and topographic data shall be reviewed to determine where it is evident that there are missing pipes that would be significant to the modeling effort. The review shall start at the outfall for each drainage system. A standardized naming convention shall be employed that includes the basin identifier from the previous SDMP. Connectivity through detention basins shall be established. All of the pipes that shall be included in the model shall be drawn from upstream to downstream nodes. An ArcGIS Online system shall be used to submit data requests to the City for missing information and to resolve configurations with conflicting information. Consultant shall coordinate with the City to determine whether the missing data shall be obtained from as-built drawings, City staff investigations, or field investigations and/or field survey crews by Consultant.

Data acquisition shall be prioritized to obtain the most important information within the available budget. The most important information is pipe size. Though the previous Storm Drainage Master Plan evaluated pipe capacity with pipe slope, the SWMP shall identify locations of capacity deficiencies based on surface flooding which is controlled by hydraulic grade lines. Because hydraulic grade lines are only impacted by pipe depth under inlet control circumstances, many missing pipe elevations can be estimated for the purposes of drainage system analysis.

Open channels that shall be in the ICM model shall be included in the GIS by identifying reaches between culverts and junction points. Cross section locations shall be determined, and cross section endpoints shall be set so that lines between cross section endpoints can be used as bank lines. Bank lines shall be used to connect the channels to areas of two-dimensional mesh used to simulate overland flow.

The existing conditions drainage system in the GIS database for modeling does not have to be limited to the drainage system that has already been constructed. Planned improvements could also be included, as determined by the City to be appropriate. Consultant shall include planned drainage systems as part of the baseline drainage GIS database based on data provided by the City for this purpose. If the year that the planned system shall be constructed is not known, a flag value can be used in the GIS to identify features as planned.

Consultant shall add and update information in the existing GIS database to provide an inventory of the system with pipe size, location and material. The year of construction shall be included where known. The geodatabase shall include feature classes of manholes, inlets, outfalls, water quality treatment facilities, pumps, detention basins and other identified drainage features. The completeness and accuracy of the data shall depend on the data provided by the City and the amount of information that can be collected and entered considering the available budget. Consultant shall coordinate with the City to provide and implement recommendations to prioritize data collection within the available budget for this task.

It is noted that the amount of time necessary to develop the GIS database is highly dependent on the availability and condition of City records for installed infrastructure. Consultant costs for this task item are based on our best estimate of the effort without understanding the availability and condition of City data. If additional hours are required, Consultant shall seek additional budget for the task line item.

Additional effort to complete the drainage system in GIS in a manner that takes advantage of the vast quantity of system layout data that the City has provided.

Consultant shall update the system GIS to reflect new and corrected system data, to add more BMP data, and to improve system presentation.

Task J Deliverables

- *Data requests for missing information*
- *File geodatabase with GIS data as feature classes used to prepare, and present the results of, the SWMP. Feature classes will be spatially referenced to conform to the City's datum.*
- *Inventory of the City's storm drain system assets in Excel format.*

Task K Public Outreach to Proposed Plan

Provide draft plan (to be completed in Task A) for public comment with a focus on the piping network and input for consideration to the proposed SWMP after city review. Log written submitted questions and comments from the public and consider for inclusion into the proposed SWMP if they are applicable. Upon completion of the public comment period, incorporate any final changes for a final, completed document to be presented for acceptance to the Chico City Council (incorporation of comments will be part of Task A).

Consultant shall include a minimum of two (2) stakeholder meetings during this data collection phase to engage the public and allow for participation early in the process. An additional stakeholder meeting may be added.

Consultant shall prepare for, present at, and document input received during up to three stakeholder meetings.

Consultant shall prepare a public notice and can send targeted mailers to a pre-established list of up to 100 stakeholders. The scope of work does not include budget for City-wide mailers, a website, or social media accounts. Consultant shall be available to assist with additional public outreach tasks which could include some or all of those additional items; however, the scope and fee would need to be adjusted to accommodate the additional hours needed to perform those tasks.

Consultant shall coordinate the timing of the first stakeholders' meeting with the City. A logical timeframe for the first stakeholders' meeting would be at a point when substantial existing conditions results can be presented, when there would be opportunities to obtain input on the findings and corrective measures that could be considered.

The second stakeholders' meeting shall be conducted to present the draft SWMP for public review comments. Consultant shall prepare a public presentation of the SWMP for online and/or in-person use. A draft of the presentation shall be provided to the City for review and approval. The objective for this presentation will be to tailor information for the public audience to explain what the plan entails and what benefits would be achieved.

Consultant shall participate in a third stakeholder meeting, if requested by the City.

Consultant shall prepare a log of all of the questions from the public. Questions shall be reviewed with the City to determine how to respond. Task A shall address responses that shall be incorporated into SWMP.

The Public Outreach task includes preparation of a presentation to the Chico City Council. Consultant shall coordinate with staff to develop a presentation for the desired length and content.

Task L California Environmental Quality Act (CEQA)

Consultant shall prepare a CEQA document of the appropriate level to analyze the proposed systematic and project level improvements impacts on the environment. The level of CEQA document shall be coordinated with City staff.

Task L.1 Notice of Preparation Process

Consultant shall prepare a Notice of Preparation (NOP) for the EIR which shall be circulated to responsible agencies and the public for their review and comment. The NOP shall provide interested parties with sufficient information describing the project, its alternatives under consideration, the project location, and possible environmental impacts of the proposed project. The NOP shall be sent via certified mail to each responsible agency as well as other known stakeholders identified by the City.

Consultant shall coordinate with the City of Chico to organize a NOP Scoping Meeting and shall attend the meeting to meet with participants and answer questions. Consultant shall provide basic meeting materials (comment cards, sign in sheet) as well as project exhibits. A

summary of comments and meeting minutes shall be provided to the City and included in the Draft EIR.

Task L.2 Record Searches, Data Collection, and Review

Early in the SWMP development process, Consultant's Team shall coordinate with the City to compile and review all of the prior environmental documentation that could be relevant to the preparation of a CEQA document supporting the SWMP 2021 ~~Program Level Environmental Impact Report~~. These documents include but are not limited to the 2000 Storm Drainage Master Plan EIR, the Chico 2030 General Plan and General Plan EIR, the City's Capital Improvement Plan, and the Butte Regional Conservation Plan. These documents shall be reviewed, and relevant sections highlighted for inclusion in the 2021 SWMP ~~EIR~~ CEQA document, both to provide a consistent level of analysis as well as to document how the SWMP is consistent with the City's other planning level documents.

The following records searches shall be obtained to support identification efforts for environmental resources relevant to the SWMP 2021 ~~EIR~~ CEQA document:

- A copy of the City's archaeological and historic resources records search conducted for the 2030 General Plan EIR
- A sacred lands query from the Native American Heritage Commission
- A hazardous waste records search from the Environmental Resources Database
- Biological resource database searches including the California Natural Diversity Database (CNDDB), the California Native Plant Society, the US Fish and Wildlife Service, and the National Marine Fisheries Service.

This records and database research shall provide a baseline of information for the existing conditions of the City's existing stormwater facilities and will support preparation of the SWMP 2021 ~~EIR~~ CEQA document.

Additional work to obtain a full record search from the Northeast Information Center.

Task L.3 Native American Consultation Process

Consultant shall evaluate the potential effects of the SWMP on cultural resources. Because of the broad geography and long timeframe to which the SWMP will apply, the cultural resources analysis shall be prepared at a programmatic level. Consultant's Team shall provide the City with a letter inviting tribal consultation pursuant to Assembly Bill (AB) 52. If consultation is requested, Consultant's Team shall assist the City by coordinating meetings with tribal representatives and negotiating appropriate mitigation measures to include in the EIR for the minimization of impacts to tribal cultural resources. Any technical evaluations requested under the AB 52 consultation process shall be addressed through a scope and budget amendment.

Task L.4 Draft ~~Environmental Impact Report~~ Initial Study/Negative Declaration Tasks

Consultant shall incorporate the purpose and need, project description, proposed build alternatives, SWMP content, and environmental research into the Draft ~~Environmental Impact~~

Report (EIR) Initial Study/Negative Declaration (IS/ND). The Draft EIR IS/ND shall be prepared at a programmatic level with general analysis for each section to cover the content of the SWMP as well as evaluating a wide range of future stormwater system improvement projects. Consultant and Assent specialists shall prepare sections of the EIR IS/ND covering the 22 environmental topics provided in the CEQA guidelines. Key environmental considerations that will be covered in greater detail in the EIR IS/ND are summarized below while topics not discussed here are expected to have minimal or no impacts:

1. Aesthetics – Analysis of how stormwater related projects could impact the visual aesthetics of the City. Most common impacts are expected to include tree and vegetation removal; however, new facilities such as diversion structures or detention basins could result in changes to the physical environmental and local views. Impacts are expected to be less than significant or less than significant with mitigation.
2. Air Quality and GHG Emissions – The City of Chico is located within the Butte County Air Quality Management District. Future projects shall result in short term construction related emissions such as carbon monoxide, particulate matter, sulfur dioxide, and carbon dioxide (among others); ~~Consultant's Team shall develop modeling parameters to estimate a range of future construction projects and the projected emissions that are expected to be generated. It is assumed that improvements to the City's storm water infrastructure would not result in a substantial increase in operational emissions. Construction emissions, both associated with Air Quality and Greenhouse Gas emissions, are expected to result in a less than significant impact, or less than significant with mitigation incorporated.~~ However, the SWMP approval will not result in any Air Quality emissions and therefore the IS/ND will anticipate no impacts to Air Quality and GHG emissions.
3. Biological Resources – Consultant shall assess potential impacts to biological resources that could result from future storm water system improvements, facilities, and maintenance based on the level of detail provided in the SWMP. The biological resource analysis shall be based on firsthand knowledge of the local and regional biological resources in Chico and surrounding areas, including prior environmental documentation and resource mapping completed for the Chico 2030 General Plan, General Plan EIR, the City's CIP, and the Butte Regional Conservation Plan. The environmental analysis shall be, at a broad level, appropriate to the programmatic master plan and shall not include any site-specific data collection or analysis. Project-level analysis can be provided once improvement details are available (a scope and budget modification may be required).

The biological resources section of the EIR IS/ND shall include comprehensive database records search results and any information provided by regulatory agencies during the Notice of Preparation review period. The EIR IS/ND shall document the biological resources present in the SWMP area, special status habitat types that are present, and a framework for analyzing potential impacts on biological resources. ~~The section shall provide a detailed analysis of all potentially significant direct, indirect, and cumulative impacts of the proposed project on biological resources. Feasible and practical mitigation measures that would avoid or reduce potentially significant impacts shall be provided. All mitigation measures shall be designed in conformance with resource agency and City~~

~~requirements and the goals and policies of the General Plan and shall be designed for subsequent tiering of future specific projects as well as to support approvals for Routine Maintenance Agreement permits that address maintenance activities. The level of environmental impacts may be cumulatively significant, but the Consultant's Team shall work to identify all available mitigation measures to reduce potential impacts to a less than significant level.~~

4. Cultural Resources and Tribal Cultural Resources – Consultant shall evaluate the potential effects of the SWMP on cultural resources. Because of the broad geography and long-time frame to which the SWMP will apply, the cultural resources analysis shall be prepared at a programmatic level and no field surveys are proposed with this scope of work. A citywide archaeological and historic records search was conducted for the 2030 General Plan EIR; these results, including the sensitivity map, shall be incorporated into the EIR section. This section of the ~~EIR IS/ND~~ shall describe the cultural resources that are known or have the potential to occur in Chico, the potential impacts that may occur as a result of project implementation, ~~and it shall include appropriate mitigation measures.~~ Consultation letters to Native American Tribal groups registered with the City shall be prepared and provided to the City to facilitate the initiation of Native American Consultation pursuant to Assembly Bill (AB) 52. ~~If consultation is requested, the Consultant's Team shall assist the City with meetings and negotiating appropriate avoidance, minimization, and mitigation measures to protect cultural and tribal resources during construction of future storm water projects. Any technical evaluations requested under the AB 52 consultation process shall be addressed through a scope and budget amendment. Impacts to cultural and tribal resources are expected to be less than significant with mitigation incorporated.~~
5. Energy – ~~CEQA Guidelines Section 15126.2(b) and CEQA Guidelines Appendix F require that EIRs include a discussion of the potential energy impacts of projects, with emphasis on considering whether projects implemented under the SWMP would result in inefficient, wasteful, and unnecessary consumption of energy, or conflict with a state or local plan for renewable energy or energy efficiency. Using much of the same data relied upon to estimate emissions for the air quality and GHG analyses, the Consultant's Team shall estimate the amounts of diesel and gasoline that would be consumed during the construction of new or upgraded infrastructure under the master plan. The SWMP shall be evaluated to determine if the proposed improvements would make it energy efficient and the degree to which new facilities developed under the SWMP would comply with existing energy standards. Special consideration shall be given to the important relationship among the analyses of air quality, GHGs, and energy. Impacts associated with energy are expected to be less than significant or less than significant with mitigation.~~
5. Hydrology and Water Quality – Analysis of potential impacts associated with hydrology and water quality will be a critical component of the ~~EIR IS/ND~~ as implementation of storm water improvements shall be fulfilling the purpose of the SWMP and General Plan goals associated with flood risk, water quality standards, and health and safety of local residents. A key element of this section shall be to present potential impacts that recommended improvements to the drainage system would be expected to have on peak discharges and flooding conditions. Hydrology and water quality related impacts are expected to be less than significant with mitigation incorporated.

6. Cumulative Impacts – A benefit of a Program Level ~~EIR~~ CEQA document is that it can provide a better assessment of potentially significant cumulative impacts than typically provided as part of individual project level analysis. The ~~EIR~~ IS/ND shall include a general discussion of potential cumulative impacts to air quality, water quality, biological resources, greenhouse gas emissions and any other resources that could be potentially impacted cumulatively. ~~Mitigation measures shall be developed such that they can adequately reduce potentially significant impacts to a less than significant level on both a project level and a cumulative level for all future projects covered by the City's SWMP. A cumulative impacts discussion shall also be provided for routine maintenance with measures in place to reduce the need for separate environmental documentation and permits for maintenance projects. Cumulative impacts may be determined significant and unavoidable, but all available mitigation measures shall be incorporated where appropriate to reduce potentially significant impacts.~~

Once the Draft ~~EIR~~ IS/ND is completed, it shall be submitted to the City for their review and approval. Consultant shall be responsible for updating the document if the City request changes or has comments.

Task L.5 Public Circulation of the Draft ~~EIR~~ IS/ND

Consultant shall prepare the requisite public notices and hard copies of the Draft ~~EIR~~ IN/ND public circulation and comments. Consultant shall coordinate the preparation of a distribution list consistent with City of Chico requirements and a Notice of Completion shall be prepared and submitted along with the ~~EIR~~ IS/ND to the State Clearinghouse (to initiate a ~~45~~ 30-day public review and comment period for the Draft ~~EIR~~ IS/ND).

During circulation of the draft environmental document, Consultant shall coordinate with the City to hold a public hearing to answer questions and address concerns. Postcards containing specific information related to the project and the public meeting information shall be mailed to public agencies and stakeholders. Consultant shall coordinate with the City to post a newspaper advertisement about the SWP and the opportunity to provide public comments. Consultant shall prepare exhibits, facilitate the meeting, conduct set up/cleanup activities, and compile public comments to include in the Final ~~EIR~~ IS/ND.

Task L.6 Final ~~EIR~~ IS/ND Tasks

At the close of the ~~45~~ 30-day public review period for the ~~EIR~~ IS/ND, Consultant shall prepare responses to any written comments received on the Draft EIR, or those that were recorded orally at the public hearing. Once these responses have been prepared they shall be submitted to the City for review. Once approved by the City, these comments and responses shall be included as an appendix in the Final ~~EIR~~ IS/ND. The Draft ~~EIR~~ IS/ND shall be updated to “Final” and shall include modifications as needed to provide additional information in response to comments received during the public review period.

~~Consultant shall draft findings of fact pursuant to State CEQA Guidelines Section 15091 for each of the significant effects identified in the Final EIR. The findings shall describe the effect,~~

~~cite one or more applicable findings under Section 15091, and describe the evidence that supports the selected findings. The findings shall also explain why other project alternatives that could avoid significant impacts are infeasible. Consultant shall also prepare a Statement of Overriding Considerations to address any significant effects of the project that are unavoidable, explaining the economic, legal, social, technological, or other benefits of the project that outweigh its unavoidable environmental impacts. The statement shall be based on substantial evidence in the record. The City of Chico shall have opportunities to review and make changes to both the findings and statement of overriding considerations.~~

~~Consultant shall prepare a Mitigation Monitoring and Reporting Plan (MMRP) to ensure that the environmental measures contained in the Final EIR are implemented for future storm water improvement projects. The MMRP shall be included as an appendix in the Final EIR and shall be useful during final design, permitting, and construction of future projects as it is a summary of all avoidance, minimization, and mitigation measures developed during the environmental process.~~

Consultant shall prepare a Notice of Determination and shall assist the City in delivering it to the Butte County Recorder's Office within 5 days of approval of the Final EIR (pursuant to CEQA guidelines). Filing of the Notice of Determination shall require payment of Fish and Game Fees pursuant to Fish and Game Code Section 711.4, which shall be required for inclusion with the future 1602 permit applications. All CEQA filing fees, including the Fish and Wildlife review fee, are included in the fee estimate for this scope of services.

Task L Deliverables

- *Native American Consultation Letters*
- *Notice of Preparation*
- *Public Notices, Public Meeting Materials, Comment Cards etc.*
- *Draft Environmental Impact Report Initial Study/Negative Declaration*
- *Public Comments and Responses (Appendix to the Final EIR IS/ND)*
- *Final Environmental Impact Report Initial Study/Negative Declaration*
- ~~*Findings of Fact*~~
- ~~*Statement of Overriding Considerations*~~
- ~~*Mitigation and Monitoring Program*~~
- *Notice of Determination*

Task M Refine Chico Area Streams HEC-RAS Model

Consultant shall refine the Chico Area Stream HEC-RAS model by:

1. Adding the California Parks Lake spillway to the model geometry and Dead Horse Slough inflows. CVHS and FEMA hydrology will be reviewed to determine an appropriate Dead Horse Slough inflow hydrograph for 200-year floodplain mapping;
2. Refining roughness values along streets and key channels;

3. Adding two-dimensional flow areas northeast of Mud Creek and east of Butte Creek;
4. Adding break lines in order to define high ground that controls flow patterns and along key channels in order to improve mesh alignment where it may be significant to the results; and
5. Running the model for up to three 200-year event sets of inflows in order to have appropriate 200-year storm flows for all critical locations. The results will be reviewed to check for obvious issues such as stability or unrealistic flood depths. Model refinements will be made where necessary to correct any issues with the results that are identified during review.

Task N Perform Levee Breach Analysis

Consultant shall perform breach analyses for up to 45 breach locations at the lateral structure stations (i.e., locations) identified as part of the CVFED. Breach parameters are available from spreadsheets developed as part of the CVFED. Areas where flood depths resulting from the breach flows exceed 3.0 feet shall be reviewed to determine if additional model refinement may be warranted.

Task O Prepare 200-Year Floodplain Map

Consultant shall compile the model results from Task M and Task N into a composite 200-year floodplain map. The floodplain map shall use a color gradient associated with the depth of flooding. Another map shall be prepared to clearly illustrate where 200-year flood depths exceed 3.0 feet.

Task P Model Documentation

Consultant shall provide documentation that explains the process and lists the data sources used in the development of the refined Chico Area Streams HEC-RAS model and the 200-year floodplain map.

Task Q Meetings and Coordination

Consultant shall participate in meetings as requested by the City and coordinate with the City as necessary during the course of the Project.

Task R Review and Summarize Available Information

The Consultant shall prepare maps and tables that illustrate and summarize levee accreditation status, maintenance responsibility, and the types of analyses that have been completed as part of the City's Provisional Levee Accreditation (PAL) Report and the DWR Urban and Non-Urban Levee Evaluation (ULE/NULE) Projects.

A map shall be prepared to illustrate which State Plan of Flood Control (SPFC) levees currently provide protection to developed areas and which ones provide protection to areas expected to be developed based on the General Plan.

A summary of known deficiencies relative to FEMA requirements and ULDC shall be

prepared for levees which provide protection to existing and expected development.

Task S Preliminary 100-Year Floodplain Mapping

The Consultant shall create a set of HEC-RAS unsteady-state model plans based on the 100-year storm HEC-RAS models that were prepared for the SWMP. An enveloping set of levee conditions shall be modeled with various levee segments effectively removed in order to estimate an appropriate floodplain for areas where unconfined conditions shall preclude the reasonable application of a natural valley levee removal approach. The Consultant shall prepare a map that shows the composite floodplain of the set of results and compare it to the effective FEMA 1% Annual Chance Floodplain.

The Consultant has provided a 100-year floodplain map based on no levee breaches. This map does not indicate any levee overtopping. Therefore, it can be used to illustrate preliminary 100-year floodplain mapping based on the current levee accreditations being maintained with assumed accreditation of the Little Chico Creek Diversion Channel and Butte Creek Levees.

One issue that affects the 100-year floodplain mapping and analysis of the Little Chico Creek Diversion Channel and Butte Creek Levees is overflow from the Little Chico Creek Diversion Channel in the vicinity of St. Augustine Drive. The SWMP modeling indicates significant right bank overtopping of the Little Chico Creek Diversion Channel in the amount of approximately 590 cubic feet per second (cfs). The overtopping flow causes significant flooding and also reduces downstream flows along Little Chico Creek Diversion Channel and Butte Creek, including reaches with levees. Improvements to the downstream levees shall consider flows that would result from upstream channel maintenance and improvements necessary to contain the 100-year discharge (or more).

Floodplain mapping conducted in Task S is limited to the 100-year analysis described above. Other analyses, such as 500-year floodplains consistent with FEMA requirements and floodways shall not be provided. No additional 200-year floodplain analysis, other than that which has been completed for the SWMP, is included.

Task T Schedule and Costs

The Consultant shall provide a summary of the steps, along with a timeline, that are anticipated to be necessary in order to accredit and re-accredit levees that provide protection to developed areas of the City. Additional steps and extents of improvements to satisfy ULDC shall also be provided. Planning-level cost estimates shall be developed for the geotechnical data collection and for the evaluations needed to determine what improvements shall be necessary to certify the levees for FEMA accreditation, as well as any additional work that shall be required to plan improvements for meeting the ULDC. The Consultant shall provide an order-of-magnitude estimate for constructing levee improvements by making assumptions based on available information. Potential state and federal programs to fund the levee repairs shall be identified.

Task U Technical Memorandum

The Consultant shall prepare Draft Technical Memorandum (TM) that documents the work described in Tasks R through T. The Consultant shall address the City's comments on the Draft TM and then deliver a Final TM. Task U does not include integration of the TM into the SWMP. If requested by the City, the TM could be included in the SWMP as an appendix that shall be identified in a simple reference from the main body of the SWMP.

Task V Meetings and Coordination

The Consultant shall participate in meetings as requested by the City and shall coordinate with the City as necessary during the course of preparing the Technical Memorandum. This task includes budget for Project management and assumes that the work shall be completed within 5 months of receipt of the Notice to proceed and shall include three (3) meetings with the City.

Completion Schedule

The Consultant shall complete all services outlined herein by ~~April 1, 2024~~ **September 1, 2024**.

AMENDMENT NO. 6

CITY OF CHICO - PROFESSIONAL SERVICES AGREEMENT

WOOD RODGERS, INC.
Architect/Consultant/Engineer

STORM WATER MASTER PLAN
Project Title

309-000-8801/13025-309-4120
Budget Account Number

AMENDED
EXHIBIT C

Amendment No. 6 Services (in Bold):

Compensation for the services shall be in accordance with the following schedule of hourly rates attached. Total maximum compensation for the services outlined herein shall not exceed ~~1,032,237.00~~ ~~\$1,094,655.44~~ ~~\$1,146,294.44~~ ~~\$1,209,334.48~~ ~~\$1,393,591.48~~ **\$1,482,374.01** for services outlined in the cost proposal attached as page ~~C4-R3~~ ~~C5-R5~~ **C6-R6**.

Compensation shall be based upon actual invoices received and actual work completed.

A total of ~~\$811,166.00~~ for Tasks A through K will be authorized initially with the remainder of compensation for Task L (Tasks L.1 through L.6) authorized in writing by the City at a later date.

Hourly Rates

Principal Engineer II	\$329.41/Hour
Principal Engineer I	\$242.19/Hour
Engineer III	\$149.77/Hour
Engineer II	\$129.06/Hour
Engineer I	\$ 98.79/Hour
Associate Engineer III	\$213.57/Hour
Associate Engineer II	\$203.76/Hour
Associate Engineer I	\$162.52/Hour
Associate Geologist II	\$200.70/Hour
Associate Environmental Planner II	\$191.52/Hour

Principal GIS I	\$248.18/Hour
GIS Tech III	\$154.55/Hour
Principal Surveyor I	\$252.80/Hour
Associate Surveyor III	\$212.33/Hour
Surveyor II	\$111.53/Hour
Associated Planner I	\$157.81/Hour
2-Person Survey Crew	\$299.74/Hour
3-Person Survey Crew	\$449.61/Hour
Project Coordinator	\$121.09/Hour

Amendment No. 3 Services

**WOOD RODGERS PROPOSED BUDGET
Floodplain Mapping Update**

TASK ID	DESCRIPTION	Role		PIC	PM	Lead GIS	GIS Tech	Modeler 1		Modeler 2		TOTAL LABOR-HOURS	TOTAL COSTS
		Name	Class.					M. Berggren	M. Cedeno				
		H. Ostlick Princ. Eng. I	J. Faoro GIS Tech III					Eng. III	Eng. I				
		J. Kors Princ. Eng. II	S. Tan Princ. GIS I	\$329.41	\$242.19	\$248.18	\$154.55	\$149.77	\$98.79				
M	Refine Chico Area Streams HEC-RAS Model				16			40	40			96	\$13,817.44
N	Perform Levee Breach Analysis				16			36	80			132	\$17,169.96
O	Prepare 200-Year Floodplain Map			2	16	16	20	16	40			110	\$17,943.66
P	Model Documentation			2	8	2	4	16				32	\$6,107.22
Q	Meetings and Coordination			4	16	4	4	8				36	\$8,001.76
	TOTAL LABOR-HOURS			8	72	22	28	116	160			406	
	TOTAL COST			\$2,635.28	\$17,437.68	\$5,459.96	\$4,327.40	\$17,373.32	\$15,806.40				\$63,040.04

Amendment No. 5 Services

Task	Description	Rate	Oslick	Cedeno	GIS	Admin	Total Hours	Total Labor Costs	Larry Walker Associates	Markup of 8%	Total Change
A.1	A1 - Meetings & Monthly PM Tasks T&M		242.19	98.79	154.55	121.09					
			80				80	\$ 19,375	\$ 5,376	\$ 430	\$ 25,181
A.2	A2 - SWMP Draft Final T&M		60			60	120	\$ 21,797	\$ 5,128	\$ 410	\$ 27,335
B	B - Data Collection & Review T&M		8	32	16		56	\$ 7,572	\$ 7,080	\$ 566	\$ 15,218
C	C - Catch Basin in System T&M		8	20	20		48	\$ 7,004	\$ 7,860	\$ 629	\$ 15,493
D	D - Detention Basin in System T&M		8	32	16		56	\$ 7,572	\$ 5,472	\$ 438	\$ 13,481
F.6	F6 - Existing Condition Modeling T&M		24	96			120	\$ 15,296			\$ 15,296
G.3	G3 - Future Conditions Modeling T&M		24	120	24		168	\$ 21,377			\$ 21,377
G.4	G4 - Integrate SWQM Projects T&M		24	24	16		64	\$ 10,656	\$ 3,788	\$ 303	\$ 14,747
G.6	G6 - Project Priorize & Coordinate T&M		16				16	\$ 3,875	\$ 11,664	\$ 933	\$ 16,472
J.2	J2 - Surface Flow Path/Wtrshed Delineate T&M			24	16		40	\$ 4,844			\$ 4,844
J.3	J3 - Pipe System Name/Cont Refine T&M		4	40	64		108	\$ 14,812			\$ 14,812
	Amendment No. 5 Request		\$ 256	\$ 388	\$ 172	\$ 60	\$ 876	\$ 134,179	\$ 46,368	\$ 3,709	\$ 184,257

Amendment No. 6 Services

**TABLE 1
WOOD RODGERS PROPOSED BUDGET
FEMA Accreditation Process for SPFC Levees**

TASK ID	DESCRIPTION	Role		PIC	Tech. Adv.	PM	Lead GIS	Lead GE	Proj. Eng.	Proj. Geo.	GIS Tech	Modeler 1	TOTAL LABOR-HOURS	TOTAL COSTS
		Name	Classification											
		J. Kers	R. Reinhardt	H. Ostlick	S. Tan	M. Hughes	C. Milligan	D. Lukashov	J. Faoro	K. Barragan				
		Princ. Eng. II	Princ. Eng. II	Princ. Eng. I	Princ. GIS I	Princ. Eng. I	Senior Eng. I	Project Geo. I	GIS Tech III	Eng. III				
		\$ 329.41	\$ 329.41	\$ 242.19	\$ 248.18	\$ 242.19	\$ 162.52	\$ 150	\$ 155	\$	150			
1	Review and Summarize Available Information		4	4	2	4	32	16					94	\$ 16,294.08
2	Preliminary 100-year Floodplain Mapping		12	12			40					104	128	\$ 20,336.96
3	Schedule and Costs		24	8		32							104	\$ 24,094.24
4	Technical Memorandum		8	16	2	4	24					12	84	\$ 16,670.94
5	Meetings and Coordination		2	9	4	4	12						47	\$ 11,386.31
	TOTAL LABOR-HOURS		45	60	4	44	108	16	56	116		457		
	TOTAL COST	\$ 1,317.64	\$ 14,823.45	\$ 14,531.40	\$ 992.72	\$ 10,656.36	\$ 17,552.16	\$ 2,396.32	\$ 8,654.80	\$ 17,373.32				\$ 88,782.53