

AGREEMENT FOR ENGINEERING SERVICES
FOR
WATER AVAILABILITY ANALYSIS – MIDDLE CREEK
FLOOD DAMAGE REDUCTION AND
ECOSYSTEM RESTORATION PROJECT

This Agreement is made and entered into this First day of August, 2017, by and between the lake County Watershed Protection District, hereinafter referred to as 'DISTRICT', and Stetson Engineers, Inc, hereinafter referred to as "CONSULTANT".

WHEREAS, the DISTRICT has caused to be developed the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project; and

WHEREAS, the DISTRICT has identified a need to develop a Water Availability Analysis for the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project; and

WHEREAS, CONSULTANT is a licensed professional Civil Engineer in the State of California and is qualified and willing to provide said services.

NOW, THEREFORE, it is mutually agreed by the parties as follows:

I.
SCOPE OF SERVICES

- A. CONSULTANT shall perform the services described in "Exhibit A", attached hereto and incorporated herein by this reference hereinafter called Scope of Work. In the event of a conflict between this Agreement and "Exhibit A", the provisions of this Agreement shall control. Technical support to the DISTRICT during negotiations of the operating criteria with the Yolo County Flood Control and Water Conservation District are excluded from the scope of services to be provided herein. These services may be provided in the future by an amendment to this AGREEMENT.
- B. Time of Beginning and Completion of Services: Work on the PROJECT shall begin no later than ten (10) calendar days after CONSULTANT's receipt of a DISTRICT issued Notice to Proceed. CONSULTANT shall perform services within the times or by the dates provided in Exhibit "A", which by reference is made a part hereof, except that, if applicable, the schedule may be adjusted to reflect any delay in issuance of the Notice to Proceed, or other delay factors not subject to CONSULTANT control.

II.
DISTRICT'S RESPONSIBILITIES

The DISTRICT's responsibilities will include the payment for the CONSULTANT's services and the time period within which payment must be made. Additionally, the DISTRICT may agree to provide certain information, documents, work space, and/or materials.

- A. DISTRICT Furnished Data: DISTRICT will provide to CONSULTANT all data in DISTRICT's possession relating to CONSULTANT's services on the PROJECT.
- B. Access to Facilities and Property: DISTRICT will make its facilities accessible to CONSULTANT as required for CONSULTANT's performance of its services. DISTRICT will be responsible for all acts of DISTRICT's personnel.
- C. Timely Review: DISTRICT will examine CONSULTANT's studies, reports, and other documents; obtain advice of an attorney, insurance counselor, accountant, auditor, bond and financial advisors, and other consultants as DISTRICT deems appropriate; and render in writing decisions required by DISTRICT in a timely manner.

- D. Prompt Notice: DISTRICT will give prompt written notice to CONSULTANT whenever DISTRICT observes or becomes aware of any development that affects the scope or timing of CONSULTANT's services, or of any defect in the work of CONSULTANT.
- E. Environmental Clearances: DISTRICT will be responsible for all environmental clearances.

III.

CONSULTANT'S REPORT AND/OR MEETINGS

- A. The CONSULTANT shall submit progress reports at least once a month. The report should be sufficiently detailed for the DISTRICT's Project Manager to determine if the CONSULTANT is performing to expectations or is on schedule, to provide communication of interim findings and to afford occasions for airing difficulties or special problems encountered so remedies can be developed.
- B. The CONSULTANT's Project Manager shall meet with the DISTRICT's Project Manager as needed to discuss progress on the project(s).

IV.

SUBCONTRACTORS

A. Subcontractors

1. Nothing contained in this Agreement or otherwise, shall create any contractual relation between the Agency and any subcontractors, and no subcontract shall relieve the Contractor of his/her responsibilities and obligations hereunder. The Contractor agrees to be as fully responsible to the Agency for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by the Contractor. The Contractor's obligation to pay its subcontractors is an independent obligation from the Agency's obligation to make payments to the Contractor.
2. Any subcontract in excess of \$25,000, entered into as a result of this Agreement, shall contain all the provisions stipulated in this Agreement to be applicable to subcontractors.
3. Contractor shall pay its subcontractors within ten (10) calendar days from receipt of each payment made to the Contractor by the Agency.
4. Any substitution of subcontractors must be approved in writing by the Agency's Contract Manager in advance of assigning work to a substitute subcontractor.

B. Prompt Payment of Funds Withheld to Subcontractors

1. The DISTRICT shall hold retainage from the CONSULTANT and shall make prompt and regular incremental acceptances of portions, as determined by the DISTRICT, of the contract work, and pay retainage to the CONSULTANT based on these acceptances. The CONSULTANT, or subconsultant, shall return all monies withheld in retention from a subconsultant within 30 days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the agency. Federal law (49 CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of this provision shall subject the violating prime consultant or subconsultant to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies, otherwise available to the prime consultant or subconsultant in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subconsultant performance, or noncompliance by a subcontractor.
2. Any subcontract entered into as a result of this Agreement shall contain all of the provisions of this section.

V.
PREVAILING WAGE

- A. The CONSULTANT shall comply with the State of California's General Prevailing Wage Rate requirements in accordance with California Labor Code, Section 177, and all federal, state, and local laws and ordinances applicable to the work.

VI.
COMPENSATION AND TERMS OF PAYMENT

Payment to CONSULTANT will be made as follows:

- A. **Invoices and Time of Payment:** Monthly invoices will be issued by CONSULTANT for all services performed under this AGREEMENT. Invoices shall reference the project title and include a detailed breakdown of work items and unit costs by task and project site with a summary of all work completed to date and the cost of work remaining. Invoices are due and payable upon receipt. Each invoice will include a 5% retention amount.

Invoices shall be mailed to the Contract Manager, Philip B. Moy, PhD., at the following address:
County of Lake
Water Resources Department
255 N. Forbes Street, Room 309
Lakeport, California 95453
Attn: Philip B. Moy, PhD.

Upon satisfactory completion of services enumerated in ARTICLE I herein, the final payment of any balance will be due upon receipt of the final invoice. The final invoice should be submitted within 60-calendar days after completion of the CONSULTANT's work.

- B. **Interest:** Interest at the rate of 1-1/2% per month, or that permitted by law if lesser, will be charged on all past-due amounts starting thirty (30) days after receipt of invoice and required documentation. Payments will first be credited to interest and then to principal.

In the event of a disputed or contested billing, only that portion so contested will be withheld from payment, and the undisputed portion will be paid. DISTRICT will exercise reasonableness in contesting any bill or portion thereof. No interest will accrue on any contested portion of the billing until mutually resolved.

If DISTRICT fails to make payment in full to CONSULTANT for services within sixty (60) days of the date due for any uncontested billing, CONSULTANT may, after giving seven (7) days written notice to DISTRICT, suspend services under this AGREEMENT until paid in full, including interest. In the event of suspension of services, CONSULTANT will have no liability to DISTRICT for delays or damages caused DISTRICT because of such suspension of services.

- C. **Compensation:** The method of payment for this contract will be based on Specific Rates of Compensation set forth in Exhibit "B" which include labor costs, overhead rates, fee and Direct Costs. Direct Costs for Sub Consultants will be billed as actual costs. No payment will be made prior to approval of any work, nor for any work performed prior to approval of this AGREEMENT. For all services and CONSULTANT shall be paid in accordance with the budget set forth in Exhibit "B" provided however, total payments to CONSULTANT shall not exceed the sum of forty eight thousand six hundred two dollars and no cents (\$48,602.11) without prior written authorization by DISTRICT and formal Amendment to this Agreement:

VII.
TERM

This Agreement shall commence on the date hereinabove entered into and shall terminate on December 31, 2019, unless earlier terminated as hereinafter provided. This term may be extended an appropriate

period of time in case of unavoidable delays and for consideration of corresponding warranted adjustments in payment by modification of this agreement as hereafter provided.

VIII. DUE PERFORMANCE - DEFAULT

Each party to this Agreement undertakes the obligation that the other's expectation of receiving the performance due under the terms of this Agreement will not be impaired. Upon the occurrence of any default of the provisions of this Agreement, a party shall give written notice of said default to the party in default. If the party in default does not cure the default within ten (10) days of the date of that notice (i.e. the time to cure) then such party shall be in default. The time to cure may be extended at the discretion of the party giving notice. Any extension of time to cure shall be in writing executed by both parties and must specify the reason(s) for the extension and the date the extension of time to cure expires.

Notice given under this provision shall specify the alleged default and the applicable Agreement provision and shall demand that the party in default perform the provisions of this Agreement within the applicable time period. No such notice shall be deemed a termination of this Agreement, unless the party giving notice so elects in that notice, or so elects in a subsequent written notice after the time to cure has expired.

IX. TERMINATION

This Agreement may be terminated as follows:

- A. By mutual written consent of the parties; or
- B. By DISTRICT or Director of Water Resources upon thirty (30) days written notice to CONSULTANT.

Upon termination prior to the full and satisfactory completion of CONSULTANT's performance under this Agreement, DISTRICT shall not be liable to pay CONSULTANT the total compensation set forth in Article VI of this Agreement, but CONSULTANT shall be paid an amount which bears the same ratio to the total compensation as the services actually performed bear to the total services of the CONSULTANT covered by this Agreement. Upon termination of this contract, ownership and title to all reports, documents, plans, specifications, and estimates produced as part of this contract will automatically be vested in the DISTRICT, and no further agreement will be necessary to transfer ownership to the DISTRICT.

X. INSURANCE

CONSULTANT shall not commence work under this Agreement until he has obtained all the insurance required herein, certificates of insurance have been submitted to DISTRICT, and said insurance has been approved by DISTRICT. The certificates of insurance shall contain a provision that coverage afforded under the policies will not be cancelled until at least thirty (30) days prior written notice has been given to DISTRICT, ten (10) days notice if cancellation is due to nonpayment of premium.

CONSULTANT shall not allow any subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been obtained.

Any failure of CONSULTANT to maintain the insurance required by this provision, or to comply with any of the requirements of this provision, shall constitute a material breach of the entire Agreement. DISTRICT shall not be responsible for any premiums or assessments on the policy.

Certificates evidencing the issuance of the following insurance shall be filed with DISTRICT within ten (10) days after the date of execution of this Agreement by CONSULTANT and prior to commencement of work hereunder.

- A. **Compensation Insurance.** CONSULTANT shall procure and maintain, at CONSULTANT's own expense during the term hereof, Workers' Compensation Insurance and Employer's Liability Insurance as required by the State of California, for all employees to be engaged in work. In any case of such work sublet, CONSULTANT shall require subcontractor similarly to provide Employer's Liability Insurance and Workers' Compensation Insurance for all of the latter's employees to be engaged in such work, unless such employees are covered by the protection afforded by CONSULTANT's Workers' Compensation Insurance and Employer's Liability Insurance. Employer's Liability Insurance shall be in an amount not less than One Million Dollars (\$1,000,000.00) per occurrence.
- B. **Commercial General Liability.** CONSULTANT shall procure and maintain, at CONSULTANT's own expense during the term hereof, upon himself and his employees at all times during the course of this Agreement, Commercial General Liability Insurance (Occurrence Form CG 0001) for bodily injury, personal injury, and broad form property damage, in an amount of not less than One Million dollars (\$1,000,000.00) combined single limit coverage per occurrence, including but not limited to endorsements for the following coverages: Personal and advertising injury, Premises-operations, Products and completed operations, Blanket contractual, and Independent CONSULTANT's liability. If such policy includes an aggregate limit, such aggregate limit shall be at least double the per occurrence limit required herein.
- C. **Automobile Liability Insurance.** CONSULTANT shall procure and maintain, at CONSULTANT's own expense during the term hereof, Comprehensive Automobile Liability Insurance, both bodily injury and property damage, on owned, hired, leased, and non-owned vehicles used in connection with CONSULTANT's business in an amount not less than One Million Dollars (\$1,000,000.00) combined single limit coverage per occurrence.
- D. **Professional Liability Insurance.** CONSULTANT shall procure and maintain, at CONSULTANT's own expense during the term hereof, Professional Liability Insurance for protection against claims arising out of the performance of services under this Agreement caused by errors, omissions, or other acts for which CONSULTANT, its employees, subcontractors, and agents, are liable. Said insurance shall be written with limits of not less than One Million Dollars (\$1,000,000.00). If said insurance is written on a "claims made" form, insurance shall be maintained and evidence of insurance must be provided for at least one (1) year after completion of the work under this Agreement.
- E. **Subcontractors.** CONSULTANT shall include all subcontractors as insured under the aforesaid policies or shall furnish separate certificates and endorsements to the DISTRICT for each subcontractor which shall be subject to review and approval by DISTRICT. All insurance coverages for subcontractors shall be subject to each of the requirements hereinabove and contain the additional insured endorsements required of CONSULTANT described with particularity hereinbelow.
- F. **Additional Insured Endorsement.** The Commercial General Liability and Automobile Liability Insurance must each contain, or be endorsed to contain, the following provision:

The DISTRICT, its officers, officials, employees, and designated agents are to be covered as additional insureds and shall be added in the form of an endorsement to CONSULTANT's insurance on Form CG 20 10 11 85. CONSULTANT shall not commence work under this Agreement until he has had delivered to DISTRICT the Additional Insured Endorsements required herein. This provision is not intended to extend to construction contractors contracted by the DISTRICT to perform the work of improvement.

Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under subdivision (b) of California Civil Code Section 2782.

- G. **Other Insurance Provisions.** For any claims related to the work performed under this Agreement by CONSULTANT, the CONSULTANT's insurance coverage shall be primary insurance as to the DISTRICT, its officers, officials, employees, designated agents and appointed volunteers. Any insurance or self-insurance maintained by DISTRICT, its officers, officials, employees, designated

agents or appointed volunteers shall be in excess of the CONSULTANT's insurance and shall not contribute with it.

Any deductibles or self-insured retentions must be declared to and approved by DISTRICT. At the option of DISTRICT, either CONSULTANT shall reduce or eliminate such deductibles or self-insurance retentions as they apply to DISTRICT or CONSULTANT shall provide a financial guarantee satisfactory to DISTRICT guaranteeing payment of losses and related investigations, claim administration, and defense and defense-related expenses.

Insurance coverage required of CONSULTANT under this Agreement shall be placed with insurers with a current A.M. Best rating of no less than A: VII.

Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve the CONSULTANT for liability in excess of such coverage, nor shall it preclude DISTRICT from taking other action as is available to it under any other provision of this Agreement or applicable law. Failure of DISTRICT to enforce in a timely manner any of the provisions of this section shall not act as a waiver to enforcement of any of these provisions at a later date.

If any insurance coverage required by this Agreement is provided on a "Claims Made", rather than "occurrence" form, CONSULTANT agrees to maintain required coverage for a period of three years after the expiration of this Agreement (hereinafter, "Post Agreement Coverage") and any extensions thereof. CONSULTANT may maintain the required Post Agreement Coverage by renewal or purchase of prior acts or tail coverage. This subprovision is contingent upon Post Agreement Coverage being both available and reasonably affordable in relation to the coverage provided during the term of this Agreement. For purposes of interpreting this requirement, a cost not exceeding 100% of the last annual policy premium during the term of this Agreement in order to purchase prior acts or tail coverage for Post Agreement Coverage shall be deemed to be reasonable.

DISTRICT shall include a provision in its contract with the general contractor hired to perform the work of improvement a provision requiring that the general contractor and all of its subcontractors maintain general liability insurance of not less than \$1,000,000 and that such insurance include the DISTRICT, its officers, officials, employees, designated agents, appointed volunteers and Quincy Engineering, Inc., as additional insureds.

XI. **INDEMNIFICATION - HOLD HARMLESS**

Each Party shall indemnify and hold the other harmless against all actions, claims, demands, and liabilities and against all losses, damage, cost, expenses, and attorney's fees, that arise out of, pertain to, or relate to its own negligent acts and/or omissions, recklessness, or willful misconduct which caused said claim, demand, liability, loss, damage, cost expense, and/or attorney's fees. This provision shall not extend to any claim, demand, liability, loss, damage, cost, expenses, and/or attorney's fees covered by the insurance of either party. CONSULTANT's liability hereunder shall be limited by the DISTRICT to the amount of the available coverage under CONSULTANT's insurance coverage as described in Section X. herein.

CONSULTANT's obligations under this Section shall survive the termination of the Agreement.

XII. **CONSULTANT'S WARRANTIES**

CONSULTANT hereby makes the following representations and warranties:

- A. **Standard of Care.** CONSULTANT represents that it is specially trained, licensed, experienced, and competent to perform all the services, responsibilities, and duties specified herein and that such services, responsibilities, and duties shall be performed, whether by CONSULTANT or designated subcontractors, in a manner according to generally accepted practices of the engineering profession.

If DISTRICT determines that any of CONSULTANT's work is not in accordance with such level of competency and standard of care, DISTRICT, in its sole discretion, shall have the right to do any or all of the following: (a) require CONSULTANT to meet with DISTRICT to review the quality of the work and resolve matters of concern; (b) require CONSULTANT to correct the work at no additional charge to generally accepted standards and practices of the engineering profession; (c) terminate this Agreement pursuant to the provisions of Article IX; or (d) pursue any and all other remedies at law or in equity.

Assigned Personnel:

1. CONSULTANT shall assign only competent personnel to perform work hereunder. In the event that at any time DISTRICT, in its sole discretion, desires the removal of any person or persons assigned by CONSULTANT to perform work hereunder, CONSULTANT shall remove such person or persons immediately upon receiving written notice from DISTRICT.
 2. Any and all persons identified in this Agreement or any exhibit hereto as the project manager, project team, or other professional performing work hereunder are deemed by DISTRICT to be key personnel whose services were a material inducement to DISTRICT to enter into this Agreement. CONSULTANT shall not remove, replace, substitute, or otherwise change any key personnel without the prior written consent of DISTRICT. With respect to performance under this Agreement, CONSULTANT shall employ the following key personnel: Ali Shahroody (Principal in Charge), James Reilly (Project Manager), Xiaoqing Zeng, Guoyuan Li Julian Fulwiler, and Hankai Zhu.
 3. In the event that any of CONSULTANT's personnel assigned to perform services under this Agreement become unavailable due to resignation, sickness or other factors outside of CONSULTANT's control, CONSULTANT shall be responsible for timely provision of adequately qualified replacements.
- B. Non-Discrimination in Employment.** In the performance of the work authorized under this Agreement, CONSULTANT shall not unlawfully discriminate against any qualified worked because of race, religious creed, color, sex, sexual orientation, national origin, ancestry, physical disability, mental disability, medical condition, marital status, or age.
- CONSULTANT shall, in all solicitations or advertisements for employees placed by or on behalf of the CONSULTANT, state that all qualified applicants will receive consideration for employment without regard to race, color, creed religion, sex, sexual orientation, national origin, ancestry, physical disability, mental disability, medical condition, marital status, or age.
- C. Adherence to Applicable Disability Law.** CONSULTANT shall be responsible for knowing and adhering to the requirements of Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act, (42 U.S.C. Sections 12101, et seq.). California Government Code Sections 12920 et seq., and all related state and local laws.
- D. HIPAA Compliance.** CONSULTANT will adhere to Titles 9 and 22 and all other applicable Federal and State statutes and regulations, including the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and will make his best efforts to preserve data integrity and the confidentiality of protected health information.
- E. Safety Responsibilities.** CONSULTANT will adhere to all applicable CalOSHA requirements in performing work pursuant to this Agreement. CONSULTANT agrees that in the performance of work under this Agreement, CONSULTANT will provide for the safety needs of its employees and will be responsible for maintaining the standards necessary to minimize health and safety hazards.
- F. Interest of CONSULTANT.** CONSULTANT hereby covenants that he has, at the time of the execution of this Agreement, no interest, direct or indirect, and that he shall not acquire any interest in the future, direct or indirect, which would conflict in any manner or degree with the performance of

services required to be performed under this Agreement. CONSULTANT further covenants that in the performance of this work, no person having such interest shall be employed.

- G. **Covenant Against Contingent Fees.** The CONSULTANT warrants that he/she has not employed or retained any company or person, other than a bona fide employee working for the CONSULTANT, to solicit or secure this Agreement, and that he/she has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or formation of this Agreement. For breach or violation of this warranty, the DISTRICT shall have the right to annul this Agreement without liability, or at its discretion to deduct from the Agreement price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.
- H. **Laws to be observed.** CONSULTANT will comply with all laws, regulations, orders, and decrees applicable to the PROJECT. Indemnify and defend the DISTRICT against any claim or liability arising from the violation of a law, regulation, order, or decree by CONSULTANT or your employees. Immediately report to the Contract Manager a discrepancy or inconsistency between the Contract and a law, regulation, order, or decree.

If the DISTRICT incurs any fines or penalties because of CONSULTANT's failure to comply with a law, regulation, order, or decree, the DISTRICT will deduct the amount of the fine or penalty.

Immediately notify the Contract Manager, if a regulatory agency requests access to the job site or to records. Submit a list of documents provided to the agency and issued enforcement actions.

XIII. **ASSIGNMENT**

CONSULTANT shall not assign any interest in this Agreement and shall not transfer any interest in the same without the prior written consent of DISTRICT, except that claims for money due or to become due the CONSULTANT from DISTRICT under this Agreement may be assigned by the CONSULTANT to a bank, a trust company, or other financial institution without such approval. Written notice of any such transfer shall be furnished promptly to the DISTRICT. Any attempt at assignment of rights under this Agreement except for those specifically consented to by both parties or as stated above shall be void.

XIV. **INDEPENDENT CONSULTANT**

It is specifically understood and agreed that, in the making and performance of this Agreement, CONSULTANT is an independent CONSULTANT and is not an employee, agent or servant of DISTRICT. CONSULTANT is not entitled to any employee benefits. DISTRICT agrees that CONSULTANT shall have the right to control the manner and means of accomplishing the result contracted for herein.

CONSULTANT is solely responsible for the payment of all federal, state, and local taxes, charges, fees, or contributions required with respect to CONSULTANT and CONSULTANT's officers, employees, and agents who are engaged in the performance of this Agreement (including without limitation, unemployment insurance, social security, and payroll tax withholding).

XV. **MODIFICATION**

- A. This Agreement may only be modified by a written amendment thereto, executed by both parties. However, matters concerning scope of services which do not affect the agreed price may be modified by mutual written consent of CONSULTANT and DISTRICT executed by Director of Water Resources.
- B. CONSULTANT shall only commence work covered by an amendment after the amendment is executed and notification to proceed has been provided by the DISTRICT's Project Manager.

- C. There shall be no change in the CONSULTANT's Project Manager or members of the project team, as listed in the Cost Proposal which is a part of this contract, without prior written approval by the DISTRICT's Project Manager.

XVI.
ATTORNEYS FEES AND COSTS

If any action at law or in equity is necessary to enforce or interpret the terms of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees, costs, and necessary disbursements in addition to any other relief to which such party may be entitled.

XVII.
OWNERSHIP OF DATA

- A. Upon completion of all work under this contract, ownership and title to all reports, documents, plans, specifications, and estimates produced as part of this contract will automatically be vested in the DISTRICT, and no further agreement will be necessary to transfer ownership to the DISTRICT. The CONSULTANT shall furnish the DISTRICT all necessary copies of data needed to complete the review and approval process.
- B. It is understood and agreed that all calculations, drawings and specifications, whether in hard copy or machine-readable form, are intended for one-time use in the construction of the project for which this contract has been entered into.
- C. The CONSULTANT is not liable for claims, liabilities, or losses arising out of, or connected with the modification, or misuse by the DISTRICT of the machine-readable information and data provided by the CONSULTANT under this agreement; further, the CONSULTANT is not liable for claims, liabilities, or losses arising out of, or connected with, any use by the DISTRICT of the project documentation on other projects, for additions to this project, or for the completion of this project by others, except only such use as many be authorized in writing by the CONSULTANT.
- D. Applicable patent rights provisions described in 41 CFR 1-91, regarding rights to inventions shall be included in the Agreements as appropriate.
- E. CONSULTANT may copyright reports or other agreement products.
- F. Any subcontract in excess of \$25,000 entered into as a result of this contract, shall contain all of the provisions of this Article.

XVIII.
RETENTION OF RECORDS / AUDIT

For the purpose of determining compliance with Public Contract Code 10115, et seq. and Title 21, California Code of Regulations, Chapter 21, Section 2500 et. Seq., when applicable, and other matters connected with the performance of the contract pursuant to Government Code 10532, the CONSULTANT, subcontractors and the DISTRICT shall maintain all books, documents, papers, accounting records, and other evidence pertaining to the performance of the contract, including but not limited to, the costs of administering the contract. All parties shall make such materials available at their respective offices at all reasonable times during the contract period and for three (3) years from the date of final payment under the contract. The DISTRICT shall have access to any books, records, and documents of the CONSULTANT that are pertinent to the contract for audits, examinations, excerpts, and transactions, and copies thereof shall be furnished if requested.

Subcontracts in excess of \$25,000 shall contain this provision.

XIX.
JURISDICTION AND VENUE

This Agreement shall be construed in accordance with the laws of the State of California and the parties hereto agree that venue of any action or proceeding regarding this Agreement or performance thereof

shall be in Lake County, California. CONSULTANT waives any right of removal it might have under California Code of Civil Procedure Section 394.

XX.
NO THIRD-PARTY BENEFICIARIES

Nothing contained in this Agreement shall be construed to create, and the parties do not intend to create, any rights in or for the benefit of third parties.

XXI.
SEVERABILITY

If any provision of this Agreement is held to be unenforceable, the remainder of this Agreement shall be severable and not affected thereby.

XXII.
NON-APPROPRIATION

In the event DISTRICT is unable to obtain funding at the end of each fiscal year for professional engineering services required during the next fiscal year, DISTRICT shall have the right to terminate this Agreement, without incurring any damages or penalties, and shall not be obligated to continue performance under this Agreement. To the extent any remedy in this Agreement may conflict with Article XVI of the California Constitution or any other debt limitation provision of California law applicable to DISTRICT, CONSULTANT hereby expressly and irrevocably waives its right to such remedy.

XXIII.
CONFIDENTIALITY OF DATA

- A. All financial, statistical, personal, technical, or other data and information relative to the DISTRICT's operations, which is designated confidential by the DISTRICT and made available to the CONSULTANT in order to carry out this contract, shall be protected by the CONSULTANT from unauthorized use and disclosure.
- B. Permission to disclose information on one occasion or public hearing held by the DISTRICT relating to the contract, shall not authorize the CONSULTANT to further disclose such information or disseminate the same on any other occasion.
- C. The CONSULTANT shall not comment publicly to the press or any other media regarding the contract or the DISTRICT's actions on the same, except to the DISTRICT's staff, CONSULTANT's own personnel involved in the performance of this contract, at public hearings, or in response to questions from a Legislative committee.
- D. The CONSULTANT shall not issue any news release or public relations item of any nature whatsoever regarding work performed or to be performed under this contract without prior review of the contents thereof by the DISTRICT and receipt of the DISTRICT's written permission.
- E. Any subcontract, entered into as a result of this contract, shall contain all of the provisions of this Article.

XXIV.
NATIONAL LABOR RELATIONS BOARD CERTIFICATION

In accordance with Public Contract Code, Section 10296, the CONSULTANT hereby states under penalty of perjury that no more than one final unappealable finding of contempt of court by a Federal court has been issued against the CONSULTANT within the immediately preceding two-year period because of the CONSULTANT's failure to comply with an order of a Federal court that orders the CONSULTANT to comply with an order of the National Labor Relations Board.

XXV.
INSPECTION OF WORK

The CONSULTANT and any subconsultants shall permit the DISTRICT to review and inspect the project activities at all reasonable times during the performance period of this contract including review and inspection on a daily basis.

XXVI.
NON-DISCRIMINATION

- A. During the performance of this Agreement, CONSULTANT and its subcontractors shall not unlawfully discriminate, harass or allow harassment, against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, nation origin, physical disability (including HIV and AIDS), mental disability, mental condition (cancer), age (over 40), marital status, and denial of family care leave. CONSULTANTS and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination and harassment. CONSULTANTS and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12900.0 et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990, set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this contract by reference and made a party hereof as if set forth in full. CONSULTANT and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.
- B. The CONSULTANT shall include the non-discrimination and compliance provisions of this clause in all subcontracts to perform work under this contract.
- C. CONSULTANT shall comply with Title VI of the Civil Rights Act of 1964, as amended. Accordingly, 49 CFR 21 through Appendix C and 23 CFR 710.405(b) are applicable to this contract by reference.

XXVII.
DISPUTES

- A. Any dispute, other than audit, concerning a question of fact arising under this contract that is not disposed of by agreement shall be decided by a committee consisting of the DISTRICT's Contract Manager and Department Head, who may consider written or verbal information submitted by the CONSULTANT.
- B. Not later than 30 days after completion of all deliverables necessary to complete the plans, specifications and estimate, the CONSULTANT may request review by the DISTRICT GOVERNING BOARD of unresolved claims or disputes, other than audit. The request for review will be submitted in writing.
- C. Neither the pendency of a dispute, nor its consideration by the committee will excuse the CONSULTANT from full and timely performance in accordance with the terms of this contract.

XXVIII.
SAFETY

- A. The CONSULTANT shall comply with CalOSHA regulations applicable to CONSULTANT regarding necessary safety equipment or procedures. The CONSULTANT shall comply with safety instructions issued by the DISTRICT Safety Officer and other DISTRICT representatives.
- B. Any subcontract entered into as a result of this contract, shall contain all of the provisions of this Article.

XXIX.
SUBCONTRACTING

- A. The CONSULTANT shall perform the work contemplated with resources available within its own organization; and no portion of the work pertinent to this contract shall be subcontracted without written authorization by the DISTRICT's Contract Manager, except that, which is expressly identified in the approved Cost Proposal.
- B. Any subcontract in excess of \$25,000 entered into as a result of this contract, shall contain all the provisions stipulated in this contract to be applicable to subcontractors.
- C. Any substitution of subcontractors must be approved in writing by the DISTRICT's Contract Manager.

XXX.
STATEMENT OF COMPLIANCE

The CONSULTANT's signature affixed herein, and dated, shall constitute a certification under penalty of perjury under the laws of the State of California that the CONSULTANT has, unless exempt, complied with, the nondiscrimination program requirements of Government Code Section 12990 and Title 2, California Administrative Code, Section 8103.

XXXI.
DEBARMENT AND SUSPENSION CERTIFICATION

- A. The CONSULTANT's signature affixed herein, shall constitute a certification under penalty of perjury under the laws of the State of California, that the CONSULTANT has complied with Title 49, Code of Federal Regulations, Part 29, Debarment and Suspension Certificate, which certifies that he/she or any person associated therewith in the capacity of owner, partner, director, officer, or manager, is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency; has not been suspended, debarred, voluntarily excluded, or determined ineligible by any federal agency within the past three (3) years; does not have a proposed debarment pending; and has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three (3) years. Any exceptions to this certification must be disclosed to the DISTRICT.
- B. Exceptions will not necessarily result in denial of recommendation for award, but will be considered in determining CONSULTANT responsibility. Disclosures must indicate to whom exceptions apply, initiating agency, and dates of action.

XXXII.
CONFLICT OF INTEREST

- A. The CONSULTANT shall disclose any financial, business, or other relationship with DISTRICT that may have an impact upon the outcome of this contract. The CONSULTANT shall also list current clients who may have a financial interest in the outcome of this contract.
- B. The CONSULTANT hereby certifies that it does not now have, nor shall it acquire any financial or business interest that would conflict with the performance of services under this agreement.
- C. Any subcontract in excess of \$25,000 entered into as a result of this contract, shall contain all of the provisions of this Article.
- D. The CONSULTANT hereby certifies that neither CONSULTANT, nor any firm affiliated with the CONSULTANT will bid on any construction contract, or on any contract to provide construction inspection for any construction project resulting from this contract. An affiliated firm is one, which is subject to the control of the same persons through joint-ownership, or otherwise.
- E. Except for subcontractors whose services are limited to providing surveying or materials testing information, no subcontractor who has provided design services in connection with this contract shall

be eligible to bid on any construction contract, or on any contract to provide construction inspection for any construction project resulting from this contract.

XXXIII.

REBATES, KICKBACKS OR OTHER UNLAWFUL CONSIDERATION

The CONSULTANT warrants that this contract was not obtained or secured through rebates kickbacks or other unlawful consideration, either promised or paid to any DISTRICT employee. For breach or violation of this warranty, DISTRICT shall have the right in its discretion; to terminate the contract without liability; to pay only for the value of the work actually performed; or to deduct from the contract price; or otherwise recover the full amount of such rebate, kickback or other unlawful consideration.

XXXIV.

CONTINGENT FEE

The CONSULTANT warrants, by execution of this contract that no person or selling agency has been employed, or retained, to solicit or secure this contract upon an agreement or understanding, for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees, or bona fide established commercial or selling agencies maintained by the CONSULTANT for the purpose of securing business. For breach or violation of this warranty, the DISTRICT has the right to annul this contract without liability; pay only for the value of the work actually performed, or in its discretion to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

XXXV.

AUDIT REVIEW PROCEDURES

- A. Any dispute concerning a question of fact arising under an interim or post audit of this contract that is not disposed of by agreement, shall be reviewed by the DISTRICT's CHIEF FINANCIAL OFFICER.
- B. Not later than 30 days after issuance of the final audit report, the CONSULTANT may request a review by the DISTRICT's CHIEF FINANCIAL OFFICER of unresolved audit issues. The request for review will be submitted in writing.
- C. Neither the pendency of a dispute nor its consideration by the DISTRICT will excuse the CONSULTANT from full and timely performance, in accordance with the terms of this contract.

XXXVI.

EQUIPMENT PURCHASE

- A. Prior authorization in writing, by the DISTRICT's Contract Manager shall be required before the CONSULTANT enters into any unbudgeted purchase order, or subcontract exceeding \$5,000 for supplies, equipment, or CONSULTANT services. The CONSULTANT shall provide an evaluation of the necessity or desirability of incurring such costs.
- B. For purchase of any item, service or consulting work not covered in the CONSULTANT's Cost Proposal and exceeding \$5,000 prior authorization by the DISTRICT's Contract Manager; three competitive quotations must be submitted with the request, or the absence of bidding must be adequately justified.
- C. Any equipment purchased as a result of this contract is subject to the following: "The CONSULTANT shall maintain an inventory of all nonexpendable property Nonexpendable property is defined as having a useful life of at least two years and an acquisition cost of \$5,000 or more. If the purchased equipment needs replacement and is sold or traded in, the DISTRICT shall receive a proper refund or credit at the conclusion of the contract, or if the contract is terminated, the CONSULTANT may either keep the equipment and credit the DISTRICT in an amount equal to its fair market value, or sell such equipment at the best price obtainable at a public or private sale, in accordance with established DISTRICT procedures; and credit the DISTRICT in an amount equal to the sales price. If the CONSULTANT elects to keep the equipment, fair market value shall be determined at the

CONSULTANT's expense, on the basis of a competent independent appraisal of such equipment. Appraisals shall be obtained from an appraiser mutually agreeable to by the DISTRICT and the CONSULTANT, if it is determined to sell the equipment, the terms and conditions of such sale must be approved in advance by the DISTRICT.

D. All subcontracts in excess \$25,000 shall contain the above provisions.

**XXXVII.
NOTICES**

All notices that are required to be given by one party to the other under this Agreement shall be in writing and shall be deemed to have been given if delivered personally or enclosed in a properly addressed envelope and deposited with the United States Post Office for delivery by registered or certified mail addressed to the parties at the following addresses, unless such addresses are changed by notice, in writing, to the other party.

Lake County Watershed Protection District
255 North Forbes Street
Lakeport, California 95453
Attn: Philip B. Moy, PhD., Water Resources Director

Stetson Engineers, Inc.
2171 E. Francisco Blvd., Suite K
San Rafael, CA 94901
Attn: James Reilly

**XXXVIII.
ADDITIONAL PROVISIONS**

This Agreement shall be governed by the laws of the State of California. It constitutes the entire Agreement between the parties regarding its subject matter. This Agreement supersedes all proposals, oral and written, and all negotiations, conversations or discussions heretofore and between the parties related to the subject matter of this Agreement.

DISTRICT and CONSULTANT have executed this Agreement on the day and year first written above.

LAKE COUNTY WATERSHED
PROTECTION DISTRICT

STETSON ENGINEERS INC.:

Chair, Board of Directors



James Reilly

ATTEST: Carol J. Huchingson
Clerk of the Board
of Supervisors

APPROVED AS TO FORM:
ANITA L. GRANT
County Counsel

By: _____

By: 

EXHIBIT A
SCOPE OF WORK AND SCHEDULE

Proposed Workplan Tasks:

- Task 1 General Administration, Meetings, and Presentations
- Task 2 Data Reconnaissance and Selection of Representative Hydrologic Period for Analysis
- Task 3 Analysis of Historical Daily Inflows to Clear Lake
- Task 4 Hydrologic Model Development
- Task 5 Scenario Simulations and Analysis of Results
- Task 6 Preparation of Draft WAA
- Task 7 Preparation of Model Documentation

Task 1 General Administration, Meetings, and Presentations

Stetson's Project Manager, James Reilly, P.E., will administer all contracts and will closely monitor the progress of the project. Mr. Reilly has over 30 years of engineering experience. He has been a Senior Project Manager in Stetson for about 17 years and has managed several water availability studies. Stetson will implement an effective project management program during the course of study. The program will be built on establishing clear lines of communication and authority, delineating areas of responsibility, and closely monitoring progress.

Stetson will work closely with the District. In addition to providing progress deliverables, we propose regular monthly progress meetings, teleconferences, or web-conferences to discuss specific issues. This approach will keep the project on-track, on-time, and on-budget, and will ensure that the District is kept well informed.

Upon receipt of the Notice to Proceed, Stetson will coordinate a kickoff meeting with the County staff to establish project goals and objectives, identify effective strategy to accomplish these goals and objectives, work plan tasks and project schedule, and discuss project concerns, data needs, and data contacts. Stetson will submit a preliminary list of data/information needs to the County prior to the kickoff meeting and collect any available data/information during the meeting. Stetson will also conduct a site visit during the kickoff meeting to gain a field understanding of the wetland areas and the littoral properties in the Middle Creek Project area that are related to evapotranspiration losses and consumptive agricultural water uses. Stetson will also inspect the Grigsby Riffle and the Cache Creek Dam to observe outlet channel conditions, particularly the difference in water levels between upstream and downstream of the Grigsby Riffle.

Within two weeks after the kickoff meeting, Stetson will prepare a draft detailed work plan for each task in accordance with the final agreed upon scope of work to set forth the significant milestones and deliverables and ensure compliance with the established project goals/objectives and project execution strategy. A teleconference meeting with the County staff will be held for discussion and review of the draft work plan. Stetson will incorporate County review comments into the final detailed work plan and submit the final work plan to the County for approval within two weeks after receipt of County review comments.

During the course of the study, Stetson will arrange monthly meetings, teleconferences, or web-conferences with County staff, as necessary, to review progress and to discuss ideas and information regarding the Water Availability Analysis. Stetson will also provide monthly status reports providing the County with updated status for each task and budget.

Stetson anticipates preparing the following three presentations:

- Selection of the representative hydrologic period of analysis and the water budget analysis of historical daily inflows to Clear Lake
- Hydrologic model development, representation of operating rules in the model, and preliminary results of analysis
- Modeling scenarios and results of water availability analysis

The first presentation is intended to present (1) the reasoning for selecting the analysis period based on review of data availability and reliability and hydrologic representativeness, (2) the methods/data/assumptions used to estimate all components involved in the water budget analysis of the net natural inflows, and (3) the results of the analysis of the net natural inflows and all components involved in the analysis of the net natural inflows. The second presentation is intended to present the hydrologic model development procedures with an emphasis on how the operating criteria established in the Gopcevic and Solano Decrees are represented in the model and how the YCFCWCD's senior rights to use of water from Clear Lake are not diminished in the overall analysis. The third presentation is intended to present the modeling scenarios and explain the results of the Water Availability Analysis.

Stetson will prepare for and attend one meeting with the State Water Board Division of Water Rights staff in Sacramento to discuss the preparation of the WAA.

Stetson will submit invoices to the District on a monthly basis. Each invoice will indicate labor and expenses for the period, broken down by task. Project budget to expenditures will also be summarized.

Stetson will also provide monthly status reports to the District with updated status for each task and budget. The monthly progress updates will include:

- An assessment of actual versus planned progress in completing the final agreed upon scope of work, including a description of the tasks, deliverables completed to date, and an updated schedule;
- For each task, the percentage of the fees incurred for such task compared to dollar amount allocated to such task;
- For any proposed change to the final agreed upon scope of work, the supporting rationale for such change.

Task 1 Deliverables:

- Detailed Work Plan
- Three presentations
- Monthly Progress Reports

Task 2 Data Reconnaissance and Selection of Representative Hydrologic Period for Analysis

Stetson will coordinate meetings with County staff and other agencies and districts, as necessary, to collect additional information needed to perform the Water Availability Analysis and prepare the hydrologic model. Data and information that will be collected, reviewed, and assessed include, but not limited to:

- Historical daily water levels of Clear Lake;

- Historical daily flows below Cache Creek Dam;
- Historical daily rainfall at a nearby rain gage;
- Historical daily evaporation rate of Clear Lake;
- Historical daily withdrawals directly from Clear Lake for water supply;
- Historical daily consumptive agricultural water use by the littoral property owners within the reclaimed land area;
- Elevation-storage-surface area curves of Clear Lake;
- Elevation-storage-surface area curves of Clear Lake with the Middle Creek Project;
- Elevation-discharge rating curves of the Cache Creek Outlet Channel under pre-dredging natural and post-dredging conditions;
- Detailed description of the Middle Creek Project;
- Project area map of the Middle Creek Project;
- Existing vegetation mapping in the Middle Creek Project area;
- Complete documentation of the Gopcevic and Solano Degrees, including all addendums.

Data will be obtained in electronic format when available. Data collected or converted to electronic format will be organized for efficient use and provided to the County as a functional database for future use. Data will be assembled in a format to optimize the County's future utilization of the data and to support the modeling and analysis necessary for preparation of the Water Availability Analysis. All electronic data will be quality control checked for accuracy and completeness.

A technical memorandum will be prepared describing the data available and the sources of the data, and assessing the completeness and quality of the data. The data will be provided to the County, in electronic format where applicable, for future use and flexibility. The technical memorandum will recommend a representative hydrologic period for analysis and provide the reasoning.

Task 2 Deliverables:

- A technical memorandum describing the data available and the sources of the data, assessing the completeness and quality of the data, and recommending a representative hydrologic period for analysis

Task 3 Analysis of Historical Daily Inflows to Clear Lake

In order to investigate the additional lake yield created by the Middle Creek Project, it is critical to accurately estimate the historical daily inflows to Clear Lake for the selected period of analysis. Stetson will use a daily water budget method to back-calculate the historical daily inflows to the lake. Since the design hydraulic capacity of the dam outlet is much greater than the hydraulic capacity of the outlet channel at the Grigsby Riffle, the water levels in the lake and the Cache Creek Dam forebay could be different (see Figure 3). This is demonstrated by the observed daily lake levels at Lakeport (USGS #11450000) and daily flows below the dam (USGS #11451000) in 1998 (Figure 4). The reported discharge capacity of the outlet channel is about 4,700 cfs at the lake water level of 11.0 ft Rumsey, while the recorded dam releases during most of February 1998 were more than 4,700 cfs and as high as 7,200 cfs. The higher releases from the dam relative to the outlet channel capacity would have drawdown the forebay and, thus, resulted in lower water levels in the forebay than the lake. Under this condition, the hydraulics at the Grigsby Riffle, rather than the dam release, would have controlled lake outflow. It follows that, when these conditions occur, outflow at the Grigsby Riffle should be used to back-calculate the inflow to the lake.

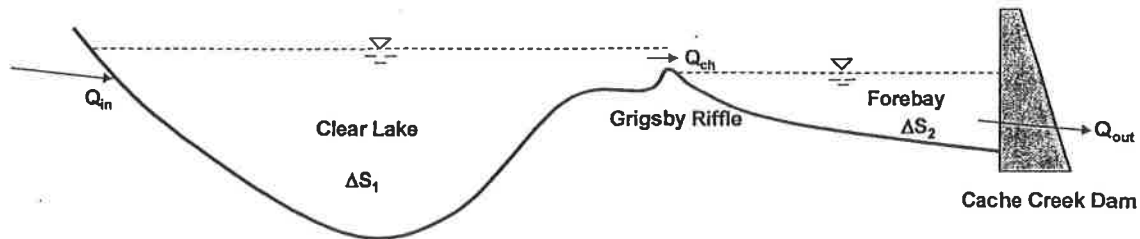


Figure 3 Schematic of Clear Lake and the Outlet Channel

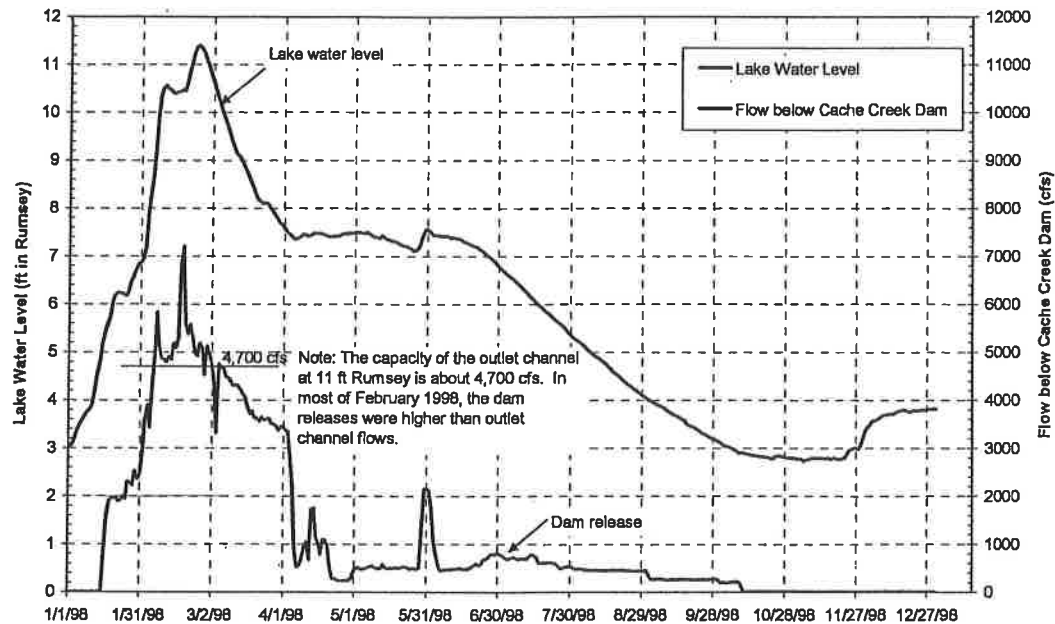


Figure 4 Observed Daily Clear Lake Water Levels at Lakeport (USGS #11450000) and Daily Flows below Cache Creek Dam (USGS #11451000)

To realistically and accurately represent the physical system, the water budget analysis will be conducted to back-calculate the inflow to the lake on a daily basis for the two connected water bodies: Clear Lake and the Cache Creek Dam forebay. The water budget components for Clear Lake will include inflows to the lake, precipitation, evaporation, direct lake withdrawals for consumptive agriculture uses by littoral property owners and other water users (if any), outflows through the Grigsby Riffle, and the resulting change-in-storage estimated from the recorded lake levels and the lake's elevation-storage curve. The water budget components for the Cache Creek Dam forebay will include inflows to the forebay through the Grigsby Riffle, local tributary inflows, precipitation, evaporation, and the resulting change-in-storage in the forebay. The outflow through the Grigsby Riffle is the link between the two water bodies and can be computed by simultaneously solving the water budget for the two water bodies. The storage changes of Clear Lake (ΔS_1) and the Cache Creek Dam forebay (ΔS_2) can be expressed in a simplified fashion as follows:

$$\Delta S_1 = Q_{in} - Q_{ch} \quad (1) \quad \text{Refer to Figure 3. For purposes of illustration and simplification, the terms for evaporation, precipitation, and consumptive agriculture uses by littoral riparian property owners are not included in the equations, since these are computed independently.}$$

$$\Delta S_2 = Q_{ch} - Q_{out} \quad (2)$$

The outflow at Cache Creek Dam is known from the USGS streamflow records at #11451000. Given a known water level or storage of Clear Lake at a given time step (from the USGS lake stage records at #11450000), the *potential* flow through the outlet channel (Q_{ch}) will be known too based on the elevation-discharge rating curve. Since the above two equations will have only two unknowns: Q_{in} (inflow to Clear Lake) and ΔS_2 (storage change of the Cache Creek Dam forebay), these two equations can be solved simultaneously. However, since the actual flow through the outlet channel (Q_{ch}) is also related to the control of Cache Creek Dam, there are four conditions that require different treatments:

- 1) If Q_{out} is greater than the computed Q_{ch} by trial using the elevation-discharge rating curve, the forebay water level will be lower than Clear Lake and the actual Q_{ch} will be equal to the outlet channel discharge corresponding to the Clear Lake water level;
- 2) If Q_{out} is less than the computed Q_{ch} by trial using the elevation-discharge rating curve and if the flow difference is not sufficient to fill the forebay to the same level as Clear Lake, the forebay water level will be lower than Clear Lake and actual Q_{ch} will be equal to the outlet channel discharge corresponding to the Clear Lake water level;
- 3) If Q_{out} is less than the computed Q_{ch} by trial using the elevation-discharge rating curve and if the flow difference is sufficient to fill the forebay to the same level as Clear Lake, the forebay water level will be the same as Clear Lake and the actual Q_{ch} will be equal to Q_{out} plus the change-in-storage of the forebay.
- 4) If Q_{out} is equal to the computed Q_{ch} by trial using the elevation-discharge rating curve, the forebay water level will not change and actual Q_{ch} will be equal to Q_{out} .

The back-calculation analysis of historical daily inflows to Clear Lake will be computed by the hydrologic model which will be described in Task 4. The above rules will be coded into the model using the model script language.

Task 3 Deliverables:

- A technical memorandum describing the methods, data, and assumptions used to analyze historical daily inflow to Clear Lake and presenting results

Task 4 Hydrologic Model Development

Stetson will develop a hydrologic model of the two connected water bodies. The model will be constructed using either RiverWare or HEC-ResSim. The RiverWare program was developed by the University of Colorado at Boulder's Center for Advanced Decision Support for Water and Environmental Systems (CADSWES) and the HEC-ResSim program was developed by the US Army Corps of Engineers Hydrologic Engineering Center. Both programs are window-based programs designed for modeling reservoir operations. RiverWare offers greater functionality and flexibility than HEC-ResSim, but requires purchase of a license to operate, whereas HEC-ResSim is free. If selected, Stetson will discuss the pros and cons of the two programs with the County in deciding which program is best suited for this project.

Stetson is one of the most experienced consulting firms in the U.S. in developing hydrologic models. The subject of one of our recent RiverWare applications, Coeur d'Alene Lake, has very similar hydraulic features and characteristics to Clear Lake (Refer to the cover aerial photo). Coeur d'Alene Lake is a natural lake located on the Spokane River in northern Idaho. The lake's water level has been manipulated by operation of the Post Falls dam, approximately nine miles downstream on the lake's outlet channel. Prior to the construction of Post Falls dam for hydropower generation, Coeur d'Alene Lake historically served as a natural reservoir for the Spokane River. Lake levels rose and

water was “stored” during high runoff periods to be naturally released later as limited by the hydraulics of the natural sill in the lake outlet channel. Stetson developed a RiverWare application model for the Coeur d’Alene Lake system to analyze lake water levels under natural conditions (i.e., without the Post Falls dam) and different operating scenarios. Figure 5 shows the RiverWare model layout for the system. Figure 6 shows our preliminary RiverWare model layout for Clear Lake.

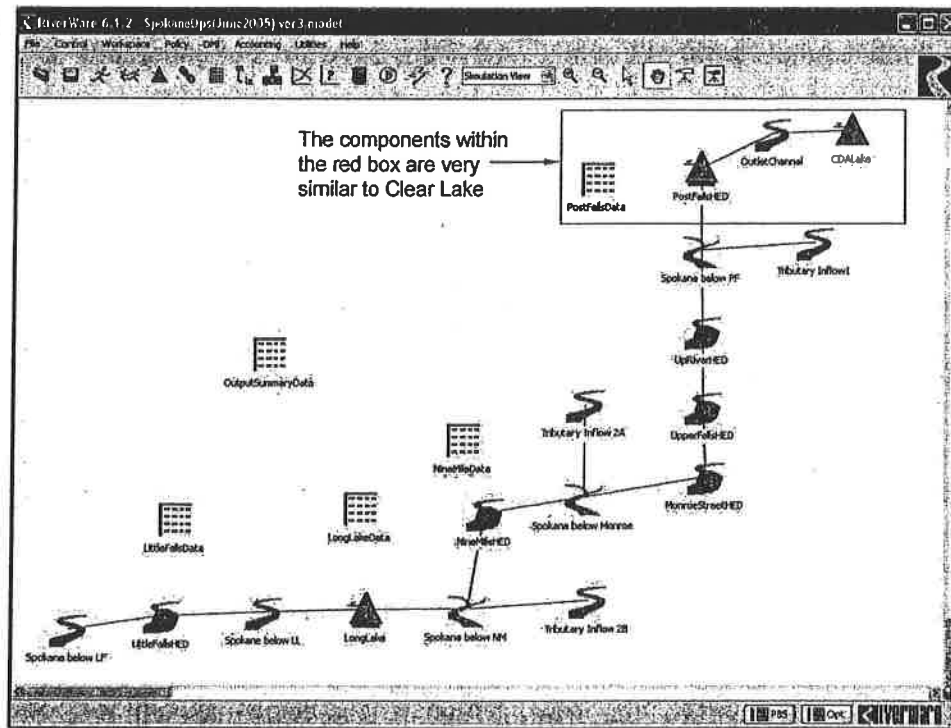


Figure 5 RiverWare Model Layout of Coeur d’Alene Lake Hydrologic Operations

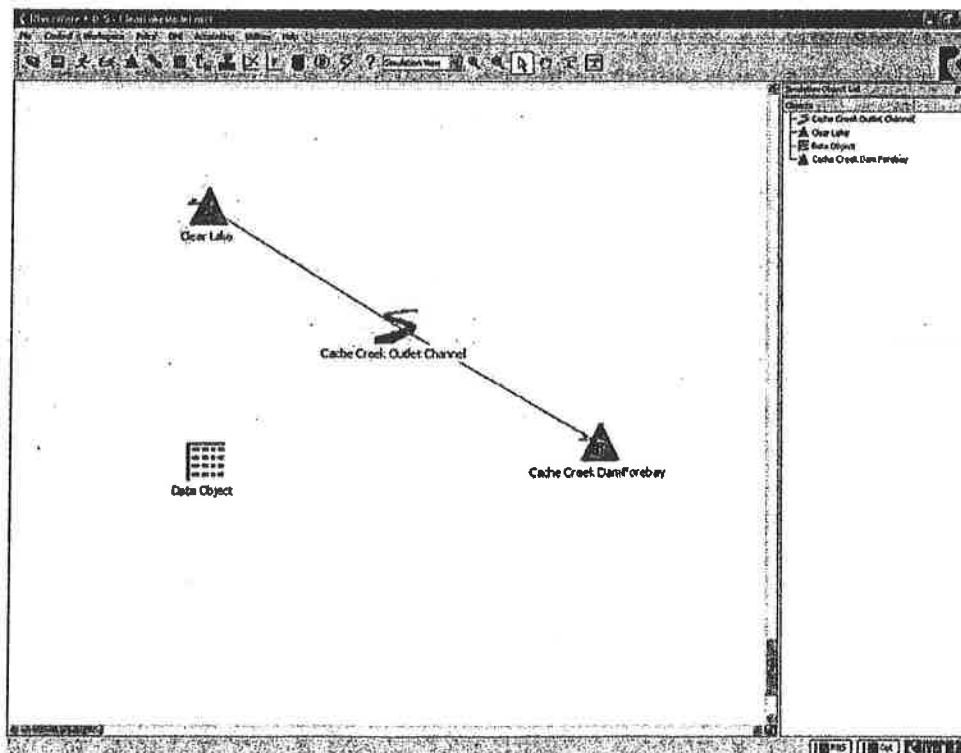


Figure 6 Preliminary RiverWare Model Layout of Clear Lake Hydrologic Operations

(Note: Both RiverWare and HEC-ResSim are window-based programs designed for modeling reservoir operations. RiverWare offers greater functionality and flexibility than HEC-ResSim, but requires purchase of a license to operate, whereas HEC-ResSim is free. If selected, Stetson will discuss the pros and cons of the two programs with the County in deciding which program is best suited for this project.

Given accurate and complete input data, the reliability of the hydrologic model would depend on accurate coding of the operating criteria established in the Gopcevic and Solano Decrees. Stetson will first closely examine the operating criteria established in the Gopcevic and Solano Decrees. After gaining a clear understanding of the operating criteria, Stetson will prepare a detailed flowchart diagram to show how the operating criteria will be represented in the model logic. The detailed flowchart diagram will be submitted to the County staff for review and discussion. Stetson will then carefully code the logic using the model's script language to accurately represent the operating criteria. Internal independent review and careful quality assurance/quality control (QA/QC) processes will be taken to ensure that the scripts for the operating criteria are correctly coded.

Task 4 Deliverables:

- Flowchart diagrams to show how the operating criteria will be represented in the model logic

Task 5 Scenario Simulations and Analysis of Results

Stetson will conduct the following model scenario simulations to support development of the Water Availability Analysis:

- a) Natural lake level fluctuations (without dam and outlet channel modifications)
- b) Current conditions or without-Project conditions (current dam operation and operating criteria)
- c) Future conditions with the implementation of the Middle Creek Project with revised operating criteria. The revised operating criteria should be designed to minimize any adverse impacts to Yolo's senior water rights on Clear Lake.
- d) Quasi-natural lake level fluctuations (without dam but with outlet channel modifications)
- e) With-Project conditions and without stage limitations (with the implementation of the Middle Creek Project and using the withdrawal quantities resulting from simulation of Scenario (b)).

The first three scenarios were specified in the RFP. The last two are scenarios recommended by Stetson.

The added Scenario (e) is intended for preliminarily determining the additional lake yield using the withdrawal quantities resulting from simulation of Scenario (b). This is how our overall analysis will ensure that Yolo's senior water rights are not adversely affected. Simulated results from Scenario (b), particularly the adjusted May 1 water level, monthly withdrawal quantities, and the end of diversion season water level (i.e., October 31 water level), will be used in Scenario (e) to preliminarily determine additional lake yield created by the Middle Creek Project. The results from Scenario (e), including additional yield of water supply, lake levels, and storages, will be used to revise the current operating criteria while avoiding any adverse impacts to Yolo's senior water rights. Scenario (c) will be used to fine tune the revised operating criteria and verify/finalize the additional lake yield analyzed from Scenario (e).

Figure 7 is a general flow chart to analyze the annual and monthly withdrawal quantities under current operations (i.e., Scenario (b)). Once Scenario (b) is simulated, the resulting adjusted May 1

water level and the simulated monthly withdrawal quantities will be used as input for simulating Scenario (e). Scenario (e) will analyze lake level changes without consideration of stage limitations.

Figure 8 is a general flow chart for Scenario (e) to analyze the lake water levels and preliminarily determine the additional water, on a daily time step aggregated annually, for the with-Project and without stage limitation conditions. The model will start simulations on November 1 of the first year of the selected hydrologic period. As highlighted in red in Figure 8, to ensure the Yolo's senior water rights on Clear Lake are not adversely impacted, the adjusted May 1 water level under the without-Project conditions (i.e., current conditions or Scenario (b)), rather than the with-Project conditions, will be used to determine the total seasonal withdrawal quantity for Yolo according to the Solano Decree. This way the analysis ensures no adverse impacts to Yolo's senior water rights. During the diversion season, the monthly withdrawal quantities resulting from simulation of Scenario (b) will be used as model inputs for Scenario (e) to analyze the lake water levels without consideration of stage limitations. At the end of diversion season (i.e., October 31), if the simulated lake storage (not lake level) for the with-Project conditions is greater than the without-Project conditions, then this means that there is additional water available for the year and the additional water will be computed. Otherwise there is no additional water available for the year. Whether there is additional water available or not, the lake storage on October 31 for the with-Project conditions will be reset to the same storage as the without-Project conditions to avoid any storage surplus or shortage carryover to the next year simulation.

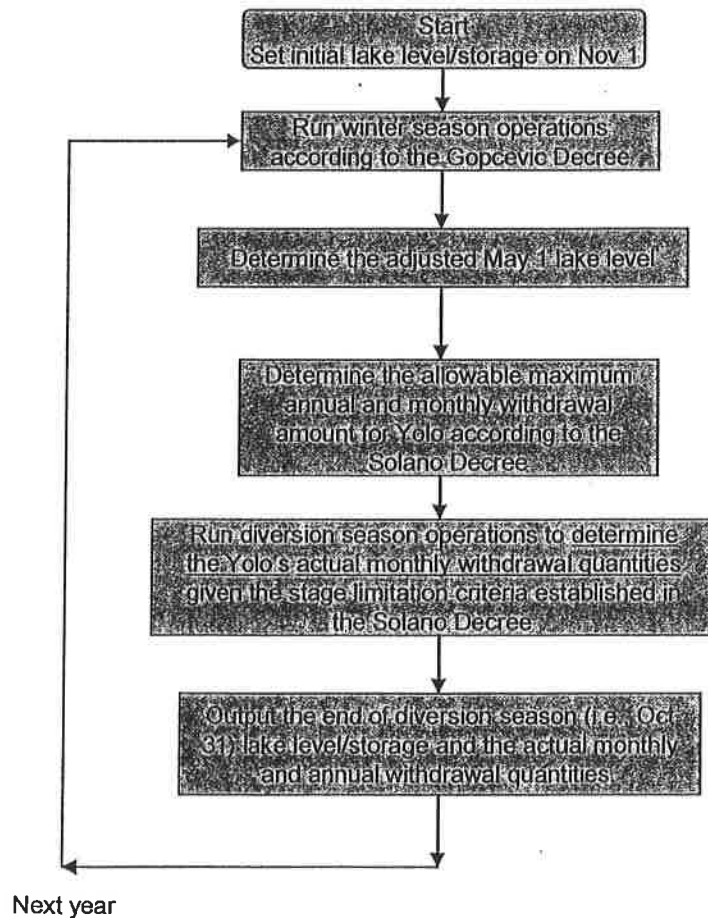


Figure 7 General Flow Chart to Analyze the Actual Annual and Monthly Withdrawal Quantities Year by Year for the Without-Project Condition (i.e., Scenario (b))

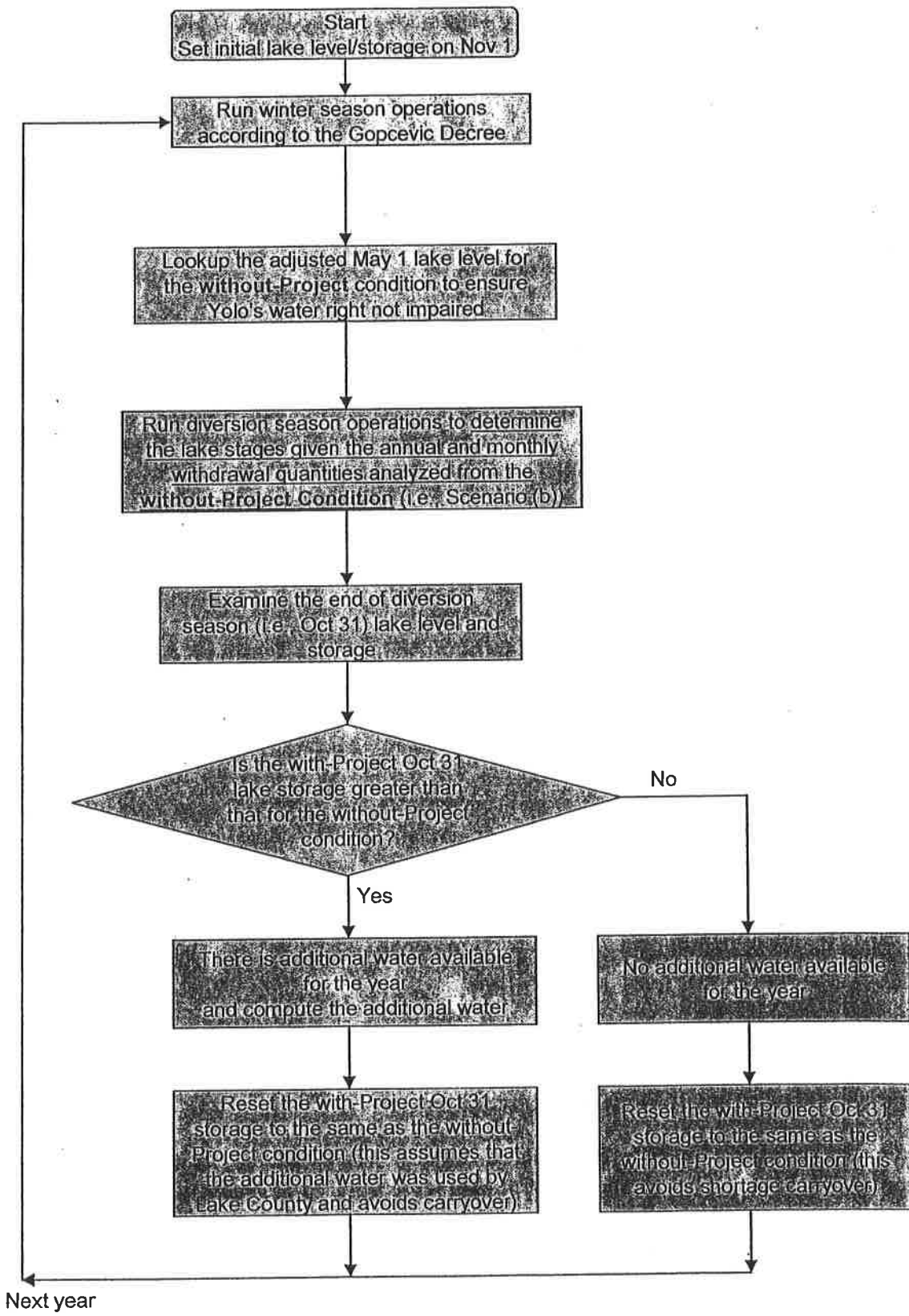


Figure 8 General Flow Chart to Preliminarily Analyze the Additional Water Year by Year for the With-Project and Without Stage Limitation Condition (i.e., Scenario (e))

The results from Scenarios (b) and (e) will be used to modify the operating criteria. The revised operating criteria will be designed to avoid any adverse impacts to Yolo's senior water rights on Clear Lake. Scenario (c) will be used to fine tune the revised operating criteria and verify/finalize the additional lake yield analyzed from Scenario (e).

Task 5 Deliverables:

- A technical memorandum documenting the simulation runs, the result of additional water year by year, and the revised operating criteria.

Task 6 Preparation of Draft WAA

Stetson will consolidate key information from the previous tasks into a Draft WAA report. Two copies of the Draft WAA report will be provided to the County for review and comment. The example format of a WAA report provided by the State Water Board in its website is not directly applicable for this case because the example is intended for stream water diversions. Stetson will follow a format similar to the Stampede and Prosser WAAs (See project descriptions) to prepare the Draft WAA since these were accepted and approved by the Division of Water Rights. Considering the unique circumstances of this project, the Draft WAA report will include the following sections:

1. Introduction
2. Description of the Middle Creek Project
3. Current Operating Criteria of Clear Lake
4. Methods for Determining Additional Yield of Water Resulting from the Increased Lake Storage by the Middle Creek Project
5. Results of Water Availability Analysis
6. Findings and Discussions

It should be pointed out that based on our experience in California water right applications, a WAA report needs to be concise and easily understandable by the State Water Board, Division of Water Rights staff. Division staff will probably not have the resources to review the RiverWare or HEC-ResSim model. In view of this, Stetson will present the model inputs and outputs in an easily understandable format such as in Excel Spreadsheet, concisely label each column, and clearly explain the source of data in each column and the relationships among the columns.

Task 6 Deliverables:

- Draft WAA report

Task 7 Preparation of Model Documentation

It is anticipated that the hydrologic model will be a very useful tool for future scenario simulations and negotiations. To be transparent for model review and future scenario simulations, Stetson will prepare a detailed report documenting the development of the model. The report will describe the construct of the model, including assumptions and estimates, model structure, operating rules or logic, and input and output.

Task 7 Deliverables:

- A detailed report documenting the development of the model, including assumptions and estimates, model structure, operating rules or logic, and input and output.

SCHEDULE

Although this project is entirely locally funded and there are no deadlines that have been imposed on completion of the WAA, Stetson proposes to timely complete the scope of work within **eight months** from the date of the signing of a Professional Services Agreement. The details of the proposed project schedule are provided in the chart on the following page. Based on an assumed start (Notice to Proceed) date of May 1, 2012, the proposed project schedule targets the end of 2012 for completion of all tasks and submission of all deliverables.

SCHEDULE

(Assume Notice to Proceed on 05/01/2012)

ID	Task Name	Qtr 2, 2012			Qtr 3, 2012			Qtr 4, 2012			Qtr 1, 2013		
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Task 1 General Administration, Meetings, and Presentations												
2	Task 2 Data Reconnaissance and Selection of Representative Hydrologic Period for Analysis												
3	Task 3 Analysis of Historical Daily Inflows to Clear Lake												
4	Task 4 Hydrologic Model Development												
5	Task 5 Scenario Simulations and Analysis of Results												
6	Task 6 Preparation of Draft WAA												
7	Task 7 Preparation of Model Documentation												
8	Kickoff Meeting												
9	Presentation 1 - Analysis of Historical Daily Inflows												
10	Presentation 2 - Model Development and Preliminary Results												
11	Presentation 3 - Results of Water Availability Analysis												

Stetson proposes to timely complete the scope of work within eight months from the date of the signing of a Professional Services Agreement. Based on an assumed start (Notice to Proceed) date of May 1, 2012, the proposed project schedule targets the end of 2012 for completion of all tasks and submission of all deliverables.



