AGREEMENT TO FURNISH ENGINEERING SERVICES
FOR WATER DISTRIBUTION HYDRAULIC MODEL UPDATE AND SYSTEM ANALYSIS

This Agreement is made and entered into this 21st day of June, 2005, by and between the City of Redlands, a municipal corporation (hereinafter "City") and CH2MHill, hereinafter ("Consultant"). In consideration of the mutual promises, covenants and conditions hereinafter set forth, City and Consultant hereby agree as follows:

ARTICLE 1 - ENGAGEMENT OF CONSULTANT

1.1 City hereby engages Consultant, and Consultant hereby accepts the engagement, to perform professional consulting services ("Services") for Water Distribution Hydraulic Model Update and System Analysis ("Project").

1.2 The Services shall be performed by Consultant in a professional manner, and Consultant represents that it has the skill and the professional expertise necessary to provide high quality Services for the Project at the level of competency presently maintained by other practicing professional engineers in the industry providing like and similar types of services.

ARTICLE 2 - SERVICES OF CONSULTANT

2.1 The specific Services which Consultant shall perform are more particularly described in Attachment "A," entitled "Scope of Services," which is attached hereto and incorporated herein by this reference.

2.2 Consultant shall comply with all applicable Federal, State and local rules, laws and regulations in the performance of this Agreement including, but not limited to, all applicable Labor Code and prevailing wage laws.

ARTICLE 3 - RESPONSIBILITIES OF CITY

3.1 City shall make available to Consultant information in its possession that is pertinent to the performance of Consultant's Services.

3.2 City will provide access to and make provisions for Consultant to enter upon City-owned property or right-of-way as required by Consultant to perform the Services.

3.3 City designates Greg Gage, Project Manager, to act as its representative with respect to the Services to be performed under this Agreement.

ARTICLE 4 - PERIOD OF SERVICE

4.1 Consultant shall perform the Services in a prompt and diligent manner and in accordance with the schedule set forth in Attachment "B", entitled "Project Schedule".

ARTICLE 5 - PAYMENTS TO THE CONSULTANT AND NOTICE

5.1 The total compensation for Consultant's performance of the Services shall not exceed the amount of $60,000. City shall pay Consultant on a time and materials basis up to the not to exceed amount, in accordance with Attachment "C", entitled "Project Costs" based on the hourly rates shown in Attachment "D", entitled "Rate Schedule".

5.2 Consultant shall bill City within ten days following the close of each month by submitting an invoice indicating the Services performed, who performed the Services, indirect costs, and the detailed cost of all Services including backup documentation. Payments by City to Consultant shall be made within 30 days after receipt and approval of Consultant's invoice, by warrant payable to Consultant.

5.3 All contractual notices, bills and payments shall be made in writing and may be given by personal delivery or by mail. Notices, bills and payments sent by mail shall be addressed as follows:

City
Greg Gage
Municipal Utilities Dept.
35 Cajon Street
P. O. Box 3005
Redlands, CA 92373

Consultant
Eva Plajzer, P.E.
CH2MHill
402 West Broadway, Suite 1450
San Diego, CA 92101-3542

When so addressed, such notices shall be deemed given upon deposit in the United States Mail. In all other instances, notices, bill and payments shall be deemed given at the time of actual delivery. Changes may be made in the names and addresses of the person to whom notices, bills, and payments are to be given by giving notice pursuant to this paragraph.

ARTICLE 6 - INSURANCE AND INDEMNIFICATION

6.1 Consultant's Insurance to be Primary

All insurance required by this Agreement is to be maintained by Consultant for the duration of this Project and shall be primary with respect to City and non-contributing to any insurance or self-insurance maintained by the City. Consultant shall not perform any services pursuant to this Agreement unless and until all required insurance listed below is obtained by Consultant. Consultant shall provide City with Certificates of Insurance and endorsements evidencing such insurance prior to commencement of work. All insurance policies shall include a provision prohibiting cancellation of the policy except upon thirty

(30) days prior written notice to City.

6.2 Workers' Compensation and Employer's Liability

A. Consultant shall secure and maintain Worker Compensation and Employer's Liability insurance throughout the duration of this Agreement in amounts which meet statutory requirements with an insurance carrier acceptable to the City.

B. Consultant expressly waives all rights to subrogation against the City, its officers, employees and volunteers for losses arising from work performed by Consultant for City by expressly waiving Consultant's immunity for injuries to Consultant's employees and agrees that the obligation to indemnify, defend and hold harmless provided for in this Agreement extends to any claim brought by or on behalf of any employee of Consultant. This waiver is mutually negotiated by the parties. This shall not apply to any damage resulting from the sole negligence of City, its agents and employees. To the extent any of the damages referenced herein were caused by or resulted from the concurrent negligence of City, its agents or employees, the obligations provided herein to indemnify, defend and hold harmless is valid and enforceable only to the extent of the negligence of Consultant, its officers, agents and employees.

6.3 Comprehensive General Liability Insurance. Consultant shall secure and maintain in force throughout the duration of the Agreement comprehensive general liability insurance with carriers acceptable to City. Minimum coverage of one million dollars ($1,000,000) per occurrence and two million dollars ($2,000,000) aggregate for public liability, property damage and personal injury is required. Consultant shall obtain an endorsement that City shall be named as an additional insured.

6.5 Business Auto Liability Insurance. Consultant shall have business auto liability coverage, with minimum limits of one million ($1,000,000) per occurrence, combined single limit for bodily injury liability and property damage liability. This coverage shall include all consultant owned vehicles used on the project, hired and non-owned vehicles, and employee non-ownership vehicles. Consultant shall obtain an endorsement that the City shall be named as an additional insured.

6.6 Assignment and Insurance Requirements. Consultant is expressly prohibited from subletting or assigning any of the services covered by this Agreement without the express written consent of City. In the event of mutual agreement between parties to sublet a portion of the Services, the Consultant will add the subcontractor as an additional insured and provide the City with the insurance endorsements prior to any work being performed by the subcontractor. Assignment does not include printing or other customary reimbursable expenses that may be provided in this Agreement.

6.7 Hold Harmless and Indemnification. Consultant shall defend, indemnify, and hold harmless City and its elected officials, employees and agents from and against any and all actions,

claims, demands, lawsuits, losses and liability for damages to persons or property, including costs and attorney fees, that may be asserted or claimed by any person, firm, entity, corporation, political subdivision or other organization arising out of or in connection with Consultant's negligent and/or intentionally wrongful acts or omissions under this Agreement; but excluding such actions, claims, demands, lawsuits and liability for damages to persons or property arising from the negligence or intentionally wrongful acts of City, its officers, employees or agents.

ARTICLE 7 - GENERAL CONSIDERATIONS

7.1 In the event any action is commenced to enforce or interpret any of the terms or conditions of this Agreement the prevailing party shall, in addition to any costs and other relief, be entitled to the recovery of its reasonable attorneys' fees.

7.2 Consultant shall not assign any of the Services required by this Agreement, except with the prior written approval of City and in strict compliance with the terms, provisions and conditions of this Agreement.

7.3 Consultant's key personnel for the Project are:

Project Manager: Eva Plajzer, P.E. Project Manager

Consultant agrees that the key personnel shall be made available and assigned to the Project, and that they shall not be replaced without concurrence from City.

7.4 All documents, records, drawings, designs, costs estimates, electronic data files and databases and other documents developed by the Consultant pursuant to this Agreement and any copyright interest in said above described documents, shall become the property of City and shall be delivered to City upon completion of the Services, or upon the request of City. Any reuse of such documents and any use of incomplete documents will be at City's sole risk.

7.5 Consultant is for all purposes an independent contractor. All personnel employed by Consultant are for its account only, and in no event shall Consultant or any personnel retained by it be deemed to have been employed by City or engaged by City for the account of or on behalf of City.

7.6 Unless earlier terminated, as provided for below, this Agreement shall terminate upon completion and acceptance by City of the Services.

7.7 This Agreement may be terminated by the City, without cause, by providing ten (10) days prior written notice to the Consultant (delivered by certified mail, return receipt requested) of intent to terminate.

7.8 Upon receipt of a termination notice, Consultant shall (1) promptly discontinue all services, and (2) deliver or otherwise make available to City, copies of any data, design calculations, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been accumulated by Consultant in performing the Services required by this Agreement. Consultant shall be compensated on a pro-rata basis for work completed up until notice of termination.

7.9 This Agreement, including the attachments incorporated herein by reference, represents the entire agreement and understanding between the parties and any prior negotiations, proposals or oral agreements are superseded by this written Agreement. Any amendment to this Agreement, to be effective, shall be in writing and approved by the City Council of City and signed by City and Consultant.

7.10 This Agreement shall be governed by and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF, duly authorized representatives of the City and Consultant have signed in confirmation of this Agreement.

City of Redlands
("City")

By: _____
MAYOR

CH2MHill
("Consultant")

By: _____
Kim Martin, P.E.
Vice-President

ATTEST:

By: _____
Lorrie Poyzer
City Clerk, City of Redlands

AGREEMENT TO FURNISH ENGINEERING SERVICES
FOR WATER DISTRIBUTION HYDRAULIC MODEL UPDATE AND SYSTEM ANALYSIS

ATTACHMENT A

SCOPE OF SERVICES

Hydraulic Model Update and System Analysis

Project Understanding

The City of Redlands (City) has a need to update the existing hydraulic model because new facilities have been implemented since the last model update in 2002. In addition, the City desires to perform system analysis on various scenarios to help determine if changes to facilities and/or operations will be beneficial to the City. The following scope of work details the approach to update the model and perform the needed analysis.

In addition, the City seeks assistance with the preparation of the Urban Water Management Plan (UWMP). The UWMP is a requirement of the California Water Code Chapter 2, Part 2.6, Division 6 and has to be prepared by each water supplier in years ending in zero and five.

Scope of Work

Task 1 – Model Update

The existing hydraulic model of the potable system resides in H2ONET version 3.5 and is composed of the existing scenario (as of 2002), a 2010 scenario, and a buildout scenario. This model is currently outdated because new facilities have been added to the system. A new hydraulic model of the existing potable system will be constructed. The model will be built in H2OMAP version 6. Modeling the recycled water system is not included this scope. The following sub-tasks detail the approach of the model update:

Model Construction - Facilities

Pipes

The City will provide a GIS coverage file of pipes and nodes for the model. CH2M HILL will provide the City a list of the parameters that are required for these facilities. At a minimum, the following parameters are needed for pipes and nodes:

- Pipes – diameter, length, status, pressure zone (pipe material and installation date are desired)
- Nodes – elevation

Each pipe will be associated with two nodes, upstream and downstream, and each pipe and node will have a unique identification number.

Valves

The City will provide a GIS coverage file of all of its valves, with zone separation valves identified (pressure regulating valves [PRVs], flow control valves [FCVs], zone isolation valves, etc.). This GIS coverage will be used as a reference to the modeling files. Zone separation valves will be added to the model. All other system valves will either be represented as a node or removed from analysis. The City will perform the valve analysis, i.e. which valves stay in the model and which need to be changed to a node. For the automatic valves, the City will provide set points such as pressure settings or flow settings. If these set points are not available, the set points defined in the previous model will be used. CH2M HILL will connect the zone separation valves into the model. Our level of effort assumes that about 29 zone separation valves in 15 locations will be added to the system model.

Pump Station

Previous modeling efforts (1998 Master Plan and 2002 model update) expended significant effort in defining the pump stations within the City. This included detailed layout of pumps within the pump stations and definition of pump curves. Development of this data is a significant effort. CH2M HILL proposes to transfer the pump station data from the previous models to this model. The data, such as pump curves and layouts will be provided to the City for review. Data changes desired by the City will be made by CH2M HILL, but are assumed to be minimal and confined to pump curves and minor layout modifications. Approximately 39 pumps in 14 locations will be transferred to the new model.

Storage Tanks

The storage tanks (about 17 tanks), with their accompanying data, will be transferred from the previous models to the new model. Tank data from the model will be provided to the City for review and necessary changes will be made.

Supply Points

The City has two main types of supply: wells and treatment plants. In the previous models, these supplies were identified as point inputs, with surface elevation and a negative demand to represent the input into the system.

The City will provide a GIS point coverage file identifying all well locations, potable and non-potable. CH2M HILL will add these wells to the model and use the previous models to verify connection to the system. CH2M HILL will review with the City connectivity of the wells to the system. CH2M HILL proposes to represent the wells in the same way as they were represented in the previous models. Supply flows as identified in the attached Table 1 will be used in the model.

The City operates two water treatment plants. These water treatment plants will be added to the system and will be represented as a point, as in previous models, or as a reservoir, depending on modeling needs.

Demands

CH2M HILL will work with the City to develop an approach for demand allocation using City's meter records. The demand processing and assignment to nodes will be performed by the City. The City will provide an electronic file, with node id and average day demand, to CH2M HILL.

Water use factors developed in the 1998 Master Plan will be used to peak the average day demands to the desired demand levels.

Model Verification

The new model will be run in static mode and the results will be compared to the hydraulic results from the previous models for the existing scenario. Our level of effort assumes that the node pressures and HGLs will be within 10 percent of each other and only minor adjustments, such as PRV settings, will be needed. If significant difference in the new model, as compared to the 2002 model, exist CH2M HILL will coordinate with the City on the best approach to mitigate the difference, which may or may not result in budget changes.

CH2M HILL assumes that all data provided by the City will be compatible with ESRI products and contain appropriate information.

Task 2 – System Model Analysis

Flow Path Diagrams

An Excel spreadsheet will be set up to model flow paths within the City's system. Exhibit A shows a sample flow path previously developed. This flow path diagram will be used in all scenarios as a screening tool.

Scenario Definition Workshop

CH2M HILL will conduct a half day workshop with the City to demonstrate the updated model and to further refine and add scenarios. The flow path diagram spreadsheet will be used as a quick tool for initial screening of scenarios during the workshop. The workshop will also define what constitutes acceptable system conditions for each of the discussed scenarios.

Scenario Evaluation

CH2M HILL anticipates that the scenarios discussed below are the minimum scenarios that will be evaluated. Additional scenarios, as defined during the scenario definition workshop, can be added to the scope, with contract amendments, at a later date.

Reservoir Reassignment – The feasibility of changing the one-million gallon reservoir at Texas Street to non-potable uses will be evaluated. A storage calculation will be performed to compare storage needs vs. available storage before and after reservoir reassignment. The hydraulic model will be used to determine impacts in the area if the tank is removed from the potable system. The model will be run in the existing scenario under static conditions with maximum day demands, peak hour demands, and reservoir refill conditions.

Bear Valley Canal Rehabilitation – This scenario will evaluate the hydraulic and capacity benefits of lining this canal and converting it to convey water from excess capacity at Ford Park wells, Agate 1, and Crafton wells to facilities in the north end of the system, Agate reservoir or a blending station. Two flow conditions, 12 mgd and 24 mgd, between the facilities will be evaluated. Facilities necessary to achieve this will be identified and sized preliminarily. The model will be run in the existing scenario under static conditions with maximum day demands, peak hour demands, and reservoir refill conditions. If water quality data for stable constituents is available, a simple mass balance for the mixing points will be performed to determine potential mixed concentrations of constituents.

Tate Water Treatment Plant Discharge Line Capacity – The model will be used to evaluate the facilities that would be needed to increase the capacity of the discharge lines into the system

from the Tate Water Treatment Plant (WTP). Two capacity goals will be evaluated. Facilities necessary to achieve this will be identified and sized preliminarily. The model will be run in the existing scenario under static conditions with maximum day demands, peak hour demands, and reservoir refill conditions.

Hinckley WTP Discharge Improvements – The City needs to determine the benefits from increased capacity at Hinckley WTP as compared to current system operation to determine if the system benefits justify investment in this WTP. Two capacity goals will be evaluated. Facilities necessary to achieve this will be identified and sized preliminarily. The model will be run in the existing scenario under static conditions with maximum day demands, peak hour demands, and reservoir refill conditions.

Task 3 – Cost Estimates

Capital costs for scenarios evaluated in Task 2 will be estimated. The cost estimates will be order-of-magnitude budgetary level costs. The Association for the Advancement of Cost Engineering (AACE International) defines order-of-magnitude costs as Class 5 cost estimates that are approximate without detailed engineering data. Examples would include: (1) an estimate from cost capacity curves, (2) an estimate using scale-up or scale-down factors, and (3) an approximate ratio estimate. It is normally expected that an estimate of this type would be accurate within +50 percent or -30 percent.[1] CH2M HILL will use the unit costs developed by the U.S. Environmental Protection Agency in the report titled Standardized Costs for Water Supply Distribution System, January 1992. These costs will be updated to 2005 levels with the Engineering News Record (ENR) Construction Cost Index (CCI). Capital cost estimates for up to four scenarios will be developed.

Task 4 – Technical Memorandum

The documentation for this project will be developed in individual technical memoranda (TMs). These TMs will become appendixes to the project TM at the end of the project. The project TM will be an executive summary of all other TMs and not exceed 10 pages, including tables and figures. The individual TMs will include:

1. Task 1 TM – This TM will document the model development, demands in the model, and results comparison to the existing scenarios in the previous models.
2. Task 2 TM – This TM will document the scenario development workshop and the final scenarios to be carried forward for detailed analysis.
3. Task 3 TM – This TM will document the analysis results for the analyzed scenarios and the capital cost estimates.

A PDF electronic copy of each TM will be provided the City of review. The City will provide comments that will be discussed with CH2M HILL via a conference call. Comment resolution will be agreed upon by the City and CH2M HILL. CH2M HILL will incorporate changes and submit the final TM as part of the project TM. Resolution of comments that require additional analysis that is outside of this scope or is a significant revision of the scenario parameters may require contract revisions with scope and fee additions. Five copies of the project TM will be

1 The percentages included with the definitions above should be viewed as statistical confidence limits, and should not be confused with contingencies.

provided for City review. Only resolution of comments on the executive summary is included in this scope. Additional comments on the individual TMs will be discussed with the City and need for scope and fee revisions determined.

Task 5 – UWMP Support

CH2M HILL will provide as needed support to the City for the preparation of the UWMP as required by the California Water Code. The support will be composed of reviewed data, providing comments, meeting with City staff to evaluate approach, and providing a report template in MS Word™ for City use. This task is limited to a total fee of $10,000. CH2M HILL shall not be obligated to perform work beyond this budget, and the City shall not be obligated to compensate CH2M HILL beyond the budget for this task unless the City approves.

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ATTACHMENT B

PROJECT SCHEDULE

CH2M HILL will initiate work immediately upon receipt of a notice to proceed. The technical work for model update is estimated to be completed within four weeks after all data is received by CH2M HILL. Model analysis is estimated to be completed within 4 weeks after the model is deemed acceptable. A draft TM will be issued approximately two weeks later and a final TM two weeks after City of Redlands and CH2M HILL adjudicate the review comments. The project is forecasted to end by December 31, 2005.

AGREEMENT TO FURNISH ENGINEERING SERVICES
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ATTACHMENT C

PROJECT COSTS

The work presented in the Scope of Services (Exhibit A) will be completed for the not to exceed amount of $60,000 based upon the table below, and in accordance with Exhibit D – "Rate Schedule".

CH2M HILL shall not be obligated to perform work beyond this fee, and the City shall not be obligated to compensate CH2M HILL beyond this fee for this project unless the City approves.

Description	Hours	Labor	Expenses	Total
Task 1 – Model Update	121	$16,491	$858	$17,349
Task 2 – System Model Analysis	100	$15,248	$669	$15,917
Task 3 – Cost Estimates	28	$3,232	$190	$3,422
Task 4 – Technical Memorandum	88	$12,660	$652	$13,312
Task 5 – UWMP Support	58	$9,338	$662	$10,000
Total	395	$56,969	$3,031	$60,000

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ATTACHMENT D - RATE SCHEDULE

Classification	Hourly Rate
Principal/Senior Consultant	$191
Senior Project Manager	$168
Project Manager/Construction Mgr.	$161
Sr. Engineer/Scientist	$161
Task Mgr./Project Engineer/Assoc. Proj. Mgr.	$146
Contracts/Procurement	$136
Assoc. Engineer/Scientist/Planner	$125
Resident Engineer	$125
Staff Engineer/Scientist/Planner	$103
Senior Inspector	$103
Senior Technician	$121
Staff Technician	$94
Junior Technician	$76
Technical Editor	$94
Administration/Accounting	$75
Administrative Aide	$65

Expenses		
Expense Type	Estimating Method	Rate
Communications Note a	Service Center	$1.20
Health & Safety Assessment Note b	Service Center	$1.70
Computer Resources Note a	Service Center	$4.65
Photo Copies	Service Center	$0.040
Reprographics	Service Center	varies
Auto mileage	Travel	$.405/mile + 10%
Auto Rental	Travel	Actual + 10%
Other Travel (FTR Guidelines)	Travel	Actual + 10%
Equipment Rental	Operating Expense	Actual + 10%
Postage/Freight	Operating Expense	Actual + 10%
Subcontractors	Outside Service	Actual + 10%

Note a Assessment applies to all labor hours

Note b Assessment applies to all Health & Safety trained individuals

Rates subject to change on January 1, 2006