

CONTRACT DOCUMENTS AND SPECIFICATIONS
FOR
DRILLING AND DEVELOPMENT OF PRODUCTION
WELL(S)
FOR THE CITY OF WILLIAMS, ARIZONA



City of Williams

January 2015

Project Number: Well-2015-01

NOTICE TO BIDDERS

REQUIRED BID FORMS

THE FOLLOWING ITEMS MUST BE COMPLETED BY THE BIDDING CONTRACTOR AND SUBMITTED WITH **THIS COMPLETE AND INTACT BID PACKAGE** FOR THIS BID TO BE CONSIDERED RESPONSIVE. ANY AND ALL DEFICIENCIES OF ITEMS LISTED BELOW WILL BE CONSIDERED ADEQUATE REASON **TO REJECT THE BID IN ITS ENTIRETY.**

- COMPLETE BID PACKAGE (CONTRACT DOCUMENT)
- ACKNOWLEDGMENT OF ADDENDA
- BID PROPOSAL EXECUTION SHEET
- BID SCHEDULE
- BID BOND
- SIGNATURES, SEALS & NOTARIES
- QUALIFICATIONS PACKAGE

This information is provided for your use in preparing all documents required for a complete Bid Submittal. Please double check all requirements and if you have any questions regarding what is required with a submittal, please call and ask.

SPECIAL NOTE

Bidders are advised that no separate construction plans have been prepared for this project. All information associated with the work is included in this Bid package.

ADVERTISEMENT FOR BID

Sealed Bids will be received at:

Office of the City Clerk
113 South First Street
Williams, Arizona 86046

Until January 16, 2015 at 5:00 PM

For the Drilling and Development of Production Well(s)

The project consists of:

Drilling of Production Well(s), Development of Production Well(s) and related work as required for the City of Williams. It is the intention of the City of Williams to enter into a Contract for the proposed construction.

Contractors desiring to submit proposals may obtain copies of detailed plans, specifications and proposal forms and full information as to the proposed work from City of Williams, 113 S. Street, Williams, Arizona 86046 (520) 635-4451.

The City of Williams retains the right to reject any or all proposals as it may be deemed best for the interest of the City.

Brandon Buchanan
City Manager

Publish one (1) times only, Williams Grand Canyon News

INFORMATION FOR BIDDERS

Bidder's attention is called to the fact that no bid is acceptable without the return of both the properly completed Proposal and Bid Bond (per the requirements of Title 34, ARS).

Bids will be returned unopened if not submitted properly sealed. Qualified bidders may examine Plans and Specifications at the City of Williams, 113 South First Street, Williams, Arizona 86046.

The Maricopa Association of Governments (MAG) **Uniform Standard Specifications for Public Works Construction** are not attached to these Contract Documents. These standard specifications, which have been adopted by the City of Williams, are the governing specifications for this contract, as amended by the General and Special Provisions. These standard specifications may be purchased from the Maricopa Association of Governments, Phoenix, Arizona.

Bids are to be made upon the Proposal Form(s) contained in and submitted with this contract specification book. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

Each Bid must be submitted in a sealed envelope, addressed to CITY CLERK, City of Williams, 113 South First Street Williams, Arizona 86046.

Each sealed envelope containing a BID must be plainly marked on the outside as **Bid For Drilling and Development of Production Well(s) for the City of Williams**. The envelope should bear on the outside the name of the BIDDER and its address. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to:

OFFICE OF THE CITY CLERK
City of Williams
113 South First Street
Williams, Arizona 86046

The successful BIDDER shall submit or apply for a City of Williams Business License upon award of the contract. Applications can be obtained from:

City Finance Department
113 South First Street
Williams, Arizona 86046

PROPOSAL

TO: Honorable Mayor and Council
113 S. 1st Street
Williams, AZ 86046

In compliance with the Advertisement for Bids, the undersigned Bidder:

Having carefully examined the Contract Documents, site of work, and being familiar with the conditions to be met, hereby submits the following Proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed, and agrees to execute the Contract Documents and furnish the required Bonds and Certificates of Insurance for the completion of said work, at the locations and for the prices set forth on the BID SCHEDULE.

Understands that construction of this project shall be in accordance with all applicable Standard Specifications and Standard Drawings and as otherwise required by the Project Plans, General Provisions and Special Provisions.

Understands that this proposal shall be submitted with a proposal guarantee of cash, certified check, cashier's check or surety bond (in accordance with Title 34, ARS) for an amount not less than 10 percent of the total amount bid.

Agrees that upon receipt of Notice of Award from the City of Williams, the Contractor will execute the contract documents.

Work shall be completed within 120 calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completion of the work includes lead-time for obtaining the necessary material and/or equipment. Bidder agrees to pay, as liquidated damages, the sum as stated in the latest revision of the MAG Specifications. Liquidated Damages shall be based upon the final contract amount.

The Bidder hereby acknowledges receipt of and agrees proposal is based on the following Addenda. (If there are no addenda, write NONE below).

The City of Williams retains the right to reject any or all proposals and to waive minor defects and technicalities or withhold the award, as may be deemed best for the interest of the City.

This proposal shall be valid for a period of sixty days.

THIS PROPOSAL IS SUBMITTED BY _____, a corporation organized under the laws of the State of _____, a partnership consisting of _____ or individual trading as _____ of the City _____ and is the holder of Arizona

State Contractor's License(s):

No.(s), _____

Classification(s), _____

Address _____

Respectfully submitted,

Print Name and Title

Firm

Signature

Date

ATTEST:

Print Name and Title

Witness (if Bidder is an individual)

Signature

Date

BID SCHEDULE

Bid Schedule No.: _____

BID SCHEDULE INSTRUCTIONS:

- Bidder may submit multiple bid schedules (numbered 1,2,3, etc.) for each proposed Alternative.
- Bidders must bid on all items.
- Progress payments will be made based upon the contractors proposed item numbers will be used as a means of computing progress payments and as a basis for any Change Order incurred.
- The Owner reserves the right to recalculate the following Schedules if they appear malapportioned.
- The Lump Sum amounts indicated are to include the Contractor's cost of administration, mobilization, bonds, insurance, pavement markings, traffic control, and any other miscellaneous items required for the project.

Lump Sum Items		
Item No.	Description	Total Bid
1	Furnish all labor, materials, equipment and services for the mobilization and demobilization of equipment to drill and develop production well(s) for the City of Williams.	\$
2	Furnish all labor, materials, equipment and services for the installation and removal of a temporary pipeline, pumping equipment and all other equipment necessary to convey water to the well site(s) and onsite storage for drilling fluid.	\$
3	Furnish all labor, materials, equipment and services to conduct geophysical from 3000 to 4000 feet.	\$
4	Furnish all labor, materials, equipment and services to conduct a video survey as requested by the City of Williams	\$
5	Furnish all labor, materials, equipment and services for the mobilization to additional production well sites as determined by the City of Williams.	\$
6	Furnish all labor, materials, equipment and services to install permanent discharge piping with electromagnetic flow meter for well development, testing and production.	\$

This project consists of the drilling and development of one or more production wells for the City of Williams to an estimated depth up to 4,000 feet below land surface. Sections 300 through 320 address the specific requirements production well drilling and development. Note that there are no separate construction plans for this project. All bidder information is included in this contract document.

BID SCHEDULE- Continued

Unit Priced Items					
Item No.	Description	Estimated Quantity	Units	Unit Cost	Total Bid
7					\$
8					\$
9					\$
10					\$
11					\$
12					\$
13					\$
14					\$
15					\$
16					\$
17					\$
18					\$
19					\$
20					\$
21					\$
22					\$
23					\$
24					\$
Total Bid Items (1-24)					\$

Bidder may specify their own unit price and estimated quantities for all major components of each proposed well. Bidders should attach a "conceptual production well design" for each bid schedule submitted. Bidder may also submit a bid schedule in their preferred format.

The quantities specified under Unit Price Items are considered to be a reasonable estimate. Payment for the actual quantities furnished, installed or constructed as described in Unit Price Items will be made at the unit price set forth above.

Bidder's Acknowledgement _____ Date _____

STATUTORY BID BOND

PROJECT NAME: Drilling and Development of Production Well(s) for the City of Williams

PROJECT NUMBER: Well-2015-01

PURSUANT TO TITLE 34, CHAPTER 2, ARTICLE 1 OF THE ARIZONA REVISED STATUTES- (Penalty of this bond must not be less than 10% of the bid amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____ (hereinafter "Principal") as Principal, and _____ a corporation organized and existing under the laws of the State of _____ with its Principal offices in the City of _____ (hereinafter "Surety"), as Surety, are held and firmly bound unto the _____ (hereinafter "Obligee"), in the amount of _____ (Dollars) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted bid for:

NOW, THEREFORE, if the Obligee shall accept the proposal of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of the proposal and give bonds and certificates of insurance as specified in the standard specifications with good and sufficient surety for the faithful performance of the contract and for the prompt payment of labor and materials furnished in the prosecution of the contract, or in the event of the failure of the Principal to enter into the contract and give the bonds and certificates of insurance, if the Principal pays to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise, it remains in full force and effect provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of the section to the extent as if it were copied at length herein.

Witness our hands this ____ day of _____ 2015.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

AGREEMENT

This Agreement, made and entered into this ____ day of _____ 2015 by and between the City of Williams, Arizona, party of the First Part, termed in these Contract Documents as the "Owner" and _____ party of the Second Part, termed in these Contract Documents as the "Contractor,"

WITNESSETH, that in consideration of the mutual covenants hereinafter contained, the parties hereto agree with each other as follows:

1. It is understood by both parties hereto that the construction work hereinafter referred to is to be done in Williams, Arizona. The Owner may award to others contracts for additional work, and the Contractor shall cooperate with any such other contractors and coordinate his work as directed by the Owner with the work included under any such other contracts.
2. The Contractor shall furnish and deliver all of the materials and perform all of the work described in the **Specifications for Drilling and Development of Production well(s) for the City of Williams** as shown on plans included in the back of the Specifications, it being understood that said Specifications and Plans are as fully a part of this Contract as if herein set forth, and that they are the property of the Owner.
3. That the work shall be completed within **120 Days** calendar days and shall be delivered to the Owner free of all liens, claims and demands of any kind for materials, equipment, supplies, services, labor, taxes and damages to property or persons.
4. If the Bidder to whom an award is made, fails or refuses to execute the required Agreement within the time specified in Paragraph entitled "PROPOSAL" of these requirements, or such additional time as may be allowed, the proceeds of his proposal guaranty shall become subject to deposit in the Treasury of the municipality as monies available to compensate the Owner for damages as provided by ARS 34-201 for the delay in execution of the agreement and bonds and the performance of work hereunder, and the necessity of accepting a higher or less desirable bid from such failure or refusal to execute agreement and bond as required. If the successful Bidder has submitted a certified check or cashier's check as a proposal guaranty, the check will be returned after execution of this agreement. The certified check or cashier's check of other Bidders will be returned at the expiration of thirty (30) days from the date of opening of proposals or sooner, if the agreement is executed prior to that time.
5. The Contractor shall keep the premises and work clear and free of all mechanics' liens.

AGREEMENT – Continued

6. It is hereby mutually agreed between the parties hereto that the sum to be paid by the Owner to the Contractor for said work and materials shall be

_____ Dollars

\$ _____ as per the proposal bid schedule, which amount includes all applicable federal, state, and local taxes. This amount shall be payable through monthly progress payments, subject to the following conditions:

- a. Contractor shall promptly submit all proper invoices necessary for the determination of the prices of labor and materials;
- b. Progress payments shall be made in the amount of ninety percent (90%) of the value of labor and materials incorporated in the work, based on the sum of the Contract prices of labor and material, and of materials stored at the site, on the basis of substantiating paid invoices, as estimated by the Engineer, less the aggregate of all previous payments, until the contract is fifty percent (50%) complete. When and after the contract is fifty (50%) complete, the ten percent (10%) of value previously retained may be reduced to five percent (5%) of value completed if the Contractor is making satisfactory progress as determined by the Owner and providing that there is no specific cause or claim requiring a greater amount to be retained. If at any time the Owner determines that satisfactory progress is not being made, the ten percent (10%) retention shall be reinstated for all subsequent progress payments made under the contract;
- c. The Engineer shall have the right to finally determine the amount currently due to the Contractor;
- d. Monthly progress payments will be made by the Owner on or before fourteen (14) calendar days after the receipt by the Owner of an approved estimate of the work completed;
- e. Contractor agrees that title to all materials incorporated in the work and stored at the site shall vest with the Owner upon receipt of the progress payment;
- f. The remainder of the Contract price, after deducting all such monthly payments, will be paid within sixty (60) days after acceptance of the completed work by the Owner; lien waivers from the Contractor and from all subcontractors covering work performed and materials supplied on the project must be supplied by the Contractor to the Owner prior to the release of retention or alternate surety.

7. The Contractor shall not assign this Contract in whole or in part without the written consent of the Owner.

AGREEMENT – Continued

- 8. All prior negotiations, proposals, and understandings of the parties are merged in and superseded by this Contract, and there is no verbal or written contract, agreement, or understanding of any kind whereby the terms and conditions hereof are or can be changed, varied, modified, or explained in any manner whatsoever.

 - 9. The Contractor shall not enter into any subcontract or issue any purchase order for the complete work, or any substantial part of the work, unless in each instance written approval have been given by the Owner. The Contractor shall be fully responsible to the Owner for the acts and omissions of the Contractor, subcontractors and all persons either directly or indirectly employed by them.

 - 10. The Contractor shall not employ illegal aliens in accordance with A.R.S. §34-301.
- IN WITNESS WHEREOF, the parties hereto have executed this instrument the day and year first above written.

CONTRACTOR

WITNESS OR ATTEST

Signature

Date

Name and Title

CITY OF WILLIAMS

Mayor

WITNESS OR ATTEST

Date

PAYMENT BOND

PROJECT NAME: Drill and Development of Production Well(s) for the City of Williams

PROJECT NUMBER: Well-2015-01

PURSUANT TO TITLE 34 CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES- (Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____ (hereinafter "Principal") as Principal, and _____ a corporation organized and existing under the laws of the State of _____ with its Principal offices in the City of _____ (hereinafter "Surety"), as Surety, are held and firmly bound unto the _____ (hereinafter "Obligee"), in the amount of _____ (Dollars) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated this _____ day of 2015, to in the City of Williams which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

Provided, however, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as a part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this ____ day of _____ 2015.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

PERFORMANCE BOND

PROJECT NAME: Drilling and Development of Production Well(s) for the City of Williams

PROJECT NUMBER: Well-2015-01

PURSUANT TO TITLE 34 CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES (Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____ (hereinafter "Principal") as Principal, and _____ a corporation organized and existing under the laws of the State of _____ with its Principal offices in the City of _____ (hereinafter "Surety"), as Surety, are held and firmly bound unto the _____ (hereinafter "Obligee"), in the amount of (Dollars).for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated this ____ day of 2015, to in the City of Williams which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

Now, therefore, the condition of this obligation is such, that if the principal faithfully performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of contract during the original term of the contract and any extension of the contract, with or without notice to the Surety, and during the life of any guaranty required under the contract, and performs and fulfills all of the undertakings, covenants terms, conditions and agreements of all duly authorized modifications of the contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, the above obligation is void. Otherwise it remains in full force and effect.

Provided, however, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this agreement.

PERFORMANCE BOND-Continued

The prevailing party in a suit on this bond shall recover as a part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this ____ day of _____ 2015.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

CERTIFICATE OF INSURANCE

PROJECT NAME: Drilling and Development of Production Well(s) for the City of Williams

PROJECT NUMBER: Well-2015-01

In accordance with the requirements of Subsection 103.6 Contractors' Insurance, in the Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction, having been adopted for this Project by the City of Williams, Arizona; this will certify that the individual, company, or corporation shown below has this insurance herein described in full force and effect.

All insurance policies or certificates shall include an endorsement providing for thirty (30) days prior written notice to the City Engineer of any cancellation or reduction of coverage. Liability Insurance policies or certificates shall name the City of Williams as an Additional Insured.

COMPREHENSIVE GENERAL LIABILITY

Combined single limit for Bodily Injury and Property Damage, in an amount not less than \$1,000,000 each occurrence \$2,000,000 aggregate

COMPREHENSIVE AUTOMOBILE LIABILITY

Combined single limit for Bodily Injury and Property Damage, in an amount not less than \$1,000,000

WORKMAN'S AND OCCUPATION DISEASE COMPENSATION

Statutory Minimum \$100,000

BUILDER'S RISK / COURSE OF CONSTRUCTION INSURANCE

Not less than full amount of Contract \$ _____

Project Name: _____ Signature: _____

Contractor: _____ Name _____

Insurer: _____ Policy Number(s): _____

Expiration Date. _____

Agency of Record: _____

Agency Address: _____

Authorized Signature: _____ Date: _____

SECTION 1 - GENERAL CONDITIONS

The work shall be performed in accordance with; the Construction Plans, this Contract document, the Maricopa Associations of Governments (MAG) Uniform Standard Specifications and Details for Public Works Construction -latest revision, and any Arizona Department of Transportation (A.D.O.T.) Standards that may be referenced on the Plans or in these Specifications.

Special Note - Plans shall govern where Plans and Specifications may disagree.

101 PRE-CONSTRUCTION CONFERENCE NOTICE

A Pre-Construction Conference will be held with the successful Contractor after the Notice of Award is issued. The date and time of the Conference will be agreed upon between the Contractor and the Engineer. The meeting will be held in the Council Chambers, 113 S. 1st Street, City Hall Building, Williams, AZ. 86046.

The purpose of the meeting is to outline specific construction items and procedures the City feels require special attention on the part of the Contractor. The Contractor may also present any variations in procedures that they feel may improve the workability of the Project, reduce the cost, or reduce inconvenience to the public.

The Contractor shall submit a written proposal at this conference outlining their intended plans for pavement replacement, maintaining continuous access to residences and businesses along the construction site, and traffic control.

102 PERFORMANCE OF WORK

All work covered by the Plans and Specifications shall be done in accordance with the latest and best-accepted practices of the trades involved. The Contractor shall use only skilled craftsmen experienced in their respective trades to prepare the materials and to perform the work.

103 INSPECTION

The City of Williams shall designate an Engineer, Consultant, or individual to inspect and oversee said work but may at any time substitute another Engineer, Consultant, or individual theretofore designated. The Contractor shall permit said Engineer, Consultant, individual, or any person or persons authorized by Owner, to visit and inspect said work at all times during its progress, and shall provide facilities for such inspection. If any work shall be covered up without approval of the Engineer, Consultant, or individual it must, if required, be uncovered for examination at Contractor's expense.

104 CONDEMNATION OF WORK

The Contractor at the expense of the Contractor shall immediately remove any work or materials condemned by the Engineer as inferior or not in compliance with the Contract, Specifications, and Plans. The Contractor shall promptly replace and re-execute his work in accordance with the Contract, Specifications, and Plans without any expense to the Owner. In addition, the Contractor shall bear the expense of making good all work of other contractors destroyed or damaged by such removal and replacement.

105 ACCEPTANCE OF WORK

No failure of the Owner during the progress of the work to discover or reject materials or work not in accordance with this Contract, Specifications, and Plans shall be deemed an acceptance thereof nor a waiver of defects therein, and no payment shall be construed to be an acceptance of work, or materials which are not strictly in accordance with the Contract, Specifications, and Plans.

106 DELAY OF WORK

Any delay in the performance of this Contract due to strikes, lockouts, fires, or other unavoidable casualties beyond the control of the Contractor and not caused by any wrongful act or negligence of the Contractor shall entitle the Contractor to an extension of time equal to the delay so caused, provided, however, that the Contractor shall notify the Owner in writing specifying such cause within twenty-four (24) hours after the occurrence thereof, and with the understanding that in the event such delay is caused by strikes, lockouts, or inability to obtain workmen for any other cause, the Owner shall have the right but shall not be obligated to complete the work on the same basis as is provided for by the following paragraph (contract violations).

107 CONTRACT VIOLATIONS

That in the event of any of the provisions of this Contract are violated by the Contractor or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate such Contract, and unless within five (5) days after the serving of such notice upon the Contractor, such violation shall cease and satisfactory arrangement for correction be made, the Contract shall, upon the expiration of said five (5) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and Surety shall have the right to take over and perform the Contract, provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the work and prosecute the same to completion by Contract for the account and at the expense of the Contractor and the Contractor and his Surety shall be liable to the Owner, for any excess cost occasioned by the Owner thereby, and in such event, the Owner may take possession of and utilize in completing the work, such materials, appliances and plant as may be on the site of the work and necessary therefore.

108 MATERIAL STORAGE

During the progress of the work, the Contractor shall arrange for office facilities and for the orderly storage of materials and equipment, including the erecting of any temporary structures required for such purpose at his own expense. The Contractor shall at all times keep the premises reasonably free from debris and in a condition which will not increase fire hazard. Upon completion of the work, the Contractor shall remove all temporary buildings, facilities, equipment, surplus materials and supplies belonging to the Contractor, and shall leave the premises clean, in good order, and ready to use by the Owner.

109 CONTRACTOR'S LIABILITY

The Contractor agrees to assume sole responsibility for any and all manner of claims, demands, liabilities, damages, costs and expense arising or accruing against the Owner, or chargeable against or secured by any lien on the Owner on which the aforesaid work is to be done, including any injury to any person whomsoever, or any damage to the property of the Owner or any other persons, or the violation of any law or ordinance or the infringement of any materials or labor for the work, and the Contractor agrees to reimburse the Owner for any amount which the Owner is compelled to expend in discharge of the liabilities herein assumed by the Contractor.

The Contractor accepts exclusive liability for any payments based on wages paid to employees of the Contractor or any subcontractor under any applicable unemployment compensation law, and will hold the Owner harmless against any liability on account thereof. The Contractor hereby certifies that all licensing fees or similar charges imposed by any applicable statute upon the Contractor, or upon the business covered by this agreement, have been fully paid.

110 INSURANCE

Before entering into this agreement, the Contractor shall furnish the Owner evidence satisfactory to the Owner that the Contractor is complying with the requirements of this Article with respect to insurance coverage. The Contractor shall procure, and maintain during the life of this Contract, such public liability and property damage insurance necessary to protect him and the Owner from all claims arising from operations under this Contract, whether such operations are the Contractor's or the subcontractors'.

Unless otherwise specifically required by the Special Provisions, the minimum limits of Public Liability Insurance shall be as follows:

Combined single limit for bodily injury and property damage, including Contractual Liability, in an amount not less than \$1,000,000 each occurrence and not less than \$2,000,000 aggregate.

Such policy shall not exclude coverage for the following:

- Injury to or destruction of any property arising out of the collapse of/or structural injury to any building or structure due to:

- ~ Grading of land, excavation, burrowing, filling, backfilling, tunneling, pile driving, cofferdam work, or caisson work; Moving, shoring, underpinning, raising, or demolition of any building or structure, or removal or rebuilding of any structural support thereof.
- ~ Injury to or destruction of wires, conduits, pipes, mains, sewers, or other Similar property, or any apparatus in connection therewith, below the surface of the ground, if such injury or destruction is caused by and occurs during the use of the mechanical equipment for the purpose of grading of land, paving, excavating, or drilling; or injury to or destruction of any property at any time resulting there from.
- ~ Injury to or destruction of any property arising out of blasting or explosion.
- Such policy shall name the Owner as an Additional Insured, or, alternatively, the Contractor shall provide an owner's protective liability policy with the Owner as Named Insured, and with a limit not less than \$1,000,000 for bodily injury and property damage liability combined.

Unless otherwise specifically required by the Special Provisions, the minimum limits for Automobile Liability Insurance shall be as follows:

- Combined single limit for bodily injury and property damage in an amount not less than \$1,000,000.
- Such policy shall name the Owner as an Additional Insured.

The minimum limits of coverage for **Workmen's and Occupation Disease Compensation** shall be the Arizona statutory limits. The Contractor shall show evidence of the coverage or authorized self-insurance.

When the project includes construction of a new or modification of an existing building, the Contractor shall obtain Builder's Risk /Course of Construction Insurance. Unless otherwise specifically required by the Special Conditions, the minimum limit of coverage shall be the full amount of the contract.

The Contractor shall give the Owner immediate written notice directed to the attention of the Owner's Insurance Division of each and every casualty arising from operations under this Contract and involving personal injuries and/or damages to property.

111 ALTERATIONS OF WORK

No changes or alterations in the work herein specified shall be made or permitted, except after an exchange of writings describing such changes or alterations and establishing the cost to or credit due the Owner by reason thereof with mutual acceptance finally evidenced by a formal change order issued by the Owner.

112 LABOR DEMONSTRATION

It is understood that the work covered by this Contract is for the Owner's business purposes and that any unfavorable publicity or demonstrations in connection with the work will react to the detriment of the Owner. To guard against any such detrimental reactions, it is agreed that in the event the performance of this Contract by Contractor shall result in any public demonstration or remonstrance on behalf of the laborers or organized labor in the vicinity of the Owner's premises whether such demonstration or remonstrance is in the form of picketing, posting of placards or signs, violence, threats of violence or in any other form, which in the Owner's judgment, might convey to the public the impression that the Owner or the Contractor or any subcontractor is unfair to laborers or to organized labor, the Owner shall have the right to terminate this Contract forthwith unless the Contractor shall have caused such demonstration or remonstrance to be discontinued within two (2) days after request of the Owner to do so.

In the event any such demonstration is attended by violence, the Owner may fix a lesser time within which discontinuance shall be accomplished. In the event of such termination, the Contractor agrees to remove from the premises within twenty-four (24) hours thereafter, all machinery, tools, and equipment belonging to it or to its subcontractors. All obligations or liabilities of the Owner to the Contractor shall be discharged by such termination, except the obligation to pay to the Contractor a portion of the Contract price representing the value based upon the Contract prices of labor and materials incorporated in the work and of materials stored on the site up to the time of such termination as established by the Owner less the aggregate of all previous payments, but subject to all of the conditions pertaining to payments generally as provided in the Agreement, Article 6 hereof.

113 PAYMENT TERMS

All payments will be mailed; no Contractor or Vendor will be allowed to pick up progress payments.. Final payment will not be released until an "Unconditional Waiver and Release on Final Payment" is received from all Vendors who have filed an Arizona Preliminary Twenty Day Lien notice with the City of Williams.

SECTION 2 - SPECIAL CONDITIONS

The work embraced herein shall be done in accordance with the requirements of the following:

- Maricopa Association of Governments (MAG), Uniform Standard Specifications and Details for Public Works Construction, 1998 edition;
- City of Williams Engineering Standards, most recent edition;
- Arizona Department of Health Services Engineering Bulletins:
 - # 8 Disinfection of Water Systems
 - # 10 Guidelines for the Construction of Water Systems
 - # 11 Minimum Requirements for Design, Submission of Plans and Specifications of Sewage Works
 - #12 Guidelines for Installation of Septic Tank Systems;
- U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices (MUTCD);
- American Water Works Association Standards, most recent edition. Modifications to the MAG Specifications are made in the Special Provisions and take precedence over the MAG Specifications as follows:
 - Where there is no conflict between MAG Specifications and the Special Provisions, the Special Provisions are to be construed as being additions to the MAG Specifications.
 - In cases of conflict between the MAG Specifications and the Special Provisions, the Special Provisions are to be construed as supplanting only the conflicting portions of the MAG Specifications.

201 DEFINITIONS AND TERMS

The work is to be performed for the City of Williams, located in Coconino County, Arizona. All references in the specifications to City or County officials, City Councils, or Board of Supervisors, shall be interpreted as if suitably modified so as to be appropriate to the City of Williams project.

202 ELIGIBILITY AND PREFERENCE

All Bidders shall furnish satisfactory evidence of the Bidder's competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the Bidder's past experience on similar work and, a list of equipment assigned to the project.

All Bidders shall furnish, if requested, the City of Williams with satisfactory evidence of the Bidder's financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the Bidder's financial resources and liabilities as of the last calendar year or the Bidder's last fiscal year. A public accountant shall certify such statement or report. At the time of submitting such financial statement or report, the Bidder shall further certify whether the Bidder's financial responsibility is approximately the same as stated or reported by the public accountant. If the Bidder's financial responsibility has changed, the Bidder shall qualify the public accountant's statement or report to reflect the Bidder's true financial condition at the time such qualified statement or report is submitted to the City of Williams.

Evidence of competency shall be submitted in a qualifications package, which shall accompany the Bidder's document.

Each bidder, contractor and subcontractor shall possess and maintain the appropriate contractor's license for the work included in this contract. The appropriate license shall be as required by the Arizona State Registrar of Contractors and as required by Arizona Revised Statutes Chapter 10, Title 32.

Unless specified otherwise in the Special Provisions for this contract, all bidders and prime contractors for public works construction shall hold and maintain the license appropriate for the work that each is proposed to provide under the terms of this contract.

203 CONTENTS OF CONTRACT DOCUMENT

The Plans, Specifications and other Documents designated in the Contract Documents shall be considered a part of the Contract whether attached or not.

The City of Williams reserves the right to refuse to issue or to accept a proposal form from a prospective Bidder should such Bidder be in default for any of the following reasons:

- Failure to comply with any pre-qualification regulations of the City of Williams, if such regulations are cited, or otherwise included, in the Proposal as requirement for bidding.
- Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force (with the City of Williams) at the time the City of Williams issues the Proposal to a prospective Bidder.
- Contractor has defaulted under previous contract(s) with the City of Williams.
- Record of unsatisfactory work from previous contracts.

In the case of conflict, the following order of precedence shall govern:

- Drilling Specifications
- Special Provisions
- General Provisions
- City of Williams Engineering Standards and Specifications
- MAG Standards and Specifications
- ADOT Standards and Specifications
- Manual of Uniform Traffic Control Devices

204 EXAMINATION OF PLANS, SPECIAL PROVISIONS, AND SITE OF WORK

Before submitting a Bid, each Bidder will, at his own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies, and obtain any additional information and data which pertain to the physical condition (surface, subsurface, and underground facilities) at or contiguous to the site or elsewhere which may affect the cost, progress, performance, or furnishing of the work, and any and all difficulties or restrictions relating to the performance of the work, and which Bidder deems necessary to determine its Bid for performing and furnishing the work in accordance with the time, price, and other terms and conditions of the contract documents.

Bidders are hereby advised that no subsurface investigations or borings for this project have been made at the specified production well location. General subsurface conditions from the previously drilled well designated as Rodeo Well, are included in Appendix C. The responsibility for evaluating the site for purposes of preparing Bids rests entirely with each Bidder, as he deems appropriate.

205 IRREGULAR PROPOSALS

Proposals shall be considered irregular for the following additional reasons:

- If the Proposal contains unit prices that are obviously unbalanced.
- If the Proposal is not accompanied by the proposal guaranty specified by the City of Williams.

The City of Williams reserves the right to reject any irregular Proposal and the right to waive technicalities for acceptance of Proposals, if such waiver is in the best interest of the City of Williams and conforms to local laws and ordinances pertaining to the letting of construction contracts.

206 DISQUALIFICATION OF BIDDERS

A Bidder shall also be considered disqualified and considered in default for any reason specified in Subsection 203.

207 SUCCESSFUL BIDDERS

The City of Williams shall provide three (3) sets of plans and Contract Documents at no cost. with the actual printing costs being charged to the Contractor for any additional copies.

208 REQUIREMENT OF CONTRACT BONDS

Performance and payment bonds shall conform to all statutory requirements of A.R.S. 34-222 and A.R.S. 34-223, as applicable.

209 SCOPE OF WORK

The project consists of the drilling and development of one or more production wells for the City of Williams to an estimated depth up to 4,000 feet below land surface. Sections 300 through 321 address the specific requirements for production well drilling and development. Note that there are no separate construction plans for the project. All bidder information is included in this contract document.

- Appendix A- Schematic and anticipated Lithologic description of **Fingers Crossed** Well No.1
- Appendix B - Map of general location of new well
- Appendix C - Schematic of nearby production well and anticipated lithological conditions

210 REQUIREMENT

The Contractor shall drill and develop a minimum of one (1) production well to a depth of up to 4,000 feet, collect lithologic samples, conduct geophysical logging, borehole stimulation in accordance with the requirements of the Contract Documents.

Time is of the essence; all work must commence immediately after award of contract and proceed continuously. A Notice to Proceed will be issued for the initial production well and for any additional production well authorized as noted above. All drilling, construction, development, and cleanup for each well shall be completed within one hundred twenty (120) days per well after the issuance of the corresponding notice to proceed. Mobilization of pump equipment must occur within seven (7) calendar days after completion of the production well.

In no event shall the work be suspended for the driller's convenience for a period greater than three (3) calendar days from the time drilling commences until the production well has been completed and developed.

Bidders are encouraged to submit multiple bid schedules giving the city all available drilling options. Bidder may propose modifications to all terms, conditions and drilling methods within these bid documents. The modifications must be attached referencing the section number. (Example 301 working hours).

The following definitions apply to these specifications:

Contractor: Drilling Company whose authorized representative(s) has signed the contract document.

Owner: City of Williams
113 S. First Street
Williams, AZ 86046
928-635-4451

Engineer: The individual or firm designated by the City of Williams.
c/o Brandon Buchanan
113 S. First Street
Williams, AZ 86046

211 COOPERATION WITH UTILITIES

The Contractor shall notify all utility companies and the City of Williams of his intent to begin work. In particular, the Contractor shall make use of the Blue Stake service by calling 1-800-782-5348 at least 3 working days before beginning work. The Contractor shall exercise all care to avoid damaging utilities whether shown on the plans, staked in the field, or not.

212 CONSTRUCTION DRAWINGS

The location of the Project, its general nature, extent, form and details of the various features of the work are shown in the Appendices located in the back of these Contract Documents.

213 SITE OF THE WORK:

The first well will be drilled at the location to be determined by the City of Williams. The sequence of subsequent wells, if any, will be determined during construction.

214 SITE INSPECTION

Prior to bidding and/or moving onto the project site, the Contractor shall visit and inspect site conditions and review maps of existing site and offsite pipeline routes and facilities delineating the Owner's property and right-of-way- lines.

215 SUBSURFACE GEOLOGY

A schematic diagram, indicating the formations anticipated to be encountered is presented as Appendix C of these Specifications. Many intersecting faults occur in the area, lost circulation conditions have been known to occur in ash and cinder zones in the basalt, solution features in the Kaibab Limestone, at the contact between the Toroweap Formation and the Coconino Sandstone and in the upper Supai Formation. Underlying the Supai Formation is the Redwall Limestone, Muav Limestone and other carbonate rocks, which is the primary source of ground water. Additionally lost circulation may occur in fracture zones within the carbonate rock. Drilling will terminate when the Bright Angle shale is encountered, which under lays the Red wall and Muav Limestone. Static water level is anticipated to be at a depth between 2,700 and 2,800 feet below land surface.

The above-generalized description of subsurface geologic conditions in the area is intended to provide the Contractor with a background of the subsurface conditions that have been encountered in other wells in the region. It is not intended to indicate that the same conditions will be encountered in the well(s) to be drilled herein. The Contractor shall provide adequate equipment and methods for properly drilling the well(s) under any conditions that could reasonably be expected.

216 QUALIFICATIONS OF THE BIDDER AND BIDDER'S PROPOSED APPROACH TO THE WORK

The Bidder shall prepare and submit with its bid a package describing the Bidder's qualifications to undertake the proposed work. The qualifications package will include at least the items called for in this section, together with such other information, as the Bidder may deem pertinent to demonstrating its qualifications.

The Bidder shall be licensed to drill water wells in the State of Arizona. In the last five years, the Bidder shall have been engaged in the business of successful construction of large capacity water wells.

The Bidder will submit the following information concerning its qualifications with its bid, in order for the bid to be considered:

- Name and address of Contractor.
- Number of years the Contractor firm has been in existence.
- The Contractor's Arizona Registrar of Contractors license number and AD WR Well Driller's license number.

In addition, the Bidder shall submit with its bid a list describing wells, which have been drilled with similar dimensions and in similar subsurface conditions as those herein. The Bidders ability to show experience on similar projects will be a significant factor in the City's decision about whether and to whom to award this contract. The list shall include the following information in the order shown:

- Contact name, position, address, and phone number;
- Well designation;
- Dates project started and completed;
- Casing diameters and depths;
- Drilling methodology utilized;
- Types of lithology penetrated;
- Well production capacity

In submitting its Bid, the Bidder thereby certifies that the equipment, personnel, and procedures he is proposing for the work are adequate to successfully complete the well as specified herein.

A written form of this certification must be included in the qualifications package.

The Bidder shall prepare and submit with its bid a narrative description of the proposed approach to the work. This narrative shall include, at a minimum, the following:

- Information about the type of equipment to be used;
- Value engineering or cost saving suggestions;
- A description of innovative aspects to the Bidder's approach to the work;
- A description of various drilling techniques to be used;
- A statement as to the Bidder's ability to guarantee completion within the time allowed;
- Any other information the Bidder deems pertinent to the City's evaluation of the Bidder's proposal.

The City will evaluate the entire package, including bids, according to the following formula:

Price 40 points

Experience, reputation and references 20 points

Capabilities 20 points
(Including equipment, crew, and corporate financial strength)

Approach, 20 points
(Including value-engineering suggestions, technical merit, proposal quality)

Total Evaluation Points 100 points

It is the Owner's intention to award a contract for the work described herein to the Bidder, which, in the Owner's sole opinion, ranks highest according to the rating system described above. The Owner's decision will be final, and the Owner reserves the right to reject all proposals received and to waive any irregularity or informality in any or all of the proposals received.

The Owner reserves the right to disqualify any Bidder who, in the opinion of the Owner, does not unequivocally demonstrate the experience, equipment, personnel, and procedures necessary for successfully completing the work.

217 SERVICES PROVIDED BY THE CITY OF WILLIAMS

The City of Williams will, at no expense to the Contractor, furnish the following services:

Site Preparation: The City of Williams will clear, level and construct a 150-foot by 150-foot well pad area. Any additional work will be the Contractor's responsibility.

Water Supply: The Owner will provide a potable water supply for construction purposes. Watersupply for construction of the well(s) will be available from a nearby fire-hydrant.. The Contractor will provide all labor and material to install, operate, monitor and remove a temporary water pipeline to convey the water to the well site. This water line shall be constructed and maintained by the Contractor to The City of Williams requirements. In no case will the temporary water line be permitted to be a continuing obstruction to traffic or detrimental to public health and safety. The water supply is limited to 15,000 gallons per day, subject to change by the City of Williams based on availability.

Surveying and Water Quality Testing: The City of Williams will perform surveying for the purpose of well site location, legal descriptions, and water quality testing for this project. The Contractor shall fully cooperate with the individuals performing these services.

Drilling Materials Disposal Area: Drill cuttings, excess filter pack, sand, or similar materials shall be disposed offsite at a disposal area provided by the City of Williams.

218 CONSTRUCTION MANAGEMENT

The City of Williams will provide construction management services for this project. The City of

Williams Engineer will perform on-site monitoring of construction activities, review Shop Drawings, review Contractor pay requests, interpret the plans and specifications, modify the well design as required, and process Change Orders, in addition to other services that may be required during this project. All references to Engineer, Project Engineer, Project Hydrologist, Project Manager, Inspector, or Field Engineering Inspector in these Contract Documents shall mean City of Williams representatives or designee.

219 TIME FOR COMPLETION

The Owner will provide the Contractor a Notice to Proceed within ten (10) calendar days upon receipt by the Owner from the Contractor of the executed Contract and all required insurance and bonds. All drilling, construction, testing, and clean-up for each well shall be completed within the number of calendar days after the date indicated in the Notice to Proceed as follows:

- In no event shall work be suspended for a period greater than three (3) working days from the time drilling begins until the well has been completed or the decision has been made to abandon it in accordance with these specifications.
- If the Owner exercises its right to add additional production wells to the contract by Change Order, the time allowed for each will be One Hundred and Twenty (120) Calendar Days, including demobilization from one well site and remobilization at the next well site.
- If a hole is abandoned, all abandonment work, including clean-up, shall be completed within thirty (30) days from the date of the documentation from the Owner to the Contractor instructing the Contractor to commence with well abandonment procedures.
- Well construction operations may be conducted twenty-four (24) hours per day. Noise Control will be required for the initial site. Drilling operations may be conducted without noise abatement from 7:00 am to 7:00 pm. Drilling operations outside those hours may require placement of noise abatement blankets or barriers, at the Owner's discretion. The City may require noise control measures at other sites at its discretion, in response to resident complaints.

220 LIQUIDATED DAMAGES

Contractor shall pay to the Owner liquidated damages as determined from the MAG standards, not as a penalty, but as liquidated damages if he fails to complete the work or specified parts of the work within the time or times agreed upon. The periods for which such damages shall be paid shall be the number of calendar days from the agreed date or dates of completion as contained in the Contract, or from the date of termination of any extension of time approved by the Owner, to the date or dates the Engineer certifies completion of work or specified parts of the work to the Owner. The Owner may deduct the amount of said damages from any monies due to the Contractor.

The said amount is fixed and agreed upon by and between the Contractor and the Owner because

of the impracticality and difficulty of fixing and ascertaining the actual damages that the Owner would sustain. Said amount is agreed to be the amount of damages that the Owner would sustain. All times specified in the Contract Documents are hereby declared to be of the essence.

221 PERMITS

The Contractor shall comply with all Federal, State, and local laws, ordinances, or rules, and regulations pertaining to the performance of the project. The Contractor shall, at his own expense, procure all permits, certificates, and licenses required of him by law, for the execution of this project and shall pay all taxes properly assessed against his equipment or property used in connection with the work. Within ten (10) calendar days of the commencement date stated in the Notice to Proceed, the Contractor shall submit a complete list of all permits he will obtain indicating the agency required to grant the permit and the expected date of issuance of the permit.

The Contractor shall bear the cost of inspection required by agency or utility from which the permit was obtained, as well as all costs related to traffic control or safeguarding of persons or property required by said agency or utility.

The Contractor shall obtain a City Business License upon award of the Contract and shall conform to the provisions of the license issued.

Copies of all permits, certificates, and licenses obtained by the Contractor shall be submitted by the Contractor to the Engineer prior to the commencement of the work at the site.

The City of Williams shall issue a no-fee permit for work on City property for this contract. Additional Sales Tax Exempt Items include: Steel Casing, Steel Screen, Steel Conductor Casing, Filter pack, Neat Cement and Casing Guides.

222 POWER, AND COMMUNICATIONS

Power: The Contractor shall provide all necessary power required for the work, and shall provide and maintain all power lines required to perform the work in a safe and satisfactory manner. All work conducted at night or under conditions of deficient daylight shall be suitably lighted to ensure proper work and to afford adequate facilities for inspection and safe working conditions.

Communications: The Contractor shall provide and maintain at all times during the progress of the work, not less than one telephone in good working order at the work site. A cellular phone is acceptable, but must be operational at all times that the work site is manned. The Contractor shall be responsible for all long distance charges and other fees associated with maintenance of the telephone.

The Owner shall provide and the Contractor shall maintain at the site one two-way radio on the City of Williams Radio Network, Utilities Band, for emergency communications. In case of emergency, the two-way radio shall be used to contact City of Williams officials.

Access to the site shall be limited to the City of Williams representatives or other individuals having reasonable business there. The Contractor and the City of Williams shall be responsible for enforcing limited access to the site.

223 SITE PREPARATIONS, SITE AND FACILITIES MAINTENANCE AND DRAINAGE

Site Preparation: Prior to mobilization of the Contractor's equipment to the site, the City of Williams will clear, level and construct a 150-foot by 150-foot well pad area. Any additional work on the well pad area will be the Contractor's responsibility. Existing trees, shrubs, and other natural growth outside of the well pad area shall not be destroyed, and the Contractor for the protection thereof, as are necessary, shall take such measures.

Site and Facilities Maintenance: The Contractor shall at all times maintain the site in a neat and orderly condition, free from trash and waste construction materials caused by the Contractor's personnel or work. Unattended construction materials and equipment shall be stored in a manner such that they do not constitute fire hazards or become a nuisance due to the forces of nature such as wind, rain, or snow, or to personnel moving about the well site. The Contractor shall maintain the site so that there is sufficient access by the Contractor's personnel and other authorized personnel to all areas of the site. The Contractor shall coordinate his efforts with any representatives of the City of Williams or other contractors, which may be on the site performing work for the Owner.

Road Maintenance and Dust Abatement: The City of Williams shall be responsible for road maintenance during well construction and testing activities. Road maintenance shall consist of snow removal, grading, maintenance of proper drainage pathways, and application of cinders, as necessary, to maintain a reasonably smooth clear road to the project site. The City of Williams shall also be responsible for dust abatement operations.

Weather Conditions: The well site(s) are located at elevations of approximately 6,700 feet above mean sea level. The Contractor shall be aware that adverse weather conditions may occur at and in the vicinity of the well site during the work, especially during the winter months.

Temporary Work Stoppage: If the Contractor by no fault or action of its own is required by the Owner to temporarily stop the work, (i.e. due to site inaccessibility), the Contractor will be compensated by the Owner, at the contract rate for standby time. If such a stoppage occurs, the Contract Completion Time will be extended an amount equal to the total amount of stoppage.

Drainage: The Owner shall provide sufficient grading around the site to provide reasonable drainage such that runoff will not overrun the site.

Sanitary Restroom Facilities: The drill site shall be equipped with sanitary restroom facilities provided by the contractor and serviced at least once a week.

Security: The Contractor shall provide necessary security and fencing for equipment and

materials stored on site.

224 TIME AND NOTICE OF CRITICAL EVENTS:

The Contractor shall coordinate with the City of Williams regarding drilling and testing schedules. The Contractor shall be responsible for notifying the Engineer in a timely manner, at least 24 hours in advance of reaching critical events such as geophysical logging, plumbness and alignment testing, and commencement of production testing. The City of Williams will define for the Contractor at the Pre-Construction Conference the events that are considered critical and shall promptly notify the Contractor should there be a change in the proposed schedule.

225 CONTRACTOR SUBMITTALS

- **General:** All Contractor submittals shall conform to the requirements of Section 105.2 of the MAG Specifications.
- **Cutting Sample Collection:** The cuttings sample collection method shall be approved by the City of Williams. The Contractor shall satisfactorily demonstrate that the proposed method of obtaining samples shall produce adequate representative samples. The first sample shall be taken at 10 feet below existing land surface, additional samples will be collected every 10 feet in drilling depth. Provisions shall be made to obtain a record of circulation time and probable depth of the formation from which the cuttings are derived. Each sample shall be clearly labeled to indicate well number, date, and depth from which the sample was taken and stored in a well-protected place .
- **Geologist:** During drilling operations, a time/depth log in the form of a Geologist shall be employed by the Contractor to record penetration rate. In addition, a daily detailed driller's log on a AIDC/API form, shall be maintained and a copy provided to the City of Williams at the end of each shift's operations. The log shall include number of feet drilled, type of bit being used, number of hours on the job, number of hours shut down due to breakdown or maintenance, feet of casing installed, and all other such pertinent data as may be requested.
- **Records Required by Law:** The Contractor shall maintain all records required by governmental agencies having jurisdiction, shall submit such records to them as may be required. Two copies of all such records shall be furnished to the City of Williams.

226 MATERIALS DELIVERY, STORAGE AND PROTECTION OF MATERIALS

All materials shall be delivered in an undamaged condition and stored to provide protection against damage. All defective or damaged materials shall be replaced with new materials.

227 CONTRACTOR'S EQUIPMENT

The Contractor's equipment shall be clean, well maintained, and in good operating condition when delivered to the site and during the entire operation. The equipment shall be of adequate size, strength, horsepower, and capacity for the project and shall be of the type successfully utilized for the construction of similar or larger wells within the last five years. All equipment

shall be provided with safety devices as required by governmental authorities having jurisdiction.

228 MOBILIZATION AND OPERATING REQUIREMENTS

The Contractor shall mobilize its equipment and personnel to effectively commence its drilling operations within the time limit specified and similarly promptly remove equipment no longer needed at the well site upon completion of the work. Mobilization shall include the obtaining of all permits; moving onto the well site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the work.

Mobilization/demobilization shall include the following principal items:

- Additional site leveling and site preparation, if required.
- Moving onto the well site of all Contractors' plant and equipment required for completion of the Work.
- Rig and equipment set-up.
- Installing temporary construction power, wiring, and lighting facilities at the beginning of the work.
- Establishing a fire protection system. This system shall include outdoor fire and smoking restrictions during periods of high fire danger and establishment of an emergency means to extinguish small fires.
- Providing a field office on-site, level, climate controlled, with suitable office furniture and connected to temporary power.
- Providing both an operating telephone and operational two-way radio on-site as defined in Section 222.
- Providing on-site sanitary facilities and potable water facilities.
- Arranging for and the erection of Contractor's work and storage yard.
- Obtaining all required permits.
- Having all OSHA required notices and establishment of safety programs.
- Having the Contractor's superintendent at the job site full time.
- Submitting initial submittals, including schedule.

Demobilization shall include rig-down and removal of such facilities as established during mobilization as described above.

Operating Requirements: All equipment shall be carefully maintained during the Contractor's operations and any damage to the well or surrounding property and/or facilities of any nature due to the Contractor's operations shall be repaired or replaced at the Contractor's expense. Drip pans or plastic sheeting with containment shall be placed beneath all of the Contractor's motorized equipment. In case of fuel or oil spills, the Contractor shall immediately affect adequate clean-up procedures and any necessary remediation.

229 MEASUREMENT AND PAYMENT

Scope: Payment for the various items of the bid schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the Work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).

No separate payment will be made for any item which is not specifically set forth in the Contractor Bid Schedule, and all costs therefore shall be included in the prices named in the contractors Bid Schedule for the various appurtenant items of work.

Measurement for payment for the lump sum and each items will be based upon the completion of the work as a lump sum unit, complete, as specified, and as indicated on the drawings.

Payment for completion of the lump sum an each items will be made at the price named in the Bid Schedule, which price shall constitute full compensation for completing said work.

Payment for Mobilization/Demobilization: The Contractor's attention is directed to the condition that no payment for mobilizations, or any part thereof, will be approved for payment under the Contract until all mobilization items listed in Section 228 have been completed as specified. After these items have been completed or established for the initial well site, a partial payment in the amount of 60% of the lump sum Mobilization/Demobilization cost, as stated in the Bid Schedule, shall be paid to the Contractor by the City of Williams. Payment for the remaining 40% of the lump sum mobilization/demobilization cost shall be paid to the Contractor by the City of Williams when the Contractor demobilizes the last of the associated equipment from the well site(s).

Price Items Based Upon Time:

- Measurement of time will be recorded by the hour with one-half hour intervals as the smallest unit of time credited to the Contractor. Fractions of an hour less than one-half hour, but exceeding one-quarter hour, will be considered to be one-half hour. The items recorded for payment shall commence when the installed equipment is placed in operation, under direction of the Engineer, and shall end when stopped under direction of the Engineer.
- Payment will be made at the contract price per hour listed in the Contractor's Bid. No time will be recorded for delays resulting from:
 - ~ Equipment stuck or dropped in the hole;
 - ~ Equipment breakdown;

- ~ Arranging major drilling, pumping, or testing apparatus;
- ~ Tool trip time;
- ~ Time while waiting for delivery of materials;
- ~ Failure to conduct the operations in a diligent and workmanlike manner by which the desired results could ordinarily be expected.

No payment shall be made to the Contractor for pumping tests interrupted by malfunctioning or failure of pumping equipment.

230 STAND BY TIME

Measurement for payment for standby time will be based upon the number of hours the Contractor is prevented from working for the sole convenience of the City of Williams after the drill rig is set-up and ready to drill. This shall not include equipment down time, equipment setup time, tool trip time, time while waiting for delivery of equipment or materials, time Contractor is stopped for not meeting specifications, or weather delay time. During periods where the Contractor has not identified the working day to be 24 hours, no more than 8 hours of standby time can accrue per 24-hour period. All standby time must be pre-approved by the City of Williams. Hours of operation limited as a result of complaints about noise will not be the occasion of payment for standby time.

Payment for standby time will be made at the unit price per hour named in the Bid Schedule, which shall constitute full compensation for equipment and labor. Payment for the standby time of the rig and crew will be made for standby time when the Engineer requests that the operating personnel stay on site. For all other standby time, the rate for the rig only will be paid.

231 UNIT PRICE ITEMS BASED UPON FOOTAGE

Measurement of the footage for linear foot items will be recorded by the foot with one foot as the smallest unit of length credited to the Contractor. Fractions of a foot less than one-half foot will be considered to be zero. Fractions of a foot equal to or greater than one-half foot will be considered to be one foot. Payment will be made at the contract price for linear foot items as presented in the Contractor's Bid.

232 UNIT PRICE ITEMS BASED UPON VOLUME

Measurement of volume for cubic foot or cubic yard items will be recorded by the cubic foot or cubic yard, as applicable. If the units listed for a particular item in the Bid Schedule are cubic feet, all measurements will be recorded in cubic feet with one cubic foot as the smallest unit of volume credited to the Contractor. If the units listed for a particular item in the Bid Schedule are cubic yards, all measurements will be recorded in cubic yards with one cubic yard as the smallest unit of volume credited to the Contractor. Fractions of a cubic foot or cubic yard, as applicable, less than one-half will be considered to be zero. Fractions of a cubic foot or cubic yard equal to or greater than one-half will be considered to be one cubic foot or one cubic yard, as applicable. Payment will be at the contract price listed in the Bid Schedule.

233 UNIT PRICE ITEMS BASED ON WEIGHT

Measurement for unit price items based on weight will be recorded by the ton with one ton as the smallest unit of weight credited to the Contractor. Fractions of a ton less than one-half will be considered to be zero. Fractions of a ton equal to or greater than one-half will be considered to be one ton. Payment will be made at the contract price per ton listed in the Bid Schedule.

234 FIRE PREVENTION

The Contractor shall comply with the rules and regulations of the USPS and the City of Williams Fire Department to prevent fires within and around any work area. The Contractor shall have available at all times shovels, axes, fire extinguishers and other tools as necessary for suppression of fires. The cost of all damages and fire suppression costs by other entities will be the responsibility of the Contractor if a fire is started by the Contractor's operation.

235 FINAL CLEANUP

The Contractor shall thoroughly clean the site after completion of its operations. All excess drilling fluids, drill cuttings, filter pack, debris, and other materials utilized during the construction shall be removed and properly disposed of by the Contractor. Any work excavations shall be filled, compacted, and graded and the site returned to a condition equal to or better than its condition at the commencement of work.

The Contractor shall promptly remove its equipment, temporary facilities, and materials and leave the site in a condition acceptable to the City of Williams. The Contractor shall repair any damage to property or facilities caused by its operations prior to final acceptance of the work.

SECTION 3 -METHOD OF WELL CONSTRUCTION

Drilling on the initial production well shall commence within fourteen (14) calendar days after notification by the City of Williams, unless prior arrangements have been made with the City, or liquidated damages shall be assessed in the amount defined in MAG, for each calendar day delay until drilling commences. No material associated with the construction of the production well shall be purchased until notification to commence work on the production well has been issued. The Contractor shall furnish all labor, equipment, materials, and services for the performance of all work required for the construction of a production well .

The Contractor shall submit a site plan outlining, but not limited to, access, trenching, grading, and placement of equipment, location of sanitary restroom facilities, excess water drainage, safety and hazardous materials handling procedure to the City of Williams. Said site plan shall be approved by the City of Williams, prior to the commencement of work.

The Contractor shall submit a list of all Arizona licensed drillers, supervisors, certified welders and personnel to the City of Williams. Said list shall be approved by the City of Williams prior

to the commencement of drilling activities. The City of Williams reserves the right to have any Contractor employee removed from site if deemed to be in the City's best interest for the timely and successful completion' of this project. The Contractor is responsible for maintaining an updated list of personnel and phone numbers; in addition, all site personnel shall attend an orientation meeting at the City of Williams's facilities.

The Contractor must provide documentation of adequate equipment capacity to safely handle all casing loads. Additionally, the drill string integrity shall be certified within the last twelve (12) months, by a non-destructive test. Test results shall be submitted for approval prior to commencement of work.

301 WORKING HOURS

The Contractor shall have access to the sites twenty-four (24) hours a day, seven (7) days a week to allow around-the-clock bore hole construction. The Contractor will be responsible for securing the site at all times and shall notify the designated representative of the City of Williams forty-eight hours (48) in advance of any site activity outlined in the construction schedule. Any delay or break in construction longer than eight (8) hours requires notification of the City of Williams representative to coordinate rescheduling of activities.

302 SITE PREPARATION

The Contractor shall furnish all labor, equipment, materials, and services to convey wastewater associated with drilling and aquifer testing from the drill site. The Contractor will minimize or eliminate silt and sand debris in all wastewater leaving the site. It is the sole responsibility of the contractor to ensure that all wastewater leaving the site is properly contained and poses no problems to public and/or personal properties.

The Contractor at his sole cost and expense shall provide a portable field telephone at the well location. Prior to the commencement of drilling, the Contractor shall prepare a telephone contact list including, but not limited to, the well site portable telephone number, Contractor's office number and twenty-four (24) hour contact number(s) for drilling supervisor(s).

Electrical service will not be supplied by the City of Williams at any site. The construction site shall be equipped with a minimum lighting of five (5) foot candles of illumination for all night activities.

303 DRILLING FLUID CONTROL PROGRAM

The Contractor shall submit to the City of Williams, prior to the commencement of drilling for approval, a drilling fluid control program and Material Safety Data Sheets (MSDS) for all additives anticipated to be used in the drilling of the production well. No material may be added unless approved by the City of Williams, including sand or native cuttings placed in the borehole to control loss circulation. The methodology for measurement of the fluid properties must be approved by the City of Williams. The Contractor is responsible for providing the necessary equipment to conduct measurements and record fluid properties when made, following accepted procedures and a copy supplied to the City of Williams. A certified mud engineer must be available for consultation and daily testing.

Below grade (excavated) mud pits can be used for drilling fluids, based on an arrangement approved by the City of Williams. All drilling fluid must be contained in the excavated pits only. If equipped with a shale shaker, or other fluid cleaning device, the drilling fluid must be able to bypass the cleaning equipment during periods of loss circulation material usage. The mud pits must be of adequate capacity to prevent excessive sand content in the drilling fluid, especially during drilling of the primary ground-water production zones.

The Contractor shall provide adequate access to the cuttings and rig the flow of cuttings from the borehole to allow safe sampling by the City of Williams. Actual arrangement and operation of facilities must be identified in the drilling fluid control program and site plan. If mud pits are used, the Contractor shall stockpile excavated material. Upon completion of the project, Contractor shall excavate and dispose of all residual mud, waste, fluids, and fine-grained material in a manner approved by the City of Williams. The mud pits shall be backfilled with previously stockpiled material to original lines, grade, and density of existing ground. If necessary, small quantities of off-site granular material (2-inch minus) will be used to complete backfill and compaction operations.

304 LOST CIRCULATION PLAN

The Contractor shall submit a Lost Circulation Plan to the City of Williams for approval and must be in place prior to the commencement of drilling operations. The Lost Circulation Plan shall include procedural steps to be followed by the Contractor according to increasing severity of lost-circulation conditions encountered, including identification of specific types and approximate amounts of lost-circulation materials to be added to the drilling fluid, if necessary. The Plan should address procedures to be followed and specific materials to be used in order to reestablish circulation. In developing the Lost Circulation Plan, the Contractor shall include the most cost-effective alternatives and procedures to rectify lost circulation conditions.

In the event that lost circulation conditions are encountered during drilling operations, the Contractor shall take immediate remedial action to restore circulation of the drilling fluid. Only those methods and materials pre-approved by the City of Williams shall be employed to restore circulation. The Contractor shall immediately inform the representative of the City of Williams each time lost circulation conditions are encountered.

If borehole problems, such as collapsing materials or lost circulation zones, are encountered during drilling operations above the water table, the Contractor may seal-off the problem-drilling zone by grouting. For this procedure the Contractor shall:

- Trip the bit out of the hole;
- Install a tremie pipe near the bottom of the hole;
- Inject, from the bottom up, a sufficient volume of quick setting, non-bentonite neat cement or cement grout, sealing material to extend above the problem zone,
- Allow adequate time for the cement to set-up;
- Trip the bit back into the hole; and
- Drill through the cement plug.

Grouting of problem zones during drilling shall include furnishing all labor, equipment, materials, and services for injecting cement grout, grout setting time; bit tripping time; and drilling back through the grout plug. Grouting to seal off problem zones during drilling shall not be conducted below the water table without the express approval of the City of Williams.

305 RECORDS AND SAMPLES

The Contractor is to provide and maintain, but not limited to, an accurate log of tool string components, dimensions and penetration rates with land surface as the designated measuring point. The Contractor must ensure that each drilling shift maintains a consistent weight on the bit while drilling to ensure that the borehole alignment is within the specified limits. The drilling rig shall be equipped with a functioning, calibrated weight indicator and Geolograph to be used during all drilling and reaming operations to monitor bit weight, drill string weight and penetration rates. Additionally, the drilling rig shall have a functioning wire-line unit, equipped with an accurate numerical depth counter for sounding the entire borehole depth. The sounder wire and bottom weight shall be completely drillable in case of loss in the well bore. The Contractor must also furnish and supply a suitable fluid level depth indicator to monitor actual fluid level during drilling and development to total depth.

The Contractor shall submit at the end of each shift two (2) copies summarizing daily activities on an IADC-API Official Daily Drilling Report Form. The daily drilling report shall include the following items as a minimum:

- Beginning and ending depths during drilling or lengths of casing installed;
- Downtime;
- Log of formations penetrated;
- Geolograph log;
- Exact lengths of drill pipe or casing inserted in the borehole;
- Number and weight of drill collars;
- Description of drill bits and the bottom hole assemble;
- Periodic recording of weight of drill string, bit weight, and bit rotation rate;
- Penetration rate;
- Complete drilling fluid properties;
- Approximate volume of water, types and amounts of drilling fluid additives added
- Times and depths at which circulation is lost;
- Time at which Engineer was notified of lost circulation conditions;
- Action taken to resume circulation;
- Types and volumes of lost circulation materials added to the drilling fluid;
- Times and depths at which circulation is resumed;
- Total depth

The contractor will drill the hole such that the pump and motor and all necessary accessories can be easily installed and removed from the hole without damage. The contractor shall be responsible to insure that all borehole sizes are large and plumb enough to permit free casing installation, as no additional payment will be made for re-reaming or re-running casing.

The Contractor shall file all reports and records as required with the Arizona Department of Water Resources. Two (2) copies of all documents filed with the Arizona Department of Water Resources, shall be submitted to the City of Williams.

306 CASING AND SCREEN MATERIALS

All physical tests on the blank casing and screen shall be performed, in accordance with the appropriate ASTM standard. The Contractor shall furnish the City of Williams, without cost, three (3) copies of the laboratory analyses of its physical properties as tested by the manufacturer at said point of last loading.

The Contractor shall have on location at the well site, the required casing and screen prior to reaching the completion depth of the specified material. The casing sections will be placed on timbers for inspection and approval by the City of Williams.

All casing shall be manufactured in sections not less than twenty (20) feet in length containing only one longitudinal seam parallel to the casing axis and not more than one circumferential seam in four (4) feet. All longitudinal and circumferential seams shall be automatically welded by an approved shielded arc process which protects the weld metal from the atmosphere while cooling and which assures full fusion with the parent metal and complete penetration. Approved methods for welding shall be employed to insure complete penetration. Contractors may substitute treaded casing with approval from the City of Williams.

Any casing or screen that is bent, damaged or has been dropped will be rejected and removed from the site. Casing tallies of all pipe onsite will be recorded and delivered to the designated representative of the City of Williams prior to installation.

307 CONDUCTOR CASING

The described conductor casing shall be set in the borehole not less than twenty-eight (28") inches in diameter. The casing bottom should be set at two hundred feet (200') below land surface or until competent Basalt is encountered. The City of Williams reserves the right to require the conductor casing to be set at a lesser or greater depth depending on hydrogeologic conditions encountered during drilling.

Two hundred feet (200') of twenty inch (20") minimum nominal diameter, LC Steel (66 lbs/ft) or a City of Williams approved equivalent conductor casing shall be installed in the production well(s) and fabricated of a minimum of .312 inch thick steel plate conforming to the physical and chemical properties of the standard specifications for "Electric-Fusion (ARC) Welded Steel Pipe (NPS in four (4) inches and over)." Specification of steel casing must be provided to the City of Williams for approval prior to installation. The sections of the conductor casing shall be welded longitudinally with automatic equipment by a process, which provides a ductile weld of the same strength as the parent material.

The conductor casing shall be equipped with three (3) centralizers equally spaced circumferentially on the outside near the bottom to insure centering of the conductor casing in the borehole. The centralizers shall be fabricated of the same material as the conductor casing. The centralizers shall extend three (3) inches away from the outer face of the conductor casing. Centralizers shall be sufficiently strong and rigid so that they cannot become distorted as the casing is lowered into the borehole.

The ends of all casing sections shall be furnished with factory installed collars of the same thickness, physical, and chemical properties as the corresponding casing sections or shall have factory beveled, squared ends suitable for butt welding.

308 SANITARY SEAL

Prior to grouting, the conductor casing shall be securely anchored to prevent rising under the grouting pressure. The grouting shall completely seal the conductor casing against infiltration of all fluids. Grouting shall be completed within eight (8) hours to ensure a homogenous seal. After the grouting operation is completed, the grout shall be left undisturbed for a minimum of twenty-four (24) hours.

The annular space between the conductor casing and the borehole shall be grouted under pressure. Grout shall consist of, a slurry of sand and Portland ASTM Type II cement. Grout shall not be more than one (1) hour old from time of on-site arrival until pumped into the annulus. Grout shall be pumped through a steel tremie line, placed in the annulus between the conductor casing and the borehole, extending at or near the bottom of the conductor casing. Minimum diameter of the steel tremie line for grouting shall not be less than two (2) inch I.D. To insure no plugging exist the crew shall inspect the tremie line prior to installation. Grouting shall continue until the annular space between then conductor casing and borehole is filled to approximately five (5) feet below land surface.

309 INTERMEDIATE CASING MINIMUM 14" INCH DIAMETER

After installing the conductor casing and the sanitary seal, the Contractor shall drill an eighteen inch (18") nominal diameter borehole, capable of installing a minimum fourteen inch (14") nominal diameter casing.

A caliper log as defined in Section 403 and a deviation survey as defined in Section 404 will be conducted in the borehole prior to the installation of the casing. LC Steel (57 lbs/ft) or a City of Williams approved equivalent casing, shall be installed in the borehole and fabricated from a minimum of one-half (1/2) inch thick steel plate conforming to the physical and chemical properties of the standard specifications for "Electric-Fusion (ARC) Welded Steel Pipe (NPS in four (4) inches and over)." Specification of steel casing must be provided to the City of Williams for approval prior to installation. The sections of the casing shall be welded longitudinally with automatic equipment by a process, which provides a ductile weld of the same strength as the parent material.

The annular space between the intermediate casing and the borehole shall be grouted under pressure. Grout shall consist of neat cement or a slurry mixture of sand and Portland ASTM Type II cement. Grout shall not be more than one (1) hour old from time of on-site arrival until pumped into the annulus. Grout shall be pumped through a steel tremie line extending at or near the bottom of the casing. Minimum diameter of the steel tremie line for grouting shall not be less than two (2) inch I.D. To insure no plugging exist the crew shall inspect the tremie line prior

to installation. Grouting shall continue until the annular space between the intermediate casing and borehole space is filled to approximately five (5) feet below land surface.

The ends of all casing sections shall be furnished with factory installed collars of the same thickness, physical, and chemical properties as the corresponding casing sections or shall have factory beveled, squared ends suitable for butt welding.

310 PRODUCTION BOREHOLE

After installation of the 14” nominal diameter casing to an approximate depth of 2900’ (as determined by the City) the Contractor shall furnish all labor equipment, material and services to drill a minimum ten inch (10”) nominal diameter borehole to a depth of up to four thousand (4,000) feet below land surface. During the drilling of the production borehole strict adherence to the approved drilling fluid control program shall be maintained. Penetration rates in portions of the Lower Supai formation, Redwall and Muav Limestone, may be five (5) feet per hour or lower. The production borehole will terminate prior to the Bright Angel Shale being encountered, at the discretion of the City. The Bright Angle Shale may be a potential source of poor water quality, and exceeding Safe Drinking Water Act standards. If encountered, the Bright Angle Shale may need to be cemented off to prevent introduction of the poor quality ground water into the well. After total depth has been reached geophysical logging as defined in Section 4 will be conducted.

311 BOREHOLE STIMULATION (OPTIONAL)

After completion of the production borehole to total depth and geophysical logging as described in Section 4, a drillable inert containment vessel containing approximately five hundred (500) pounds of eighty (80) percent nitro gel, shall be inserted down hole to a predetermined depth and detonated to stimulate the borehole. This procedure induces and enhances fracturing within the borehole, which may increase the specific capacity of the well. The charges will be configured to detonate horizontally into the formation. A minimum of five (5) intervals will be selected for borehole stimulation. Borehole stimulation intervals will be selected from the borehole geophysics as identified in Section 4 and approved by the City of Williams.

After completion of borehole stimulation, the Contract shall furnish all labor, equipment materials and services to clean out the borehole.

312 PRODUCTION SCREEN AND CASING (OPTIONAL)

After the borehole stimulation and clean out is complete, install up to 1080' feet of ten inch (10") inch I.D. well screen casing conforming to the physical and chemical properties of the standard specifications for "Corrosion Resistant, High-Strength Low Alloy Well Casing" ASTM Grade B with the following additions: The steel from which the casing is manufactured shall be 0.312 inch wall thickness HSLA Steel (35lbs/ft) or a City of Williams approved equivalent. The screen openings shall be machined made, horizontal to the axis of the casing and of louver form with the aperture facing downward, designated full-flo, with a slot size of 0.080-inches by 2.50". The well screen shall have three (3) centralizers equally spaced circumferentially from near the base of the casing and every eighty 80 feet thereafter. Centralizers shall be sufficiently strong and rigid so that they cannot become distorted as the casing is lowered into the borehole.

The final twenty feet of casing (3970'-3990' or as otherwise designated by City) shall be 10" x .312" blank casing, as shown in design.

The casing shall not be supported from the bottom and shall be fitted with a cement plug to seal out potential poor quality ground water. The casing shall project one (1) foot above the finish ground elevation.

All welding shall be by the shielded arc method and shall conform to the AWS D1.1. "Structural Welding Code." Qualification of welders shall be in accordance with the "Specification for Standard Qualification Procedure" of the A WS. Welding electrodes shall meet the requirements of A WS D 1.1 and shall be compatible with the base metal. Welding shall be accomplished in two passes, unless an alternate method is approved by the City of Williams. The welds shall be capable of developing the full strength of the base metal. Welding on circumferential seams shall be performed simultaneously on opposite sides of the casing. However, if only one welder is employed, the casing shall be tacked at eight points spaced equidistant around the circumference of the casing prior to welding to prevent distortion.

The ends of all screen and casing shall be furnished with factory-installed collars of the same thickness, physical, and chemical properties as the corresponding screen or casing sections.

313 DIFFERENTIAL FLUID COMPENSATOR (OPTIONAL)

To minimize the potential collapse of the blank casing above the screened interval, perforated sections termed, Differential Fluid Compensators (DFCs) will be installed at intervals selected by the City of Williams. The DFCs will be constructed from the ASTM A606 Type 4 material and potentially occur from a depth above three thousand (3,000) feet.

314 REJECTION OF BORE HOLES

If the City of Williams determines that, for reasons beyond the control of the Contractor, it is necessary to stop drilling or the bore hole is lost before the objective or desired depth is reached, and further attempts to save or complete the bore hole are not practical, the bore hole shall be ordered abandoned by the City of Williams. The Contractor shall plug and abandon the borehole in accordance with Arizona Department of Water Resources regulations. The Contractor shall be reimbursed for the footage drilled and other costs incurred and for moving to an alternate location.

If the City of Williams determines that the borehole is lost due to negligence, incompetence, or malpractice on the part of the Contractor or his personnel, or to the use of defective or unsuitable equipment, he shall immediately notify the Contractor in writing of his decision and order the borehole abandoned, and the Contractor shall not be paid for any footage drilled or any other operations performed in the abandoned borehole and shall be responsible for replacing any lost casing or screen in accordance with these specifications.

If a borehole does not meet the requirements set forth herein in all Sections, it shall be considered an abandoned bore hole and the Contractor shall not be paid for any footage drilled or any other operations performed in the abandoned borehole. If the Contractor fails to drill a borehole to the depth ordered by the City of Williams within the scope of the contract, the borehole shall be declared abandoned. The Contractor, at his own expense, will plug and abandon the borehole in accordance with Arizona Department of Water Resources regulations. The Contractor will drill a new borehole at an alternate site in the immediate area as approved by the City of Williams.

SECTION 4- GEOPHYSICAL LOGGING

The Contractor shall perform all work and furnish all labor, materials, and equipment required to conduct the geophysical logging of the production well as specified herein. Results of said logs will be provided to the City of Williams in digitized format and hard copy.

The geophysical logging will be provided by Southwest Exploration Services, LLC, 25811 S. Arizona Avenue, Chandler, AZ 85248, phone 480-926-4458 or approved equal. The Contractor must notify the City of Williams 24 hours prior to conducting all geophysical logging, so that a representative may be onsite at all times. No **standby time is associated with geophysical logging**. After completion of borehole stimulation all logs identified in sections 401 and 402 will be conducted.

401 RESISTIVITY PROFILE

A resistivity profile shall be run from an estimated total depth of 4000 feet below land surface up to an approximate depth of 3,000 feet below land surface. The resistivity profile shall consist of a spontaneous potential log, dual induction log, lateral log and a focus resistivity log consisting of a laterolog or guard log. For the induction log and lateral log a minimum standoff distance of 1.5

inches must be utilized and a maximum standoff distance of 2.5 inches must be available upon request.

402 ADDITIONAL LOGS

The remaining logs will be run from an estimated total depth of 4000 feet below land surface up to an approximate depth of 3,000 feet below land surface, and consist of a natural gamma, spectra gamma, bore hole compensated sonic or acoustic, U.S. NRC exempt neutron moisture log, temperature and fluid resistivity. The temperature log shall consist of a temperature profile and differential temperature. An Idronaught water quality profile containing fluid resistivity, conductivity, pH, salinity, pressure, Oz redox/reduction and a flow survey to detect fluid movement and migration shall be conducted within the borehole.

403 CALIPER LOG

A caliper survey using a caliper with a minimum of three (3) arms shall be made from an estimated total depth of 4,000 feet below land surface up to a depth of 3,000 feet below land surface in the production borehole. The caliper shall be capable of reaching one and one-half (1.5) times the borehole diameter. Calibration of the caliper tool shall be based on the inside diameter of the ten (10) inch production casing and the thirty-six (36) inch conductor casing.

404 VERTICAL DEVIATION LOG

Vertical deviation logs will be run from total depth of the borehole to land surface. The tool shall be capable of measuring drift angle and direction, along with the dogleg deviation severity and direction, on a north south and east west coordinate system. The accuracy of the measurements shall be one (1) degree for inclination (drift angle); two (2) degrees for azimuth (drift direction) and four inches per one hundred (100) feet for true horizontal bore hole location at depth. A City representative must be onsite when the survey is made.

405 DOWN HOLE VIDEO

A color down hole television video scan shall be made along the full depth of the cased production well to inspect the condition and location of the blank casing and well screen. All attempts shall be made by the Contractor to provide a clear video log. Acceptance of this log is at the discretion of the City of Williams. A representative of the City of Williams must be present during the video scan and a right angle lens must be available for use at the direction of said representative. A DVD of the inspection scan shall be provided to the City of Williams.

SECTION 5- WELL DEVELOPMENT AND HYDROLOGIC TESTING

The Contractor shall furnish all, on site lighting, labor, equipment, materials, associated hardware and services for the performance of all work relative to the development and testing of the production well. Prior to the test pump installation, a pump performance curve and a drawing of the discharge configuration must be submitted to the project Hydrologist for approval.

The Contractor shall submit an updated schedule of activities for hydrologic testing and notify the project Hydrologist forty-eight (48) hours prior to the initiating of the well development and test pump. The project Hydrologist shall determine the actual starting time for the well development and test pump.

501 PUMP INSTALLATION AND REMOVAL

The Contractor shall furnish all labor, equipment, materials, and services for the performance of all work relative to the installation, operation and removal of a submersible pump, supplied by the City of Williams, to and from a depth of three thousand eight hundred (3800) feet below land surface. The contractor shall supply J-55 Range II column pipe (diameter to be determined) with buttress thread for pump installation. The pump shall be of sufficient size and design to produce a variable pumping rate of one hundred (100) gpm to four hundred (400) gpm to develop and conduct aquifer tests of said well.

The pump must be equipped with a seal of sufficient size to allow back spinning of the shaft during well development and the installation of a check valve will **NOT** be allowed in the column so that the specified well developmental can occur.

In addition the test pump must be equipped with a transducer and airline supplied by the pump manufacturer to accurately collect, monitor and record water levels. All water level data shall be supplied to the Project Hydrologist in an acceptable form.

502 DISCHARGE PIPE SPECIFICATIONS INSTALLATION AND REMOVAL

The Contractor shall furnish all labor, equipment, materials, and services for the performance of all work relative to the installation and removal of the discharge pipeline. The discharge pipeline shall be of sufficient size and length to conduct water away from the test-pumping unit to a point approved by the City of Williams.

In addition the Contractor shall provide a Rossum sand tester with a minimum of four (4) threequarter (3/4) inch valved outlets, at approved points in the discharge line for sand testing, water sampling and pressure monitoring

- Discharge from the well shall be in compliance with the provision of the Clean Water Act.
- Water quality parameters will be monitored by the City of Williams and are to include pH, temperature and electrical conductivity.
- All permits required for discharge, shall be obtained by the City of Williams prior to the commencement of any discharge.

503 FLOW METER INSTALLATIONS AND REMOVAL

The Contractor shall furnish all labor, equipment, materials and services relative to the installation, operation and removal of an electromagnetic flow meter to accurately measure the discharge flow rate. Prior to installation of the electromagnetic flow meter the Contractor shall supply all factory calibration data to the City of Williams. The flow meter must be installed per the manufacture specifications with a minimum of ten (10) pipe diameters between the meter and any flow altering obstruction. An additional metering device shall be installed as back up, should a failure occur to the electromagnetic flow meter.

504 GENERATOR

The Contractor shall furnish all labor equipment and materials to operate a 1000-kilowatt (kW) generator to power the submersible pump supplied by the City of Williams.

505 WELL DEVELOPMENT

The Contractor shall thoroughly develop the well in accordance with AWWA Standard A100-84, Section 9 as directed by the City of Williams. Development is complete at the satisfaction of the Project Hydrologist, when all drilling fluid is removed from the water producing zones. It is anticipated that the pumping rates will vary from one hundred (100) gpm to a maximum estimated rate of four hundred (400) gpm, depending on the performance of the aquifer.

Well development is accomplished by pumping the well for short periods of time to remove drilling fluid and formation material from the borehole at various rates, then allowing water contained in the pump column to flow back into the formation. This surging of the well flushes the drilling fluid out of the well bore and assists in cleaning up the discharge water. Application of chemicals to assist in removal drilling fluid may need to occur at this time. Sodium Acid Pyro Phosphate (SAPP) is one the most type of additive used. Contractor shall supply the mixing tank for application of chemicals into the well.

Developmental pumping is optimally accomplished by surging the well for 12 hours then terminating pumping, and allow the well to recover overnight. Developmental pumping needs to occur during daylight hours. The initial pumping rate is anticipated to be at 100 gpm. Upon successful completion of developmental pumping production testing will commence.

506 PRODUCTION TESTING

The production testing is to start a minimum of twenty-four (24) hours after the completion of well development or when the aquifer has stabilized as determined by the Project Hydrologist.

507 STEP DRAW DOWN TEST

Upon completion of development pumping, and after a minimum shutdown period of twenty (24) hours, the Contractor shall perform a step draw down test on the production well. The test shall include pumping the well at a sufficient number of rates, from one hundred (100) gpm up to maximum rate sustainable by the aquifer; to determine the shape of the draw down curve. The Project Hydrologist prior to testing will determine the rates and time intervals for each step test. Pumping shall continue at each rate for a sufficient length of time to bring about a relatively steady water level in the well. If the pump motor is not capable of maintaining a steady, consistent speed or if the pump or engine fails to operate for any period longer than **five (5) minutes** during the step draw down test, the test shall be repeated on the following day at the Contractor's expense. Upon shutdown of the pump at the end of the test, the well will remain undisturbed for not less than twenty-four (24) hours or until the aquifer has returned to static as determined by the Project Hydrologist.

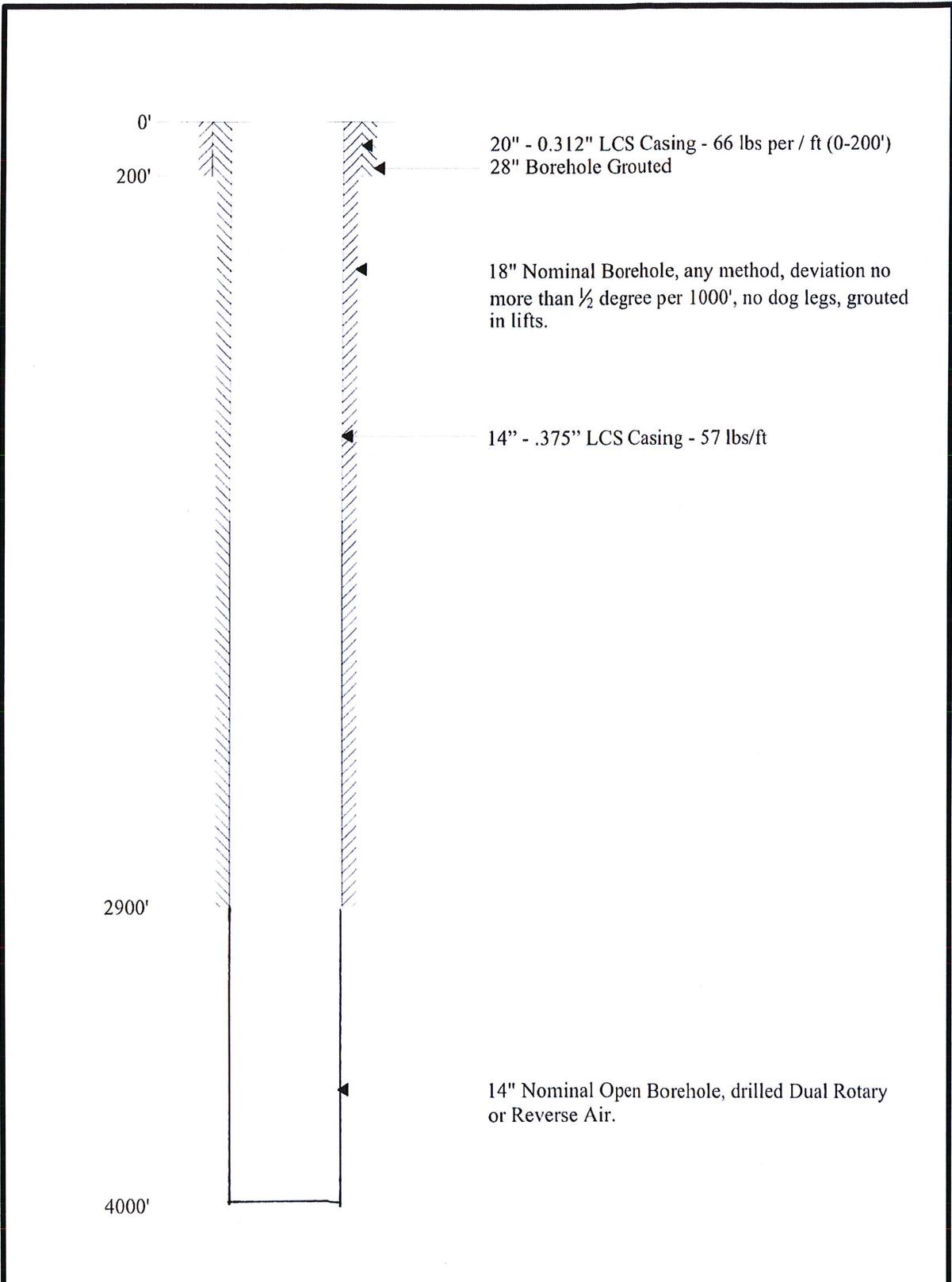
508 CONSTANT RATE TEST

After completion of the step draw down test, a constant rate production test will be conducted for a minimum of seventy-two (72) hours at a rate specified by the Project Hydrologist. The Project Hydrologist, based on the observed aquifer response will determine the actual duration of the constant rate test. The constant rate test must be concluded between Monday through Thursday morning to allow water quality sampling by the Project Hydrologist and proper shipping of the samples to the laboratories. If the pump motor is not capable of maintaining a steady, consistent speed or if the pump or engine fails to operate for any period longer than **five (5) minutes** during the constant rate test, the test shall be repeated on the following day or when the well has returned to static at the Contractor's expense. Upon shutdown of the pump at the end of the test, the well will remain undisturbed for not less than twenty-four (24) hours or until the aquifer has returned to static as determined by the Project Hydrologist. The Project Hydrologist will coordinate scheduling of tests, Contractor will supply personnel to operate equipment and perform draw down, recovery, and discharge measurements when the Project Hydrologist is not present.

509 RECORDS

The Contractor shall submit prior to the start of development pumping a tally of the pump column and the actual pump depth. At the end of each shift, the Contractor shall submit two (2) copies on an approved form summarizing daily activities, which shall include, but not be limited to, meter readings, static and pumping water levels, pumping rates, and any other information designated by the City of Williams.

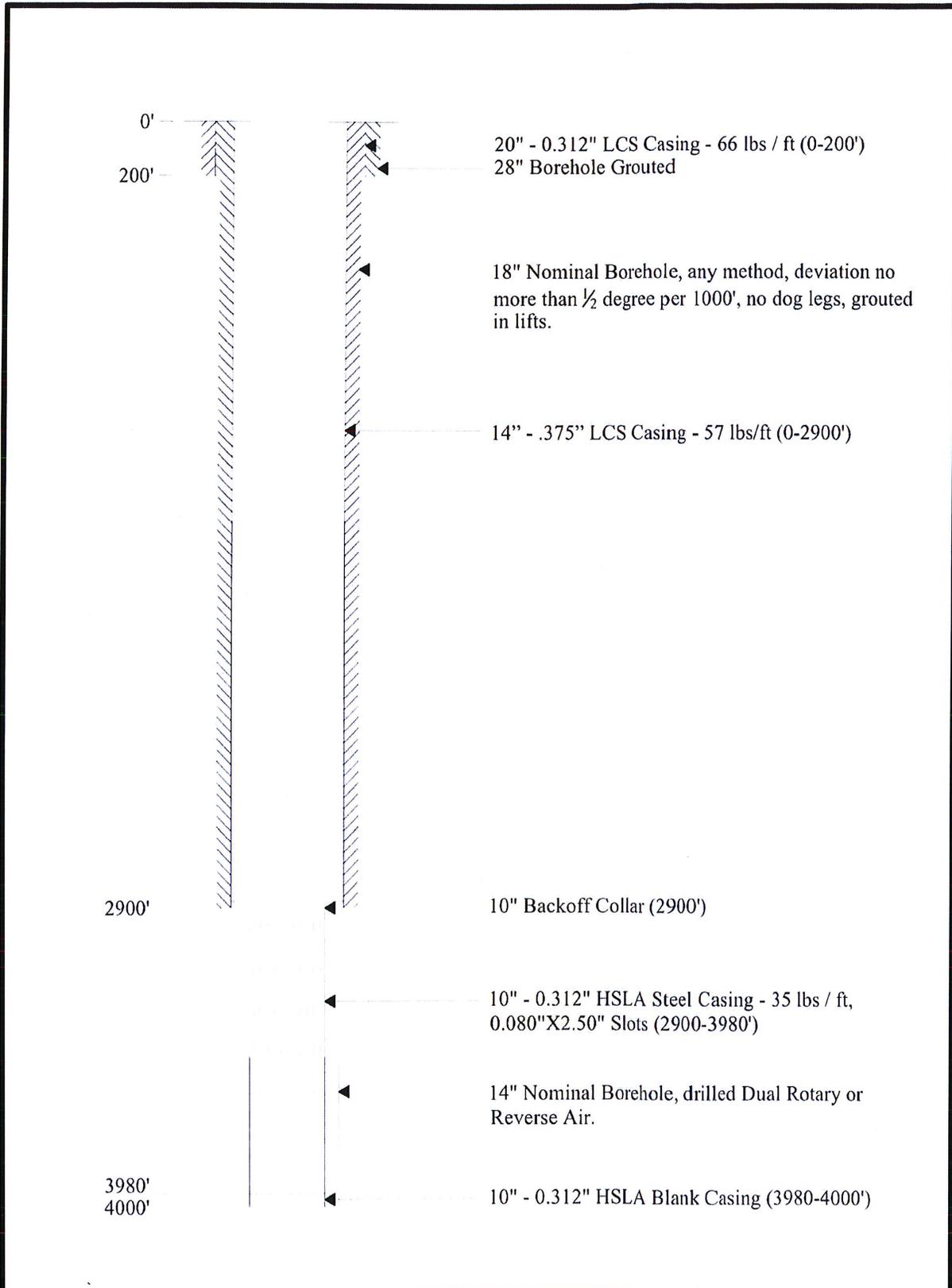
Appendix A (Open Borehole)



Conceptual Well Design, Open Borehole
City of Williams, Arizona

Figure #

Appendix A (Optional Casing)



Conceptual Well Design, Slotted Casing
City of Williams, Arizona

Figure #

Appendix B

Approximate Site 1: Latitude: N 35° 15' 47.1" Longitude: W 112° 11' 19.1"

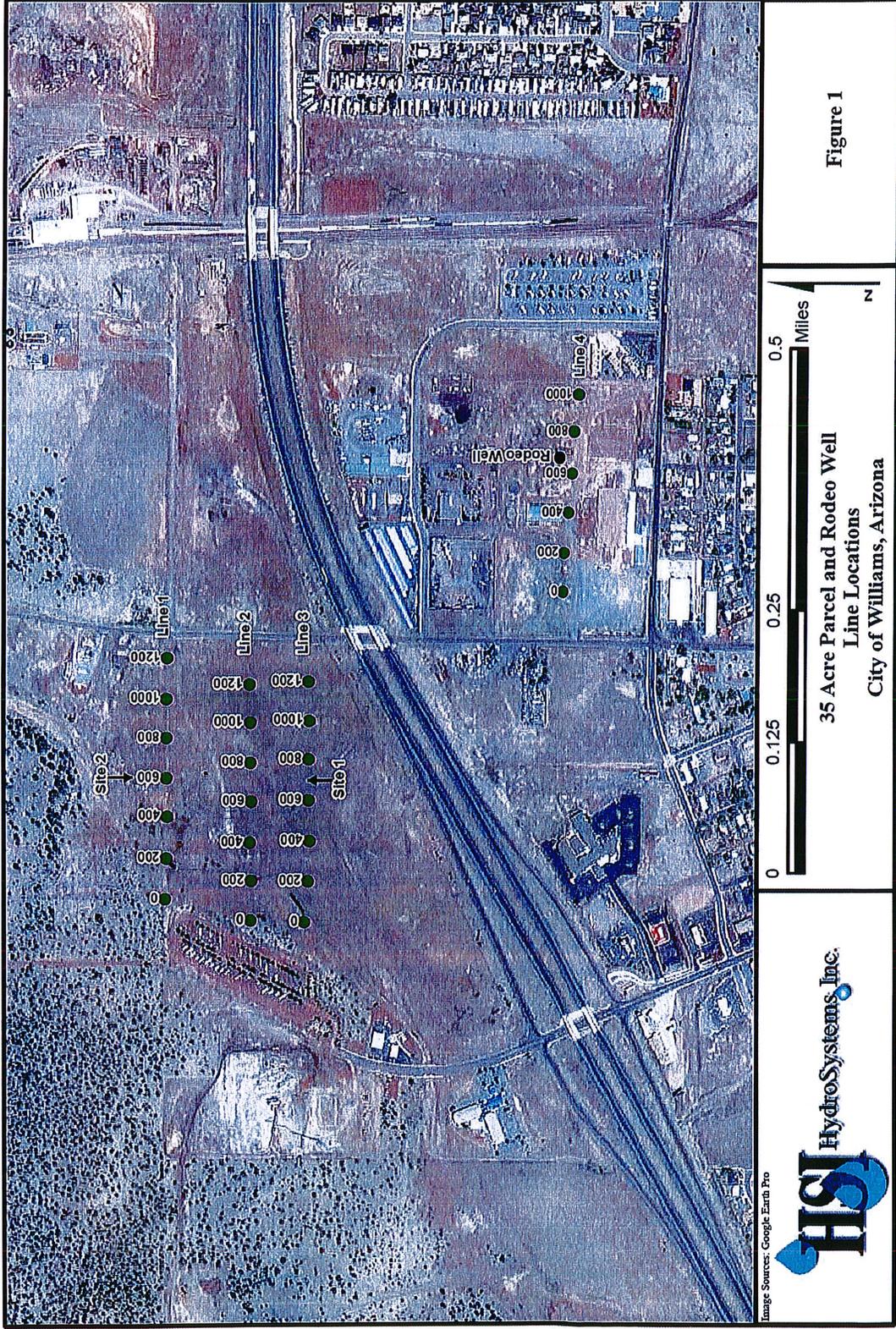


Figure 1

35 Acre Parcel and Rodeo Well
Line Locations
City of Williams, Arizona



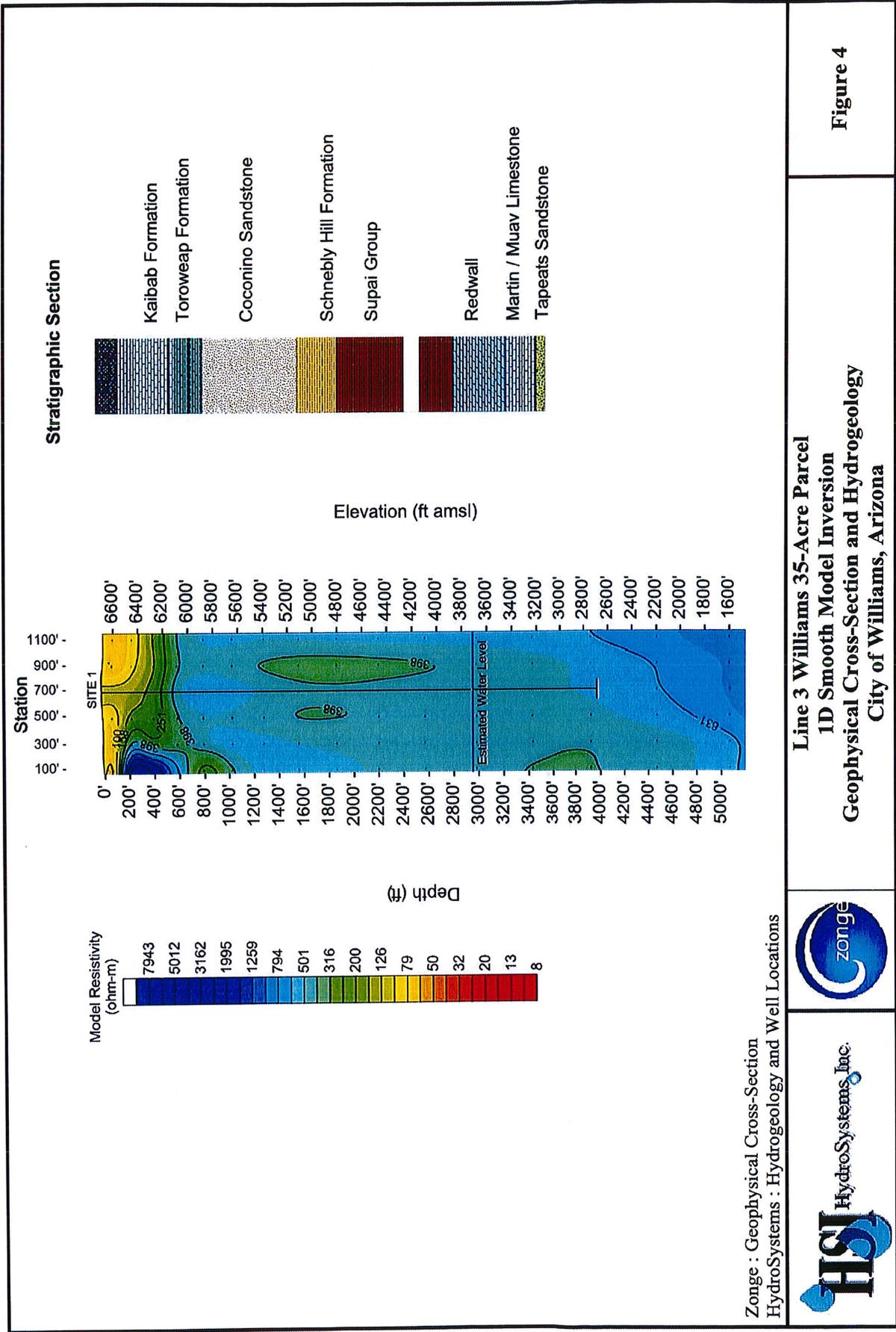


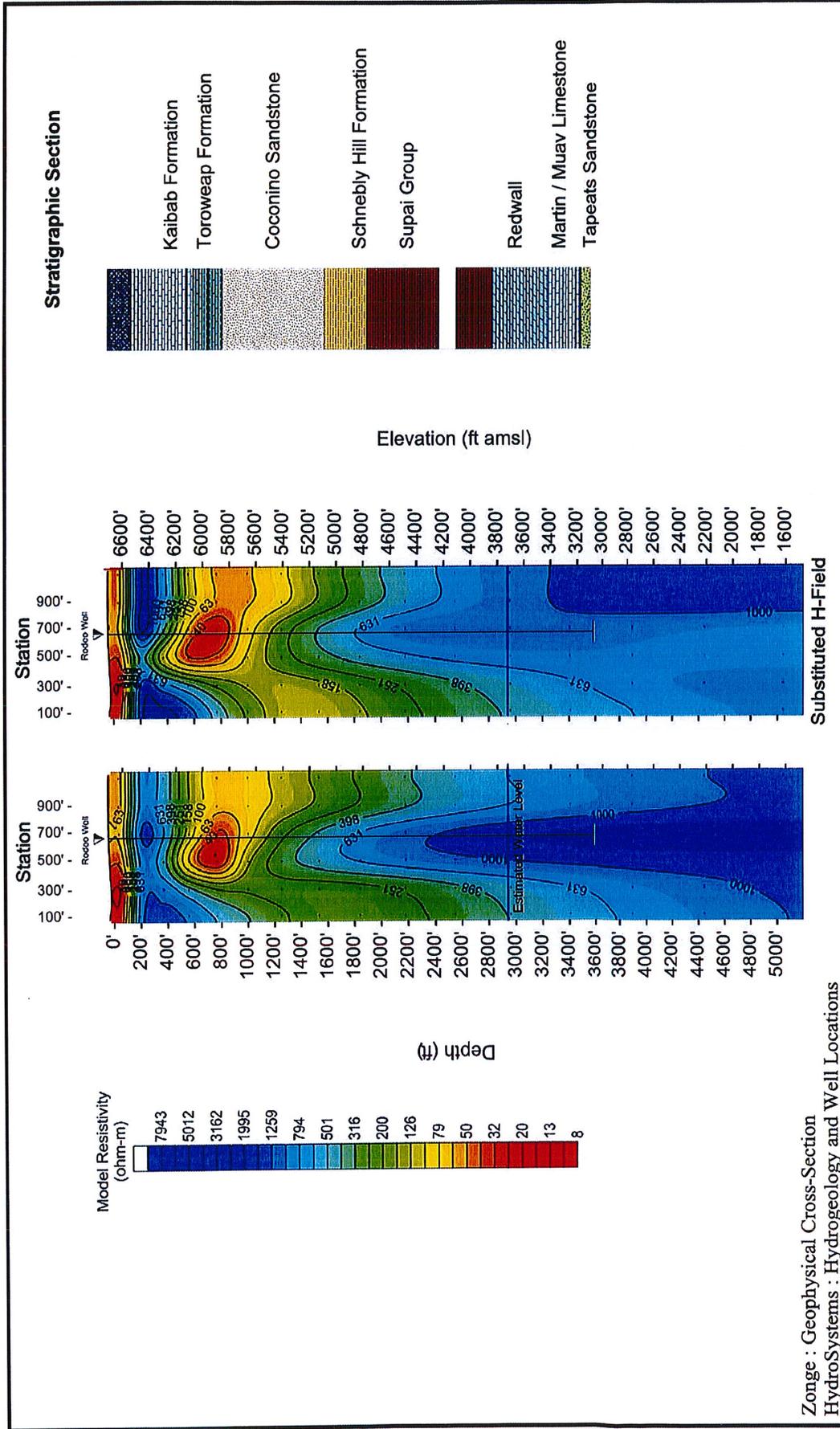
Figure 4

Zonge : Geophysical Cross-Section
HydroSystems : Hydrogeology and Well Locations



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Appendix C



Zonge : Geophysical Cross-Section
HydroSystems : Hydrogeology and Well Locations



Line 4 Williams Rodeo Well
1D Smooth Model Inversion
Geophysical Cross-Section and Hydrogeology
City of Williams, Arizona



Figure 5