

**Pine Water Co., Inc. -  
K2 Well Project**

**Requests Proposals and Quotations  
for Drilling and Construction Services for Two Wells in the  
Strawberry Area of Gila County, Arizona**

**RFP PROJECT NUMBER: PWCo 2008 - 02**

**Packet Release Date: February 22, 2008, 10:00 AM  
Proposals and Quotations Due: March 3, 2008, 2:00 PM**

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## INTRODUCTION

The Pine Water Co., Inc. (PWCo) is seeking a qualified firm, or firms, for the construction project of two water wells on the real property at the location known as the K2 Well Site in Strawberry, Arizona, as described in Appendix B, Record of Survey Map 3463 of PWCo K2 Well Site; and Appendix C, Drawing SIPL, K2 Well Site (Parcels 301-11-138 A & B), and for which the PWCo has the authority to undertake the improvements contemplated for this Project..

**HISTORICAL PERSPECTIVE:** The Pine & Strawberry area of Gila County is a Community of historical significance in Arizona. The Community's domestic water needs are largely obtained from ground water and served by a mix of private wells, regulated water utilities, and domestic water improvement districts. The regulated water utility companies owned by Brooke Utilities, Inc., [Pine Water Co., Inc. (PWCo) and Strawberry Water Co., Inc. (SWCo) combined], are the predominant supplier of domestic water service to the Community. PWCo and the Pine/Strawberry Water Improvement District (PSWID) have entered into a Joint Well Development Agreement (JWDA) to work cooperatively to develop a new water source into the deep regional R-Aquifer to supplement the water supplies currently available within the PSWID area and the PWCo's CC&N (Reference Appendix D. The PSWID boundaries encompass the general extent of the area, including the entities listed above, but the PSWID itself does not provide domestic water service to the Community. As a certified water provider in the Pine-Strawberry area, the new water source will be owned and operated by PWCo. The Arizona Department of Water Resources has deemed this area to have an "inadequate water supply."

The results of prior geohydrologic investigations and exploratory drilling have been summarized for this Project in Appendix E, PWCo K2 Test Well #1 Technical Specifications.

This packet has been prepared to aid firms interested in responding to this Request for Proposal and Quotation (RFP).



**II. LEGAL NOTICE**

The Pine Water Co., Inc., K2 Well Project (PWCo), is Inviting Contractors to Submit Proposals and Quotations to Provide for Drilling and Construction Services for Two Wells in the Strawberry area of Gila County, Arizona.

<b>PROJECT NUMBER:</b>	<b>PWCo 2008-02</b>	
<b>RFP INFO PACKET:Available:</b>	<b>Friday,</b>	<b>February 22, 2008 at 10 AM</b>
<b>BIDDERS CONFERENCE:at K2 Site</b>	<b>Wednrday,</b>	<b>February 27, 2008 at 10 AM</b>
<b>RFP DUE DATE:</b>	<b>Wednesday,</b>	<b>March 5, 2008 at 2:00 PM</b>
<b>RFP OPENING DATE:</b>	<b>Wednesday, March 5, 2008 at 2:30 PM</b>	
<b>RFP AWARD DATE:</b>	<b>Wednesday,</b>	<b>March 5, 2008 at 4:30 PM</b>
<b>NOTICE OF AWARD</b>	<b>Wednesday</b>	<b>March 5, 2008</b>
<b>COMMIT PROJECT CONTRACT</b>	<b>Friday,</b>	<b>March 7, 2008</b>
<b>NOTICE TO PROCEED:</b>	<b>Monday,</b>	<b>March 10, 2008</b>

**RFP PICKUP AND DELIVERY ADDRESS:** **PWCo K2 Well Project**  
**P.O. Box 2096, 3475 Whispering Pines Road**  
**Pine, Arizona 85544-2096**  
**Attn: PWCo Agent: John Breninger, Project Mgr**  
**Phone: (928) 476-3707**

**NOTICE IS HEREBY GIVEN** that sealed Proposals and Quotations for Project # PWCo 2008-02 will be received by the Pine Water Co., K2 Well Project (PWCo), until the date and time cited above. These Requests for Proposals and Quotations will be publicly opened and read aloud, at the time noted above, at the outdoor Pine Civic Center Ramada, Hwy 87, Pine, AZ, or other site which may be designated prior to the noted time. Proposals physically received, by the PWCo after the date and time specified above will not be accepted and will be returned unopened. Mailed Proposals must be in the possession of the PWCo by the date and time specified in order to be considered timely. Packets must be clearly labeled (as directed in the RFP Packet) and addressed to the PWCo, per the above.

Respondents are strongly encouraged to read the entire Request for Proposals (RFP) carefully. One Proposal Packet will be provided each interested party at no charge. Additional Proposal Packets will be available for a \$15.00 per copy charge.

**Questions Regarding the Project Specifications or Submission of Proposals should be directed to:**

PWCo K2 Well Project, Attn: John O. Breninger, Phone: (928) 476-3707, or  
Email: ihunt4h2o@npgcable.com

The PWCo reserves the right to reject any or all proposals, to negotiate any proposal, to waive any informality in any proposal, or to withhold the award if deemed in the best interest of the PWCo.

/s: \_\_\_\_\_ Date: February 19, 2008  
John O. Breninger, Manager, PWCo K2 Well Project

/s: \_\_\_\_\_ Date: February 19, 2008  
Jim Richey, PSWID Designated Representative

**Legal Advertisement Publication Dates:**  
**The Payson Roundup: Friday, February 22, 2008 (1/2) and Tuesday, February 26, 2008 (2/2)**



**Arizona Silver Belt: Wednesday, February 27, 2008**

### III. SCOPE OF WORK

The work to be done in a future Contract includes the furnishing of all mobilization, insurance, on-site supervision, labor, material, transportation, tools, supplies, plant equipment and appurtenances, unless specifically excepted by the Contract, necessary for the complete and satisfactory construction and development of a PWCo K2 Test Well #1, and a subsequent Production Well (K2 Well #2), if the specified sustainable pumping rate is justified by the testing of the Test Well #1.

The PWCo K2 Well Project (Project) has provided a water collection pit on site for the purposes of collecting the returns from the drilling operations, of allowing the settlement of solids and the temporary storage of the waters for percolation into the ground and also subsequent discharge into Strawberry Creek under the provisions of an ADEQ AZPDES De Minimus General Permit. As a part of this Permit, the Project has developed and implemented a Best Management Practices (BMPs) Plan, which will require the cooperative participation of the Contractor. The BMPs are to control solid and liquid pollutants in the discharge; for the prevention of erosion, scour or sedimentation due to the discharge; and to minimize the duration of discharge or unplanned discharges (line breaks, leaks or overflows). The Project shall negotiate the technical provisions of the BMPs Plan with the Contractor for suitability and any unique provisions that may be required for his operations, equipments and site mobilization. The Contractor shall comply with the requirements of the BMPs Plan for performance, monitoring and reporting in addition to compliance with the ADWR and ADEQ requirements applicable to the licensed Drillers in the State of Arizona. Additionally, the Driller Contractor, and Agents of the Contractor, shall be cooperatively responsible to the PWCo K2 Well Project Manager for performing the actions, monitoring and reporting as required by the BMPs Plan, as provided by the terms and conditions of the Contract with PWCo.

The Technical Specifications for this Project are as specified in Appendix D, PWCo 2002-08. The drilling Contractor shall conduct his operations cooperatively with the Project Hydrologist, as may be practical, during the drilling and testing phases, to provide such data as may be available for the Project Hydrologist to quantify the potential water yield of the borehole and quality of the water.

#### A. Desired Outcomes:

The following criteria and expectations shall be utilized to guide and direct the efforts of the Drilling Contractor firm or firms working on this project. The Project desires the satisfactory completions of the drilling and construction services for the two wells comprising the K2 Well Project. This plan shall include at a minimum, the following components:

##### TEST WELL #1:

- |   |           |
|---|-----------|
| 1. Driller's Card from ADWR per an approved NOID                            | 3/28/2008 |
| 2. Driller's mobilization plan and schedule:                                |           |
| * Mobilize drill rig on site  | 4/3/2008  |
| • Perform initial air-lift well development. Completed                      | 5/15/2008 |
| • Demobilize drill rig, on or before  | 5/27/2008 |
| 2. Test Well #1 – PWCo K2 Test Well #1 Test Specifications (Ref Appendix E) |           |

##### PRODUCTION WELL #2:

1. The second well is proposed to be drilled at the nearby location on the site of the same design as the Test Well #1, except for any changes that may result from the experiences gained from



the prior well. The changes may include a decision not to drill the second well at all. The Contract may be modified accordingly and renegotiated. 5/14/2008

2. Driller's Card from ADWR per an approved NOID 9/12/2008
3. Driller's mobilization plan and schedule:
  - \* Mobilize drill rig on site 9/19/2008
  - Perform initial air-lift well development. Completed 12/30/2008
  - Demobilize drill rig, on or before 1/16/2009
2. Test Well #2 – PWCo K2 Test Well #1 Test Specifications (PENDING)

#### **B. Anticipated Project Bidding Schedule: (Year 2008)**

PWCo Post RFP & Advertise	<b>February 21, 2008, THU</b>
RFP Packets Available (10:00 AM)	<b>February 22, 2008, FRI</b>
Bidders Conference at K2 Site	<b>February 27, 2008, WED</b>
Proposals Due (2:00 PM)	<b>March 5, 2008, WED</b>
Proposals Opened and Read (2:30 PM)	<b>March 5, 2008, WED</b>
PWCo & PSWID Consultant Review	<b>March 5, 2008, WED</b>
Contract Awarded – PWCo	<b>March 5, 2008, WED</b>
Notice of Award	<b>March 5, 2008, WED</b>
Commit Project Contract	<b>March 7, 2008, FRI</b>
Notice to Proceed	<b>March 10, 2008, MON</b>

## **IV. QUALIFICATION CRITERIA AND CERTIFICATIONS**

Qualification Statements and Proposals should sequentially and specifically address each of the following four (4) criteria. The maximum potential score is one hundred (100) points. Consultants may use industry Standard Qualification documents, Firm-Developed Qualification documents and Narratives to address the established criteria. The Certification form, provided in the appendix of this document, must be included with your packet.

The PWCo K2 Well Project will establish a review committee which will evaluate all responses according to the four (4) criteria described below.

A short list of respondents may be developed for the purpose of further discussion, public presentation or interview.

### **CRITERIA & RATING**

- **Availability per Schedule and Work Plan (35 Points)**
  - Refer to Sec. III. A., Desired Outcomes, above for the K2 Project Plan and Schedule.
  - Describe your commitment and plan to meet the Schedule.
- **Suitable Drilling Methodology and Equipment (40 Points)**
  - Appendix E describes the anticipated local geology and drilling conditions for the K2 site.
  - Bidder to describe how your firm's plan will perform.
  - Execute the Bid Schedule 1 to support your cost quotation.
- **Experience with Similar Drilling Conditions (15 Points)**



- Select the applicable experiences from your plan per “B” above.
- Provide your summary of those experiences.



**D. Credentials and Recommendations (10 Points)**

Please provide the following credentials information:

- Appendix E requires certification of the “Licenses Required” and “Contractor Qualifications.”
- Provide this as your Statement of Credentials.

Please provide the following recommendation information:

- Provide a list of client references, including the client's name, point of contact, address and telephone number.

**V. GENERAL INSTRUCTIONS TO RESPONDENTS****A. Notice**

Notice is hereby given that sealed qualification statements and proposals will be received by the Pine Water Co. K2 Well Project (Project), from qualified and licensed Drillers in the State of Arizona, which are responsive to the scope of work in all respects.

**B. Familiarization**

Prior to submitting a proposal, each respondent shall familiarize themselves with the scope of work, Arizona laws, regulations and other factors affecting the performance of services. The respondent shall carefully correlate their observations with the desired outcomes and satisfy themselves of the expense and difficulties attending the performance of services. The submission of a proposal will constitute a representation of understanding and compliance by the respondent. There will be no subsequent financial adjustment, other than that provided for by the Contract, for lack of such familiarization.

**C. Preparation of the RFP**

This Request for Qualifications and Proposals does not commit the Project to pay any cost incurred in the preparation of the RFP, either pre-or-post award, or to procure or contract for the services described in this request.-

**D. Questions Related to the RFP**

Any question related to this Request must be directed to those whose names appear on the Legal Notice. Questions should be submitted in writing when time permits. The Project, at their sole discretion, may require all questions be submitted in writing. Any correspondence related to a Request for Proposal and Quotation (RFP) should refer to the appropriate Request / Project number, page, and paragraph number. However, the respondent **must not** place the RFP number on the outside of an envelope containing questions since such an envelope may be mistaken for a sealed response and may not be opened until after the official Request due date and time. Questions received less than three (3) working days prior to the date for opening responses will be answered only if time permits. Only questions answered by formal written addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.



**E. Proposal Format**

Bidders must respond completely to this RFP, with all relevant forms and schedules submitted at the time of bid to be made a part of the contract. The PWCo will use the qualification criteria, and other submitted documentation, in evaluating the capacity of firms to perform the scope of work as set forth in this packet. Failure of any respondent to submit a complete response prior to the time and place of opening may be grounds for automatic disqualification of respondent from further consideration.

The names of all persons signing must be legibly printed below the signature. Evidence of the authority of the person signing shall also be furnished. The full name of each person or company interested in the project shall be listed in the response.

No alterations in the response, by erasures, interpolations, or otherwise will be acceptable unless each such alteration is signed or initialed by the person signing for the respondent; if initialed, the PWCo may require the respondent to identify any alteration so initialed.

All responses shall contain an acknowledgment of receipt of the RFP and all Addenda (the numbers of which shall be filled in on the Proposal Form).

A minimum of three (3) copies of the response packet shall be submitted. The PWCo will not be liable for any cost incident to the preparation of proposals, materials, reproductions, presentations, copy-right infringements, etc.

**F. Modification or Withdrawal of Proposals**

At any time prior to the specified time and date set for the proposals submission, a respondent, or his/her designated representative, may withdraw or modify a proposal. Any proposal modification or notice of intent to withdraw must be in writing, executed by an authorized representative of the firm, and submitted prior to the proposal submission deadlines.

**G. Obligations and Reservation of Rights by the Pine Water Co.**

This RFP and the acknowledgement of receipt does not bind or obligate the PWCo to issue or otherwise enter into an agreement for the services described herein. The PWCo, at its discretion, reserves the right to:

- 1) Waive any immaterial defect or informality in any proposal or proposal procedure.
- 2) Reject any or all proposals
- 3) Reissue a Request for Qualifications & Proposal
- 4) Modify the specified submittal date and time. Note: PWCo will make a reasonable attempt to communicate the changes to parties who have indicated an interest in this RFP.
- 5) Request more information from any or all submitters

This RFP and the acknowledgement of receipt does not commit the PWCo to accept all of the terms of the proposal. Final terms of any agreement will be agreed upon during negotiations. The PWCo may terminate negotiations at any time.



**H. Respondent Certification**

By responding to the RFP, the respondent certifies that the respondent has not paid or agreed to pay any fee or commission, or any other thing of value contingent on the award of this contract to any employee, official, or current contracting consultant of the PWCo.

The respondent further certifies that the submitted cost and fee information has been arrived at independently and without consultation, communications, or agreement for the purpose of restricting competition as to any matter relating to such costs with any other proposal or respondent.

**I. Qualification Statements as Public Records**

The confidentiality of the responses will be maintained until the time and date established for the final submission of all proposals. Thereafter, each proposal submitted shall not be considered confidential, proprietary, or trade secret information. The contents of the proposal may be considered public records of the PWCo.

**J. Right to Disqualify**

PWCo reserves the right to disqualify any respondent who fails to provide information or data requested hereby or who provides materially inaccurate or misleading information or data. Further, the right is reserved to disqualify any respondent on the basis of any real or apparent conflict of interest that is disclosed by the proposal submitted or any other data available to the PWCo at their sole discretion. By submission of a proposal hereunder, the respondent waives any right to object at the present or any future time, before any body or agency, including, but not limited to the Arizona Corporation Commission, or any court, as to the exercise by the PWCo of such right to disqualify or as to any disqualification by reason of real or apparent conflict of interest.

The PWCo is not responsible for any respondent's errors or omissions. Negligence in preparing an offer confers no right to the respondent unless the respondent discovers and corrects such errors prior to the RFP deadline.

**K. Property of Pine Water Co., Inc. (PWCo)**

All materials and documents submitted by the respondent in response to this RFP will become the property of the PWCo and will not be returned. Respondents selected for further negotiations, as well as the respondents ultimately selected to enter into a contractual agreement, will be responsible for all their costs incurred during negotiations.

**L. Submittals**

Proposals shall be submitted in a sealed envelope with the words "SEALED PROPOSAL" along with the Project Description, Project Number, Date and Time of Bid Opening clearly written on the front of the envelope. Respondents shall assume full responsibility for timely delivery at the location designated in the published notice.

**M. Results and Decisions**

Results are not given in response to telephone inquiries. A summary of proposals received and cumulative scores will be forwarded to all respondents after evaluation and award. This summary will also be on file with the Project Manager.



**N. Protests**

A protest of a solicitation must be received at the PWCo, mail address, prior to the solicitation opening date. A protest of a proposed award or of an award must be filed within two (2) days after the opening of bids. A protest must include:

- The name, address and telephone number of the protestor.
- The signature of the protestor or its representative, and evidence of authority to sign.
- Identification of the contract and the solicitation or contract number.
- A detailed statement of the legal and factual grounds of protest including copies of relevant documents.
- The form of relief requested.

**O. Documentation**

The apparent successful respondent shall sign and file with the Project Manager, within two (2) days after receipt of Notice of Award, all documents necessary for the successful execution of the contract.

- END -

**VI. APPENDICES**

(See next page for Respondent Certification Form, Appendix A)



**Project Number: PWCo 2008-02**

**Appendix A. RESPONDENT CERTIFICATION FORM**

I hereby certify that this response and proposal is genuine, and is not in any collusive or sham; that the proposal is not made with the intent to restrict or prohibit competition; that the firm submitting the proposal has not revealed the contents of the proposal to, or in any way colluded with, any other firm which may compete for the contract; and that no other firm which may compete for the contract has revealed the contents of a proposal to, or in any way colluded with, the firm submitting this proposal.

I further certify that I am in receipt of the RFP Proposal packet and the following

Addenda, dated: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

**Name of Firm Submitting Response to RFP:**

\_\_\_\_\_

**Address:** \_\_\_\_\_

**City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_

**Telephone No.:** \_\_\_\_\_ **Fax No:** \_\_\_\_\_

**Authorized Signature:** \_\_\_\_\_

**Print Name / Title:** \_\_\_\_\_



**APPENDICES -- (Continued)**

**Appendix B. Record of Survey Map 3463 of  
PWCo K2 Well Site (Parcels 301-11-138A & B)**  
[to be inserted]

**Appendix C. Drawing SIPL, K2 WELLSITE**  
[to be inserted]

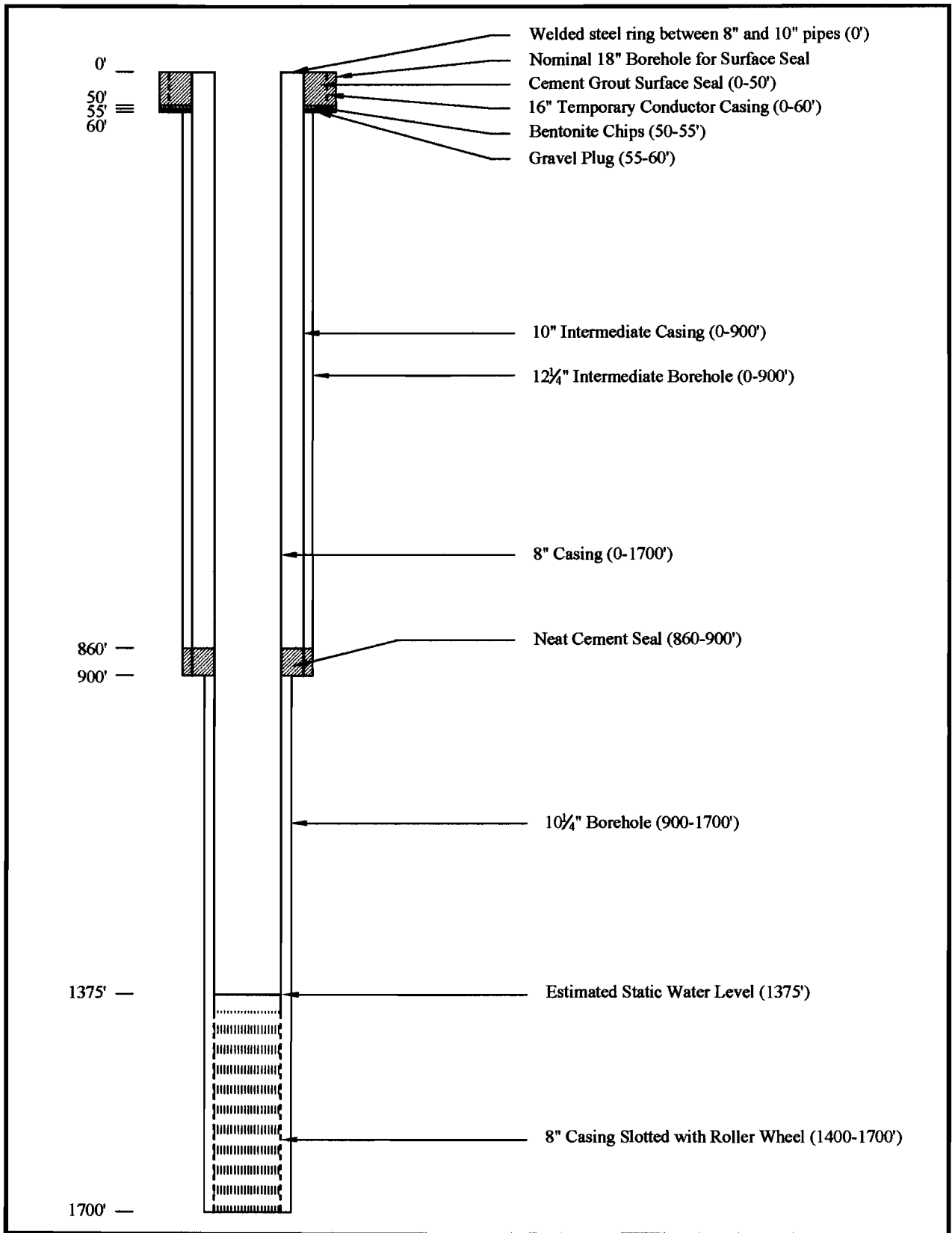
**Appendix D. JOINT WELL DEVELOPMENT AGREEMENT (JWDA)  
Between Pine Water Co., Inc. and Pine-Strawberry Water Improvement  
District**  
(to be inserted)  
Dated May 1, 2007

**Appendix E. PWCo K2 Test Well #1 Technical Specifications**  
(to be inserted)  
Dated February 19, 2008









	<b>Pine Water Company K2 Test Well Conceptual Well Design Dual Rotary Drilling</b>	<b>Figure 2</b>
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S:\08-525 Pine Strawberry Phase 1\Technical Specs\Figure 2 Well Design.dwg, 2/13/2008 3:06:40 PM







APPENDIX E.  
PWCo 2008-02

***PWCo K2 Test Well#1  
Technical Specifications***

***Prepared by:***

**Pine Water Company, Inc. (PWCo)  
K2 Well Project  
P.O. Box 2096  
Pine, Arizona 85544**

***February 19, 2008***



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### List of Bid Schedules

<b>Bid Schedule 1</b>	K2 Test Well Drilling
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## 1.0 GENERAL

### 1.1 Scope of Work

The work to be accomplished under the following technical specifications consists of drilling, casing, and preliminary development of one water production well for the Pine Water Company, Inc. (PWCo), K2 Well Project. The K2 Well Project consists of two (2) wells: Test Well #1 (this specification) and tentative Production Well #2 (pending results of Test Well #1). PWCo will be referred to as **Owner** for purposes of these specifications, and **Owner may delegate the Hydrologist or other qualified persons to act for the Owner**. The PWCo has a Joint Well Development Agreement (JWDA) with the Pine-Strawberry Water Improvement District (PSWID), referred to as “Party” or “Parties”. In accordance with the JWDA, the PWCo has contracted with Southwest Groundwater Consultants, Inc., Stephen D. Noel, P.G., as the “**Hydrologist**” for the K2 Project. Separately, PSWID has contracted with HydroSystems, Inc. (HSI), to provide certain professional consultation services and oversight of the K2 Test Well per the Attachment A, “Scope of Services” (SOS). The SOS may include the development of well drilling specifications and review of project planning for well construction at the K2 Test Well site located in Strawberry, Arizona. These services and others as detailed in the SOS may be provided in coordination with the PWCo K2 Well Project and with oversight responsibilities to PSWID. PWCo retains the contractual authority and responsibility for the K2 Well Project.

The K2 Test Well shall be installed in accordance with the conceptual well design presented in this technical specification document. All materials including casing and cement grout shall be supplied and purchased by the **Contractor**. Engineering data covering all equipment and fabricated materials, which will become a permanent part of the work under this contract, shall be submitted to the **Owner**. The drilling, casing, and preliminary testing of the well shall be conducted under the observation of the **Owner** and/or the **Hydrologist**.

The work consists of drilling and construction of a water supply well for the PWC at a location in the eastern portion of the unincorporated community of Strawberry, Arizona. The site is located at approximately N34 °24.33' W, 111 °29.83', NAD83, at a surface elevation of approximately 5,868ft. The target aquifer is the Redwall limestone, the top of this unit at an estimated depth of 1,247 feet. The well shall penetrate the Redwall limestone and the Martin Formation with an estimated total well depth of approximately 1,700 feet. When the well is complete, it shall be subjected to preliminary air-lift development and pumping tests as well as water quality sampling as directed by the **Hydrologist**. Additional stepped-rate and constant-rate pumping tests may be specified under separate contract (not part of this specification). The anticipated static water level in the well is 1,375 feet. The well shall be drilled deep enough to allow for adequate submergence of a pump with as much as 200 feet of drawdown below static level.

### 1.2 Background

The Pine & Strawberry area of Gila County is a Community of historical significance in Arizona. The Community’s domestic water needs are largely obtained from ground water and served by a mix of private wells, regulated water utilities, and domestic water improvement districts. The regulated water utility companies owned by Brooke Utilities, Inc. (the PWCo and Strawberry Water Company (SWCo)), are the predominant suppliers of domestic water service to the Community. Due to the limited nature of groundwater supplies developed to date, the Arizona Department of Water Resources (ADWR) has deemed this area to have an “inadequate water supply.” As a result, the PWCo and the PSWID have entered into a JWDA to work cooperatively to develop a new water source into the deep regional R-Aquifer to supplement the



water supplies currently available within the area. PWCo and SWCo are certified water providers in the Pine-Strawberry area and PWCo will be the eventual Owner and operator of the wells.

The well site is located in the southeast quarter of the southwest quarter of Section 22, T12N, R8E, on private land at the eastern portion of Strawberry, as displayed on *Figure 1*. Access to the site from AZ Hwy 87/260 is via Parkinson for approximately ¼ mile with limited vertical and horizontal clearances. The purpose of the well is to test the yield and quality of groundwater from the Redwall Limestone and associated strata, collectively referred to as the R-aquifer system. The well shall be constructed in a suitable manner that it can be modified for use as a public water supply well and equipped with pumps and appurtenances yet to be determined.

For this project, the **Owner** is accepting bid proposals for the dual rotary drilling method. The Conceptual Well Design and Bid Schedule for the K2 Test Well are included as *Figure 2* and *Bid Schedule 1*, respectively.

### 1.3 Local Geology and Drilling Conditions

The K2 Test Well site is located within the Mogollon Highlands at the southern edge of the Colorado Plateau Physiographic Province. Groundwater in the area is generally obtained from sedimentary units including the Schnebly Hill Formation, and Supai Group. The sedimentary sequence is estimated from the ground surface to approximately 992 feet deep where the Naco Formation is encountered. The groundwater resources within these sedimentary units are limited based on low porosity and restrictive fractured rock conditions. Below the Naco Formation is the Redwall Limestone and the Martin Formation. It is believed that these geologic formations will provide more favorable conditions for long-term sustainable groundwater supplies. *Table 1* displays the anticipated geologic strata that will be encountered while drilling the K2 Test Well.

**Table 1 Anticipated Depth Intervals for Geologic Strata at K2 Test Well**

Geologic Unit	Depth Intervals (feet)
Alluvium/colluvium	0-30
Lower Schnebly Hill	30-440
Upper Supai	440-777
Lower Supai	777-992
Naco	992-1247
Redwall	1247-1447
Martin	1447-1807

A major characteristic of the subsurface conditions anticipated at the well site is the potential for lost circulation during drilling. A test well drilled to a depth of 1,872 feet in May-June 2000, located on the floor of Strawberry Valley about one mile west-southwest of the proposed K2 Test Well site, experienced considerable problems with lost circulation. A report describing the Strawberry exploratory borehole is available on the ADWR website at:

<http://www.azwater.gov/dwr/Content/Publications/files/strawborehole.pdf>



The ADWR August 9, 2000 report about the Strawberry borehole includes a U.S. Bureau of Reclamation geologist's notes and well log that include a summary of drilling fluid loss intervals and intervals where the drilling tools penetrated cavities that resulted in a "rod drop". Table 2 summarizes the fluid loss and rod drop data.

**Table 2: Summary of Fluid Loss and Rod Drops in Strawberry Borehole.**

DRILL FLUID RETURN		ROD DROP INTERVALS	
Interval Drilled	Percent Returns	Interval	Estimated Drop
0- 415	90		
415- 423	0-10		
423- 645	50-80		
645- 650	0	645-650	3-5
650- 730	60-70		
730- 795	80-90		
795- 800	30		
800- 850	50		
850- 970	30-50		
970-1872	0	982-983	0.7
		998-999	0.7
		1041-1042	1.0
		1042-1042.5	0.5
		1049-1051	2
		1051-1053	2
		1067-1071	
		1075-1078	
		1083-1086	
		1089-1090	
		1095-1098	
		1125-1128	
		1138-1141	
		1145-1148	
		1157-1159	
		1194-1197	
		1397-1399	
1597-1598			
1642-1644			
1690-1693			
1780-1792			

The lost circulation zones at 415-417 ft and 645-650 ft are in the lower Schnebly Hill and upper Supai Formations, respectively, in the geologic sequence used in this specification. It is not known if these lost circulation zones are associated with a limestone layer or with fracture zones in siltstone and sandstone. A series of rod drops starting in the lower part of the lower Supai and continuing through the Naco Formation were also recorded. The rod drop intervals are similar to the layer thicknesses of the interbedded limestone and shale layers in the Naco.



Other rod drops occurred within the Redwall Limestone and Martin Formations, suggesting solution cavities or caverns, below the depth of 970 feet.

*The implication of this information is that circulation might be lost in any of the geologic strata at any depth due to the potential presence of shear zones and associated fracture openings.*

#### **1.4 Permits**

The **Owner** shall apply for the required Notice of Intent (NOI) to Drill and pay the permit fee. The **Owner** shall supply the De Minimus Discharge Permit and supporting documentation according to the AZPDES program administered by the Arizona Department of Environmental Quality (ADEQ). The **Owner** shall also contract the services of a local engineering firm to prepare the surface water plan for each well site. The **Contractor** shall negotiate with the **Owner** to determine their role in participating in the Best Management Practice (BMP) Plan and shall be paid as a lump sum (LS) (*Bid Schedule 1m Item 17*).

#### **1.5 Licenses Required**

The **Contractor** shall hold an Arizona Well Driller's License issued by the ADWR in the rotary drilling category. The **Contractor** shall also hold a current Arizona Registrar of Contractor License, Type A, A-4, A-16, or L-53. The **Contractor** shall provide the **Owner** copies of these licenses prior to the start of the project.

#### **1.6 Site Preparation**

Prior to the drilling equipment arriving at the site, the **Owner** will have the site rough graded to provide easy access and good work conditions. Prior to drill rig mobilization, the **Owner** will construct the pits required as part of the well construction project.

#### **1.7 Contractor Qualifications**

The **Contractor** shall be licensed to drill wells in the State of Arizona. In the last five years, the **Contractor** shall have been engaged in the business of successful construction of deep water production wells using the dual rotary drilling method. The **Contractor** shall submit, with their bid, a list describing five wells drilled having similar subsurface geologic conditions to the Pine-Strawberry area. This list shall include:

1. Client's name, address, and phone number;
2. Type of well;
3. Dates project started and completed;
4. The names of the Contractor's crew and each crew-member's position on the project;
5. Casing depths and diameters;
6. Drilling methods;
7. Well production capacity;
8. Type of drill rig dedicated for this project with technical capabilities;
9. List of names and positions of all principal crew members proposed for use on this project.

In submitting its Bid, the **Contractor** thereby certifies that the equipment, personnel, and procedures he is proposing for the Work are adequate to successfully complete the well as



specified herein. The **Owner** reserves the right to disqualify any **Contractor** who, in the opinion of the **Owner**, does not unequivocally demonstrate the experience, equipment, personnel, and procedures necessary for successfully completing the Work. The **Contractor** must certify that it has a drill rig that has the capability to support the weight of the Work proposed.

## 2.0 METHOD OF DRILLING

The **Contractor** shall furnish all labor, equipment, materials, and services for the construction of the water production well using the dual rotary drilling method. The drilling method recommended for this project is the dual rotary drilling method. The **Contractor** shall perform all of the work required to complete this project according to these technical specifications. All work is subject to the approval of the **Owner**.

## 3.0 DRILLING FLUID CONTROL PROGRAM

The **Contractor** shall submit a copy of the drilling fluid control program to the **Hydrologist** prior to mobilization. This shall include copies of the Material Safety Data Sheets (MSDS) describing all of the drilling additives to be used during drilling. The drilling fluid control program is subject to approval by the **Owner**.

## 4.0 REPORTS, LOGS, RECORDS and SAMPLES

### 4.1 General

The **Contractor** shall keep accurate and legible daily logs and records of all drilling and construction, showing all geologic materials encountered during drilling, the depth at which changes in formation occur and all difficulties or unusual conditions encountered. The daily logs and records shall also show the completion details of the well including but not limited to, the length of conductor casing, blank casing, slotted intervals, formation stabilization materials, and cement grout installed and the depth of installation. The **Contractor** shall also record estimated air lift discharge rates, and sand production during development of the well. The **Contractor** shall submit the drilling penetration rate log, the daily driller's report, and the driller's log to the **Owner** as well as the Well Completion Report to ADWR.

### 4.2 Penetration Rate Log

A penetration rate log shall be kept showing the actual penetration time required to drill the well borehole. The **Contractor** shall record the time that it takes to drill each 20-foot section of the borehole. The log shall be available for review throughout the drilling program and shall be delivered to the **Hydrologist** upon completion of the well, or as requested by the **Hydrologist**.

### 4.3 Daily Drillers' Report

A detailed daily driller's report shall be maintained and provided for review on a daily basis to the **Owner** at the well site. The report shall provide a complete description of all formations encountered, the number of feet drilled, the number of hours on the job, any shutdown time due to breakdown, the tally of casing set, and other such pertinent data as requested by the **Owner**. The casing tally shall consist of a sequential list of each piece of casing



installed and the length of that piece of casing. The **Contractor** shall submit the completed log to the **Hydrologist** for approval at the end of each day.

#### 4.4 Drillers' Log

The **Contractor** shall prepare and keep a complete log that sets forth the reference point for all depth measurements, the depth at which each change of formation occurs, the depth at which the first water is encountered, the depth at which each stratum is encountered and the thickness of each stratum. The **Contractor** shall also identify in the log the material of which each stratum encountered during drilling was comprised, including color, whether material is loose, tight, angular or rounded, and the depth interval from which each formation sample is taken. The **Contractor** shall provide a copy of the log to the **Owner** and submit a copy of the log with the well completion report to ADWR.

#### 4.5 Depth Reference Point

The reference point for all depth measurements, specified herein as ground level. Ground level shall be referenced to a nearby land survey corner pin, designated by **Owner**. The elevation value shall remain constant throughout the project until completion.

#### 4.6 Drilling Fluid Record

A daily log of all drilling water used during drilling shall be maintained by the **Contractor**. This shall include documentation of the fluid level in the pre-constructed drilling pits. The **Owner** shall provide a vertical measurement device within the pits and shall supply the **Contractor** with a volumetric calibration table relating to vertical measurements. This will provide a rough estimate of fluid gains and losses from the pits. The drilling fluid log shall be available for review by the **Owner** throughout the course of drilling activities. This log shall be furnished to the **Owner** upon completion of the well, or as requested by the **Owner**.

#### 4.7 Cutting Samples

The **Contractor** shall collect and preserve for the **Owner**, one set of cutting samples collected at each 5-foot depth interval from the initiation of drilling to the bottom of the borehole. The samples shall be placed in cloth sacks furnished by the **Contractor**, which shall be marked by the **Contractor** with the well identification and the depth represented. In addition, as an on-site visual record of the borehole stratigraphy, a sample for each interval shall be laid out in descending order in the specified sample storage area on a waterproof tarp or ground cloth. The storage area and ground cloth must allow samples to be maintained in sequence, unmixed with surface material or other samples, until such time as they have been examined and logged by the **Owner**. The storage area is subject to approval by the **Owner** prior to the start of drilling.

## 5.0 PERFORMANCE OF WORK

The **Contractor** shall employ only competent employees for the execution of work. All operations shall be performed by an Arizona licensed well driller(s) with a Registrar of Contractor License Type A or A-4. The drilling, installation, and completion of the wells shall



comply with the ADWR Article 8 - Well Construction and Licensing of Well Drillers, as adopted January 3, 2000.

If the **Owner** or **Hydrologist** determines that, for reasons beyond the control of the **Contractor**, it is necessary to stop drilling or if the borehole is lost before the objective or desired depth is reached, and further attempts to save or complete the borehole are not practical, a written order to abandon the borehole shall be issued. The **Contractor** shall be compensated on a time and material basis for attempts to save the borehole subject to approval by the **Owner**. The **Contractor** shall abandon the well in accordance with A.A.C. Article 8, R12-15-816 as applicable to well abandonment. The **Contractor** shall be reimbursed for the footage drilled and other costs incurred and for moving to an alternate location.

If the **Owner** or **Hydrologist** determines that the borehole is lost due to negligence, incompetence, or malpractice on the part of the **Contractor** or his personnel, or due to the use of defective or unsuitable equipment, the **Owner** shall immediately notify the **Contractor**. The **Owner** will provide written documentation of this decision within 24-hours and order the borehole abandoned. The **Contractor** shall not be paid for any footage drilled or for other operations performed in the abandoned borehole and shall be responsible for replacing any lost casing or screen in accordance with these specifications. The **Contractor**, at his own expense, shall abandon the borehole in accordance with A.A.C. Article 8, R12-15-816 as applicable to well abandonment. The **Contractor** shall drill a new borehole at an alternate site in the immediate area as approved by the **Owner**.

If any work delays are caused by failure of the **Contractor** to comply with any item of these specifications, then the **Contractor** shall bear the burden of additional expenses directly resulting from the non-compliance, including reimbursement of the **Hydrologist** fees to the **Owner**.

## 6.0 SCHEDULING

The specific schedule of the drilling program described herein will be coordinated among the **Owner**, the **Hydrologist**, and the **Contractor** prior to the start of drilling. It is critical that all project personnel strictly adhere to the schedule, once it has been established. The allotted time for drilling and completion of the water production well is 120 days commencing on the date referenced on the "Notice to Proceed" between the **Owner** and the **Contractor**.

## 7.0 PROTECTION OF PROPERTY

### 7.1 General

The **Contractor** shall take all necessary precautions to preserve the landscape and vegetation, as nearly as practical, in their present condition. The **Contractor** shall be responsible for replacing any damaged items. Off-road driving and other activities will be restricted to that which is essential for access to the well location and for the efficient operation of drilling and testing equipment. All litter and debris shall be cleaned up daily and disposed off-site by the **Contractor**. Plastic tarps shall be placed under all drilling and support equipment during the entire time the equipment is onsite to protect the site against oil or hydraulic fluid spills or leaks.



If more cuttings are generated from drilling than can be sufficiently contained within the pre-constructed pits, the **Contractor** shall neatly pile the drill cuttings at the site as directed by the **Owner**. The **Contractor** is responsible for providing traffic control according to applicable code, if needed. After completion of the work, the **Contractor** shall remove all debris, waste, trash and unused materials or supplies and shall obliterate all signs of temporary construction facilities such as temporary work areas, temporary structures, and stockpiles of excess or waste materials. The **Contractor** shall restore the well location, as nearly as possible, to the original condition.

## 7.2 Site Access and Dust Control

The **Owner** shall provide access to the well sites. The **Contractor** shall be responsible for maintaining access and dust control. The **Contractor** must maintain the access road in good condition throughout the drilling program. If delays in drilling or well completion occur as a result of failure to provide and maintain the property and the well site access and dust control, the **Contractor** shall bear the additional expense.

# 8.0 UTILITIES

## 8.1 Water

The **Owner** has limited water available for use by the **Contractor** for drilling of the water production wells. As already mentioned, Pine and Strawberry have very limited water supplies. It is anticipated that the drilling and well construction will utilize approximately 5,000 gallons of water per day. This water will be provided from an existing shallow well near the K2 Test Well site as long as this water is available. If the well is unable to sustain the water needs for the drilling and construction, additional water supplies may be obtained from the water storage tank located onsite. The water for well drilling and construction shall be supplied to the **Contractor** at the cost of the **Owner**.

## 8.2 Electricity

The **Contractor** shall provide independent power units for all operations that require electricity associated with the drilling, air-lift development and aquifer testing of the well, as applicable.

## 8.3 Underground Utilities

The **Owner** is responsible for locating and marking all underground utilities as documented in the Arizona Revised Statutes (ARS), Chapter 2, Article 6.3, Sections 40.360.21 through 40.360.31 as related to the Arizona Blue Stake Law. The locating and marking of utilities also includes pipelines that cross or pass near the drill site prior to the start of drilling. Should any of these utilities or pipelines be damaged during the drilling process, the **Contractor** shall be responsible for the repair or replacement of the utilities and/or pipelines.

# 9.0 CASING MATERIALS and WELDING

The wall thickness of the various steel well casing lengths installed in the production well is the responsibility of the **Contractor**. All casing materials shall be new and no rusted casing will be accepted. Shop drawings for the casing shall include written assurances from the casing manufacturer that the casing supplied meets or exceeds the specifications. The **Contractor** shall



supply documentation of the casing specifications and strength as applied to the installation of the production well according to the applicable conceptual well design.

All well casing shall be new low carbon steel (LCS) blank casing manufactured in accordance with the ASTM Standard Specification A-53 Grade B. The casing shall comply with the ADWR Rule R12-15-811 for Minimum Well Construction Requirements. The **Contractor** shall provide certified test reports (mill and/or manufacturer certification) to demonstrate compliance with the physical and chemical properties of the casing.

Welding of the casing shall be conducted using AWS Class E6010 or E7010 electrodes or wireline feed equivalent. All welding shall be performed by a welder who is experienced with the drilling operation and materials selected for use in this project. Joints in the well casing shall be field welded in accordance with applicable provisions of the American Water Works Association (AWWA) Standard C206 for welded joints. A welding sequence will be followed which will avoid excessive distortion. Prior to welding, the ends of each casing section shall be free of grease, paint, cement, dirt, oil, scale, slag, heavy rust, or any other foreign material. The inside edge of the weld rings and the outside edge of the adjacent casing length shall be ground, or sufficiently scarred, to remove sharp edges or burrs. Section ends shall be beveled, perpendicular to the axis of the casing, and shall not vary more than 0.010 inch at any point from a true plane at right angles to the axis of the casing. The ends of the casing sections shall be sufficiently orientated to assure 100 percent penetration of the weld, and adequate welding passes shall be made to provide for complete filling of the joined casing ends. Each welding pass shall be smooth and free of blisters, scale, bubbles, cracks, and imperfections that would contribute to a lack of strength of the overall wells joint. The welds shall be capable of developing the full strength of the base metal. All well casing joints or overlaps shall be made water-tight.

## 10.0 DRILLING MOBILIZATION and DEMOBILIZATION

The **Contractor** shall furnish and maintain, in safe and efficient working condition, all equipment necessary to perform the specified work, including a drill rig capable of performing the specified operations to the specified depths, sampling, and auxiliary equipment as specified or required to complete the described tasks. Prior to mobilization of drilling equipment to the property and upon request of the **Owner**, the **Contractor** shall decontaminate the drill rig and downhole tools by steam cleaning and rinsing critical pieces of equipment. All living and other expenses to perform this project should be included in this task. Mobilization and demobilization shall be paid as a lump sum (LS) according to the applicable drilling method (*Bid Schedule 1, Item 1*).

## 11.0 DUAL ROTARY BOREHOLE DRILLING and CASING

The casing lengths and estimates of the perforated intervals are approximate. It is anticipated that the well shall have 10-inch diameter casing extending from the ground surface to a depth of 900 feet. The well also includes the installation of 8-inch diameter casing from 900 feet to a total depth of 1,700 feet. The conceptual well design for the K2 Test Well is shown on *Figure 2*.



### 11.1 Conductor Borehole Drilling, Casing, and Surface Seal

The conductor borehole shall have a nominal 18-inch diameter with temporarily placed 16-inch diameter steel casing advanced to a depth of approximately 60 feet. For well completion, the 16-inch diameter casing shall be removed creating an annular space between the open borehole and subsequently installed 10-inch diameter intermediate steel casing for cement grouting. As the final step in well completion, the **Contractor** shall place a cement grout surface seal in the annular space between the nominal 18-inch diameter borehole and the outside of the 10-inch diameter intermediate casing filling all the available space meeting the ADWR surface seal requirements. The method of installation is subject to approval by the **Owner**. The Conductor borehole drilling, casing, and surface seal shall be paid as a lump sum (LS) (*Bid Schedule 1, Item 2*).

### 11.2 Drill and Advance 10-inch Casing to 900 Feet

The **Contractor** shall telescope 10-inch diameter blank casing inside the 16-inch diameter casing with a 11.25-inch casing shoe welded to the bottom edge of the 10-inch casing to a depth of 60-feet. The **Contractor** shall advance the 10-inch diameter casing utilizing the dual rotary method with air and a 12.25-inch percussion under reamer to an estimated depth of 900-feet. The actual depth and placement of the 10-inch diameter casing shall be determined by the **Hydrologist** based on the hydrogeologic conditions encountered. The advancement of the 10-inch casing will be terminated once drilling encounters a significant interval of clay/shale (indicative of the Lower Supai strata). Drilling and advancement of the 10-inch casing to 900 feet shall be paid by the lineal foot (LF) (*Bid Schedule 1, Item 3*).

### 11.3 Placement of Intermediate Seal

Upon termination of the 10-inch diameter casing at approximately 900-feet, the **Contractor** shall pull the casing up the borehole a minimum of 20 feet, thus placing the bottom of the 10-inch casing at depth of 880 feet. Within the open borehole interval between 880 and 900 feet, **Contractor** shall install a neat cement grout seal from a depth of 860 feet (within the 10-inch casing) to a depth of 900 feet. The **Contractor** will then lower the 10-inch casing back down to 900 feet while the neat cement grout is wet. The **Contractor** will allow sufficient time for the neat cement grout seal to cure before drilling may continue. This neat cement grout seal will act as a barrier to prevent migration of groundwater moving from above the Lower Supai formation into those formations below. The total length of the seal is estimated at 40-feet. The placement and materials used in setting the intermediate seal shall be paid by the lineal foot (LF) (*Bid Schedule 1, Item 4*).

### 11.4 Drill and Advance 8-inch Casing to 1,700 Feet

With the 10-inch casing set at approximately 900-feet, the **Contractor** shall telescope 8-inch diameter blank casing inside the 10-inch diameter casing with a 9.25-inch casing shoe welded to the bottom edge of the 8-inch casing to a depth of 870-feet. The **Contractor** shall advance the 8-inch diameter casing utilizing the dual rotary method with air and a 9.25-inch percussion under reamer to an estimated depth of 1,700-feet. The actual depth and placement of the 8-inch diameter casing shall be determined by the **Owner**. Drilling and advancement of the 8-inch casing from 0 to 1,700 feet shall be paid by the lineal foot (LF) (*Bid Schedule 1, Item 5*).

### 11.5 Air Lift Testing

Periodically during the drilling process, the **Contractor** will conduct air lift testing for purposes of groundwater sampling and preliminary well yield determinations. The depth intervals and duration of the airlift testing will be determined by the **Hydrologist**. For bid



purposes, three (3) tests will be considered, with the length of each air lift test estimated at 6-hours. The estimated total number of hours for air lift testing is 18. The air lift testing shall be paid by the hour (HR) (*Bid Schedule 1, Item 6*). If additional depth intervals are selected and/or additional time for testing is requested by the **Hydrologist**, this additional testing will be paid at the same hourly rate.

### 11.6 Plumbness and Alignment

Every effort to ensure the plumbness and alignment shall be made by the **Contractor** during the drilling of the borehole. The test for plumbness and alignment shall be the ability to rotate the casing. If the well casing can be rotated at 1,700 feet then the well is considered plumb and aligned.

The **Owner** may waive the requirements of plumbness if, in their judgment: (a) the **Contractor** has exercised all possible care in constructing the well and the defect is due to circumstances beyond control, and (b) the utility of the completed well will not be materially affected.

The reference of plumbness shall be the local gravity vertical at the borehole. Subject to the limitation of the **Contractor's** alignment control device, the borehole of the Test Well #1 shall be directed away from the future location designated for the Production Well #2 nominally by one (1) degree of angle, referenced to the local gravity vertical.

The straightness component of alignment shall be verified after completion of the well by lowering a 60-foot length of 6-inch diameter (6.625 OD) rigid steel casing test blank to the full depth of the well. The test blank shall be lowered and raised with no apparent sticking or binding within the 8-inch well casing. This test shall be conducted with the **Owner's** representative present.

### 11.7 Slot Casing with Roller Wheel

The **Contractor** shall insert an 8-inch air perforator to 1,700-feet and perforate the 8-inch diameter casing from 1,400 to approximately 1,700 feet (*Figure 2*). The actual perforated interval will be determined from the cutting samples, geophysical logs, and consultation between the **Contractor** and **Owner**. For bidding purposes, the slot size is estimated at 1/8 x 1-inch having 40 cuts per foot with an open area of approximately five square inches per foot. The exact slot size for the casing will be determined based on the cutting samples. Slotting of the casing with the roller wheel shall be paid by the (LF) lineal foot (*Bid Schedule 1, Item 7*).

### 11.8 Preliminary Well Development

The **Contractor** shall perform air lift development by inserting 4 ½-inch open ended drill pipe into the well and position the pipe above the perforated portions of the well casing. The length of air lift development will be determined by the **Owner** but is estimated at 12-hours. Additional air lift development is subject to approval by the **Owner**. Any material accumulated in the well as a result of the air lift development must be removed by the **Contractor**. Air lift development of the perforated casing shall be paid by the hour (HR) (*Bid Schedule 1, Item 8*).

### 11.9 Placement of ADWR Surface Seal

The **Contractor** shall install 16-inch casing jaws on the 16-inch diameter temporary casing and remove it from the 60-foot conductor borehole. The **Contractor** shall install pea gravel from a depth of 60 to 55 feet. Above the pea gravel, a layer of ¾-inch bentonite chips will be added over the depth interval from a 55 to 50 feet. The bentonite chips will then be hydrated. Above the bentonite chips, a neat cement grout surface seal will be added to the annular space between the nominal 18-inch diameter borehole and 10-inch diameter casing from a depth of 50



feet to land surface. At the conclusion of well construction activities, the **Contractor** shall weld a steel ring at the surface of the well in order to seal off the annular space between the 8-inch casing and the 10-inch casing. Payment for the ADWR surface seal is included as presented in *Section 11.1*.

## 12.0 WELL CAPPING

During completion of all the work in connection with construction, preliminary development, disinfection, and final completion, the **Contractor** shall temporarily cap the well by placing a full circumference weld using 3/8-inch thick steel plate over the top of the well casing. Well capping shall be paid as a lump sum (LS) (*Bid Schedule 1, Item 10*).

## 13.0 CHLORINATION of WELL

The **Contractor** shall chlorinate the well by slowly pouring 100-pounds of granulated chlorine from the surface into the well casing after the test pumping has been completed. The granulated chlorine will slowly fall to the bottom of the well where it will disperse with the movement of the groundwater. Chlorination of the well shall be paid as a lump sum (LS) (*Bid Schedule 1, Item 11*).

## 14.0 DRILLING SITE SECURITY

The **Contractor** is responsible for the security of the well until the work is complete and accepted by the **Owner**. The **Contractor** shall select and implement the security measure or measures to protect the wells from damage, acts of vandalism, and public safety. The **Owner** and **Hydrologist** are not responsible for any lost or damaged equipment at the drilling site. Drilling site security shall be paid as a lump sum (LS) (*Bid Schedule 1, Item 12*).

## 15.0 NOISE ABATEMENT

Well construction operations may be conducted 24-hours per day at the discretion of the **Contractor**. The well site area is small and is surrounded by private property which may be bothered by the noise emanating from the drilling operations. The **Contractor** is responsible to mitigate the noise concerns. Drilling operations may require placement of noise abatement blankets or barriers to dampen the noise. The **Contractor** shall have the final responsibility for sound control. Noise abatement shall be paid as a lump sum (LS) (*Bid Schedule 1, Item 13*).

## 16.0 STANDBY TIME

Standby Time consists of the cost of maintaining equipment and personnel if a work stoppage is not due to any fault of the **Contractor** or Subcontractor's. The **Contractor** must notify the **Owner** at the commencement of any standby time and provide an explanation. Standby time shall be documented in the **Contractor's** daily log. All standby time is subject to approval by the **Owner**. Standby time shall be paid on an hourly (HR) basis (*Bid Schedule 1, Item 14*).



## 17.0 ADDITIONAL REQUESTED SERVICES

Any additional services requested by the **Hydrologist** or **Owner** shall be paid at an hourly basis (HR) (*Bid Schedule 1, Item 15*).

## 18.0 WELL ABANDONMENT

If well abandonment is necessary, the **Contractor** shall follow the requirements of ADWR's January 3, 2000 "Statutes and Rules Governing Minimum Well Construction Standards and the Licensing of Well Drillers" (A.C.R.R. R12-15-816). Well abandonment shall be paid as a lump sum (LS) estimated at 1,700 feet (*Bid Schedule 1, Item 16*).

## 19.0 VISITATION AND INSPECTION

The **Owner** and **Hydrologist** are entitled to review the **Contractor's** facilities, program operations, transactions, and records, which pertain to this scope of work and contract, at any reasonable time during the term of work. The **Contractor** further agrees to include in all its subcontracts hereunder, if any, a provision that the Subcontractor agrees that the **Owner** or **Hydrologist**, or any of their authorized representatives, shall have access to the Subcontractor facilities and have the right to examine any books, documents, and records of the Subcontractor involving transactions related to the subcontract.

## 20.0 DISPOSAL OF FLUIDS AND MATERIALS

The **Contractor** shall be responsible for the handling and the appropriate disposal of all fluids and materials removed from the borehole resulting from all work identified within these technical specifications. The **Contractor** shall contain all waste fluids and materials on the site through the utilization of pits and berms constructed by the **Owner** prior to drilling. These pits have a minimum capacity of 90,000 gallons to hold the drilling fluid and all materials (fluids and solids) removed from the borehole. The **Contractor** shall dispose of the drill cuttings in an area subject to approval by the **Owner**. Fluids from development and test pumping shall be disposed according to the AZDES De Minimus Permit and site surface water drainage plan.

- END -

