

CONTRACT DOCUMENTS FOR
FOUR WELL REHABILITATION PROJECT

NEWBURY WELL
1000 EAST 7800 SOUTH WELL
9800 SOUTH 2300 EAST WELL
8200 SOUTH 700 EAST WELL

PROJECT #: 4119

JUNE 2019

OWNER

Jordan Valley Water Conservancy District
8215 South 1300 West
West Jordan, Utah
(801) 565-4300

ENGINEER

CRS Engineers
4246 South Riverboat Road
Salt Lake City, Utah 84123
(801) 359-5565

TABLE OF CONTENTS

<u>Bidding Documents</u>	<u>Page</u>
Notice Inviting Bids.....	A-1
Instructions to Bidders.....	B-1
Bid	C-1
Bid Bond.....	D-1
Information Required of Bidder	E-1
 <u>Contract Documents</u>	
Agreement.....	F-1
Performance Bond	G-1
Payment Bond.....	H-1
Notice of Award.....	I-1
Notice to Proceed.....	J-1
Payment Application and Certificate	K-1
Change Order	L-1
Contractor's Certificate of Substantial Completion.....	M-1
Contractor's Certificate of Final Completion.....	N-1
Consent of Surety for Final Payment	O-1
Affidavit of Payment.....	P-1

GENERAL CONDITIONS OF THE CONTRACT

Article

1 - Definitions	1-1
2 - Preliminary Matters	2-1
3 - Contract Documents: Intent, Amending, Reuse.....	3-1
4 - Availability of Land; Physical Conditions: Reference Points	4-1
5 - Bonds and Insurance	5-1
6 - Contractor's Responsibilities.....	6-1
7 - Other Work	7-1
8 - Owner's Responsibilities	8-1
9 - Engineer's Status During Construction	9-1
10 - Changes in the Work	10-1
11 - Change of Contract Price.....	11-1
12 - Change of Contract Time.....	12-1
13 - Warranty and Guarantee; Tests and Inspections; Correction, Removal, Or Acceptance of Defective Work.....	13-1
14 - Payments to Contractor, Liquidated Damages and Completion	14-1

GENERAL CONDITIONS OF THE CONTRACT

15 - Suspension of Work and Termination.....	15-1
16 - Miscellaneous	16-1

SUPPLEMENTAL GENERAL CONDITIONS

<u>Article</u>	<u>Page</u>
17 - General	17-1
18 - Amounts of Liquidated Damages, Bonds, and Insurance	18-1
19 - Physical Conditions and Weather Delays	19-1
20 - Subcontract Limitations.....	20-1
21 - Miscellaneous	21-1

TECHNICAL SPECIFICATIONS

<u>Section</u>	<u>No. of Pages</u>
DIVISION 1 – GENERAL REQUIREMENTS	
01 02 50 - Measurement and Payment.....	16
01 11 00 - Summary of Work	6
01 74 15 - Mobilization / Demobilization / Cleanup	4
WELL REHAB	
22 11 23 - Deep Well Vertical Turbine Pump, Motor and Appurtenances	6
33 01 22 - Water Well Rehabilitation	10
33 01 25 - Initial Well Redevelopment	4
33 20 22 - Install Development Pump Equipment	2
33 20 26 - Step-Rate Drawdown Test	2
33 20 28 - Constant-Rate Discharge Test	4
33 20 30 - Video Camera Survey	2
33 20 61 - Disposal of Drilling Fluids, Cuttings and Pumped Water	4
FIGURES	
10 th & 78 th Well	2
98 ^h and 23 rd Well	2
8200 S 700 E Well	2
Newbury Well	2

APPENDIX

- Appendix A – Salt Lake County Noise Pollution Ordinance
- Appendix B – BMP'S – Water Discharges from Water Well Drilling and Operation

END OF SECTION

NOTICE INVITING BIDS

PROJECT NAME: Four Well Rehabilitation Project

DESCRIPTION OF WORK: The pumping equipment at the Newbury Well, 10th & 78th Well, 98th & 23rd Well, and 8200 S 700 E Well have experienced mechanical and/or age related failure and are currently in need of replacement and well rehabilitation. Work at each site shall include but is not limited to the following: removal of the motor and pump, inspection of pump motor and column pipe, well video survey, sounder tube and pressure transducer replacement, well bailing, redevelopment using the dual swab method and/or chemical development, supply and installation of a new vertical turbine pump or submersible pump and motor, well disinfection, testing, restoration of the site and facility to its preconstruction condition, and performing all Work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents .

DISTRICT WEB SITE AND PLANHOLDERS LIST

Prospective bidders must register at the District's web site (www.jvwcd.org) under "Engineering Projects". Prospective bidders are required to check the District's web site for any addenda prior to submitting a responsive bid. The District's web site will be used to publish updated information relative to the project, including a planholders list.

RECEIPT OF BIDS: Sealed bids will be received at the office of the Jordan Valley Water Conservancy District, Owner of the Work, located at 8215 South 1300 West, West Jordan, Utah 84088, until **2:00 pm, on Friday, July 19, 2019**, for construction of the Four Well Rehabilitation Project.

OBTAINING CONTRACT DOCUMENTS: The Contract Documents are entitled Four Well Rehabilitation Project. All Contract Documents may be obtained online at www.jvwcd.org under "Engineering Projects".

OPENING OF BIDS: The bids will be publicly opened and read at the time and location identified above.

SITES OF WORK:

1. Newbury Well: 10190 Newbury Drive, Sandy, Utah
2. 10th & 78th Well: 978 East 7800 South, Midvale, Utah
3. 98th & 23rd Well: 9785 Eastdell Drive, Sandy, Utah
4. 8200 S 700 E Well: 8159 South 700 East, Sandy, Utah

NOTICE INVITING BIDS

PRE-BID MEETING: A non-mandatory pre-bid meeting will be held at **10:am on Wednesday, July 10, 2019** at the office of the Owner. Prospective bidders with questions regarding the project are encouraged to attend.

COMPLETION OF WORK: All work shall be completed within 400 calendar days from the date of the Notice to Proceed.

AWARD OF CONTRACT: An Award of Contract, if it were awarded, will be made within 60 calendar days of the opening of bids.

NOTICE TO PROCEED: A Notice to Proceed, if it were issued, will be made within 60 calendar days of the Notice of Award.

BID SECURITY: Each bid shall be accompanied by a certified or cashier's check, money order or bid bond in the amount of five percent of the total bid price payable to the Jordan Valley Water Conservancy District as a guarantee that the bidder, if its bid is accepted, will promptly execute the contract, provide evidence of worker's compensation insurance, and furnish a satisfactory faithful performance bond in the amount of 100 percent of the total bid price and a payment bond in the amount of 100 percent of the total bid price.

ADDRESS AND MARKING OF BID: The envelope enclosing the bid shall be sealed and addressed to the Jordan Valley Water Conservancy District and delivered or mailed to 8215 South 1300 West, West Jordan, Utah 84088. The envelope shall be plainly marked in the upper left-hand corner with the name and address of the bidder and shall bear the words "Bid for," followed by the title of the Contract Documents for the work and the date and hour of opening of bids. The certified or cashier's check, money order, or bidder's bond shall be enclosed in the same envelope with the bid.

NOTICE INVITING BIDS

PROJECT ADMINISTRATION: All questions relative to this project prior to the opening of bids shall be directed to the Engineer for the project. It shall be understood, however, that no interpretations of the specifications will be made by telephone, nor will any "or equal" products be considered for approval prior to award of contract.

ENGINEER

CRS Engineers
4246 South Riverboat Road Ste. 200
Salt Lake City, Utah 84123
Telephone: (801) 359-5565
Contact: Mark Chandler, PE, PG
Email: mark.chandler@crsengineers.com

OWNER

Jordan Valley Water Conservancy District
8215 South 1300 West
West Jordan, Utah 84088
Telephone: (801) 565-4300
Project Manager: Kevin Rubow
Email: kevinr@jvwcd.org

OWNER'S RIGHTS RESERVED: The Owner reserves the right to reject any or all bids, to waive any informality in a bid, and to make awards in the interest of the Owner.

JORDAN VALLEY WATER CONSERVANCY DISTRICT

INSTRUCTIONS TO BIDDERS

FORM OF BID: The bid shall be made on the bidding schedule(s) bound herein. The bid shall be enclosed in a sealed envelope bearing the name of the bidder and name of the project. In the event there is more than one bidding schedule, the bidder may bid on any individual schedule or on any combination of schedules.

DELIVERY OF BID: The bid shall be delivered by the time and to the place stipulated in the Notice Inviting Bids. It is the bidder's sole responsibility to see that his bid is received in proper time.

WITHDRAWAL OF BIDS: Bids shall be unconditionally accepted without alteration or correction, excepting that bidder may by means of written request, signed by the bidder or his properly authorized representative withdraw his bid. Such written request must be delivered to the place stipulated in the Notice Inviting Bids for receipt of bids prior to the scheduled closing time for receipt of bids.

OPENING OF BIDS: The bids will be publicly opened and read at the time and place stipulated in the Notice Inviting Bids.

MODIFICATIONS AND ALTERNATIVE BIDS: Unauthorized conditions, limitations, or provisions attached to a bid may render it non-responsive and may cause its rejection. The completed bid forms shall be without interlineations, alterations, or erasures. Alternative bids will not be considered unless called for. Oral, telegraphic, or telephonic bids or modifications will not be considered.

DISCREPANCIES IN BIDS: In the event there is more than one bid item in a bidding schedule, the bidder shall furnish a price for all bid items in the schedule; failure to do so may render the bid non-responsive and subject to rejection. In the event there are unit price bid items in a bidding schedule and the "amount" indicated for a unit price bid item does not equal the product of the unit price and quantity, the unit price shall govern and the "amount" will be corrected accordingly, and the Contractor shall be bound by said Correction. In the event there is more than one bid item in a bidding schedule and the total indicated for the schedule does not agree with the sum of the prices bid on the individual items, the prices bid on the individual items shall govern and the total for the schedule will be corrected accordingly, and the Contractor shall be bound by said correction.

INSTRUCTIONS TO BIDDERS

BID SECURITY: Each bid shall be accompanied by a certified or cashier's check or approved bid bond in the amount stated in the Notice Inviting Bids. Said check or bond shall be made payable to the Owner and shall be given as a guarantee that the bidder, if awarded the work, will enter into a contract within 10 calendar days after receipt of the contract from the Owner, and will furnish the necessary insurance certificates, Payment Bond, and Performance Bond; each of said bonds to be in the amount stated in the Notice Inviting Bids. In case the apparent low bidder refuses or fails to enter into such contract or fails to provide the required insurance and insurance certificates, the check or bid bond, as the case may be, shall be forfeited to the Owner. If the bidder elects to furnish a bid bond as his bid guarantee, he shall use the bid bond bound herein, or one conforming substantially to it in form.

BIDDER'S EXAMINATION OF CONTRACT DOCUMENTS AND SITE

It is the responsibility of each Bidder before submitting a Bid to:

1. Examine Contract Documents thoroughly.
2. Visit the site to become familiar with local conditions that may affect cost, progress, performance, or furnishing of the work.
3. Consider federal, state and local laws and regulations that may affect cost, progress, and performance of furnishing of the work.
4. Study and carefully correlate the Bidder's observations with the Contract Documents.
5. Notify the Engineer of all conflicts, errors, or discrepancies in the Contract Documents.

Reference is made to the Supplemental General Conditions for identification of:

1. Those reports of exploration and tests of subsurface conditions at the site, which have been utilized by the Engineer in the preparation of the Contract Documents.
2. Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except underground utilities as defined in Article 1 of the General Conditions) which are at or contiguous to the site and which were utilized by the Engineer in the preparation of the Contract Documents. Copies of such reports and drawings are available for inspection at the office of the Owner.

INSTRUCTIONS TO BIDDERS

Information and data reflected in the Contract Documents with respect to underground facilities at/or contiguous to the site are based upon information and data furnished to the Owner and the Engineer by the owners of such underground facilities or others, and the Owner does not assume any responsibility for the accuracy or completeness thereof including any damages whatsoever that may be incurred by the Bidder or the Contractor through his reliance thereon unless it is expressly provided otherwise in the Supplemental General Conditions and/or the Technical Specifications.

Before submitting a bid, the bidder shall conduct such examination, investigations, studies and tests as are necessary to satisfy himself as to: the nature and location of the physical conditions (surface, subsurface and underground facilities), the general and local conditions particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, availability of utilities, local weather conditions, the character of equipment and facilities required preliminary to and during the prosecution of the work; any and all other conditions that may in any way affect the cost, progress, performance or furnishing of materials in accordance with the Contract Documents. All such examination, investigation, studies, tests and the like shall be at the Bidder's expense.

Upon reasonable request in advance, the Owner shall provide each Bidder access to the site to conduct such explorations, examination, investigation and tests as each Bidder may determine necessary for the submission of a Bid. The Bidder shall fill all holes, clean and restore the site to its former condition upon the completion of such activities.

The submission of a bid hereunder shall be considered prima facie evidence that the Bidder has made such examination as is set forth in the above paragraph and is knowledgeable as to the location and site conditions surrounding the work and the conditions to be encountered in performing the work and as to the requirements, conditions and terms of the Contract and Contract Documents.

The Owner assumes no responsibility for any understanding or representations made by any of its officers or agents during or prior to the execution of this Contract, for information contained in any reports, subsurface studies, or other information which may be made available for the Contractor's information and which are not included as Contract Documents, for any understanding or representations by the Owner or by others which are not expressly stated in the Contract Documents which liability is not expressly assumed by the Owner or its representatives or Engineer in the Contract Documents. Such information shall be deemed to be for the information of the Contractor and the Contractor shall have the obligation of evaluating any such information as to its accuracy and effect the Owner will not be liable or responsible for any such information or any conclusions that may be drawn there from by the Contractor.

INSTRUCTIONS TO BIDDERS

The lands upon which the work is to be performed, right-of-ways and easements for access thereto together with other lands designated for use by the Contractor in performing the work are identified in the Contract Documents. All additional lands and access thereto that are required for temporary construction facilities or storage of materials and equipment are to be provided by the Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the Owner unless otherwise provided in the Contract Documents.

The submission of a Bid shall constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of this Article, and that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents in compliance with such means, methods, techniques, sequences, or procedures of construction as may be indicated in or required by the Contract Documents; and that such means, methods, techniques, sequences or procedures described in the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing the work.

QUANTITIES OF WORK

The quantities of work or material stated in the Bid Schedule are supplied only to give an indication of the general scope of the work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith. The Owner reserves the right after award of the Contract to increase or decrease the quantities of any unit price item of the work by an amount up to and including 25 percent of the quantity of any bid item, or to omit portions of such work as may be deemed necessary or expedient by the Engineer or Owner, without a change in the unit price. Such right to revise and omit shall include the right to delete any bid item in its entirety, or to add additional bid items in quantities up to and including an aggregate total amount not to exceed 25 percent of the total amount of the Contract.

The Bidders nor the ultimate Contractor on the Project shall at any time after the submittal of a bid make or have any claim for damages or anticipated profits or loss of profit or otherwise because of any difference between the quantities of work actually done and material furnished and those stated in said unit price items of the Bid.

INSTRUCTIONS TO BIDDERS

COMPETENCY OF BIDDERS: In selecting the lowest responsible Bidder, consideration will be given to the general competency of the Bidder for the performance of the work covered by the Bid. To this end, each bid shall be supported by a statement of the bidder's experience as of recent date on the form entitled "Information Required of Bidder," bound herein. No bid for the work will be accepted from a contractor who does not hold an active Contractor's license in good standing applicable to the type of work bid upon at the time of opening bids.

After an award of the contract no substitution of the Project Manager or Project Superintendent will be allowed without the written approval by the Owner.

DISQUALIFICATION OF BIDDERS: More than one bid from an individual, firm partnership, corporation, or association under the same or different names will not be considered. Reasonable grounds for believing that any bidder is interested in more than one bid for the work contemplated will cause the rejection of all bids in which such bidder is interested. If there is reason for believing that collusion exists among the bidders, all bids will be rejected.

RETURN OF BID GUARANTEE: Within 10 calendar days after award of the contract, the Owner will return the bid guarantees accompanying such of the bids as are not considered in making the award. All other bid guarantees will be held until a Notice to Proceed has been issued and accepted. They will then be returned to the respective bidders whose bids they accompany.

AWARD OF CONTRACT: Award of the Contract, if it be awarded, will be based primarily on the lowest overall cost to the Owner, and will be made to a responsive and responsible bidder whose bid complies with all the requirements prescribed. Any such award will be made by written notice and within 60 calendar days after opening of the bids, unless a different waiting period is expressly allowed in the Notice Inviting Bids. Unless otherwise indicated, an award will not be made for less than all the bid items in an individual bidding schedule. In the event the entire work is contained in more than one bidding schedule, the Owner may award schedules individually or in combination. In the case of two bidding schedules which are alternate to each other, only one of such alternate schedules will be awarded.

INSTRUCTIONS TO BIDDERS

EXECUTION OF CONTRACT: The Bidder to whom the award is made shall secure all insurance and shall furnish all certificates and bonds required by the specifications within ten calendar days after receipt of the Notice of Award from the Owner. The Bidder to whom the award is made shall execute a written contract with the Owner on the form of agreement provided within ten calendar days after receipt of the Agreement from the Owner. Failure or refusal to enter into a contract as herein provided or to conform to any of the stipulated requirements in connection therewith shall be just cause for annulment of the award and forfeiture of the bid guarantee. If the successful bidder refuses or fails to execute the contract, the Owner may award the contract to the second lowest responsible bidder, or reject all bids and re-advertise the project for rebidding. If the second lowest responsible bidder refuses or fails to execute the contract, the Owner may award the contract to the third lowest responsible bidder. On the failure or refusal of such second or third lowest bidder to execute the contract, each such bidder's guarantees shall be likewise forfeited to the Owner.

ISSUANCE OF NOTICE TO PROCEED: The Owner intends to execute the Agreement and issue the Notice to Proceed specifying the Project start date within ten calendar days after its receipt of the executed Agreement, Purchase Order Assignment(s), (if applicable), bonds and insurance certificates from the successful bidder. If the Contract Time is expressed as a specific completion date in the Notice Inviting Bids and paragraph 3.1 of the Agreement rather than a specific number of successive days following the start date identified in the Notice to Proceed, then any delay by the Owner beyond the ten days in issuing the Notice to Proceed shall extend the completion date by the number of days of the delay.

LICENSES: Contractor must be licensed as a business qualified to do business within the state of Utah prior to issuance of a Notice of Award. Contractor must hold a current contractor's license with classifications appropriate to the work being contracted.

BID

BID TO: JORDAN VALLEY WATER CONSERVANCY DISTRICT

The undersigned Bidder hereby proposes to furnish all plant machinery, labor, services, materials, equipment, tools, supplies, transportation, utilities, and all other items and facilities necessary to perform all work required under the Bidding Schedule of the Owner's Contract Documents entitled "Four Well Rehabilitation Project" drawings and all addenda issued by said Owner prior to opening of the bids.

Addenda are only delivered by e-mail and through the internet.

The undersigned bidder acknowledges receipt of the following addenda:

No.	Date Received	No.	Date Received
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Bidder agrees that, within 10 calendar days after receipt of Notice of Award from Owner, he will execute the Agreement in the required form, of which the Notice Inviting Bids, Instructions to Bidders, Bid, Information Required of Bidder, Technical Specifications, Drawings, and all addenda issued by Owner prior to the opening of bids, are a part, and will secure the required insurance and bonds and furnish the required insurance certificates; and that upon failure to do so within said time, then the bid guarantee furnished by Bidder shall be forfeited to Owner as liquidated damages for such failure; provided, that if Bidder shall execute the Agreement, secure the required insurance and bonds, and furnish the required insurance certificates within said time, his check, if furnished, shall be returned to him within five days thereafter, and the bid bond, if furnished, shall become void. It is further understood that this bid may not be withdrawn for a period of 45 days after the date set for the opening thereof, unless otherwise required by law.

Bidder hereby certifies he has registered and participates in the Status Verification System (E-Verify).

Dated: _____

Bidder: _____

By: _____
(Signature)

Title: _____

Bidder further agrees to complete all work required within the time stipulated in the Contract Documents, and to accept in full payment therefore the price(s) named in the above-mentioned Bidding Schedule(s).

BID

Bid Schedule A: Newbury Well

Item No.	Description	Unit	Est. Qnty.	Bid Unit Price	Bid Price
A1	Mobilization/ Demobilization	LS	1		
A2	Remove and Inspect Permanent Pumping Equipment	EA	1		
A3	Video Survey	EA	3		
A4	Brush and Evacuate Well	HR	24		
A5	Chemicals	LS	1	\$50,000.00	\$50,000.00
A6	Acid Treatment/Agitate/ Neutralize/Dispose	HR	80		
A7	Shock Chlorination/ Agitate/ Dechlorinate/ Dispose	HR	60		
A8	Initial Well Redevelopment	HR	110		
A9	Furnish, Install, and Remove Temporary Pump	EA	1		
A10	Pump Development	HR	24		
A11	Step Drawdown Test	HR	8		
A12	Constant Rate Test	HR	24		
A13	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
A14	Re-Install Permanent Pumping Equipment	LS	1		
A15	Furnish and Install Pump and Motor Nameplate on Discharge Head	LS	1		
A16	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	3060		
A17	Clean-up of Site	LS	1		
Sub-Total of All Newberry Well Bid Items				\$	

BID

Bid Schedule B: 10th & 78th Well

Item No.	Description	Unit	Est. Qty	Bid Unit Price	Bid Price
B1	Mobilization/ Demobilization	LS	1		
B2	Remove, Inspect, and Clean Permanent Pumping Equipment	EA	1		
B3	Video Survey	EA	1		
B4	Furnish and Install New Transducer	LS	1		
B5	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
B6	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	2670		
B7	Re-install Existing Permanent Pumping Equipment with New Column, Tube, and Shaft	LS	1		
B8	Clean-up of Site	LS	1		
Sub-Total of All 10th & 78th Well Bid Items				\$	

BID

Bid Schedule C: 98th & 23rd Well

Item No.	Description	Unit	Est. Qty	Bid Unit Price	Bid Price
C1	Mobilization/ Demobilization	LS	1		
C2	Remove, Inspect, and Clean Permanent Pumping Equipment	EA	1		
C3	Video Survey	EA	3		
C4	Brush and Evacuate Well	HR	20		
C5	Assess and Repair Screens as Needed (~20' Swage)	LS	1		
C6	Chemicals	LS	1	\$30,000.00	\$30,000.00
C7	Acid Treatment/Agitate/ Neutralize/Dispose	HR	60		
C8	Shock Chlorination/ Agitate/ Dechlorinate/ Dispose	HR	45		
C9	Initial Well Redevelopment	HR	100		
C10	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
C11	Install New Well Cable for Submersible Motor	LF	760		
C12	Re-Install Permanent Pumping Equipment	LS	1		
C13	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	2700		
C14	Furnish and Install Pump and Motor Nameplate on Discharge Head	LS	1		
C15	Clean-up of Site	LS	1		
Sub-Total of All 98th & 23rd Well Bid Items				\$	

BID

Bid Schedule D: 8200 S 700 E Well

Item No.	Description	Unit	Est. Qty	Bid Unit Price	Bid Price
D1	Mobilization/ Demobilization	LS	1		
D2	Remove, Inspect, and Clean Permanent Pumping Equipment Including 3-inch Recharge Pipe	EA	1		
D3	Video Survey	EA	3		
D4	Brush and Evacuate Well	HR	24		
D5	Chemicals	LS	1	\$62,000.00	\$62,000.00
D6	Acid Treatment/Agitate/ Neutralize/Dispose	HR	80		
D7	Shock Chlorination/ Agitate/ Dechlorinate/ Dispose	HR	60		
D8	Initial Well Redevelopment	HR	110		
D9	Submersible BJ Pump Assessment and Repair/Replace	LS	1	\$25,000.00	\$25,000.00
D10	Modify Discharge head to accommodate (3) 1-1/2" tremie lines	LS	1		
D11	New Motor and Well Cable	LS	1		
D12	Re-install Permanent Pumping Equipment Including 3-inch Recharge Pipe	LS	1		
D13	Furnish and Install (3) 1-1/2" PVC Tremie Lines	LF	2760		
D14	Furnish and Install Pump and Motor Nameplate on Discharge Head	LS	1		
D15	Clean-up of Site	LS	1		
Sub-Total of All 8200 S & 700 E Well Bid Items				\$	

Summary of all Four Wells:

Sub-Total of All Newbury Well Bid Items	\$
Sub-Total of All 10th & 78th Well Bid Items	\$
Sub-Total of All 98th & 23rd Well Bid Items	\$
Sub-Total of All 8200 S & 700 E Well Bid Items	\$
Total Price of All Bid Items	\$

TOTAL BASE BID (words):

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

That _____
as Principal, and _____
as Surety, are held and firmly bound unto the Jordan Valley Water Conservancy District
(hereinafter called "Owner") in the sum of _____
dollars, (not less than five percent of the total amount of the bid) for the payment of which
sum, will and truly to be made, we bind ourselves, our heirs, executors, administrators,
successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has submitted a bid to Owner to perform all work required under the
bidding Schedule of the Owner's Contract Documents entitled "Four Well Rehabilitation
Project", (hereafter called the "Project").

NOW THEREFORE, if Principal is awarded Contract by Owner for the Construction of the
Project and, within the time and in the manner required under the heading "Instructions to
Bidders" enters into the written contract entitled "Agreement" bound with said Contract
Documents, furnishes the required certificates of insurance, and furnishes the required
Performance Bond and Payment Bond within 10 calendar days after receipt of such
contract from Owner, then this obligation shall be null and void, otherwise it shall remain in
full force and effect. In the event suit is brought upon this bond by Owner and judgment is
recovered, Surety shall pay all costs incurred by Owner in such suit, including a reasonable
attorney's fee to be fixed by the court.

SIGNED AND SEALED, this ___day of _____, 20__.

By: _____ By: _____

President

Attorney-in-Fact Chris A. Lund

Its: _____ Its: _____

(SEAL)

(SEAL)

INFORMATION REQUIRED OF BIDDER

The Bidder shall furnish the following information. Failure to comply with this requirement may render the Bid non-responsive and subject to rejection. Additional sheets shall be attached as required.

1. Contractor's name: _____

2. Contractor's address: _____

Contractor's Primary Contact: _____

Email address of Contractor's primary contact: _____

Contractor's telephone number: _____

3. **Contractor must be qualified and licensed to do business in Utah.**

Utah Department of Commerce Information

Business Entity Number: _____

Delinquent Date: _____

4. **Contractor must hold a current well driller's license.**

Contractor's Utah Well Driller's License Number: _____

Expiration Date: _____

INFORMATION REQUIRED OF BIDDER

5. Key Personnel Qualifications and Experience

List key personnel here and provide detailed information in Attachments A and B. More than one Project Manager and/or Project Superintendent may be proposed. Only personnel approved by the Owner will be allowed in the key positions.

Project Manager A: _____
Project Manager (Alternate 1): _____
Project Manager (Alternate 2): _____

Project Manager shall have worked as a project manager on a minimum of two (2) projects, each of which shall meet the following requirements:

1. Motor, column pipe, and pump were removed and replaced and
2. Mechanical development was performed

Project Superintendent A: _____
Project Superintendent (Alternate 1): _____
Project Superintendent (Alternate 2): _____

Project Superintendent shall have worked on a minimum of three (3) projects, each of which shall meet the following requirements:

1. Motor, column pipe, and pump were removed and replaced and
2. Mechanical development was performed

6. Previous Contractor Project Experience

Past project experience shall be provided for each requirement. The Owner shall be entitled to contact each and every reference listed by the contractor. The Contractor, by submitting a bid, expressly agrees that any information concerning the CONTRACTORS in possession of said entities and references may be made available to the owner. The Owner reserves the right to reject any bid based upon unsatisfactory past performance with the Jordan Valley Water Conservancy District or any of the supplied references.

Provide the information identified in Attachment C for each project listed below:

INFORMATION REQUIRED OF BIDDER

Requirements:

Contractor shall have successfully completed at least four (4) well replacement projects which include the following:

- 1. Motor, column pipe, and pump were removed and replaced and
- 2. Mechanical development was performed

- 1. _____
- 2. _____
- 3. _____
- 4. _____

7. Number of years as a contractor in construction work of this type: _____

8. Name and title of officers of Contractor's firm: _____

9. Number of persons employed full-time by the firm: _____

10. Name of person who inspected site of proposed work for your firm:

Name: _____

Date of Inspection: _____

11. Surety company who will provide the required bonds on this contract: _____

Agent's Name: _____

Telephone: _____

12. Workers Compensation Insurance Policy #: _____

INFORMATION REQUIRED OF BIDDER

ATTACHMENT A

(Copy as necessary – provide experience that meets the requirements listed above)

Project Manager Data Sheet

Name: _____

Years experienced as Project Manager: _____

Years of prior experience: _____ Positions: _____

Qualifying Project #1: _____

Project Summary: _____

Year Completed: _____ Column Diameter: _____

Length of Column Pipe Removed: _____

Total Cost: _____

Owner: _____

Owner Contact Person: _____ Telephone: _____

Qualifying Project #2: _____

Project Summary: _____

Year Completed: _____ Column Diameter: _____

Length of Column Pipe Removed: _____

Total Cost: _____

Owner: _____

Owner Contact Person: _____ Telephone: _____

INFORMATION REQUIRED OF BIDDER

ATTACHMENT B

(Copy as necessary – provide experience that meets the requirements listed above)

Superintendent Data Sheet

Name: _____

Years experienced as Superintendent: _____

Years of prior experience: _____ Positions: _____

Qualifying Project #1: _____

Project Summary: _____

Year Completed: _____ Column Diameter: _____

Length of Column Pipe Removed: _____

Total Cost: _____

Owner: _____

Owner Contact Person: _____ Telephone: _____

Qualifying Project #2: _____

Project Summary: _____

Year Completed: _____ Column Diameter: _____

Length of Column Pipe Removed: _____

Total Cost: _____

Owner: _____

Owner Contact Person: _____ Telephone: _____

Qualifying Project #3: _____

Project Summary: _____

Year Completed: _____ Column Diameter: _____

Length of Column Pipe Removed: _____

Total Cost: _____

Owner: _____

Owner Contact Person: _____ Telephone: _____

INFORMATION REQUIRED OF BIDDER

ATTACHMENT C

(Provide experience that meets the requirements listed above)

Contractor Project #1 Experience Summary

Project Name: _____

Project Location: _____

Project Manager: _____

Project Superintendent: _____

Project Description: _____

Pump type, depth, and diameter: _____

Mechanical development method: _____

Increase in specific capacity: _____

Date Bid: _____ Date Completed: _____

Contract bid price: _____ Contract final price: _____

Contract duration at bid: _____ Final contract duration: _____

Owner's contact information: _____

INFORMATION REQUIRED OF BIDDER

Contractor Project #2 Experience Summary

Project Name: _____

Project Location: _____

Project Manager: _____

Project Superintendent: _____

Project Description: _____

Pump type, depth, and diameter: _____

Mechanical development method: _____

Increase in specific capacity: _____

Date Bid: _____ Date Completed: _____

Contract bid price: _____ Contract final price: _____

Contract duration at bid: _____ Final contract duration: _____

Owner's contact information: _____

INFORMATION REQUIRED OF BIDDER

Contractor Project #3 Experience Summary

Project Name: _____

Project Location: _____

Project Manager: _____

Project Superintendent: _____

Project Description: _____

Pump type, depth, and diameter: _____

Mechanical development method: _____

Increase in specific capacity: _____

Date Bid: _____ Date Completed: _____

Contract bid price: _____ Contract final price: _____

Contract duration at bid: _____ Final contract duration: _____

Owner's contact information: _____

INFORMATION REQUIRED OF BIDDER

Contractor Project #4 Experience Summary

Project Name: _____

Project Location: _____

Project Manager: _____

Project Superintendent: _____

Project Description: _____

Pump type, depth, and diameter: _____

Mechanical development method: _____

Increase in specific capacity: _____

Date Bid: _____ Date Completed: _____

Contract bid price: _____ Contract final price: _____

Contract duration at bid: _____ Final contract duration: _____

Owner's contact information: _____

AGREEMENT

An Agreement made as of the _____ day of _____, by and between the Jordan Valley Water Conservancy District, a water conservancy district organized under the laws of the State of Utah ("OWNER"), and _____, a _____ corporation qualified to do business and doing business in the State of Utah ("CONTRACTOR").

TERMS:

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE I WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents for the _____. The Work is generally described as follows:

Furnishing all labor, services, materials, equipment, and supplies except for such materials, equipment, and services as may be stipulated in the Contract Documents to be furnished by the OWNER; furnishing and removing all plant machinery, temporary structures, tools, supplies, transportation, utilities, and all other items, facilities and equipment, and to do everything required by this Agreement and the Contract Documents; accepting all responsibility for and paying for all loss and damage arising out of the nature of the Work aforesaid, or from the action of the elements, or from any unforeseen difficulties which may arise during the prosecution of the Work until its acceptance by OWNER, and for all risks of every description connected with the Work; also for all expenses resulting from the suspension or discontinuance of work, except as in the Contract Documents are expressly stipulated to be borne by OWNER.

ARTICLE II ENGINEER

The Project has been designed by the OWNER. The OWNER will assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

[ALTERNATE PARAGRAPH] The Project has been designed by _____, a _____ corporation qualified to do business and doing business in the State of Utah, who is hereinafter called "ENGINEER" and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and

authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE III CONTRACT TIME

- 3.1 The Work shall be complete, in accordance with paragraphs 14.08 and 14.09 of the General Conditions, on or before _____.
- 3.2 Liquidated Damages: OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the Work is not completed within the time specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any proof of loss, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER the amount specified in Article 14.07 of the General Conditions and in Article 18.01 of the Supplementary General Conditions for each day that expires after the time specified in paragraph 3.1 for final completion until the Work is substantially complete. And, after Substantial Completion if CONTRACTOR neglects, refuses or fails to complete the remaining Work within forty-five (45) days or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER the amount specified in Article 14.07 of the General Conditions and in Article 18.01 of the Supplemental General Conditions for each day that expires after the forty-five (45) days until readiness for final payment.

ARTICLE IV CONTRACT PRICE

All payments to Contractor shall be made in accordance with the Contract Documents. OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents in current funds those prices stated in the approved Bid Schedule as named in the Notice of Award.

ARTICLE V PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

- 5.1 Progress Payments: OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment

as recommended by ENGINEER, on a monthly basis. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Conditions.

- 5.2 Final Payment: Upon final completion and acceptance of the Work in accordance with Article 14 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in Article 14.

ARTICLE VI INTEREST

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of twelve percent (12%) per annum.

ARTICLE VII CONTRACTOR'S REPRESENTATION

In order to induce OWNER to enter into the Agreement, CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- 7.2 CONTRACTOR has studied carefully all exploration reports and test of subsurface conditions and drawings of physical conditions which are identified in the Supplementary General Conditions, as provided in paragraph 4.02 of the General Conditions, and accepts the Technical Data contained in such reports and drawings upon which CONTRACTOR is entitled to rely.
- 7.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.02 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports,

studies or similar information or data are or will be required by CONTRACTOR for such purposes.

- 7.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities.
- 7.5 CONTRACTOR has correlated the results of all observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
- 7.6 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he had discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

ARTICLE VIII CONTRACT DOCUMENTS

The Contract Documents for the _____, which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work, consist of the following:

- 8.1 This Agreement;
- 8.2 Performance and Payment Bonds;
- 8.3 Notice of Award;
- 8.4 Notice to Proceed;
- 8.5 General Conditions;
- 8.6 Supplemental General Conditions;
- 8.7 Notice Inviting Bids;
- 8.8 Instructions to Bidders;
- 8.9 Information Required of Bidder;
- 8.10 Technical Specifications;
- 8.11 Drawings - Sheet Number One;
- 8.12 Addendum Number One; and,
- 8.13 CONTRACTOR's Bid, including all schedules and explanatory attachments; attached as Exhibit A.

The CONTRACTOR (1) acknowledges that he has received a copy of each document, specified above, (2) acknowledges that he has read and understands each document specified above and (3) agrees to every term, condition and contract obligation set forth in each document specified above.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.03 of the General Conditions.

ARTICLE IX
FEDERAL REQUIREMENTS

The CONTRACTOR shall comply with federal regulations as stated in the Supplemental General Conditions, Article 21.

ARTICLE X
MISCELLANEOUS

- 10.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 10.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 10.3 In the event any legal action or other proceeding is brought for the enforcement of this Agreement and/or the Contract Documents, or for damages, because of an alleged dispute, breach, default or misrepresentation in connection with any of the provisions thereof, the successful or prevailing party shall be entitled to recover reasonable attorneys= fees and other costs incurred in the action or proceeding, in addition to any other relief to which it may be entitled.
- 10.4 Any notice to be given hereunder shall be deemed given when sent by registered or certified mail, postage prepaid to the parties at their respective addresses stated below or at any other address when notice of such change of address has been given as provided in this Article 10.4.

“OWNER”:

JORDAN VALLEY WATER
CONSERVANCY DISTRICT
8215 SOUTH 1300 WEST
WEST JORDAN, UT 84088

By: _____
Richard P. Bay
Its Chief Executive Officer
and General Manager

“CONTRACTOR”:

Utah License No. _____

By: _____

Its: _____

EXHIBIT A
CONTRACTOR'S BID

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

That _____, as Contractor, and _____ as Surety, are held firmly bound unto the Jordan Valley Water Conservancy District hereinafter called "Owner," in the sum of \$_____ for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has been awarded and is about to enter into the annexed Agreement with Owner to perform all work required under the Bidding Schedule(s) of the Owner's Contract Documents entitled "Four Well Rehabilitation Project".

NOW THEREFORE, if Contractor shall perform all the requirements of the Agreement required to be performed on his part, at the times and in the manner specified therein, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

PROVIDED, that any alterations in the work to be done or the materials to be furnished, or changes in the time of completion, which may be made pursuant to the terms of the Agreement, shall not in any way release Contractor or Surety thereunder, nor shall any extensions of the time granted under the provisions of the Agreement release either the Contractor or Surety, and notice of such alterations or extensions of the work, materials or time to complete made under the Agreement is hereby waived by Surety. This Bond is furnished in compliance and in accordance with 14-1-18, Utah Code Ann., as amended, and 63-56-38 Utah Code Ann., as amended.

SIGNED AND SEALED, this _____ day of _____, 20__.

By: _____

By: _____

Its: _____

Its: _____

(SEAL)

(SEAL)

(SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY)

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS,

That _____ as Contractor, and _____ as Surety, are held firmly bound unto the Jordan Valley Water Conservancy District hereinafter called "Owner," in the sum of \$_____ for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has been awarded and is about to enter into the annexed Agreement with Owner to perform all work required under the Bidding Schedule(s) of the Owner's Contract Documents entitled, "Four Well Rehabilitation Project".

NOW THEREFORE, if said Contractor, or subcontractor, fails to pay for any materials, equipment, or other supplies, or for rental of same, used in connection with the performance of work contracted to be done, or for amounts due under applicable State law for any work or labor thereon, said Surety will pay for the same in an amount not exceeding the sum specified above, and, in the event suit is brought upon this bond, a reasonable attorney's fee to be fixed by the court. This bond shall inure to the benefit of any persons, companies, or corporations entitled to file claims under applicable State law.

PROVIDED, that any alterations in the work to be done or the materials to be furnished, or changes in the time of completion, which may be made pursuant to the terms of the Agreement, shall not in any way release Contractor or Surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either Contractor or the Surety, and notice of such alterations or extensions of the work, materials or time to complete made under the Agreement is hereby waived by Surety. This bond is furnished in compliance and in accordance with 14-1-18 and 19 Utah Code Ann., as amended, and 63-56-38 Utah Code Ann., as amended.

SIGNED AND SEALED, this _____ day of _____, 20__.

By: _____

By: _____

Its: _____

Its: _____

(SEAL)

(SEAL)

(SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY)

NOTICE OF AWARD

To:

Re: Four Well Rehabilitation Project

You are hereby notified that the OWNER has accepted your bid for the above referenced project in the amount of \$_____.

Furnish the required Contractor's Performance Bond, Payment Bond and Certificates of Insurance within ten calendar days from the date of this notice to you. An acknowledged copy of this Notice of Award, together with all future correspondence regarding this project, shall be sent to the District's Project Manager: Kevin Rubow.

When the Agreement is provided, sign and return it within ten calendar days from receipt of the agreement.

Dated this ____ day of _____, 20__.

Alan E. Packard, PE
Assistant General Manager & Chief Engineer

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by:

This _____ day of _____, 20__.

Signature: _____

Printed Name: _____

Title: _____

NOTICE TO PROCEED

To:

Re: Four Well Rehabilitation Project

You are hereby notified to commence work in accordance with the Agreement dated _____, and you are to complete the work within ____ calendar days.

An acknowledged copy of this Notice to Proceed should be returned to the Owner, Attention: Kevin Rubow, Staff Engineer.

Dated this _____ day of _____.

Shane K. Swensen, P.E.
Engineering Department Manager

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by:

This _____ day of _____, 20____.

Signature: _____

Printed Name: _____

Title: _____

JORDAN VALLEY WATER CONSERVANCY DISTRICT

PAYMENT APPLICATION AND CERTIFICATE No. ____ **DATE:** _____

SHEET ____ **OF** ____

PERIOD FROM _____ TO _____, 20____

PROJECT: Four Well Rehabilitation Project

JVWCD PROJECT NO.: 4119

CONTRACTOR: _____

ADDRESS: _____

ENGINEER: _____

1. ORIGINAL CONTRACT PRICE: \$ _____
2. NET CHANGE ORDERS APPROVED TO DATE: \$ _____
(Attach Summary Sheet)
3. REVISED CONTRACT AMOUNT: \$ _____
(Sum of Lines 1 & 2)
4. TOTAL VALUE OF WORK COMPLETED TO DATE \$ _____
(Attached Payment Breakdown)
5. PERCENT PROJECT COMPLETE: %
(Divide Line 4 by 3 and multiply by 100)
6. LESS AMOUNT RETAINED (5%) \$ _____
7. MATERIALS ON HAND..... \$ _____
(95% of Value, Listing Attached)
8. SUBTOTAL (Sum of Lines 4, Line 6 and Line 7) \$ _____
9. LESS PREVIOUS PAYMENTS \$ _____
10. CURRENT PAYMENT DUE: \$ _____
(Line 8 & 9)

JORDAN VALLEY WATER CONSERVANCY DISTRICT

Payment Application and Certificate No _____

SHEET _____ OF _____

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that: (1) all previous progress payments received from OWNER on account of work done under the Contract referred to herein have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with work covered by prior Applications for Payment numbered 1 through _____ inclusive; and, (2) title to all materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all liens, claims, security interests and encumbrances (except such as covered by bond acceptable to OWNER).

Dated: _____

CONTRACTOR: _____

By: _____

Engineer's Recommendation:

This Application (with accompanying documentation) meets the requirements of the Contract Documents and payment of the amount due this application is recommended.

ENGINEER

Dated _____

Project Representative

Dated _____

Project Manager

JORDAN VALLEY WATER CONSERVANCY DISTRICT

CHANGE ORDER

Change Order No. _____

Date: _____

Page ___ of ___

NAME OF PROJECT: Four Well Rehabilitation Project

PROJECT NUMBER: 4119

CONTRACTOR: _____

CONTRACT DATE: _____

The following changes are hereby made to the CONTRACT DOCUMENTS:

- 1)
- 2)
- 3)

Total Change to CONTRACT PRICE:..... \$

Original CONTRACT PRICE:..... \$

Current CONTRACT PRICE adjusted by previous CHANGE ORDER(S)..... \$

The new CONTRACT PRICE including this CHANGE ORDER will be..... \$

The CONTRACT TIME will be increased by _____ calendar days.

The date for Substantial Completion will be _____, 20__.

The Contractor agrees to furnish all labor and materials and perform all work as necessary to complete the change order items for the price named herein, which includes all supervision and miscellaneous costs. This change order constitutes full and mutual accord and satisfaction for all time and all costs related to this change. By acceptance of this change order the Contractor agrees that the change order represents an equitable adjustment to the Contract, and further agrees to waive all right to file a claim arising out of or as a result of this change. This document will become a supplement to the Contract, and all provisions will apply hereto, upon approval by the Owner.

JORDAN VALLEY WATER CONSERVANCY DISTRICT

**CHANGE ORDER
(CONTINUED)**

Change Order No. _____

Date: _____

Page ___ of ___

Recommended:

Engineer – CRS Engineers Date

Accepted:

Contractor - Date

Approved:

Owner - Jordan Valley Water Conservancy District Date

JORDAN VALLEY WATER CONSERVANCY DISTRICT

**CONTRACTOR'S CERTIFICATE
OF
SUBSTANTIAL COMPLETION**

OWNER

TO: Jordan Valley Water Conservancy District
8215 South 1300 West
West Jordan, Utah 84088

PROJECT: Four Well Rehabilitation Project

ATTENTION: _____

FROM: _____
Firm or Corporation

This is to certify that I, _____ am an authorized official of
_____ working in the capacity of _____
_____ and have been properly authorized by said
firm or corporation to sign the following statements pertaining to the subject contract:

I know of my own personal knowledge, and do hereby certify, that the work of the contract described above has been substantially performed and all materials used and installed to date are in accordance with, and in conformity to, the contract drawings and specifications. A list of all incomplete work is attached.

The Contractor hereby releases the Owner and its agents from all claims of and liability to the Contractor for anything done or furnished for or relating to the work, as further provided in Article 14.08B of the General Conditions, except demands against the Owner for the remainder of progress payments retained to date, and unresolved written claims prior to this date.

The contract work is now substantially complete, ready for its intended use, and ready for your inspection. You are requested to issue a Certificate of Substantial Completion.

SIGNATURE: _____

DATE: _____

JORDAN VALLEY WATER CONSERVANCY DISTRICT

**CONTRACTOR'S CERTIFICATE
OF
FINAL COMPLETION**

OWNER

TO: Jordan Valley Water Conservancy District
8215 South 1300 West
West Jordan, Utah 84088

PROJECT: Four Well Rehabilitation Project

ATTENTION: Project Representative: _____

FROM: _____
Firm or Corporation

This is to certify that I, _____ am an authorized official of
_____ working in the capacity of _____
_____ and have been properly authorized
by said firm or corporation to sign the following statements pertaining to the subject
contract:

I know of my own personal knowledge, and do hereby certify, that the work of the contract described above has been performed and all materials used and installed to date are in accordance with, and in conformity to, the contract drawings and specifications.

The Contract work is now complete in all parts and requirements, excepting the attached list of minor deficiencies and the reasons for each being incomplete to date, for which exemption from final payment requirements is requested in conformance to Article 14.09A of the General Conditions of our Contract (if no exemptions requested, write "none") _____. The work is now ready for your final inspection. The following items required from the Contractor prior to application for final payment (such as O & M Manuals, guarantees, record drawings, etc.) are submitted herewith, if any:

JORDAN VALLEY WATER CONSERVANCY DISTRICT

I understand that neither the issuance by the Engineer of a Notice of Completion, nor the acceptance thereof by the Owner, shall operate as a bar or claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

SIGNATURE: _____

DATE: _____

JORDAN VALLEY WATER CONSERVANCY DISTRICT

CONSENT OF SURETY FOR FINAL PAYMENT

PROJECT NAME: Four Well Rehabilitation Project

LOCATION: _____

TYPE OF CONTRACT: _____

AMOUNT OF CONTRACT: _____

In accordance with the provisions of the above-named contract between the Owner and the Contractor, the following named surety:

on the Payment Bond of the following named Contractor:

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner (as set forth in said Surety company's bond):

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____ day of _____, 20____.

(Name of Surety Company)

(Signature of Authorized Representative)

(Name of Authorized Representatives)

(Title)

JORDAN VALLEY WATER CONSERVANCY DISTRICT

AFFIDAVIT OF PAYMENT

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by the Jordan Valley Water Conservancy District to furnish labor and materials under a contract dated _____ for the project entitled "Four Well Rehabilitation Project", in the County of Salt Lake, State of Utah, of which Jordan Valley Water Conservancy District is the Owner.

NOW, THEREFORE, this _____ day of _____, 20__, the undersigned, as the Contractor for the above-named Contract pursuant to the Conditions of the Contract hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each Exception.)

Contractor (Name of sole ownership,
corporation or partnership)

(affix corporate seal here)

(Signature of Authorized Representative)

Title: _____

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated:

Addenda - Written or graphic instruments issued prior to the opening of Bids which make additions, deletions, or revisions to the Contract Documents.

Agreement - The written contract between the OWNER and the CONTRACTOR for the performance of the WORK pursuant to the Contract Documents. Documents incorporated into the contract by reference become part of the contract and of the Agreement.

Application for Payment - The form furnished by the ENGINEER and completed by the CONTRACTOR to request progress or final payment including supporting documentation to substantiate the amounts for which payment is requested.

Bonds - Performance, and Payment Bonds and other instruments which protect against loss due to inability or refusal of the CONTRACTOR to perform pursuant to the Contract Documents.

Change Order - A document recommended by the ENGINEER, which is signed by the CONTRACTOR and the OWNER and authorizes an addition, deletion, or revision in the WORK, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents - Information and Instructions, forms (including the Schedule of Prices and all required certificates and affidavits), Agreement, Performance Bond, Payment Bond, General Conditions, Supplemental General Conditions, Technical Specifications, Drawings and all Addenda and Change Orders executed pursuant to the provisions of the Contract Documents.

Contract Price - The total monies payable by the OWNER to the CONTRACTOR under the terms and conditions of the Contract Documents.

Contract Time - The number of successive Days stated in the Contract Documents for the completion of the WORK. The Contract Time begins to run on the date specified in the Notice to Proceed.

CONTRACTOR - The person, firm, or corporation with whom the OWNER has executed the Agreement.

Cost Proposal - The offer or proposal of the pipeline installation subcontractor to the CONTRACTOR to provide the work required under these Contract Documents.

Day - A calendar day of 24 hours measured from midnight to the next midnight.

Defective Work - Work that: is unsatisfactory, faulty, or deficient; does not conform to the Contract Documents; does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents; has been damaged prior to the ENGINEERS's recommendation of final payment.

Drawings - The drawings, plans, maps, profiles, diagrams, and other graphic representations which show the character, location, nature, extent, and scope of the WORK.

Effective date of the Agreement - The date indicated in the Agreement on which it was executed, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER - The person, firm, or corporation named as such in the Contract Documents.

Field Order - A written order issued by the ENGINEER which may or may not involve a change in the WORK.

Laws and Regulations; Laws or Regulations - Laws, rules, regulations, ordinances, codes, and/or orders promulgated by a lawfully constituted body authorized to issue such Laws and Regulations.

Notice of Award - The OWNER's written notice to the apparent successful Bidder stating that upon compliance with the conditions precedent enumerated therein by the apparent successful Bidder within the time specified, the OWNER will enter into the Agreement.

Notice to Proceed - The OWNER's written notice to the CONTRACTOR authorizing the CONTRACTOR to proceed with the work and establishing the date of commencement of the Contract Time.

OWNER - The Jordan Valley Water Conservancy District.

Partial Utilization - Placing a portion of the WORK in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion of the WORK.

Project - A unit of total construction of which the WORK to be provided under the Contract Documents, may be the whole, or a part thereof.

Project Representative - The authorized representative of the ENGINEER who is assigned to the site or any part thereof.

Proposer - Any person, firm or corporation submitting a proposal for the work.

Schedule of Prices - The offer or proposal of the CONTRACTOR setting forth the price or prices for the work to be performed.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the CONTRACTOR to illustrate some portion of WORK and all illustrations, brochures, standard schedules, performance charts, instruction, and diagrams to illustrate material or equipment for some portion of the WORK.

Specifications - (Same definition as for Technical Specifications hereinafter).

Subcontractor - An individual, firm, or corporation having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the WORK at the site.

Substantial Completion - That state of construction when the WORK has progressed to the point where, in the opinion of the ENGINEER as evidenced by the Certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the WORK can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to any work refer to substantial completion thereof.

Supplementary General Conditions - The part of the Contract Documents which make additions, deletions, or revisions to these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman, or vendor.

Technical Data - The factual information contained in reports describing physical conditions, including exploration method, plans, logs, laboratory test methods and factual data. Technical Data does not include conclusions, interpretations, interpolations, extrapolations or opinions contained in reports or reached by the CONTRACTOR.

Technical Specifications - Those portions of the Contact Documents consisting of the written technical descriptions of products and execution of the WORK.

Underground Utilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments and any encasements containing such facilities which have been installed under ground to furnish any of the following services or

materials: water, sewage and drainage removal, electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, traffic, or other control systems.

WORK - The entire construction required to be furnished under the Contract Documents. WORK is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

GENERAL CONDITIONS

ARTICLE 2 - PRELIMINARY MATTERS

2.01 DELIVERY OF BONDS/INSURANCE CERTIFICATES

- A. The CONTRACTOR shall deliver to the OWNER the Agreement, Bonds, Insurance Policies and Certificates required by the Contract Documents within ten (10) days after receiving the Notice of Award from the OWNER.

2.02 COPIES OF DOCUMENTS

- A. The OWNER shall furnish the CONTRACTOR 5 copies of the Contract Documents, together with 5 sets of full-scale Drawings. Additional quantities of the Contract Documents will be furnished at reproduction cost.

2.03 STARTING THE PROJECT

- A. The CONTRACTOR shall begin construction of the WORK within 10 days after the commencement date stated in the Notice to Proceed, but shall not commence construction prior to the commencement date.

2.04 BEFORE STARTING CONSTRUCTION

- A. Before undertaking each part of the WORK, the CONTRACTOR shall carefully study and compare the Contract Documents to check and verify pertinent figures and dimensions shown thereon with all applicable field measurements. The CONTRACTOR shall promptly report in writing to the ENGINEER any conflict, error, or discrepancy which the CONTRACTOR may discover and shall obtain a written interpretation or clarification from the ENGINEER before proceeding with any work affected thereby.
- B. The CONTRACTOR shall submit to the ENGINEER for review those documents called for in each section of the Technical Specifications.

2.05 PRECONSTRUCTION CONFERENCE

- A. The CONTRACTOR shall attend a preconstruction conference with the OWNER, the ENGINEER and others as appropriate to discuss the construction of the WORK in accordance with the Contract Documents.

GENERAL CONDITIONS

2.06 FINALIZING SCHEDULES

- A. At least 7 days before the CONTRACTOR's submittal of its first Application for Payment, the CONTRACTOR, the ENGINEER, and others as appropriate will meet to finalize the schedules submitted in accordance with the Technical Specifications.

GENERAL CONDITIONS

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 INTENT

- A. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK. The Contract Documents are complementary, what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.
- B. It is the intent of the Contract Documents to describe the WORK, functionally complete, to be constructed in accordance with the Contract Documents. All work, materials, or equipment that may be reasonably inferred from the Contract Documents as being required to produce the completed work shall be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe work, materials, or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals, or codes or any technical society, organization, or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the OWNER, the CONTRACTOR, or the ENGINEER or any of their consultants, agents, or employees from those set forth in the Contract Documents.
- C. If, during the performance of the WORK, the CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, the CONTRACTOR shall immediately report it to the ENGINEER in writing and before proceeding with the work affected thereby. The ENGINEER shall then make a written interpretation, clarification, or correction from the ENGINEER.

GENERAL CONDITIONS

3.02 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

- A. In resolving conflicts resulting from conflicts, errors, or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:
 - 1. Change Orders
 - 2. Agreement
 - 3. Addenda
 - 4. Contractor's Bid (Bid Form)
 - 5. Supplemental General Conditions
 - 6. Notice Inviting Bids
 - 7. Instructions to Bidders
 - 8. General Conditions
 - 9. Technical Specifications
 - 10. Referenced Standard Specifications
 - 11. Drawings

- B. With reference to the Drawings the order of precedence is as follows:
 - 1. Figures govern over scaled dimensions
 - 2. Detail drawings govern over general drawings
 - 3. Addenda/change order drawings govern over general drawings
 - 4. Contract Drawings govern over standard drawings

3.03 AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS

- A. The Contract Documents may be amended by a Change Order (pursuant to Article 10) to provide for additions, deletions or revisions in the WORK or to modify terms and conditions.

3.04 REUSE OF DOCUMENTS

GENERAL CONDITIONS

- A. Neither the CONTRACTOR, Subcontractor, Supplier, nor any other person or organization performing any of the WORK under a contract with the OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Technical Specifications, or other documents used on the WORK, and they shall not reuse any of them on the extensions of the Project or any other project without written consent.

GENERAL CONDITIONS

ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS: REFERENCE POINTS

4.01 AVAILABILITY OF LANDS

- A. The OWNER shall furnish the lands, rights-of-way and easements upon which the WORK is to be performed and for access thereto, together with other lands designated for the use of the CONTRACTOR in the Contract Documents. Easements for permanent structures or permanent changes in existing major facilities will be obtained and paid for by the OWNER, unless otherwise provided in the Contract Documents. Nothing contained in the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or rights-of-way provided. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. The CONTRACTOR shall not enter upon nor use any property not under the control of the OWNER until a written temporary construction easement agreement has been executed by the CONTRACTOR and the property owner, and a copy of the easement furnished to the ENGINEER prior to its use. Neither the OWNER nor the ENGINEER shall be liable for any claims or damages resulting from the CONTRACTOR's unauthorized trespass or use of any properties.

4.02 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES

- A. Explorations and Reports: The paragraph entitled "Physical Conditions" of the Supplementary General Conditions identifies exploration reports and subsurface conditions tests at the site that have been utilized by the ENGINEER in the preparation of the Contract Documents. The CONTRACTOR may rely upon the accuracy of the Technical Data contained in these reports. The CONTRACTOR is responsible for the interpretation, extrapolation or interpolation of all technical as well as nontechnical data and its reliance on the completeness, opinions and interpretation of the reports.
- B. Existing Structures: The paragraph entitled "Physical Conditions" of the Supplementary General Conditions identifies the drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Utilities referred to in Paragraph 4.04 herein) which are at or contiguous to the site that have been utilized by the ENGINEER in the preparation of the Contract Documents. The CONTRACTOR is responsible for the interpretation, extrapolation or interpolation of all technical as well as nontechnical data and its reliance on the completeness, opinions and interpretation of the reports.

GENERAL CONDITIONS

4.03 DIFFERING SITE CONDITIONS

- A. The CONTRACTOR shall notify the ENGINEER upon encountering any of the following unforeseen conditions, hereinafter called "differing site conditions," during the prosecution of the WORK. The CONTRACTOR's notice to the ENGINEER shall be in writing and delivered before the differing site conditions are disturbed, but in no event later than 14 days after their discovery.
1. Subsurface or latent physical conditions at the site of the WORK differing materially from those indicated, described, or delineated in the Contract Documents including those reports and documents discussed in Paragraph 4.02; and
 2. Physical conditions at the site of the WORK of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents including those reports and documents discussed in Paragraph 4.02.
- B. The ENGINEER will review the alleged differing site conditions, determine the necessity of obtaining additional explorations or tests with respect to verifying their existence and extent and advise the OWNER in writing of the ENGINEER's findings and conclusions.
- C. If the OWNER concludes that because of newly discovered conditions a change in the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the differing site conditions.
- D. In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to the differing site conditions. If the OWNER and the CONTRACTOR are unable to agree as to the amount or length of the Change Order, a claim may be made as provided in Articles 11 and 12.
- E. The CONTRACTOR's failure to give written notice of differing site conditions within 14 days of their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith, whether direct or consequential in nature.

GENERAL CONDITIONS

4.04 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Utilities at or contiguous to the site are based on information and data furnished to the OWNER or the ENGINEER by the owners of Underground Utilities or by others. Unless it is expressly provided in the Supplementary General Conditions and/or the Section entitled "Protection and Restoration of Existing Facilities" of the Technical Specifications, the OWNER and the ENGINEER shall not be responsible for the accuracy or completeness of any Underground Utilities information or data. The CONTRACTOR's responsibility relating to underground utilities are: review and check all information and data, locate all Underground Utilities shown or indicated in the Contract Documents, coordinate the WORK with the owners of Underground Utilities during construction, the safeguard and protect the of Underground Utilities, and repair any damage to Underground Utilities resulting from the WORK. The cost of all these activities will be considered as having been included in the Contact Price.
- B. Not Shown or Indicated: If an Underground Utility not shown or indicated in the Contract Documents is uncovered or revealed at or contiguous to the site and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall give written notice to the OWNER of that utility and the ENGINEER, specifying the location of the utility in question.

4.05 REFERENCE POINTS

- A. The ENGINEER will provide one bench mark, near or on the site of the WORK, and will provide two points near or on the site to establish a base line for use by the ENGINEER for alignment control. Unless otherwise specified in the Technical Specifications, the CONTRACTOR shall furnish all other lines, grades, and bench marks required for proper execution of the WORK.
- B. The CONTRACTOR shall preserve all bench marks, stakes, and other survey marks. In case of their removal or destruction by its own employees or by its subcontractor's employees, the CONTRACTOR shall be responsible for the accurate replacement of reference points by professionally qualified personnel at no additional cost to the OWNER.

GENERAL CONDITIONS

ARTICLE 5 - BONDS AND INSURANCE

5.01 PERFORMANCE AND OTHER BONDS

- A. The CONTRACTOR shall furnish Performance and Payment Bonds, each in the amount set forth in the Supplementary General Conditions as security for the faithful performance and payment of all the CONTRACTOR's obligations under the Contract Documents. The Performance Bond shall remain in effect at least until one year after the date of Notice of Completion, except as otherwise provided by Law or Regulation or by the Contract Documents. After the ENGINEER issues the Notice of Completion, the amount of the Performance Bond may be reduced to 10 percent of the Contract Price, or \$1,000, whichever is greater. The CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary General Conditions.

- B. If the surety on any Bond furnished by the CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within 7 days after written approval by the OWNER of a substitute Bond and Surety substitute the approved Bond and Surety.

5.02 INSURANCE

- A. The CONTRACTOR shall purchase and maintain the insurance required under this paragraph. This insurance shall include the specific coverages set out herein and be written for not less than the limits of liability and coverages provided in the Supplementary General Conditions, or required by law, whichever is greater. The CONTRACTOR's liabilities under the Agreement shall not be deemed limited in any way to the insurance coverage required.

- B. The CONTRACTOR shall furnish the OWNER and ENGINEER with certificates indicating the type, amount, class of operations covered, effective dates and expiration dates of all policies. All insurance policies purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 30 days' prior written notice has been given to the OWNER by certified mail. All insurance shall remain in effect until the ENGINEER issues the Notice of Completion and at all times thereafter when the CONTRACTOR may be correcting, removing, or replacing defective work in accordance with Paragraph 13.06 or completing punch list items required by the Notice of Completion. In addition, the insurance required herein (except for Worker's Compensation and Employer's Liability) shall name the OWNER, the ENGINEER, and their officers, agents, and employees as "additional insured" under the policies.

GENERAL CONDITIONS

1. Workers' Compensation and Employer's Liability: This insurance shall protect the CONTRACTOR against all claims under applicable state workers' compensation laws. The CONTRACTOR shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers' compensation law. This policy shall include an "all states" endorsement. The CONTRACTOR shall require each subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees to be engaged in the WORK unless its employees are covered by the protection afforded by the CONTRACTOR's Workers' Compensation Insurance. In the event a class of employees is not protected under the Workers' Compensation Statute, the CONTRACTOR or Subcontractor, as the case may be, shall provide adequate employer's liability insurance for the protection of its employees not protected under the statute.

2. Comprehensive General Liability: This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims arising from injuries to persons other than its employees and damage to property of the OWNER or others arising out of any act or omission of the CONTRACTOR or its agents, employees or subcontractors. The policy shall include the following endorsements: (1) Protective Liability endorsement to insure the contractual liability assumed by the CONTRACTOR under the indemnification provisions in these General Conditions; (2) Broad Form Property Damage endorsement; (3) Personal Injury endorsement to cover personal injury liability for intangible harm. The Comprehensive General Liability coverage shall contain no exclusion relative to blasting, explosion, collapse of building, or damage to underground structures.

3. Comprehensive Automobile Liability: This insurance shall be written in comprehensive form. The policy shall protect the CONTRACTOR against all claims for injuries to employees, members of the public and damage to property of others arising from the use of CONTRACTOR's motor vehicles, whether they are owned, non-owned, or hired, and whether used or operated on or off the site. The motor vehicle insurance required under this paragraph shall include: (a) motor vehicle liability coverage; (b) personal injury protection coverage and benefits; and (c) uninsured motor vehicle coverage.

GENERAL CONDITIONS

4. Subcontractor's Insurance: The CONTRACTOR shall require each of its subcontractors to procure and to maintain Comprehensive General Liability Insurance and Comprehensive Automobile Liability Insurance of the type and in the amounts specified in the Supplementary General Conditions or insure the activities of its subcontractors in the CONTRACTOR's own policy, in like amount.

5. Builder's Risk: This insurance shall be of the "all risk" type, shall be written in completed value form, and shall protect the CONTRACTOR, the OWNER, and the ENGINEER against damage to buildings, structures, materials and equipment. The amount of this insurance shall not be less than the insurable value of the WORK at completion. Builder's risk insurance shall provide for losses to be payable to the CONTRACTOR, the OWNER, and the ENGINEER as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, the OWNER, and the ENGINEER. The Builder's Risk policy shall insure against all risks of direct physical loss or damage to property from any external cause including flood and earthquake. Allowable exclusions, if any, shall be as specified in the Supplementary General Conditions.

GENERAL CONDITIONS

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 SUPERVISION AND SUPERINTENDENCE

- A. The CONTRACTOR shall supervise and direct the WORK competently and efficiently, devoting the attention and applying the skills and expertise necessary to perform the WORK in accordance with the Contract Documents. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incidental thereto. The CONTRACTOR shall be responsible to see that the finished WORK complies accurately with the Contract Documents.
- B. The CONTRACTOR shall employ the Superintendent named in "Information Required of Bidder" on the work site at all times during the progress of the WORK. The superintendent shall not be replaced without the OWNER's written consent. The superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall issue all its communications to the OWNER through the ENGINEER.
- C. The CONTRACTOR's superintendent shall be present at the site of the WORK at all times while work is in progress. Failure to observe this requirement shall be considered suspension of the WORK by the CONTRACTOR until the superintendent is again present at the site.

6.02 LABOR, MATERIALS, AND EQUIPMENT

- A. The CONTRACTOR shall provide skilled, competent and suitably qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. When required in writing by the OWNER or ENGINEER, the CONTRACTOR or any subcontractor shall discharge any person who is, in the opinion of the OWNER or ENGINEER, incompetent, disorderly, or otherwise unsatisfactory and shall not again employ the discharged person on the WORK without the consent of the OWNER or ENGINEER. The CONTRACTOR shall at all times maintain good discipline and order at the site.
- B. Except in connection with the safety or protection of persons the WORK, or property at the site or adjacent thereto, all work at the site shall be performed during regular working hours, and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday without the OWNER's written consent given after prior written notice

GENERAL CONDITIONS

to the ENGINEER. Except as otherwise provided in this Paragraph, the CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of 8 hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing. Additional compensation will be paid the CONTRACTOR for overtime work in the event extra work is ordered by the ENGINEER and the Change Order specifically authorizes the use of overtime work, but only to the extent that the CONTRACTOR pays overtime wages on a regular basis being paid by for overtime work of a similar nature in the same locality.

- C. All costs of inspection and testing performed during overtime work approved solely for the convenience of the CONTRACTOR shall be borne by the CONTRACTOR. The OWNER shall have the authority to deduct the costs of all inspection and testing from any partial payments otherwise due to the CONTRACTOR.
- D. Unless otherwise specified in the Contract Documents, the CONTRACTOR shall furnish, erect, maintain and remove the construction plant, and temporary works and assume full responsibility for all materials, equipment, labor, transportation, construction equipment, machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities and all other facilities and incidentals necessary for the furnishing, performance testing, start-up and completion of the WORK.
- E. All materials and equipment incorporated into the WORK shall be of new and good quality, except as otherwise provided in the Contract Documents. If required by the ENGINEER, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. The CONTRACTOR shall apply, install, connect, erect, use, clean, and condition all material and equipment in accordance with the instructions of the manufacturer and Supplier except as otherwise provided in the Contract Documents.

6.03 ADJUSTING PROGRESS SCHEDULE

- A. The CONTRACTOR shall submit any adjustments in the progress schedule to the ENGINEER for acceptance in accordance with the provisions for "Contractor Submittals" in the Technical Specifications.

GENERAL CONDITIONS

6.04 SUBSTITUTES OR "OR-EQUAL" ITEMS

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below:
1. "Or-Equal" Items: If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.04.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is a least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;
 - b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Document.
 2. Substitute Items
 - a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.04.A.1, it will be considered a proposed substitute item.
 - b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or

GENERAL CONDITIONS

equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

- c. The procedure for review by ENGINEER will be as set forth in paragraph 6.04.A.2.d, as supplemented in the Technical Specifications and as ENGINEER may decide is appropriate under the circumstances.
 - d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item, and whether or not incorporation or use of the substitute item is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.
- B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in

GENERAL CONDITIONS

ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.04.A.2.

- C. Engineer's Evaluation: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.04.A and 6.04.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.
- D. Special Guarantee: OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.
- E. ENGINEER's Cost Reimbursement: ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.04.A.2 and 6.04.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluation each such proposed substitute.
- F. CONTRACTOR's EXPENSE: CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.05 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- A. The CONTRACTOR shall be responsible to the OWNER and the ENGINEER for the acts and omissions of its subcontractors and their employees to the same extent as the CONTRACTOR is responsible for the acts and omissions of its own employees. Nothing contained in this paragraph shall create any contractual relationship between any subcontractor and the OWNER or the ENGINEER nor relieve the CONTRACTOR of any liability or obligation under the Agreement.

6.06 PERMITS

GENERAL CONDITIONS

- A. Unless otherwise provided in the Supplementary General Conditions, the CONTRACTOR shall obtain and pay for all construction permits and licenses from the agencies having jurisdiction, including furnishing the insurance and bonds required by such agencies. The costs incurred by the CONTRACTOR in compliance with this paragraph shall not be made the basis for claims for additional compensation. The OWNER shall assist the CONTRACTOR, when necessary, in obtaining such permits and licenses. The CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bids, including all utility connection charges for utilities required by the WORK.

- B. The CONTRACTOR shall pay all license fees and royalties and assume all costs when any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others when issued in the construction of the WORK or incorporated into the WORK. If a particular invention, design, process, product, or device is specified in the Contract Documents for incorporation into or use in the construction of the WORK and if to the actual knowledge of the OWNER or the ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of these rights shall be disclosed by the OWNER in the Contract Documents. The CONTRACTOR shall indemnify, defend and hold harmless the OWNER and the ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorneys' fees and court costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the WORK or resulting from the incorporation in the WORK of any invention, design, process, product, or device not specified in the Contract Documents.

6.07 LAWS AND REGULATIONS

- A. The CONTRACTOR shall observe and comply with all federal, state, and local laws, ordinances, codes, orders, and regulations which in any manner affect those engaged or employed on the WORK, the materials used in the WORK, or the conduct of the WORK. If any discrepancy or inconsistency should be discovered in the Contract Documents in relation to any law, ordinance, code, order, or regulations, the CONTRACTOR shall report the same in writing to the ENGINEER. The CONTRACTOR shall indemnify, defend and hold harmless the OWNER, the ENGINEER and their officers, agents, and employees against all claims and from violation of any law, ordinance, code, order, or regulation, whether by CONTRACTOR or by its employees or subcontractors. Any particular law or regulation specified or

GENERAL CONDITIONS

referred to elsewhere in the Contract Documents shall not in any way limit the obligation of the CONTRACTOR to comply with all other provisions of federal, state, and local laws and regulations. Where an individual State act on occupational safety and health standards has been approved by Federal authority, then the provision of said State act shall control.

6.08 EQUAL OPPORTUNITY

- A. The Contractor agrees to abide by: the provisions of Title VII of the Civil Rights Act of 1964 (42USC § § 2000e et seq.), which prohibits discrimination against any employee or applicant for employment on the basis of race, religion, color, or national origin; Executive Order No. 11246, as amended, which prohibits discrimination on the basis of sex; 45 CFR 90, which prohibits discrimination on the basis of age; Section 504 of the Rehabilitation Act of 1973, (42 USC § 794), which prohibits discrimination on the basis of handicap; Utah Executive Order dated June 30, 1989, which prohibits sexual harassment in the workplace; and the Americans with Disabilities Act (42 USC § § 12111 et seq.), which prohibits discrimination against qualified employees and applicants with a disability.

GENERAL CONDITIONS

6.09 TAXES

- A. The CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by the CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the WORK.

6.10 USE OF PREMISES

- A. The CONTRACTOR shall confine construction equipment, stored materials and equipment, and other operations of workers to (1) the Project site, (2) the land and areas identified for the CONTRACTOR's use in the Contract Documents, and (3) other lands whose use is acquired by Laws and Regulations, rights-of-way, permits, and easements. The CONTRACTOR shall be fully responsible to the owner and occupant of such lands for any damage to the lands or areas contiguous thereto, resulting from the performance of the WORK or otherwise. Should any claim be made against the OWNER or the ENGINEER by owner or occupant of lands because of the performance of the WORK, the CONTRACTOR shall promptly settle the claim by agreement, or resolve the claim through litigation. The CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify, defend, and hold the OWNER and the ENGINEER harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals and court costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any owner or occupant of land against the OWNER or the ENGINEER to the extent the claim is based or arises out of the CONTRACTOR's performance of the WORK.

6.11 SAFETY AND PROTECTION

- A. The CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the WORK. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. All employees on the WORK and other persons and organizations who may be affected thereby.
 - 2. All the WORK and materials and equipment to be incorporated therein, whether in storage on or off the site; and

GENERAL CONDITIONS

3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- B. The CONTRACTOR shall comply with all applicable Laws and Regulations (whether referred to herein or not) of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utilities when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Unless the CONTRACTOR otherwise designates in writing a different individual as the responsible individual, the CONTRACTOR's superintendent shall be CONTRACTOR's representative at the site whose duty shall be the prevention of accidents.

6.12 SHOP DRAWINGS AND SAMPLES

- A. After checking and verifying all field measurements and after complying with the applicable procedures specified in the Technical Specifications, the CONTRACTOR shall submit all shop drawings to the ENGINEER for review and approval in accordance with the approved schedule for shop drawings submittals specified in the Technical Specifications.
- B. The CONTRACTOR shall also submit to the ENGINEER for review and approval all samples in accordance with the approved schedule of sample submittals specified in the Technical Specifications.
- C. Before submitting shop drawings or samples, the CONTRACTOR shall determine and verify all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and review or coordinate each shop drawing or sample with other shop drawings and samples and with the requirements of the WORK and the Contract Documents.

GENERAL CONDITIONS

6.13 CONTINUING THE WORK

- A. The CONTRACTOR shall carry on the WORK and adhere to the progress schedule during all disputes or disagreements with the OWNER. No work shall be delayed or postponed pending resolution of any dispute or disagreement, except as the CONTRACTOR and the OWNER may otherwise mutually agree in writing.

6.14 INDEMNIFICATION

- A. To the fullest extent permitted by Laws and Regulations, the CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, and their officers, agents, and employees, against and from all claims and liability arising under or by reason of the Agreement or any performance of the WORK, but not from the sole negligence or willful misconduct of the OWNER and/or the ENGINEER. Such indemnification by the CONTRACTOR shall include but not be limited to the following:
 - 1. Liability or claims resulting directly or indirectly from the negligence or carelessness of the CONTRACTOR or its agents in the performance of the WORK, or in guarding or maintaining the same, or from any improper materials, implements, or appliances used in its construction, or by or on account of any act or omission of the CONTRACTOR or its agents;
 - 2. Liability or claims arising directly or indirectly from or based on the violation of any law, ordinance, regulation, order, or decree, whether by the CONTRACTOR or its agents;
 - 3. Liability or claims arising directly or indirectly from the use or manufacture by the CONTRACTOR, its agents, or the OWNER in the performance of this Agreement of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, or appliance, unless otherwise specifically stipulated in this Agreement.
 - 4. Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the OWNER or any other parties by the CONTRACTOR or its agents;
 - 5. Liabilities or claims arising directly or indirectly from the willful misconduct of the CONTRACTOR or its agents; and,

GENERAL CONDITIONS

6. Liabilities or claims arising directly or indirectly from any breach of the obligations assumed herein by the CONTRACTOR.
 - B. The CONTRACTOR shall reimburse the OWNER, and the ENGINEER for all costs and expense, (including but not limited to fees and charges of engineers, architects, attorneys, and other professional and court costs) incurred by the OWNER, and the ENGINEER in enforcing the provisions of this Paragraph.
 - C. The indemnification obligation under this Paragraph shall not be limited in any way by any limitation of the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any such subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.

6.15 CONTRACTOR'S DAILY REPORTS

- A. The CONTRACTOR shall complete a daily report indicating manpower, major equipment, subcontractors, weather conditions, etc., involved in the performance of the WORK. The daily report shall be completed on forms prepared by the CONTRACTOR and acceptable to the ENGINEER, and shall be submitted to the ENGINEER at the conclusion of each work day.

6.16 ASSIGNMENT OF CONTRACT

- A. The CONTRACTOR shall not assign, sublet, sell, transfer, or otherwise dispose of the Agreement or any portion thereof, or its right, title, or interest therein, or obligations thereunder, without the written consent of the OWNER except as imposed by law. If the CONTRACTOR violates this provision, the Agreement may be terminated at the option of the OWNER. In such event, the OWNER shall be relieved of all liability and obligations to the CONTRACTOR and to its assignee or transferee, growing out of such termination.

GENERAL CONDITIONS

ARTICLE 7 - OTHER WORK

7.01 RELATED WORK

- A. The OWNER may perform other work related to the Project at the site by the OWNER's own forces, have other work performed by utility owners, or let other direct contracts for the performance of the other work which may contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to commencing any other work.
- B. The CONTRACTOR shall afford each utility owner and other contractor who is a party to a direct contract (or the OWNER, if the OWNER is performing the additional work with the OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of the other work. The CONTRACTOR shall properly connect and coordinate the WORK with the other work. The CONTRACTOR shall do all cutting, fitting, and patching of the WORK that may be required to make its several parts come together properly and integrate with the other work. The CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and shall only cut or alter their work with the written consent of the ENGINEER and the others whose work will be affected.
- C. If the proper execution or results of any part of the CONTRACTOR's work depends upon the integration of work with the completion of other work by any other contractor or utility owner (or the OWNER), the CONTRACTOR shall inspect and report to the ENGINEER in writing all delays, defects, or deficiencies in the other work that renders it unavailable or unsuitable for proper integration with the CONTRACTOR's work. Except for the results or effects of latent or nonapparent defects and deficiencies in the other work, the CONTRACTOR's failure to report will constitute an acceptance of the other work as fit and proper for integration with the CONTRACTOR's work and as a waiver of any claim for additional time or compensation associated with the integration of the CONTRACTOR's work with the other work.

GENERAL CONDITIONS

7.02 COORDINATION

- A. If the OWNER contracts with others for the performance of other work on the Project at the site, a coordinator will be identified to the extent that the coordinator can be identified at this time, in the Supplementary General Conditions and delegated the authority and responsibility for coordination of the activities among the various contractors. The specific matters over which the coordinator has authority and the extent of the coordinator's authority and responsibility will be itemized in the Supplementary General Conditions or in a notice to the CONTRACTOR at such time as the identity of the coordinator is determined.

GENERAL CONDITIONS

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 COMMUNICATIONS

- A. The OWNER shall issue all its communications to the CONTRACTOR through the ENGINEER.

8.02 PAYMENTS

- A. The OWNER shall make payments to the CONTRACTOR as provided in Paragraphs 14.05 and 14.09.

8.03 LANDS, EASEMENTS, AND SURVEYS

- A. The OWNER's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. The OWNER shall identify and make available to the CONTRACTOR copies of exploration reports and subsurface conditions tests at the site and in existing structures which have been utilized by the ENGINEER in preparing the Drawings and Technical Specifications as set forth in Paragraph 4.02

8.04 CHANGE ORDERS

- A. The OWNER shall execute approved Change Orders for the conditions described in Paragraph 10.01D.

8.05 INSPECTIONS AND TESTS

- A. The OWNER's responsibility with respect to inspection, tests, and approvals is set forth in Paragraph 13.03B.

8.06 SUSPENSION OF WORK

- A. In connection with the OWNER's right to stop work or suspend work, see Paragraphs 13.04 and 15.01. Paragraphs 15.02 and 15.03 deal with the OWNER's right to terminate services of the CONTRACTOR under certain circumstances.

GENERAL CONDITIONS

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 OWNER'S REPRESENTATIVE

- A. The ENGINEER will be the OWNER's representative during the construction period. The duties, responsibilities and the limitations of authority of the ENGINEER as the OWNER's representative during construction are set forth in a separate agreement with the OWNER and are summarized hereafter.

9.02 VISITS TO SITE

- A. The ENGINEER will make visits to the site during construction to observe and inspect the progress and quality of the WORK and to determine, in general if the WORK is proceeding in accordance with the Contract Documents.

9.03 PROJECT REPRESENTATION

- A. The ENGINEER will furnish a Project Representative to observe and inspect the performance of the WORK. The Project Representative and/or other authorized agents of the Engineer shall serve as the chief Owner/Engineer contact(s) with the Contractor during the construction phase. All submittals shall be delivered to and communications between the Engineer and the Contractor shall be handled by the Project Representative and/or other authorized agents. The Project Representative shall be the chief authorized representative of the Owner and the Engineer at the site of the work in all on-site relations with the Contractor.

9.04 CLARIFICATIONS AND INTERPRETATIONS

- A. The ENGINEER will issue with reasonable promptness written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

9.05 AUTHORIZED VARIATIONS IN WORK

- A. The ENGINEER may authorize minor variation in the WORK as described in the Contract Documents when such variations do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These variations shall be accomplished by issuing a Field Order. The issuance of a Field Order requires the CONTRACTOR to perform the work described in the order promptly. If the

GENERAL CONDITIONS

CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and parties are unable to agree as the amount or extent thereof, the CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

9.06 REJECTION OF DEFECTIVE WORK

- A. The ENGINEER is authorized to reject work which the ENGINEER believes to be defective and require special inspection or testing of the WORK as provided in Paragraph 13.03G, whether or not the WORK is fabricated, installed, or completed.

9.07 CONTRACTOR SUBMITTALS, CHANGE ORDERS, AND PAYMENTS

- A. The ENGINEER will review for approval all Contractor submittals, including shop drawings, samples, substitutes, and "or equal" items, etc., in accordance with the procedures set forth in the Technical Specifications.
- B. In connection with the ENGINEER's responsibilities as to Change Orders, see Articles 10, 11, and 12.
- C. In connection with the ENGINEER's responsibilities with respect to Applications for Payment, see Article 14.

9.08 DECISIONS ON DISPUTES

- A. All claims, disputes, and other matters concerning the acceptability of the WORK, the interpretation of the requirements of the Contract Documents pertaining to the performance of the WORK, and claims for changes in the Contract Price or Contract Time under Articles 11 and 12 will be referred to the ENGINEER in writing with a request for formal decision in accordance with this paragraph. The ENGINEER will render a decision in writing within 30 days of receipt of the request. Written notice of each claim, dispute, or other matter will be delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event. Written supporting data will be submitted to the ENGINEER with the written claim unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.
- B. When reviewing the claim or dispute, the ENGINEER will not show partiality to the OWNER or the CONTRACTOR and will incur no liability in connection with any interpretation or decision rendered in good faith. The ENGINEER's rendering of a decision with respect to any claim, dispute, or other matter (except any which have been waived by the making or acceptance of final

GENERAL CONDITIONS

payment as provided in Paragraph 14.12) shall be a condition precedent to the OWNER's or the CONTRACTOR's exercise of their rights or remedies under the Contract Documents or by Law or Regulations with respect to the claim, dispute, or other matter.

9.09 LIMITATION ON ENGINEER'S RESPONSIBILITIES

- A. Neither the ENGINEER's authority to act pursuant to its agreement with the OWNER, nor the description of that authority under this Article 9, nor any other description of the ENGINEER's responsibility in the Contract Documents, nor any decision made by the ENGINEER in good faith either to exercise or not exercise its authority, shall give rise to any duty or responsibility on the part of the ENGINEER to the CONTRACTOR, any Subcontractor, any Supplier, any surety or any other person or organization performing any part of the WORK.
- B. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as reviewed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgement of the ENGINEER as to the WORK, it is intended that such requirement, direction, review, or judgment will be solely to evaluate the WORK for compliance with the Contract Documents, unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the ENGINEER any duty or authority to supervise or direct the performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of its agreement with the OWNER.
- C. The ENGINEER will not be responsible for the CONTRACTOR's means, methods, techniques, sequences, or procedures of construction not specified in the Contract Documents or the safety precautions and programs incident thereto.
- D. The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR nor of any subcontractor, supplier, or any other person or organization performing any of the WORK to the extent that such acts or omissions are not reasonably discoverable considering the level of observation and inspection required by the ENGINEER's agreement with the OWNER.

GENERAL CONDITIONS

ARTICLE 10 - CHANGES IN THE WORK

10.01 GENERAL

- A. Without invalidating the Agreement and without notice to any surety, the OWNER may at any time or from time to time, order additions, deletions, or revisions in the WORK; these will be authorized by a written Field Order and/or a Change Order issued by the ENGINEER. Upon receipt of any of these documents, the CONTRACTOR shall promptly proceed with the work involved pursuant to the applicable conditions of the Contract Documents.
- B. If the OWNER and the CONTRACTOR are unable to agree upon the increase or decrease in the Contract Price or an extension or shortening of the Contract Time, if any, that should be allowed as a result of a Field Order, a claim may be made therefor as provided in Articles 11 or 12.
- C. The CONTRACTOR shall not be entitled to an increase in the Contract Price nor an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented by Change Order, except in the case of an emergency and except in the case of uncovering work provided in the Paragraph 13.03G.
- D. The OWNER and the CONTRACTOR shall execute appropriate Change Orders covering:
 - 1. Changes in the WORK which are ordered by the OWNER pursuant to Paragraph 10.01A;
 - 2. Changes required because of acceptance of defective work under Paragraph 13.06;
 - 3. Changes in the Contract Price or Contract Time which are agreed to by the parties; or
 - 4. Any other changes agreed to by the parties.
- E. If the provisions of any Bond require notice of any change to be given to a surety, the giving of these notices will be the CONTRACTOR's responsibility. The CONTRACTOR shall provide for the amount of each applicable Bond to be adjusted accordingly.

GENERAL CONDITIONS

10.02 ALLOWABLE QUANTITY VARIATIONS

- A. Whenever a unit price and quantity have been established for a bid item in the Contract Documents, the quantity stated may be increased or decreased to a maximum of 25 percent with no change in the unit price. An adjustment in the quantity in excess of 25 percent will be sufficient to justify a change in the unit price. Changes in the quantity of all bid items established in the Contract Documents, regardless of whether the changes are more or less than 25 percent and at the unit price established in the Contract Documents or adjusted otherwise, shall be documented by Change Orders.

- B. In the event a part of the WORK is to be entirely eliminated and no lump sum or unit price is named in the Contract Documents to cover the eliminated work, the price of the eliminated work shall be agreed upon in writing by the OWNER and the CONTRACTOR. If the OWNER and the CONTRACTOR fail to agree upon the price of the eliminated work, the price shall be determined in accordance with the provisions of Article 11.

GENERAL CONDITIONS

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.01 GENERAL

- A. The Contact Price constitutes the total compensation payable to the CONTRACTOR for performing the WORK. Except as directed by Change Orders, all duties, responsibilities, and obligations assigned to or undertaken by the CONTRACTOR shall be at its expense without change in the Contract Price.

- B. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contact Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered with the claim, unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim, and shall be accompanied by the CONTRACTOR's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of the event. If the OWNER and the CONTRACTOR cannot otherwise agree on the amount involved, all claims for adjustment in the Contract Price shall be determined by the ENGINEER in accordance with Paragraph 9.08A. No claim for an adjustment in the Contact Price will be valid if not submitted in accordance with this Paragraph 11.01B.

- C. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contact Price shall be determined in one of the following ways:
 - 1. Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
 - 2. By mutual acceptance of a lump sum, which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.
 - 3. On the basis of the cost of work (determined as provided in Paragraphs 11.02 and 11.03) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.04).

GENERAL CONDITIONS

11.02 COST OF WORK (BASED ON TIME AND MATERIALS)

- A. General: The term "cost of work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR for labor, materials, and equipment in the proper performance of work. Except as otherwise may be agreed to in writing by the OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project.
- B. Labor: The cost of labor used in performing work by the CONTRACTOR, a subcontractor, or other forces will be the sum of the following:
1. The actual wages paid plus any employer payments to, or on behalf of workers for fringe benefits including health and welfare, pension, vacation, and similar purposes. The cost of labor may include the rates paid to foremen when determined by the ENGINEER that the services of foremen do not constitute a part of the overhead allowance.
 2. All payments imposed by state and federal laws including, but not limited to, compensation insurance, and social security payments.
 3. The amount paid for subsistence and travel required by collective bargaining agreements, or in accordance with the regular practice of the employer.

At the beginning of the extra work and as later requested by the ENGINEER, the CONTRACTOR shall furnish the ENGINEER proof of labor compensation rates being paid.

- C. Materials: The cost of materials used in performing work will be the cost to the purchaser, whether CONTRACTOR or subcontractor, from the supplier thereof, except as the following are applicable:
1. Trade discounts available to the purchase shall be credited to the OWNER notwithstanding the fact that such discounts may not have been taken by the CONTRACTOR.
 2. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the ENGINEER. Markup except for actual costs incurred in the handling of such materials will not be allowed.

GENERAL CONDITIONS

3. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from these sources on extra work items or current wholesale price for the materials delivered to the work site, whichever is lower.
 4. If in the opinion of the ENGINEER the cost of material is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of the material, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned, delivered to the work site less trade discount. The OWNER reserves the right to furnish materials for the extra work and no claim shall be made by the CONTRACTOR for costs and profit on such materials.
- D. Equipment: The CONTRACTOR will be paid for the use of equipment at the rental rate listed for the equipment specified in the Supplementary General Conditions. The rental rate will be used to compute payments for equipment whether the equipment is under the CONTRACTOR's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate resulting in the least total cost to the Owner for the total period of use. If it is deemed necessary by the CONTRACTOR to use equipment not listed in the Supplementary General Conditions an equitable rental rate for the equipment will be established by the ENGINEER. The CONTRACTOR may furnish cost data which might assist the ENGINEER in the establishing the rental rate.
1. All equipment shall, in the opinion of the ENGINEER, be in good working condition and suitable for the purpose for which the equipment is to be used.
 2. Before construction equipment is used on the extra work, the CONTRACTOR shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the ENGINEER, in duplicate, a description of the equipment and its identifying number.
 3. Unless otherwise specified, manufacturers' ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.
 4. Individual pieces of equipment or tools having a replacement value of \$100 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.

GENERAL CONDITIONS

5. Rental time will not be allowed while equipment is inoperative due to breakdowns.
- E. Equipment on the Work: The rental time to be paid for equipment used on the WORK shall be the time the equipment is in productive operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location that requires no more moving time than that required to return it to its original location. Moving time will not be paid if the equipment is used on other than the extra work, even though located at the site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power. However, no payment will be made for loading and transporting costs when the equipment is used on other than the extra work even though located at the site of the extra work. The following shall be used in computing the rental time of equipment on the WORK.
1. When hourly rates are listed, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.
 2. When daily rates are listed, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the CONTRACTOR will be paid for the equipment and operator, as set forth in Paragraph (3), (4), and (5), following.
 3. Payment for the equipment will be made in accordance with the provisions in Paragraph 11.02D, herein.
 4. Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the CONTRACTOR to other workers operating similar equipment already on the WORK, or in the absence of such labor, established by collective bargaining agreements for the type of workmen and location of the extra work, whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Paragraph 11.02B, herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all payments made to on behalf of workers other than actual wages.

GENERAL CONDITIONS

5. To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Paragraph 11.04, herein.

11.03 SPECIAL SERVICES

- A. Special work or services are defined as that work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. The following may be considered by the ENGINEER in making estimates for payment for special services:
 1. When the ENGINEER and the CONTRACTOR, by agreement, determine that a special service or work is required which cannot be performed by the forces of the CONTRACTOR or those of any of its subcontractors, the special service or work may be performed by an entity especially skilled in the work to be performed. After validation of invoices and termination of market values by the ENGINEER, invoices for special services or work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental cost.
 2. When the CONTRACTOR is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from the job site, the charges for that portion of the work performed at the off-site facility may by agreement, be accepted as a special service and accordingly, the invoices from the work may be accepted without detailed itemization.
 3. All invoices for special services will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of the allowances for overhead and profit specified in Paragraph 11.04, herein, an allowance of 5 percent will be added to invoices for special services.
- B. All work performed hereunder shall be subject to all of the provisions of the Contract Documents and the CONTRACTOR's sureties shall be bound with reference hereto as under the original Agreement. Copies of all amendments to surety bonds or supplemental surety bonds shall be submitted to the OWNER for review prior to the performance of any work hereunder.

GENERAL CONDITIONS

11.04 CONTRACTOR'S FEE

- A. WORK ordered on the basis of time and materials will be paid for at the actual necessary cost as determined by the ENGINEER, plus allowances for overhead and profit. For extra work involving a combination of increases and decreases in the WORK the actual necessary cost will be the arithmetic sum of the additive and deductive costs. The allowance for overhead and profit shall include full compensation for superintendence, bond and insurance premiums, taxes, office expenses, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for under Paragraphs 11.02B, C, and D, herein including extended overhead and home office overhead. The allowance for overhead and profit will be made in accordance with the following schedule:

ACTUAL NECESSARY COST OVERHEAD AND PROFIT ALLOWANCE

Labor	10 percent
Materials	10 percent
Equipment	10 percent

- B. It is understood that labor, materials, and equipment may be furnished by the CONTRACTOR or by the subcontractor, the allowance specified herein shall be applied to the labor, materials, and equipment costs of the subcontractor, to which the CONTRACTOR may add 5 percent of the subcontractor's total cost for the extra work. Regardless of the number of hierarchical tiers of subcontractors, the 5 percent increase above the subcontractor's total cost which includes the allowances for overhead and profit specified herein may be applied one time only for each separate work transaction.

GENERAL CONDITIONS

ARTICLE 12 - CHANGE OF CONTRACT TIME

12.01 GENERAL

- A. The Contract Time may only be changed by a Change Order. Any claim for an extension of the Contract time shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within 30 days after such occurrence (unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the ENGINEER in accordance with Paragraph 9.08 if the OWNER and the CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this Paragraph 12.01A.

- B. The Contract Time will be extended in an amount equal to time lost if the CONTRACTOR makes a claim as provided in Paragraph 12.01A and the ENGINEER determines that the delay was caused by events beyond the control of the CONTRACTOR. Examples of events beyond the control of the CONTRACTOR include acts or neglect by the OWNER or others performing additional work as contemplated by Article 7, or by acts of God or of the public enemy, fire, floods, epidemics, quarantine restrictions, strikes, labor disputes, sabotage, or freight embargoes.

- C. All time limits stated in the Contract Documents are of the essence.

- D. None of the aforesaid time extensions shall entitle the CONTRACTOR to any adjustment in the Contract Price or any damages for delay. Furthermore, the CONTRACTOR hereby indemnifies and holds harmless the OWNER and ENGINEER, their officers, agents and employees from and against all claims, damages, losses and expenses (including lost property and attorney's fees) arising out of or resulting from the temporary suspension of work whether for the OWNER's convenience as defined in Article 15.01 (a) or for whatever other reasons including the stoppage of work by the ENGINEER for the CONTRACTOR's failure to comply with any order issued by the ENGINEER.

GENERAL CONDITIONS

12.02 EXTENSIONS OF THE TIME FOR DELAY DUE TO INCLEMENT WEATHER

- A. "Inclement weather" is any weather condition or conditions resulting immediately therefrom, causing the CONTRACTOR to suspend construction operations or preventing the CONTRACTOR from proceeding with at least 75 percent of the normal labor and equipment force engaged on the WORK.
- B. Should the CONTRACTOR prepare to begin work at the regular starting time at the beginning of any regular work shift on any day on which inclement weather, or its effects on the condition of the WORK prevents work from beginning at the usual starting time and the crew is dismissed as a result thereof, the CONTRACTOR will not be charged for a working day whether or not conditions change thereafter during the day and the major portion of the day could be considered to be suitable for construction operations.
- C. The CONTRACTOR shall base its construction schedule upon the inclusion of the number of days of inclement weather specified in the paragraph entitled "Inclement weather delays" of the Supplementary General Conditions. No extension of the Contract Time due to inclement weather will be considered until after the stated number of days of inclement weather has been reached. However, no reduction in Contract Time will be made if the number of inclement weather days is not reached.

12.03 EXTENSIONS OF TIME FOR OTHER DELAYS

- A. If the CONTRACTOR is delayed in completion of the WORK beyond the time named in the Contract Documents for the completion of the WORK, by acts of God or of the public enemy, fire, floods, epidemics, quarantine restrictions, strikes, labor disputes, industry-wide shortage of raw materials, sabotage or freight embargoes, the CONTRACTOR shall be entitled to an adjustment in the Contract Time. No such adjustment will be made unless the CONTRACTOR shall notify the ENGINEER in writing of the causes of delay within 15 calendar days from the beginning of any such delay. The ENGINEER shall ascertain the facts and the extent of the delay. No adjustment in time shall be made for delays resulting from noncompliance with the Contract, accidents, failure on the part of the CONTRACTOR to carry out the provisions of the Contract including failure to provide materials, equipment or workmanship meeting the requirements of the Contract Documents; the occurrence of such events shall not relieve the CONTRACTOR from the necessity of maintaining the required progress.
- B. In the event that Contract completion is delayed beyond the Contract Time named in the Specifications by reason of shortages of raw materials required for CONTRACTOR-furnished items, the CONTRACTOR shall be entitled to

GENERAL CONDITIONS

an adjustment in the Contract Time in like manner as if the WORK had been suspended for the convenience and benefit of the OWNER; provided, however, that the CONTRACTOR shall furnish documentation acceptable to the OWNER and ENGINEER that he placed or attempted to place firm orders with suppliers at a reasonable time in advance of the required date of delivery of the items in question, that such shortages shall have developed following the date such orders were placed or attempts made to place same, that said shortages are general throughout the affected industry, that said shortages are shortages of raw materials required to manufacture CONTRACTOR-furnished items and not simply failure of CONTRACTOR's suppliers to manufacture, assemble or ship items on time, and that the CONTRACTOR shall, to the degree possible, have made revisions in the sequence of his operations, within the terms of the Contract, to offset the expected delay. The CONTRACTOR shall notify the ENGINEER, in writing, concerning the cause of delay, within 15 calendar days of the beginning of such delay. The validity of any claim by the CONTRACTOR to an adjustment in the Contract Time shall be determined by the OWNER acting through the ENGINEER, and his findings thereon shall be based on the ENGINEER's knowledge and observations of the events involved and documentation submitted by the CONTRACTOR, showing all applicable facts relative to the foregoing provisions. Only the physical shortage of raw materials will be considered under these provisions as a cause for adjustment of time and no consideration will be given to any claim that items could not be obtained at a reasonable, practical, or economical cost or price, unless it is shown to the satisfaction of the OWNER that such items could have been obtained only at exorbitant prices entirely out of line with current rates taking into account the quantities involved and the usual practices in obtaining such quantities.

- C. If the CONTRACTOR is delayed in completion of the WORK by reason of changes made under the provisions of Article 10 or changed conditions as provided under Article 4.03, or by failure of the OWNER to acquire or clear right-of-way as provided under Article 15.01, or by any act of the ENGINEER or of the OWNER, not contemplated by the Contract, an adjustment in the Contract time will be made by the OWNER in like manner as if the WORK had been suspended for the convenience and benefit of the OWNER, except, that if the WORK is increased as a result of changes, the OWNER, at his sole discretion, may grant an adjustment in the number of calendar days for completion of the Contract. In the event of such delay, the CONTRACTOR shall notify the ENGINEER in writing of the causes of delay within 15 calendar days from the beginning of any such delay.

GENERAL CONDITIONS

ARTICLE 13 - WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

13.01 WARRANTY, GUARANTEE AND MAINTENANCE PERIOD

- A. The CONTRACTOR warrants and guarantees to the OWNER and the ENGINEER that all work, equipment, materials and workmanship are in accordance with the Contract Documents and are not defective. Prompt notice of defects discovered by the OWNER or ENGINEER shall be given to the CONTRACTOR. All defective work, whether or not in place, may be rejected, corrected, or accepted as provided in this Article 13.

- B. If within one (1) year after the date of Final Completion, as set by the Engineer's Notice of Completion, or a longer period of time prescribed by Laws or Regulations or by the terms of any applicable special guarantee or specific provisions of the Contract Documents, any work is found to be defective, the OWNER shall notify the CONTRACTOR in writing and the CONTRACTOR shall promptly, without cost to the OWNER and in accordance with the OWNER's written notification, either correct the defective work, or, if it has been rejected by the OWNER, remove it from the site and replace it with non-defective work. In the event the CONTRACTOR does not promptly comply with the notification, or in an emergency where delay would cause serious risk of loss or damage, the OWNER may have the defective work corrected or rejected work removed and replaced. All direct, indirect, and consequential costs of the removal and replacement including but not limited to fees and charges of engineers, architects, attorneys and other professionals will be paid by the CONTRACTOR. This paragraph shall not be construed to limit nor diminish the CONTRACTOR's absolute guarantee to complete the WORK in accordance with the Contract Documents.

13.02 ACCESS TO WORK

- A. The ENGINEER, other representatives of the OWNER, testing agencies, and governmental agencies with jurisdictional interests shall have access to the work at reasonable times for their observation, inspections, and testing. The CONTRACTOR shall provide proper and safe conditions for their access.

GENERAL CONDITIONS

13.03 TESTS AND INSPECTIONS

- A. The CONTRACTOR shall give the ENGINEER timely notice of readiness of the WORK for all required inspections, tests, or approvals.
- B. If Laws or Regulations of any public body other than the OWNER, with jurisdiction over the WORK require any work to be specifically inspected, tested, or approved, the CONTRACTOR shall pay all costs in connection therewith. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the OWNER's or the ENGINEER's acceptance of a Supplier of materials or equipment proposed as a substitution or-equal to be incorporated in the WORK and of materials or equipment submitted for review prior to the CONTRACTOR's purchase for incorporation in the WORK. The cost of all inspections, tests, and approvals with the exception of the above which are required by the Contract Documents shall be paid by the OWNER (unless otherwise specified).
- C. The ENGINEER will make, or have made, such inspections and test as the ENGINEER deems necessary to see that the WORK is being accomplished in accordance with the requirements of the Contract Documents. The Contractor without additional cost to the OWNER, shall provide the labor and equipment necessary to make the WORK available for inspections. Unless otherwise specified in the Supplementary General Conditions or the OWNER-ENGINEER Agreement, all other costs of inspection and testing will be borne by the OWNER. In the event the inspections or tests reveal non-compliance with the requirements of the Contract Documents, the CONTRACTOR shall bear the cost of corrective measures deemed necessary by the ENGINEER, as well as the cost of subsequent re-inspection and retesting. Neither observations by the ENGINEER nor inspections, tests, or approvals by others shall relieve the CONTRACTOR from the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.
- D. All inspections, tests, or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by properly licensed organizations selected by the OWNER.

GENERAL CONDITIONS

- E. If any work (including the work of others) that is to be inspected, tested, or approved is covered without the ENGINEER's written authorization, it must, if requested by the ENGINEER, be uncovered for testing, inspection, and observation. The uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR timely notified the ENGINEER of the CONTRACTOR's intention to cover the same and the ENGINEER failed to act with reasonable promptness in response to the notice.
- F. In any work is covered contrary to the written request of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER's observation and replaced at the CONTRACTOR's expense.
- G. If the ENGINEER considers it necessary or advisable that covered work be observed, inspected or tested by the ENGINEER or others, the ENGINEER shall direct the CONTRACTOR to uncover, expose, or otherwise make available for observation, inspection, or testing that portion of the work in question. The CONTRACTOR shall comply with the ENGINEER's direction and furnish all necessary labor, material, and equipment. If found the work is defective, the CONTRACTOR shall bear all direct, indirect and consequential costs of uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction of the work, including but not limited to fees and charges for engineers, architects, attorneys, and other professionals. However, if the work is not defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both. The increase in Contract Time and Contract Price shall be the CONTRACTOR's actual time and costs directly attributable to uncovering and exposing the work. If the parties are unable to agree as to the amount or extent of the changes, the CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

13.04 OWNER MAY STOP THE WORK

- A. If the WORK is defective, or the CONTRACTOR fails to perform work in such a way that the completed WORK will conform to the Contract Documents, the OWNER may order the CONTRACTOR to stop the WORK, or any portion thereof, until the cause for the order has been eliminated. This right of the OWNER to stop the WORK shall not give rise to any duty on the part of the OWNER to exercise this right for the benefit of the CONTRACTOR or any other party.

13.05 CORRECTION OR REMOVAL OF DEFECTIVE WORK

- A. When directed by the ENGINEER, the CONTRACTOR shall promptly correct all defective work, whether or not fabricated, installed, or completed, or, if the

GENERAL CONDITIONS

work has been rejected by the ENGINEER, remove it from the site and replace it with non-defective work. The CONTRACTOR shall bear all direct, indirect and consequential costs of correction or removal, including but not limited to fees and charges of engineers, architects, attorneys, and other professionals made necessary thereby.

13.06 ACCEPTANCE OF DEFECTIVE WORK

- A. If, instead of requiring correction or removal and replacement of defective work, the OWNER prefers to accept the work, the OWNER may do so. The CONTRACTOR shall bear all direct, indirect, and consequential costs attributable to the OWNER's evaluation of and determination to accept the defective work. If any acceptance of defective work occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK, and the OWNER shall be entitled to an appropriate decrease in the Contract Price.

GENERAL CONDITIONS

ARTICLE 14 - PAYMENTS TO CONTRACTOR, LIQUIDATED DAMAGES AND COMPLETION

14.01 SCHEDULE OF VALUES (LUMP SUM PRICE BREAKDOWN)

- A. The schedule of values or lump sum price breakdown established as provided in the Technical Specifications shall serve as the basis for progress payments and will be incorporated into the form of Application for Payment included in the Contract Documents.

14.02 UNIT PRICE BID SCHEDULE

- A. Progress payments for unit price work will be based on the number of units completed.

14.03 APPLICATION FOR PROGRESS PAYMENT

- A. Unless otherwise prescribed by the Owner, on the 25th of each month, the CONTRACTOR shall submit to the ENGINEER for review and approval, an Application for Payment completed and signed by the CONTRACTOR covering the WORK completed as of the date of the Application and accompanied by such supporting documentation as required by the Contract Documents.
- B. The Application for Payment shall identify, as a sub-total, the amount of the CONTRACTOR's Total Earnings to Date, plus the Value of Materials at the Site which have not yet been incorporated in the WORK, and less a deductive adjustment for materials installed which were not previously incorporated in the WORK, but for which payment was allowed under the provisions of payment for Materials Stored at the Site but not yet incorporated in the WORK.
- C. The Net Payment Due to the CONTRACTOR shall be the above-mentioned sub-total, from which shall be deducted the retainage amount and the total amount of all previous payments made to the CONTRACTOR.
- D. The OWNER may withhold and retain 5% of each approved progress payment to the CONTRACTOR. The total retention proceeds withheld shall not exceed 5% of the total construction price. All retention proceeds shall be placed by the OWNER in an interest-bearing account. The interest accrued shall be for the benefit of the CONTRACTOR and its subcontractors, and it shall be paid after the WORK has been completed and accepted by the OWNER. CONTRACTOR shall ensure that any interest accrued on the

GENERAL CONDITIONS

retainage is distributed by the CONTRACTOR to its subcontractors on a pro rata basis.

- E. Any retention proceeds withheld, and any accrued interest, shall be released by the OWNER pursuant to an Application for Payment from the CONTRACTOR within 45 days from the later of:
1. the date the OWNER receives the final Application for Payment from the CONTRACTOR;
 2. the date that a certificate of occupancy or final acceptance notice is issued to:
 - (a) the Contractor who obtained the building permit from the building inspector or from a public agency;
 - (b) the OWNER; or
 - (c) the ENGINEER.
 3. the date the CONTRACTOR accepts final payment for the Work; or
 4. the date that a public agency or building inspector having authority to issue its own certificate of occupancy does not issue the certificate but permits partial or complete occupancy of a newly constructed or remodeled building; provided, however, that if only partial occupancy of a building is permitted, any retention proceeds withheld and retained, and any accrued interest, shall be partially released in direct proportion to the value of the part of the building occupied.

Each Application for Payment from the CONTRACTOR shall include documentation of lien releases or waivers.

- F. Notwithstanding any other provision in this Article to the contrary,
1. If the CONTRACTOR is in default or breach of the terms and conditions of the Contract Documents, the OWNER may withhold from payment to the CONTRACTOR for so long as reasonably necessary an amount necessary to cure the breach or default of the CONTRACTOR; or
 2. If the WORK or a portion of the WORK has been substantially completed, the OWNER may retain until completion up to twice the

GENERAL CONDITIONS

fair market value of the WORK of the CONTRACTOR that has not been completed:

- (a) in accordance with the Contract Documents; or
 - (b) in the absence of applicable provisions in the Contract Documents to generally accepted craft standards.
3. If the OWNER refuses payment under subparagraphs (F)(i) or (ii), it shall describe in writing within 45 days of withholding such amounts what portion of the WORK was not completed according to the standards specified in the Contract Documents.
- G. The CONTRACTOR shall distribute retention proceeds as outlined below:
1. Except as provided in Paragraph 14.03.G.2, below, if the CONTRACTOR receives retention proceeds, it shall pay each of its subcontractors from whom retention has been withheld each subcontractor's share of the retention received within ten days from the day that all or any portion of the retention proceeds is received from the OWNER.
 2. Notwithstanding Paragraph 14.03.G.1, above, if a retention payment received by the CONTRACTOR is specifically designated for a particular subcontractor, payment of the retention shall be made to the designated subcontractor.
- H. Except as otherwise provided in the Supplementary General Conditions, the value of materials stored at the site shall be valued at 95 percent of the value of the materials. This amount shall be based upon the value of all acceptable materials and equipment stored at the site or at another location agreed to in writing by the OWNER; provided, each individual item has a value of more than \$5,000 and will become a permanent part of the WORK. The Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that the CONTRACTOR has received the materials and equipment free and clear of all liens, charges, security interests, and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the OWNER's interest therein, all of which will be satisfactory to the OWNER.

GENERAL CONDITIONS

14.04 CONTRACTOR'S WARRANTY OF TITLE

- A. The CONTRACTOR warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the WORK or not, will pass to the OWNER no later than the time of final payment free and clear of all liens.

14.05 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

- A. The ENGINEER will, within 7 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the OWNER, or return the Application to the CONTRACTOR indicating in writing the ENGINEER's reasons for refusing to recommend payment. In the later case, the CONTRACTOR may make the necessary corrections and resubmit the Application. Thirty days after presentation of the Application for Payment with the ENGINEER's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.05B) become due and when due will be paid by the OWNER to the CONTRACTOR.
- B. The OWNER may refuse to make payment of the full amount recommended by the ENGINEER to compensate for claims made by the OWNER on account of the CONTRACTOR's performance of the WORK or other items entitling the OWNER to a credit against the amount recommended, but the OWNER must give the CONTRACTOR written notice within 7 days (with a copy to the ENGINEER) stating the reasons for such action.

14.06 PARTIAL UTILIZATION

- A. The OWNER may utilize or place into service any item of equipment or other usable portion of the WORK at any time prior to completion of the WORK. The OWNER shall notify the CONTRACTOR in writing of its intent to exercise this right. The notice will identify the equipment or specific portion or portions of the WORK to be utilized or otherwise placed into service.
- B. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all items or portions of the WORK to be partially utilized shall be borne by the CONTRACTOR. Upon the issuance of a notice of partial utilization, the ENGINEER will deliver to the OWNER and the CONTRACTOR a written recommendation as to division of responsibilities between the OWNER and the CONTRACTOR with respect to security, operation, safety, maintenance,

GENERAL CONDITIONS

heat, utilities and insurance. Upon the OWNER's acceptance of these recommendations, the ENGINEER's aforesaid recommendation will be binding on the OWNER and the CONTRACTOR until final payment.

- C. The CONTRACTOR shall retain full responsibility for satisfactory completion of the WORK, regardless of whether a portion thereof has been partially utilized by the OWNER and the CONTRACTOR's one year correction period shall commence only after the date of Final Completion for the WORK.

14.07 LIQUIDATED DAMAGES

- A. The CONTRACTOR shall pay to the OWNER the amount specified in the Supplemental General Conditions, 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 these damages shall be paid shall be the number of Days from the agreed date or Contract Time as contained in the Agreement, or from the date of termination of any extension of time approved by the OWNER, to the date or dates on which the ENGINEER certifies Substantial Completion of WORK or specified parts of the WORK as provided in Article 14.08, herein. The OWNER may deduct the amount of said damages from any monies due or to become due the CONTRACTOR. After Substantial Completion, if the CONTRACTOR fails to complete the remaining WORK within 45 days or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER the amount stated in the Supplemental General Conditions as liquidated damages for each day that expires after the 45 days until readiness for final payment.
- B. The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would sustain; and said amount is agreed to be the amount of damages which the OWNER would sustain. Said damages are not in lieu of but in addition to other actual or consequential damages to which the OWNER may be entitled.
- C. All times specified in the Contract Documents are hereby declared to be of the essence.

14.08 SUBSTANTIAL COMPLETION

- A. When the CONTRACTOR considers the WORK ready for its intended use, and the CONTRACTOR has delivered to the ENGINEER all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, marked-up record documents and other documents, all as

GENERAL CONDITIONS

required by the Contract Documents, the CONTRACTOR may notify the OWNER and the ENGINEER in writing that the WORK is substantially complete and request that the ENGINEER prepare a Certificate of Substantial Completion. Within a reasonable time thereafter, the OWNER, the CONTRACTOR, and the ENGINEER shall make an inspection of the WORK to determine the status of completion. If the ENGINEER does not consider the WORK substantially complete, the ENGINEER will notify the OWNER and CONTRACTOR in writing giving the reasons therefor. If the ENGINEER considers the WORK substantially complete, the ENGINEER will prepare and deliver to the OWNER for its execution the Certificate of Substantial Completion signed by the ENGINEER and CONTRACTOR, which shall fix the date of Substantial Completion.

- B. The Certificate of Substantial Completion shall be a release by the CONTRACTOR of the OWNER and its agents from all claims and liability to the CONTRACTOR for anything done or furnished for, or relating to, the WORK or for any act or neglect of the OWNER or of any person relating to or affecting the WORK, to the date of Substantial Completion, except demands against the OWNER for the remainder of the amounts kept or retained from progress payments and excepting pending, unresolved claims filed in writing prior to the date of Substantial Completion. At the time of delivery of the Certificate of Substantial Completion, the ENGINEER will deliver to the OWNER and the CONTRACTOR, if applicable, a written recommendation as to division of responsibilities between the OWNER and the CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance. Upon the OWNER's acceptance of these recommendations, the ENGINEER's recommendation will be binding on the OWNER and the CONTRACTOR until final payment.

- C. The OWNER, upon written notice to the CONTRACTOR, shall have the right to exclude the CONTRACTOR from the WORK after the date of Substantial Completion, and complete all or portions of the WORK at the CONTRACTOR's expense.

GENERAL CONDITIONS

14.09 COMPLETION AND FINAL PAYMENT

- A. Upon written certification from the CONTRACTOR that the WORK is complete (if a Certificate of Substantial Completion has been issued this certification must occur within 45 days of that date), the ENGINEER will make a final inspection with the OWNER and the CONTRACTOR. If the OWNER and ENGINEER do not consider the WORK complete, the ENGINEER will notify the OWNER and the CONTRACTOR in writing of all particulars in which this inspection reveals that the WORK is incomplete or defective. The CONTRACTOR shall immediately take the measures necessary to remedy these deficiencies. If the ENGINEER and OWNER consider the WORK complete, the CONTRACTOR may proceed to file its application for final payment pursuant to this Article. At the request of the CONTRACTOR, the ENGINEER may recommend to the OWNER that certain minor deficiencies in the WORK that do not prevent the entire WORK from being used by the OWNER for its intended use, and the completion of which will be unavoidably delayed due to no fault of the CONTRACTOR, be exempted from being completed prerequisite to final payment. These outstanding items of pickup work, or "punch list items", shall be listed on the ENGINEER's Notice of Completion, together with the recommended time limits for their completion, and extended warranty requirements for those items and the value of such items.
- B. After the issuance of the Notice of Completion and after the CONTRACTOR has completed corrections that have not been exempted to the satisfaction of the ENGINEER and delivered to the ENGINEER all required additions and modifications to maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, marked-up record documents and other documents, all as required by the Contract Documents; and after the ENGINEER has indicated that the WORK is acceptable, the CONTRACTOR may make application for final payment following the procedure for progress payments. The final application for payment shall be accompanied by all documentation called for in the Contract Documents and other data and schedules as the OWNER or ENGINEER may reasonably require, including an affidavit of the CONTRACTOR that all labor, services, material, equipment and other indebtedness connected with the WORK for which the OWNER or his property might in any way be responsible, have been paid or otherwise satisfied, and a consent of the payment bond surety to final payment, all in forms approved by the OWNER.

GENERAL CONDITIONS

14.10 FINAL APPLICATION FOR PAYMENT

- A. If, on the basis of the ENGINEER's observation of the WORK during construction and final inspection, and the ENGINEER's review of the final application for payment and accompanying documentation, all as required by the Contract Documents, the ENGINEER is satisfied that the WORK has been completed and the CONTRACTOR has fulfilled all of his obligations under the Contract Documents, the ENGINEER will, within ten days after receipt of the final application for payment, indicate in writing his recommendation of payment and present the application to the OWNER for payment. Thereupon, the ENGINEER will give written notice to the OWNER and the CONTRACTOR that the WORK is acceptable by executing the ENGINEER's Notice of Completion. Otherwise, the ENGINEER will return the application to the CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case the CONTRACTOR shall make the necessary corrections and resubmit the application.
- B. Within 45 calendar days after the ENGINEER's filing of the Notice of Completion, the OWNER will make final payment including all deducted retainage (except as noted below) to the CONTRACTOR. The OWNER's remittance of final payment shall be the OWNER's acceptance of the WORK if formal acceptance of the WORK is not indicated otherwise. The final payment shall be that amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract, including the following items:
1. Liquidated damages, as applicable.
 2. All amounts retained by the OWNER under Paragraph 14.03(F).

14.11 CONTRACTOR'S CONTINUING OBLIGATIONS

- A. The CONTRACTOR's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the ENGINEER, nor the issuance of a Certificate of Substantial Completion or Notice of Completion, nor payment by the OWNER to the CONTRACTOR under the Contract Documents, nor any use or occupancy of the WORK or any part thereof by the OWNER, nor any act of acceptance by the OWNER nor any failure to do so, nor any review of a shop drawing or sample submittal, will constitute an acceptance of work or materials not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

GENERAL CONDITIONS

14.12 FINAL PAYMENT TERMINATES LIABILITY OF OWNER

- A. Final payment is defined as the last progress payment made to the CONTRACTOR for earned funds, less deductions listed in Paragraph 14.10B herein. The acceptance by the CONTRACTOR of the final payment referred to in Paragraph 14.10 herein, shall be a release of the OWNER and its agents from all claims of liability to the CONTRACTOR for anything done or furnished for, or relating to, the work or for any act or neglect of the OWNER or of any person relating to or affecting the work, except demands against the OWNER for the remainder, if any, of the amounts kept or retained under the provisions of Paragraph 14.10 herein; and excepting pending, unresolved claims filed prior to the date of the Certificate of Substantial Completion.

GENERAL CONDITIONS

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 SUSPENSION OF WORK BY OWNER

- A. The OWNER acting through the ENGINEER may, by written notice to the Contractor, temporarily suspend the WORK, in whole or in part, for a period or periods of time, but not to exceed 90 days, for the convenience and benefit of the OWNER upon the occurrence of any one or more of the following: (1) unsuitable weather; (2) delay in delivery of OWNER- furnished equipment or materials, or such other conditions as are considered unfavorable for prosecution of the work; (3) Shortfall in construction funds; (4) Constraints imposed by public entities, public utilities, property owners or legal proceedings; (5) Failure or delay in acquisition of easements or right-of-way by the OWNER; or (6) Other conditions which, in the opinion of the OWNER, warrant a delay in the WORK. Suspended WORK shall be resumed by the CONTRACTOR within 10 calendar days of receipt from the ENGINEER of written notice to proceed. Whenever the OWNER temporarily suspends work for any conditions enumerated in this Article 15.01 A, the CONTRACTOR shall be entitled to an adjustment in the Contract Time as specified in Article 12.03 C.
- B. The suspension of work shall be effective upon receipt by the Contractor of the written order suspending the work and shall be terminated upon receipt by the Contractor of the written order terminating the suspension.
- C. The CONTRACTOR hereby indemnifies and holds harmless the OWNER and ENGINEER, their officers, agents and employees, from and against all claims, damages, losses and expenses, including lost profits and attorney's fees, arising out of or resulting from the temporary suspension of the WORK, whether for the OWNER's convenience described in this Article or for whatever other reasons, including the stoppage of work by the ENGINEER for the CONTRACTOR's failure to comply with any order issued by the ENGINEER.

15.02 TERMINATION OF AGREEMENT BY OWNER (CONTRACTOR DEFAULT)

- A. In the event of default by the CONTRACTOR, the OWNER may give written notice to the CONTRACTOR of OWNER's intent to terminate the Agreement. The notice shall state the event of default and the time allowed to remedy the default. It shall be considered a default by the CONTRACTOR whenever the CONTRACTOR shall: (1) declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors; (2) fail to provide materials or workmanship meeting the requirements of the Contract Documents; (3) disregard or violate provisions of the Contract Documents or ENGINEER's

GENERAL CONDITIONS

instructions, (4) fail to prosecute the WORK according to the approved progress schedule; or, (5) fail to provide a qualified superintendent, competent workmen, or materials or equipment meeting the requirements of the Contract Documents. If the CONTRACTOR fails to remedy the conditions constituting default within the time allowed, the OWNER may then issue a Notice of Termination.

- B. In the event the Agreement is terminated in accordance with Paragraph 15.02A, the OWNER may take possession of the WORK and may complete the WORK by whatever method or means the OWNER may select. The cost of completing the WORK shall be deducted from the balance which would have been due the CONTRACTOR had the Agreement not been terminated and the WORK completed in accordance with the Contract Documents. If such cost exceeds the balance which would have been due, the CONTRACTOR shall pay the excess amount to the OWNER. If such cost is less than the balance which would have been due, the CONTRACTOR shall have no claim to the difference.

15.03 TERMINATION OF AGREEMENT BY OWNER (FOR CONVENIENCE)

- A. The OWNER may terminate the Agreement at any time if it is found that reasons beyond the control of either the OWNER or CONTRACTOR make it impossible or against the OWNER's interests to complete the WORK. In such a case, the CONTRACTOR shall have no claims against the OWNER except: (1) for the value of the work, as determined by the engineer, performed by the Contractor up to the date the Agreement is terminated; and, (2) for the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date the Agreement is terminated, which would be needed in the WORK and which meet the requirements of the Contract Documents. The value of work performed and the cost of materials and equipment delivered to the site, as mentioned above, shall be determined by the ENGINEER in accordance with the procedure prescribed from making the final application for payment and final payment under Paragraphs 14.09 and 14.10.

15.04 TERMINATION OF AGREEMENT BY CONTRACTOR

- A. The CONTRACTOR may terminate the Agreement upon 10 days written notice to the OWNER, whenever: (1) the WORK has been suspended under the provisions of Paragraph 15.01, for more than 90 consecutive days through no fault or negligence of the CONTRACTOR, and notice to resume work or to terminate the agreement has not been received from the OWNER within this time period; or, (2) the OWNER should fail to pay the

GENERAL CONDITIONS

CONTRACTOR any monies due him in accordance with the terms or the Contract Documents and within 60 days after presentation to the OWNER by the CONTRACTOR of a request therefor, unless within said 10-day period the OWNER shall have remedied the condition upon which the payment delay was based. In the event of such termination, the CONTRACTOR shall have no claims against the OWNER except for those claims specifically enumerated in Paragraph 15.03, and as determined in Accordance with the requirements of that paragraph.

GENERAL CONDITIONS

ARTICLE 16 - MISCELLANEOUS

16.01 GIVING NOTICE

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

16.02 TITLE TO MATERIALS FOUND ON THE WORK

- A. The OWNER reserves the right to retain title to all soils, stone, sand, gravel, and other materials developed and obtained from excavations and other operations connected with the WORK. Unless otherwise specified in the Contract Documents, neither the CONTRACTOR nor any subcontractor shall have any right, title, or interest in or to any such materials. The CONTRACTOR will be permitted to use in the WORK, without charge, any such materials which meet the requirements of the Contract Documents.

16.03 RIGHT TO AUDIT

- A. If the CONTRACTOR submits a claim to the OWNER for additional compensation, the OWNER shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR's books. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which the claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR's plants, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon subcontractors. The right to examine and inspect herein provided for shall be exercisable through such representatives as the OWNER deems desirable during the CONTRACTOR's normal business hours at the office of the CONTRACTOR. The CONTRACTOR shall make available to the OWNER for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the OWNER.

16.04 ASBESTOS

- A. If the CONTRACTOR during the course of work observes the existence of asbestos in any structure or building, the CONTRACTOR shall promptly notify the OWNER and the ENGINEER. The OWNER shall consult with the ENGINEER regarding removal or encapsulation of the asbestos material and the CONTRACTOR shall not perform any work pertinent to the asbestos material prior to receipt or special instruction from the OWNER through the ENGINEER.

SUPPLEMENTAL GENERAL CONDITIONS

ARTICLE 17- GENERAL

17.01 GENERAL

1. These Supplemental General Conditions amend or supplement the General Conditions of the Contract and any other provisions of the Contract Documents as indicated herein. All provisions which are not so amended or supplemented remain in full force and effect.
2. The terms used in these Supplemental General Conditions which are defined in the General Conditions of the Contract have the meanings assigned to them in the General Conditions of the Contract herein.

17.02 SUPPLEMENTAL DEFINITIONS

1. ENGINEER

The "Engineer" is

CRS Engineers
4246 South Riverboat Road Ste. 200
Salt Lake City, Utah 84123
(801) 359-5565

17.03 TESTING COSTS

1. Paragraph 13.03 of the General Conditions is amended as follows: the CONTRACTOR shall pay all testing costs. The Owner reserves the right to have additional tests performed by a testing organization selected by the OWNER and at the OWNER's expense.

SUPPLEMENTAL GENERAL CONDITIONS

ARTICLE 18 - AMOUNTS OF LIQUIDATED DAMAGES, BONDS AND INSURANCE

18.01 AMOUNT OF LIQUIDATED DAMAGES

- A. As provided in Article 14.07 of the General Conditions, the Contractor shall pay to the Owner as liquidated damages the amount of \$500 for each calendar day's delay beyond the Contract Time for substantial completion. The Contractor shall pay to the Owner as liquidated damages the amount of \$200 for each calendar day's delay beyond 45 calendar days from the date of substantial Completion until the Engineer issues the Notice of Final Completion.

18.02 PERFORMANCE AND OTHER BOND AMOUNTS

- A. The CONTRACTOR shall furnish a satisfactory Performance Bond in the amount of 100 percent of the Contract Price and a satisfactory Payment Bond in the amount of 100 percent of the Contract Price.

18.03 INSURANCE AMOUNTS

The limits of liability for the insurance required by Paragraph 5.02 of the General Conditions shall provide for not less than the following amounts or greater where required by Laws and Regulations:

- A. Workers' Compensation under Paragraph 5.02B.1 of the General Conditions:

- 1. State: Utah Statutory

- B. Comprehensive General Liability: (under Paragraph 5.02B.2 of the General Conditions):

- 1. Bodily Injury (including completed operations and products liability):

<u>\$ 500,000</u>	Each Occurrence
<u>\$ 1,000,000</u>	Annual Aggregate

Property Damage:

<u>\$ 500,000</u>	Each Occurrence
<u>\$ 1,000,000</u>	Annual Aggregate
or a combined single limit of	<u>\$1,000,000</u>

SUPPLEMENTAL GENERAL CONDITIONS

2. Property Damage liability insurance including, Explosion, Collapse and Underground coverages, where applicable.

3. Personal Injury, with employment exclusion deleted

\$ 1,000,000

Annual Aggregate

C. Comprehensive Automobile Liability: (Under Paragraph 5.02B.3 of the General Conditions:)

1. Bodily Injury

\$ 500,000

Each Person

\$ 1,000,000

Each Occurrence

2. Property Damage:

\$ 500,000

Each Occurrence

or combined single limit of

\$1,000,000

D. Builders Risk: Not required.

SUPPLEMENTAL GENERAL CONDITIONS

ARTICLE 19 - PHYSICAL CONDITIONS AND WEATHER DELAYS

19.01 INCLEMENT WEATHER DELAYS

- A. The Contractor's construction schedule shall be based upon the inclusion of at least five (5) day(s) of inclement weather delays. Reference Article 12, paragraph 12.02 of the General Conditions for additional requirements.

SUPPLEMENTAL GENERAL CONDITIONS

ARTICLE 20 - SUBCONTRACT LIMITATIONS

20.01 SUBCONTRACT LIMITATIONS

- A. In addition to the provisions of Paragraph 6.05 of the General Conditions, the CONTRACTOR shall perform not less than 20 percent of the WORK with its own forces (i.e., without subcontracting). The 20 percent requirement shall be understood to refer to the WORK, the value of which totals not less than 20 percent of the Contract Price.

ARTICLE 21 - MISCELLANEOUS

21.01 PATENTS AND COPYRIGHTS

The Contractor shall indemnify and save harmless the Owner, the Engineer, and their officers, agents, and employees, against all claims or liability arising from the use of any patented or copyrighted design, device, material, or process by the Contractor or any of his subcontractors in the performance of the work.

SPECIFICATIONS

SECTION 01 02 50 MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Measurement and payment criteria applicable to portions of the Work performed under a unit price payment method.
- B. Defect assessment and non-payment for rejected work.

1.2 RELATED WORK

- A. Section 00 41 00 – Bid Form
- B. Section 00 52 00 – Agreement, Paragraph 6.02 – Progress Payments; Retainage
- C. Section 00 70 00 – General Conditions, Article 15
- D. Section 01 33 00 – Submittals

1.3 SUBMITTALS

- A. Submit the payment request to Engineer at least 20 days before the date established in the Agreement for each progress payment. Engineer will, within 10 days of receiving the payment request, complete the review of the progress payment and either recommend it for payment to the Owner or return it to the Contractor for correction, per the requirements of Article 15 of the General Conditions.
- B. Submit an updated progress schedule with each Application for Payment as required in Section 01 33 00 – Submittals.
- C. Submit Application for Payment on a form approved by the Engineer.

1.4 UNIT QUANTITIES SPECIFIED

- A. Quantities and measurements indicated in the Contract Documents are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.5 MEASUREMENT OF QUANTITIES

- A. Measurement Devices:
 - 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.

2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
 3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.
- B. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- C. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- F. Lump Sum: Items measured as appropriate, as a completed item or unit of the Work.

1.6 PAYMENT

- A. Payment Includes: Full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; permits, taxes, overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.
- C. It is the responsibility of the Contractor to fully inform himself regarding all Federal, State and local tax laws, rules or regulations furnished under this Contract, including all exemption provisions and procedures. All bid prices for material, equipment and labor for the Work under this Contract is inclusive of any tax for materials which are imposed by any governing agency to which the Work hereunder is subject. The Contractor is solely responsible for assuring that all applicable taxes are included in his bid.

1.7 DESCRIPTION OF BID ITEMS

- A. The work generally consists of the following, which are numbered according to the bid schedule found in Article 5 of Section 00 41 00 – Bid Form:

NEWBURY WELL:

A1. MOBILIZATION/ DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds,

insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.

- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

A2. REMOVE AND INSPECT PERMANENT PUMPING EQUIPMENT

- a. Measurement is per each pump assembly removed
- b. This item includes all labor, materials, transportation and other items associated with the removal, storage, and protection of the permanent pumping equipment in the wells.

A3. VIDEO SURVEY

- a. Measurement is per each video survey completed.
- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.
- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.

A4. BRUSH AND EVACUATE WELL

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, labor and other items required to brush and evacuate the well with the use of a nylon brush and submersible pump.
- c. Payment of this item shall be on a unit price basis for each hour spent performing brushing and evacuation work on the well.

A5. CHEMICALS

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, labor and other items required for purchasing, delivery, and safe handling of all chemicals required to perform the acid and chlorine treatments.
- c. Payment shall be for chemicals after they are delivered safely to the site.

A6. ACID TREATMENT/AGITATE/NEUTRALIZE/DISPOSE

- a. Measurement is on per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, neutralization and disposal of neutralized acid
- c. Payment shall be on a unit price basis for each hour spent performing the acid treatment work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

A7. SHOCK CHLORINATION/AGGITATE/DECHLORINATE/DISPOSE

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, de-chlorination and disposal of de-chlorinated water
- c. Payment shall be on a unit price basis for each hour spent performing the shock chlorination work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

A8. INITIAL WELL REDEVELOPMENT

- a. Measurement is on an hourly basis for the time it takes to perform initial well redevelopment.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for performing initial well redevelopment.
- c. Payment shall be on hourly basis for the actual hours performing initial well redevelopment as part of the project including swabbing, pumping, and bailing out removed materials.

A9. FURNISH, INSTALL, AND REMOVE TEMPORARY PUMP

- a. Measurement is per each pump installed and removed
- b. This includes all labor, materials, supplies, tools, and equipment required to provide, install, and remove the pump and associated appurtenance for the development and testing of the production well as, required by Specifications. This pay item shall constitute full compensation for all labor, equipment, tools, supplies, and materials required to complete this portion of the Work for this construction project.
- c. Payment shall be on a unit price basis for each full installation and removal of temporary pump for pump development and testing.

A10. PUMP DEVELOPMENT

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, tools labor and other items required for performing pump development of the well.
- c. Payment shall be on a unit price basis for each hour spent performing pump development work as part of the project.

A11. STEP DRAWDOWN TEST

- a. Measurement is on per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required to perform the step-drawdown test as specified in these specifications.
- c. Payment of this item shall be on a unit price basis for the each hour spent to perform the step-drawdown test at the unit price bid per hour.

A12. CONSTANT RATE TEST

- a. Measurement is on a per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required to perform the constant rate test as specified in these specifications.
- c. Payment of this item shall be on a unit price basis for the each hour spent to perform the constant rate test at the unit price bid per hour.

A13. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES

- a. Measurement is on a per lump sum basis

- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
- c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.

A14. RE-INSTALL PERMANENT PUMPING EQUIPMENT

- a. Measurement is on a lump sum basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing existing vertical turbine motor and purchasing and installing all new permanent pumping equipment including 750-feet of 14" column, tube, and shaft, and vertical turbine pump.
- c. Payment of this item shall be on a lump sum basis for re-installing existing vertical turbine motor and the purchase and installation of new permanent pumping equipment.

A15. FURNISH AND INSTALL PUMP AND MOTOR NAMEPLATE ON DISCHARGE HEAD

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for furnishing and installing a steel nameplate on the discharge head that contains the technical specifications of the submersible pumping equipment for future reference.
- c. Payment of this item shall be on a lump sum basis for the installation of the nameplate.

A16. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES

- a. Measurement is on a per linear foot basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
- c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.

A17. CLEAN-UP OF SITE

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.

- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

10th & 78th WELL:

B1. MOBILIZATION/ DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds, insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.
- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

B2. REMOVE, INSPECT, AND CLEAN PERMANENT PUMPING EQUIPMENT

- a. Measurement is per each pump assembly removed
- b. This item includes all labor, materials, transportation and other items associated with the removal, inspection, cleaning, storage, and protection of the permanent pumping equipment in the wells.

B3. VIDEO SURVEY

- a. Measurement is per each video survey completed.
- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.

- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.
- B4. FURNISH AND INSTALL NEW TRANSDUCER
- a. Measurement is on a lump sum basis.
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for installation of a new transducer.
 - c. Payment of this item shall be on a lump sum basis for the installation of the transducer.
- B5. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES
- a. Measurement is on a per lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
 - c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.
- B6. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES
- a. Measurement is on a per linear foot basis.
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
 - c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.
- B7. RE-INSTALL EXISTING PERMANENT PUMPING EQUIPMENT
- a. Measurement is on a lump sum basis.
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing existing permanent pumping equipment with 401-feet of new 10" column, tube, and shaft.
 - c. Payment of this item shall be on a lump sum basis for the re-installation of all permanent pumping equipment.
- B8. CLEAN-UP OF SITE

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

98th & 23rd WELL:

C1. MOBILIZATION/ DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds, insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.
- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

C2. REMOVE, INSPECT, AND CLEAN PERMANENT PUMPING EQUIPMENT

- a. Measurement is per each pump assembly removed
- b. This item includes all labor, materials, transportation and other items associated with the removal, inspection, cleaning, storage, and protection of the permanent pumping equipment in the wells.

C3. VIDEO SURVEY

- a. Measurement is per each video survey completed.

- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.
- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.

C4. BRUSH AND EVACUATE WELL

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, labor and other items required to brush and evacuate the well with the use of a nylon brush and submersible pump.
- c. Payment of this item shall be on a unit price basis for each hour spent performing brushing and evacuation work on the well.

C5. ASSESS AND REPAIR SCREENS AS NEEDED (~20' SWAGE)

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, labor and other items required for assessing existing damage to well screens and determining how many feet need patching, patching and repairing all screens needing repair.
- c. Payment shall be per lump sum of all screens assessed and repaired.

C6. CHEMICALS

- d. Measurement is on a lump sum basis.
- e. This item includes all materials, transportation, equipment, labor and other items required for purchasing, delivery, and safe handling of all chemicals required to perform the acid and chlorine treatments.
- f. Payment shall be for chemicals after they are delivered safely to the site.

C7. ACID TREATMENT/AGITATE/NEUTRALIZE/DISPOSE

- a. Measurement is on per hour basis for each hour spent.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, neutralization and disposal of neutralized acid
- c. Payment shall be on a unit price basis for each hour spent performing the acid treatment work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and

downtime due to equipment failure are not paid under this item and should be included in hourly rates.

C8. SHOCK CHLORINATION/AGGITATE/DECHLORINATE/DISPOSE

- a. Measurement is on a per hour basis for each hour spent
- b. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, de-chlorination and disposal of de-chlorinated water
- c. Payment shall be on a unit price basis for each hour spent performing the shock chlorination work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

C9. INITIAL WELL REDEVELOPMENT

- a. Measurement is on an hourly basis for the time it takes to perform initial well redevelopment.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for performing initial well redevelopment.
- c. Payment shall be on hourly basis for the actual hours performing initial well redevelopment as part of the project including swabbing, pumping, and bailing out removed material.

C10. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES

- a. Measurement is on a per lump sum basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
- c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.

C11. INSTALL NEW WELL CABLE FOR SUBMERSIBLE MOTOR

- a. Measurement is on a per linear foot basis
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the purchasing and installation of new electrical well cable down to submersible motor.
- c. Payment of this item shall be on a linear foot basis for each foot of well cable

installed.

C12. RE-INSTALL PERMANENT PUMPING EQUIPMENT

- a. Measurement is on a lump sum basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing all existing permanent pumping equipment including submersible pump, motor, and 10" column pipe.
- c. Payment of this item shall be on a lump sum basis for the re-installation of all permanent pumping equipment.

C13. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES

- a. Measurement is on a per linear foot basis.
- b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
- c. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.

C14. FURNISH AND INSTALL PUMP AND MOTOR NAMEPLATE ON DISCHARGE HEAD

- d. Measurement is on a lump sum basis.
- e. This item includes all materials, transportation, equipment, tools, labor, and other items required for furnishing and installing a steel nameplate on the discharge head that contains the technical specifications of the submersible pumping equipment for future reference.
- f. Payment of this item shall be on a lump sum basis for the installation of the nameplate.

C15. CLEAN-UP OF SITE

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

8200 S & 700 E WELL:

D1. MOBILIZATION/DEMOBILIZATION

- a. Measured by lump sum.
- b. Payment covers cost of mobilization, demobilization, installation of temporary facilities, bringing all necessary construction equipment to the site, all bonds, insurances, permits and fees, traffic control, clearing and grubbing, snow removal to the well site, quality control of materials, preparation of project schedule, final cleanup and project closeout, and all other items not specifically called for in any other bid item or called for in the plans and specifications or is customary, incidental or appurtenant to performance of a complete project.
- c. Payment will be made according to the following schedule:

<u>Percent of Original Contract Amount Earned</u>	<u>Percent of Amount Bid for Mobilization to be Paid</u>
5%	40
15%	20
40%	30
50%	10

D2. REMOVE PERMANENT PUMPING EQUIPMENT INCLUDING 3-INCH RECHARGE PIPE

- c. Measurement is per each pump assembly removed
- d. This item includes all labor, materials, transportation and other items associated with the removal, storage, and protection of the permanent pumping equipment in the well including a 3" recharge pipe that extends down to 760-feet bgs.

D3. VIDEO SURVEY

- a. Measurement is per each video survey completed.
- b. This item includes all materials, transportation, equipment, labor and other items required for performing a video survey of the well.
- c. Payment of this item shall be on a unit price basis for each successful well video survey that is performed at the unit price bid.

D4. BRUSH AND EVACUATE WELL

- a. Measurement is on a per hour basis for each hour spent

- b. This item includes all materials, transportation, equipment, labor and other items required to brush and evacuate the well with the use of a nylon brush and submersible pump.
- c. Payment of this item shall be on a unit price basis for each hour spent performing brushing and evacuation work on the well.

D5. CHEMICALS

- g. Measurement is on a lump sum basis.
- h. This item includes all materials, transportation, equipment, labor and other items required for purchasing, delivery, and safe handling of all chemicals required to perform the acid and chlorine treatments.
- i. Payment shall be for chemicals after they are delivered safely to the site.

D6. ACID TREATMENT/AGITATE/NEUTRALIZE/DISPOSE

- d. Measurement is on per hour basis for each hour spent.
- e. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, neutralization and disposal of neutralized acid
- f. Payment shall be on a unit price basis for each hour spent performing the acid treatment work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

D7. SHOCK CHLORINATION/AGGITATE/DECHLORINATE/DISPOSE

- d. Measurement is on a per hour basis for each hour spent
- e. This item includes all materials, transportation, equipment, tools, labor and other items required for the mixing, injection, agitation, evacuation, de-chlorination and disposal of de-chlorinated water
- f. Payment shall be on a unit price basis for each hour spent performing the shock chlorination work including mixing, injection, agitation, removal and neutralization and disposal. Time spent in set up, daily preparations, and downtime due to equipment failure are not paid under this item and should be included in hourly rates.

D8. INITIAL WELL REDEVELOPMENT

- d. Measurement is on an hourly basis for the time it takes to perform initial well redevelopment.

- e. This item includes all materials, transportation, equipment, tools, labor, and other items required for performing initial well redevelopment.
 - f. Payment shall be on hourly basis for the actual hours performing initial well redevelopment as part of the project including swabbing, pumping, and bailing out removed material.
- D9. SUBMERSIBLE BJ PUMP ASSESSMENT AND REPAIR/REPLACE
- a. Measurement is on a lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required to assess and make necessary repairs (or replace) to the existing submersible BJ pump.
 - c. Payment of this item shall be on a lump sum basis for the repair/replace of the existing permanent pump.
- D10. MODIFY DISCHARGE HEAD TO ACCOMMODATE (3) 1-1/2" TREMIE LINES
- a. Measurement is on a per lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for modifying the existing discharge head to accommodate for 3 new 1-1/2" PVC tremie lines.
 - c. Payment of this item shall be on a lump sum basis for the installation of all three PVC tremie lines.
- D11. NEW MOTOR AND WELL CABLE
- a. Measurement is on a lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for the purchasing and installation of a new submersible motor and electrical well cable.
 - c. Payment of this item shall be on a lump sum basis for the purchase and installation of a new submersible motor and well cable
- D12. RE-INSTALL PERMANENT PUMPING EQUIPMENT 3-INCH RECHARGE PIPE
- a. Measurement is on a lump sum basis
 - b. This item includes all materials, transportation, equipment, tools, labor, and other items required for re-installing the repaired BJ 12 Stage Submersible Pump, a new submersible motor, 444-feet of 8" column pipe, and the existing 760-feet of 3" discharge pipe.

- c. Payment of this item shall be on a lump sum basis for the reinstallation of all permanent pumping equipment.

D13. FURNISH AND INSTALL (3) 1-1/2" PVC TREMIE LINES

- d. Measurement is on a per linear foot basis.
- e. This item includes all materials, transportation, equipment, tools, labor, and other items required for the installation of three separate 1-1/2" PVC tremie line.
- f. Payment of this item shall be on a linear foot basis for the installation of the three tremie lines.

D14. FURNISH AND INSTALL PUMP AND MOTOR NAMEPLATE ON DISCHARGE HEAD

- g. Measurement is on a lump sum basis.
- h. This item includes all materials, transportation, equipment, tools, labor, and other items required for furnishing and installing a steel nameplate on the discharge head that contains the technical specifications of the submersible pumping equipment for future reference.
- i. Payment of this item shall be on a lump sum basis for the installation of the nameplate.

D15. CLEAN-UP OF SITE

- a. Measurement is on a lump sum basis, which shall constitute the total cost to the Owner.
- b. This item includes all materials, transportation, equipment, tools, labor and other items required to clean site of all materials, debris and equipment and return the site to its original condition.
- c. Payment of this item shall be on a lump sum basis for final cleanup of the site prior to full de-mobilization.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 11 00 SUMMARY OF WORK

PART 1 – GENERAL

1.1 GENERAL

- A. The Work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The work shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete, safe and proper construction of the Work in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the OWNER.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work of this contract comprises the rehabilitation of the culinary water wells using mechanical and chemical treatment methods and pump development of the well as generally described below. The CONTRACTOR is responsible for providing all the labor, materials, and equipment necessary to inspect, clean, chemically treat, disinfect, test pump and re-equip the wells. Location and site figures as well as drawings of the well construction details are given in the DRAWINGS. The work shall include, but not be limited to, the following at the well site:

Newbury Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment and store on site
4. Perform video camera survey of well
5. Wire brush casing and screen and use bailer to remove all debris
6. Perform video camera survey after pumping
7. Mix and inject Hydrogen Peroxide solution (tremie from bottom of screen to water surface)
8. Mix and inject mineral acid solution (tremie from bottom of screen to water surface)
9. Periodically monitor pH levels in well and adjust pH as directed by the Engineer.
10. Mechanically agitate acid solution with surge block for 12 hours (total contact time 24 hours)
11. Evacuate acid solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
12. Neutralize water and discharge to area shown in the drawings

13. Mix and inject Sodium Hypochlorite solution (tremie from bottom of screen to water surface)
14. Mechanically agitate chlorine solution with surge block for 12 hours (total contact time 24 hours)
15. Evacuate Chlorine solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
16. Dechlorinate water and discharge to area shown in the drawings
17. Perform initial well redevelopment by dual swab and pumping
18. Perform video camera survey of well post cleaning
19. Furnish, install and remove temporary test pump (variable speed capacity up to 3000 gpm)
20. Conduct development pumping for approximately 36 hours
21. Conduct 12 hour pump test.
22. Perform pump development
23. Conduct well step drawdown test
24. Conduct constant rate discharge test
25. Size and order new vertical turbine pump
26. Install new pumping equipment between perforated sections 1 and 2
27. Re-install existing vertical turbine motor
28. Furnish and install nameplate on discharge head to show submersible pump and motor specifications
29. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
30. Furnish and Install (3) 1-1/2" PVC Tremie lines
31. Monitor gravel pack level throughout rehabilitation and top off with 8x10 gravel pack to ground level as needed.
32. Restore the well site to its original condition
33. Furnish logs, daily records, and other items as specified to the ENGINEER.

10th & 78th Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment and store on site
4. Perform video camera survey of well
5. Furnish and install new transducer
6. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
7. Furnish and Install (3) 1-1/2" PVC Tremie lines
8. Reinstall existing pumping equipment with new 10" column, tube, and shaft
9. Restore the well site to its original condition
10. Furnish logs, daily records, and other items as specified to the ENGINEER

98th & 23rd Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment and store on site

4. Perform video camera survey of well
5. Wire brush casing and screen and use bailer to remove all debris
6. Perform video camera survey after brushing and bailing
7. Assess and repair well screens as needed, anticipated 20' swage
8. Mix and inject Hydrogen Peroxide solution (tremie from bottom of screen to water surface)
9. Mix and inject mineral acid solution (tremie from bottom of screen to water surface)
10. Periodically monitor pH levels in well and adjust pH as directed by the Engineer.
11. Mechanically agitate acid solution with surge block for 12 hours (total contact time 24 hours)
12. Evacuate acid solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
13. Neutralize water and discharge to area shown in the drawings
14. Mix and inject Sodium Hypochlorite solution (tremie from bottom of screen to water surface)
15. Mechanically agitate chlorine solution with surge block for 12 hours (total contact time 24 hours)
16. Evacuate Chlorine solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
17. Dechlorinate water and discharge to area shown in the drawings
18. Perform initial well redevelopment by dual swab and pumping
19. Perform video camera survey of well post cleaning
20. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
21. Reinstall existing pumping equipment and new well cable
22. Furnish and Install (3) 1-1/2" PVC Tremie lines
23. Monitor gravel pack level throughout rehabilitation and top off with 8x10 gravel pack to ground level as needed.
24. Furnish and install nameplate on discharge head to show submersible pump and motor specifications
25. Restore the well site to its original condition
26. Furnish logs, daily records, and other items as specified to the ENGINEER.

8200 S 700 E Well:

1. Mobilization, demobilization, snow removal and site cleanup for the well site
2. Clean and disinfect all downhole equipment prior to placement in well
3. Remove, clean and inspect existing pumping equipment including 3-inch recharge pipe and store on site
4. Perform video camera survey of well
5. Wire brush casing and screen and use bailer to remove all debris
6. Perform video camera survey after brushing and bailing
7. Mix and inject Hydrogen Peroxide solution (tremie from bottom of screen to water surface)
8. Mix and inject mineral acid solution (tremie from bottom of screen to water surface) Approximately 10 hours.

9. Periodically monitor pH levels in well and adjust pH as directed by the Engineer.
10. Mechanically agitate acid solution with surge block for 12 hours (total contact time 24 hours)
11. Evacuate acid solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
12. Neutralize water and discharge to area shown in the drawings
13. Mix and inject Sodium Hypochlorite solution (tremie from bottom of screen to water surface)
14. Mechanically agitate chlorine solution with surge block for 12 hours (total contact time 24 hours)
15. Evacuate Chlorine solution with submersible pump (250 gpm); discharge to holding tank. Approximately 10 hours of pumping
16. Dechlorinate water and discharge to area shown in the drawings
17. Perform initial well redevelopment by dual swab and pumping
18. Perform video camera survey after brushing and bailing
19. Assess and repair/replace existing BJ submersible pump
20. Furnish and install new submersible motor and well cable
21. Modify Discharge head to accommodate for (3) 1-1/2" PVC tremie lines
22. Reinstall repaired and new pumping equipment including 3-inch recharge pipe.
23. Furnish and Install (3) 1-1/2" PVC Tremie lines
24. Monitor gravel pack level throughout rehabilitation and top off with 8x10 gravel pack to ground level as needed.
25. Furnish and install nameplate on discharge head to show submersible pump and motor specifications
26. Restore the well site to its original condition
27. Furnish logs, daily records, and other items as specified to the ENGINEER.

- A. The Engineer reserves the right to change materials and quantities specified in the following documents based on conditions encountered in the field. In addition, the Engineer reserves the right to discontinue the rehabilitation of the well if at any time the Engineer believes it is in the Owner's best interest to discontinue. In such a case, the Contractor shall be paid at the prices bid for the actual work accomplished.

1.2 DOWN TIME

- A. Downtime shall mean that time, other than standby time, during which work could occur but does not or when machinery is broken down, materials or equipment are not available, or the Contractor elects not to work. All downtime shall be at the sole expense of the Contractor.

1.3 SUBMITTALS DURING CONSTRUCTION

- A. Submittals during construction shall be made in accordance with Section 01 33 00

- B. Specific submittal items are specified within individual sections of these Specifications.

1.4 NOTIFICATION TO THE ENGINEER

- A. The CONTRACTOR shall be responsible for giving the Engineer advance notice prior to performance of specific work items as specified within individual sections of these Specifications.

1.5 STANDARDS, SPECIFICATIONS, AND CODES

- A. The well shall be cleaned in conformance with the State of Utah Rules for Public Drinking Water Systems, General Responsibilities of Public Water Systems for Systems administered by the Utah Division of Drinking Water as described in the Utah Administrative Code R309 (most recent version), and the State of Utah , water Well Handbook (most recent version), R655-4 Utah Administrative Code as administered by the Division of Water Rights

1.6 SITE PROTECTION

- A. Throughout the period of work, the Contractor shall keep the work site free and clean of all rubbish and debris. Protective barriers and other safety protection necessary to protect the public and workers shall be provided by the Contractor. The Contractor shall protect all existing fences, walls, buildings, trees, surface water bodies, wetlands, riparian areas, and landscape during the progress of work. In the event of damage to such property, the Contractor shall, at his own expense, immediately restore the property to a condition equal to its original condition and to the satisfaction of the Engineer. This provision includes damage to surface and subsurface utilities. After completion of the work, the Contractor shall remove from the premises and work areas all materials, tools and debris. At the completion of the work, the site shall be cleared of all materials and left in a condition acceptable to the Engineer.

1.7 CONTAMINATION

- A. The Contractor shall at all times perform his operation in such a manner as to prevent the introduction of contaminants into the well. Tools, pumps and other elements shall be kept clean and disinfected prior to insertion into the well. Water supply shall be protected from contamination. The Engineer may require the materials and equipment to be periodically cleaned and disinfected if, in the Engineer's sole opinion, the operation is introducing contaminants into the well.

1.8 DISPOSAL OF MATERIAL

- A. The Contractor shall be responsible for disposing all materials generated during well cleaning, well development, and well testing. The materials generated from these activities and any associated activities shall be disposed of as specified in Section 33 20 61 – DISPOSAL OF DRILLING FLUIDS, CUTTINGS AND PUMPED WATER.

1.9 WELL CHARACTERISTICS

- A. The total depth, pump setting, and production rate of the production wells is as shown in the table on the following page:

Well	Depth of Well	Screened/ Perforated Length	Pump Setting	Pump Capacity	Pump Type	Motor HP
Newbury	1030'	290'	620'	4000 gpm	Vertical Turbine	1000
10 th & 78 th	890'	217'	401'	1400 gpm	Vertical Turbine	250
98 th & 23 rd	904'	200'	760'	1850 gpm	Submersible	500
8200 S & 700 E	920'	325'	444'	1000 gpm	Submersible	200

1.10 EQUIPMENT AND PERSONNEL

- A. The Engineer must approve mobilization of any equipment or personnel under this Contract.

1.11 WELL SITE

- A. Equipment shall be set up within the areas designated by the Engineer. Upon completion and acceptance of the work, all equipment, unused materials, temporary facilities, and other miscellaneous items resulting from or used in the operations shall be removed.
- B. If additional space is required for temporary storage of materials and equipment within the limits of the site, the Contractor shall coordinate with Owner and Engineer. All stored materials and equipment shall be removed from the site as part of demobilization upon completion of this contract.

PART 2 – PRODUCTS

2.1 GENERAL

- A. The treatment chemicals, if any required, will be provided by the Contractor.

PART 3 – EXECUTION

3.1 GENERAL

- A. Equipment: All equipment shall be of the proper type and size and shall be in good condition to assure that the work can proceed without interruption. Frac tanks, tools, pumps and other equipment shall be adequate to perform the required treatment.
- B. The process of the rehabilitation shall follow the outline provided in Section 33 01 22.

- END OF SECTION -

SECTION 01 74 15
MOBILIZATION / DEMOBILIZATION / CLEANUP

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to mobilize, demobilize, and clean up the drill site related to the drilling, construction, development, and testing of the production wells.

1.2 RELATED WORK

Not Used.

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

Not Used.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, equipment, and labor required to accomplish the work as specified.

2.2 SECURITY FENCE

- A. Newbury Well: A security fence with locking gate exists on the north side of the project site at the dead end of Newbury Dr.

10th & 78th: A security fence with locking gate exists on the east side of the project site adjacent to S 1000 E.

98th & 23rd: A security fence with locking gate exists on the southwest side of the project site adjacent to the intersection of Eastdell Dr and E 9800 S.

8200 S & 700 E: A security fence with locking gate exists on the east side of the project site adjacent to S 1000 E.

Owner shall allow Contractor to place a padlock on all 4 gates. The gates shall remain locked at any time Contractor is not on site.

- B. The Contractor shall provide access at any time and any necessary keys to the Engineer.

2.3 PARKING FACILITIES

- A. Parking facilities for personnel working on the project will be limited. Contractor shall maintain the access road to the well site open at all times.

2.4 NOISE CONTROL FACILITIES

- A. Where applicable, the Contractor will obtain a noise permit from the Salt Lake County Health Department (SLCHD). The Contractor will be fully responsible for compliance to the permit and the Contractor shall demonstrate compliance with the noise control requirements. Copies of the pertinent SLCHD ordinances are located in Appendix A.
- B. Diesel engine acoustical enclosure of steel framed, fiberglass filled panels shall be required for all drill rigs, compressors and pumps. Where these engines are not properly isolated to prevent noise in the supporting structure, this secondary noise shall be mitigated such as by the use of acoustical skirts for drill rig trailers. High performance mufflers shall be used on all diesel engines in regular use on the drill site.
- C. Noise barrier walls shall be constructed where required to meet sound regulations found in the SLCHD ordinance found in Appendix A to mitigate noise. The noise barrier walls shall consist of fiberglass filled acoustical walls, or equal, and have a minimum wall height of 20 feet. The noise barrier walls shall reduce the maximum continuous noise from drilling/development operations to less than 60 dB at 50 feet around the perimeter of the drill site, or to levels designated in the noise permit, whichever is stricter.

2.5 CLEARING AND GRUBBING

- A. Remove all surface vegetation to a depth necessary for complete removal of all roots and other deleterious materials from within the areas to receive structural fill or base course.
- B. All trees, stumps, roots, etc. to be removed within the construction limits shall be cut off, excavated, or removed to a depth of not less than 3 feet below the existing ground.
- C. Branches of trees extending over the construction limits shall be trimmed to the boles to give a clear height of 20 feet above the existing ground surface. All trimming shall be done in accordance with recognized tree surgery standards. Remove additional tree branches under the direction of the Owner in such a manner that the tree will present a balanced appearance.

PART 3 EXECUTION

3.1 WELL DRILLING

- A. Set up well drilling and related other equipment within the area designated by the Engineer. Accomplish all required work in accordance with applicable portions of

these Specifications.

3.2 CONSTRUCTION LAYOUT

- A. Set up construction facilities in a neat and orderly manner within designated area. Accomplish all required work in accordance with applicable portions of these Specifications. Confine operations to work area shown.
- B. Some obstructions may not be shown. Bidders are advised to carefully inspect the existing facilities before preparing their bids. The removal and replacement of obstructions such as electrical conduits, water, waste piping, and similar items shall be anticipated and accomplished even though not shown or specifically mentioned.
- C. Major obstructions encountered that are not shown on the Drawings, or could not have been foreseen by visual inspection of the site prior to bidding, should immediately be brought to the attention of the Engineer. The Engineer will make a determination for proceeding with the work.

3.3 CONTAMINATION PRECAUTIONS

- A. Avoid contamination of the project area. Do not dump waste oil, rubbish, or other materials on the ground.

3.4 DISPOSAL OF MATERIAL

- A. The Contractor shall be responsible for disposal of all drilling fluids, drill cuttings, development water, and test waters as further described in these Specifications.

3.5 CLEANUP OF CONSTRUCTION AREAS

- A. During execution of the work, the Contractor shall daily clean the site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that grounds, and public and private properties are maintained free from accumulations of waste materials and rubbish. Contractor will provide container for collection and disposal of waste materials, rubbish, and debris.
- B. Upon completion and acceptance of the well, remove from the site the drill rig and related equipment and all debris, unused materials, temporary construction buildings, and other miscellaneous items resulting from or used in the operations. Replace and repair any facility that has been damaged during the construction work. Restore the site as nearly as possible to its original condition.

3.6 NOISE CONTROL

- A. The Contractor shall demonstrate compliance with the noise control requirements. Noise levels shall be monitored at least once daily, and at the request of the Engineer, during a time when onsite equipment is in use and noise levels are expected to be the highest. Noise levels shall be measured next to the drill site boundary and at 50 and 100 feet from the drill site using a calibrated and certified sound level meter furnished by the Contractor and kept on site at all times. Noise levels will also be measured at the property boundary.

- B. Night time drilling operations shall be conducted while limiting the following activities: hammering on pipe, racking or making-up of pipe, rapid acceleration and deceleration of diesel engines, and picking up or laying down drill pipe.
- C. If, at any time, the noise limits are exceeded, immediate corrective action shall be taken through drilling equipment modifications, addition of noise abatement equipment or changes in operating procedures. Noise levels shall be monitored to demonstrate compliance.

END OF SECTION

SECTION 22 11 23
DEEP WELL VERTICAL TURBINE PUMP, MOTOR AND APPURTENANCES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope. Provide replacement pumps and motors for a water lubricated surface discharge deep well turbine pump.

- B. Submittals. Shop drawings shall be submitted in accordance with Section 01 00 00 and shall include descriptive information as required to fully describe the pump, controls (if required), and overall operating performance. The shop drawings shall clearly state any deviations from the specified requirements. The following shall also be furnished with the shop drawings. Performance requirements specified hereinafter shall be defined in the Hydraulic Institute Standards and ANSI/AWWA E101-88.
 - 1. Performance data curves (adjusted for operating speed) showing head, capacity, horsepower demand, and pump efficiency over the entire operating range of the pump, from shutoff to maximum capacity. The equipment manufactured shall indicate separately the head, capacity, horsepower demand, overall efficiency, and minimum submergence required at the specified design point.
 - 2. Equipment manufactured shall provide complete and detailed information regarding the installation of the pumps. Any installation requirements or operating conditions which the supplier or manufacturer feels to be critical to the safe and reliable operation of the pumps should be identified and described in detail.
 - 3. Operating and Maintenance manuals and Maintenance Summary Sheets for the equipment specified herein shall be furnished as specified in section 01 00 00.

1.2 DESIGN CRITERIA

- A. General. Pumps shall be capable of continuous operation while pumping untreated groundwater. The pump bowl and discharge head shall be NSF61, Annex G, **CERTIFIED**.

- B. Operating Capacities
 - 1. Newbury Well

Pump Setting Depth	750 Feet Below Top of Casing
Maximum Capacity	4,000 US GPM
Low End Capacity	3,500 US GPM
Total Dynamic Head	800 Feet TDH
Nominal Operating Speed	1785 RPM
Minimum Efficiency	85%
Minimum Motor Horsepower	1000
Minimum Column Size	14"

2. 10th & 78th Well

Pump Setting Depth	401 Feet Below Top of Casing
Maximum Capacity	1,400 US GPM
Low End Capacity	1,100 US GPM
Total Dynamic Head	537 Feet TDH
Nominal Operating Speed	1775 RPM
Minimum Efficiency	85%
Minimum Motor Horsepower	250
Minimum Column Size	10"

3. 98th & 23rd Well

Pump Setting Depth	760 Feet Below Top of Casing
Maximum Capacity	2,000 US GPM
Low End Capacity	1,500 US GPM
Total Dynamic Head	~915 Feet TDH
Nominal Operating Speed	~1,750 RPM
Minimum Efficiency	85%
Minimum Motor Horsepower	500
Minimum Column Size	10"

4. 8200 S & 700 E Well

Pump Setting Depth	444 Feet Below Top of Casing
Maximum Capacity	1000 US GPM
Low End Capacity	700 US GPM
Total Dynamic Head	~560 Feet TDH
Nominal Operating Speed	~1,750 RPM
Minimum Efficiency	85%
Minimum Motor Horsepower	200
Minimum Column Size	8"

- C. The pump and motor shall be capable of operating within specified parameters without permanent damage.

PART 2 – PRODUCTS

2.1 PUMP BOWL ASSEMBLY

- A. General. The pump bowls shall be of close grained, cast iron ASTM A48 Class 30. The water passages on bowl sizes 4" through 20" shall be lined with porcelain enamel and larger sizes shall be Heresite or fusion epoxy-lined to reduce friction losses; shall be free of blow holes, sand holes and other detrimental defects, and shall be accurately machined and fitted. The impellers shall be of bronze ASTM B584C87600 No-lead bronze or 416 Stainless Steel and statically and dynamically balanced. Impellers shall be securely fastened to

the shaft with taper split bushings of steel. Impellers shall be adjusted vertically by an external means.

- B. The pump shaft shall be of A276GR416 stainless steel, turned, ground and polished. It shall be supported by bronze bearings of ASTM B505C84400 above and below each impeller. The suction case bearing shall be grease lubricated and protected by bronze sand collar of ASTM B505C84400. The size of the shaft shall be no less than that determined by ANSI/AWWA Specifications E101, Section A4.3 paragraph 4.3.3.
- C. The discharge case shall also be fitted with a bronze ASTM B505C84400 tube adapter bearing of proper size to connect to the shaft enclosing tube. Also, the discharge case shall be fitted with a cast iron ASTM A48 Class 30 column adapter of the proper size to connect to the column selected.
- D. The pump exterior shall be coated with 10-12 mils, DFT of, NSF 61, potable epoxy paint. And, shall be NSF-61, Annex G, **CERTIFIED**.

2.2 DISCHARGE HEAD

- A. General. The discharge head shall be close grained, cast iron, ASTM A48 Class 30 free of sand holes and other defects, accurately machined and with a surface discharge. Discharge flange shall be machined and drilled to ANSI standards for 125# rating and shall be 12 inches nominal inside diameter equal to the driver base diameter (BD) and no less than 16-1/2 inches.
- B. The discharge head shall be equipped with a stuffing box rated at 300 Psi, minimum. The packing box shall contain no less than 6 Graphite Fiberglass packing rings and 2 ASTM B584GDC83600 Lantern rings. Sealing between the stuffing box and the discharge head and the plate and shaft enclosing tube shall be accomplished by means of "O" rings.
- C. The head shaft shall be of ASTM A276GR416 stainless steel which shall not exceed 10' in length. Impeller adjustment shall be provided at the top of the head shaft by means of a steel adjusting nut, which shall be positively locked in position.
- D. The existing well casing shall be fitted with a steel sole plate designed to support the weight of pump and motor assembly. The bolt holes shall be tapped into the sole plate and capped on the bottom side to prevent concrete intrusion. A neoprene gasket and cadmium plate bolts shall be used to seal the discharge head to the sole plate.
- E. For artesian type wells the base discharge head to sole plate bolt pattern shall be 125# flanged type. For non-artesian type wells a manufactures standard may be used.
- F. The discharge head interior shall be coated with 10-12 mils, DFT of, NSF 61, potable epoxy paint. And, shall be NSF-61, Annex G, **CERTIFIED**.

2.3 COLUMN ASSEMBLY

- A. The line shafts shall be of carbon steel ASTM A108 grade C1045, turned and ground. They shall be furnished in interchangeable sections not over 20 feet in length. An ASTM A269GR304 stainless steel sleeve shall be swaged onto the shaft at each bearing location.
- B. The butting faces shall be machined square to the axis of the shaft, with maximum permissible axial misalignment of the thread axis with the shaft axis 0.002" in 6". The size of the shaft shall be no less than that determined by ANSI/AWWA-E101 Specifications, Section 5.5 for C1045 line shaft and shall be such that elongation due to hydraulic thrust will not exceed the axial clearance of the impellers in the pump bowls. Maximum run out in 10' shall not exceed .005".
- C. The line shaft bearing shall be C-844 bronze, internally grooved to allow proper lubrication to enclosed lineshaft and threaded externally for connecting oil tube sections at each column joint.
- D. Shaft Enclosing Tubes shall be ASTM A53 Grade A schedule 80 steel pipe in interchangeable sections not over 20 ft. in length with the ends machined square and parallel and shall butt to ensure proper alignment and sealing. They shall be straight within 0.005 in. total indicator reading for a 5 ft. section. Threaded internally to receive the lineshaft bearings. The top section shall be designed for allowing proper tension to the tube. The enclosed tube shall be stabilized and centered in the column pipe by centering spiders spaced 20 ft. from the top and bottom, and at 40 ft. intervals throughout the balance of the column pipe.
- E. The outer column pipe shall be of ASTM A53GRB steel pipe in interchangeable sections not over 20 feet in length and with the ends of each section faced parallel and machined with 8 straight threads per inch permitting the ends to butt and insuring alignment when connected by standard mill steel couplings. The weight of the column pipe shall be no less than that stated in ANSI Specification E101, Section 5.1 "Standard Specifications for Discharge Column Pipe."
- F. The column and shaft sizes shall be as indicated in section 1.2 DESIGN CRITERIA.

2.4 MOTOR AND VARIABLE FREQUENCY DRIVE

- A. General. The electric motor shall be vertical hollow shaft 1800 RPM, 3 phase 60 Hertz 480 volts with Non-Reversing Ratchet coupling, P base, squirrel cage induction design. Enclosure shall meet NEMA weather protected type 1 design with stainless steel screens to prevent entrance of rodents. Motor shall have Class B or Class F insulation with temperature rise as specified by NEMA standards for class of insulation used and shall have a 1.15 service factor. The motor shall be of premium efficiency, inverter duty, equal to that of US Electric type HUSI.
- B. Thrust bearing shall be chosen to handle the continuous down thrust as specified by the pump manufacturer with an AFBMA B-10 50,000 hour minimum life at 110% design head conditions. Provisions shall be made for momentary upthrust equal to 30% of rated down thrust.
- C. The motor shall be equipped with an Aegis SGR shaft grounding system. It shall include, as a minimum, an upper bearing shield, and a lower shaft grounding ring.
- D. The motor rating shall be such that at design it will not be loaded beyond nameplate rating and at no place on the pump curve shall the loading exceed the service factor.

2.5 SOUNDER TUBE

- A. General. A PVC sounder tube shall be installed with the column. The sounder tube shall be a minimum of 1.25" schedule 80 flush thread PVC pipe. Threads shall conform to ASTM F480. The sounder tube shall extend from the top of the pump assembly to the surface. The bottom of the sounder tube shall be capped. The bottom 10 feet of the sounder tube shall be slotted. Slots shall be .020", and conform to ASTM F-480. The sounder tube shall be strapped to the discharge column with stainless steel bands.

2.6 WATER LEVEL INDICATOR ASSEMBLY

- A. The water level indicator shall be an INW PS98i transducer with a Powers Model 330 process controller or equal. The transducer unit shall be mounted through the pump discharge head with a sounder tube terminating at the top of the bowl assembly. Transducer cable shall be routed through the existing conduit into to the Owner's RTU cabinet at the 10th&78th, 98th&23rd, and 8200 S 700 E wells, contractor to field verify the required length of transducer cable. The transducer cable will terminate at pump discharge head at the Newbury Well.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Installation shall meet manufacturers requirements.

3.2 PAINTING

- A. Shop and field painting shall be specified by owner.

3.3 FUNCTIONAL TEST

- A. Prior to owner acceptance and formal pump station start-up, all equipment shall be inspected for proper alignment, quiet operation, proper connection, and satisfactory performance by means of a function test. A start up report showing function testing, motor voltages, running amperages and well water levels shall be provided to the engineer after pump station start-up.

3.4 SUPPLIER

- A. The supplier of the well pump, motor and appurtenances shall have been in business for not less than 10 years. The primary function of the supplier shall be water well pumps and motors. This supplier shall have sole responsibility for all materials contained within this specification section.
- B. Approved manufacturers are: Flowserve Pump Co, National Pump Co., or preapproved equal. Any alternate manufacturers must be NSF 61, Annex G, **CERTIFIED**. Certifications must be provided, to engineer, 14 days prior to bid, for approval.

-END OF SECTION-

SECTION 33 01 22 WATER WELL REHABILITATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. The Work included under this section includes furnishing all labor, materials, tools, equipment, transportation and other items required to remove existing pumping equipment, perform downhole video camera surveys, mechanically clean well using a brush and dual swab, chemically treat and remove scale and iron bacterial accumulations, chemically treat to remove residual drilling additives, swab and bail to remove formation clay, silt, fine sand and other debris, development pumping to remove chemicals, pH control and chemical neutralization, disposal of pumped water, pump test, reinstall pumping equipment and disinfect well and equipment.

1.2 RELATED WORK

- A. Section 33 01 25 – Initial Well Redevelopment
- B. Section 33 20 24 – Well Development by Pumping
- C. Section 33 20 26 – Step Rate Drawdown Test
- D. Section 33 20 28 – Constant Rate Drawdown Test
- E. Section 33 20 30 – Video Camera Survey

1.3 REFERENCES

- A. ANSI/NSF 60 – Drinking Water Treatment Chemicals - Health Effects
- B. ANSI/NSF 61 – Drinking Water System Components - Health Effects
- C. American Water Works Association (AWWA)
 - 1. ANSI/AWWA A100-90 - Water Wells
 - 2. ANSI/AWWA C654 – Disinfection of Wells
- D. State of Utah, Administrative Rules for Public Drinking Water System
- E. OSHA 29 CFR 1910 – Occupational Safety and Health Standards

1.4 SUBMITTALS

- A. Contractor shall submit a list of his proposed equipment to the Engineer for approval prior to beginning rehabilitation work on the water well.
- B. Submittal data shall include but not be limited to the following:

1. Well development and pumping equipment.
2. Description of holding tanks for de-chlorination of treated well water
3. Technical and specification sheets for replacement pump equipment
4. Monitoring data on pH and chlorine levels in the well and holding tanks, pumping rates, drawdowns, and pH and chlorine levels and discharge rates from the holding tanks to the discharge locations

1.5 QUALITY ASSURANCE

- A. Use of all chemicals, well development activities and discharge of well development water and removal of debris shall be in accordance with industry standards, the referenced standards as well as pertinent State and Local regulations and requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. All chemicals used in treating the well shall be carefully transported, stored and handled in accordance with local, state and federal regulations, as appropriate, and in accordance with the manufactures recommendation and MSDS sheets.

1.7 PROJECT CONDITIONS

- A. Well site and permission for access shall be provided by the Owner, who shall provide land and/or right of way for the Work as described herein and shall make suitable provisions for ingress and egress to the site.
- B. Contractor shall not enter the property adjacent to the project site, nor occupy with men, materials, tools, or equipment adjacent properties without written consent of the Owner of such adjacent properties.
- C. All development water shall be held on-site in holding tanks until approved for discharge to a storm drain as shown in the Drawings and as approved by the Engineer.

PART 2 PRODUCTS

2.1 CONSTRUCTION WATER QUALITY

- A. The only water that is to be introduced into the well shall be taken from a public drinking water system. The owner will provide the contractor with access to culinary water. The contractor will be responsible for conveyance of water to the site.
- B. Control of Development Water
 1. Contractor shall take sufficient precautions to insure that discharges from well rehabilitation operations do not contaminate local streams or waters.
 2. Contractor shall contain all development water in mobile on-site holding tanks and neutralize or de-chlorinate the water until the water quality reaches acceptable levels.

3. Upon completion of well rehabilitation, holding tanks shall be removed from the project site.

C. Discharge of Development Water

1. When water being pumped from the well reaches background chlorine residual levels of zero, discharge water may be discharged directly to the designated location.

2.2 WELL EQUIPMENT AND TREATMENT MATERIALS

- A. All interior surfaces must consist of products complying with ANSI/NSF Standard 61. This requirement applies to the pump, pump column, tremie pipe, electrical wire, sensors, and all other equipment or surfaces which may make contact with drinking water.
- B. All substances introduced into the well during construction or development shall be certified to comply with ANSI/NSF Standard 60 or as specifically approved in writing by the Division of Drinking Water. This requirement applies to treatment additives including biocide dispersants, wetting agents, surfactants, and acid for removing mineral deposits.
 1. Chemicals to be used will be provided by the CONTRACTOR may include, but are not limited to:
 - a. Hydrogen Peroxide (NSF 60 Certified)
 - b. Mineral Acid (NSF 60 Certified)
 - c. Bio-Dispersant (NSF 60 Certified)
 - d. Non-Ionic Surfactant (NSF 60 Certified)
 - e. Acid Inhibitor (NSF 60 Certified or as approved)
 - f. Sodium Hypochlorite (NSF 60 Certified)
 - g. Chlorine Enhancer (NSF 60 Certified)
 - h. Chlorine Neutralizer (NSF 60 Certified)

PART 3 EXECUTION

3.1 WELL TREATMENT, RE-DEVELOPMENT AND RE-EQUIPPING

A. General Sequence of Work

1. The general sequence of work shall be as follows:
 - a. Remove all pumping equipment
 - b. Perform a TV video survey of well casing and screen
 - c. Perform wire brushing and dual swabbing of well casing and screen
 - d. If needed, add acid treatment chemicals and monitor pH to ensure optimal cleaning effects.
 - e. Swab perforated sections of well

- f. Adjust pH of standing well water to maintain desired pH level
- g. Bail and/or pump debris from bottom of well, if necessary
- h. Pump well into holding tanks to purge acid chemicals from well
- i. Neutralize and discharge purge water to area shown on drawings
- j. Add “shock chlorination” to well and monitor pH to ensure optimal cleaning effects.
- k. Swab perforated sections of well
- l. Adjust pH of standing well water to maintain desired pH level
- m. Perform initial re-development of well casing and screen
- n. Bail and/or pump debris from bottom of well, if necessary
- o. Pump well into holding tanks to purge treatment chemicals from well
- p. De-chlorinate and discharge purge water to area shown on drawings
- q. Perform pump development, step drawdown testing, and continuous pumping test
- r. Clean existing pumping equipment
- s. Modify discharge head for installation of a chemical addition tremie line
- t. Install permanent pumping equipment and PVC tremie line
- u. Perform site clean-up and demobilize equipment

B. Removal of Pumping Equipment

- 1. All pumping equipment shall be removed from the well and carefully stored above the ground surface on the project site for inspection.

C. Video of well casing and screen

- 1. Video survey shall conform to Section 33 20 30 – Video Camera Survey.

D. Wire Brushing of Well Casing

- 1. The contractor shall use a stiff metal wire brush or a nylon brush with a dual swab tool to remove mineral scale and iron bacterial growth from the inside surface of the well casing. The type of brush to be used will be determined by the engineer after review of the well video survey. The bottom of the well shall be cleaned with a submersible pump capable of purging accumulated debris from the bottom of the well.

E. Addition of Chemicals

- 1. Liquid chemicals shall be pumped into the perforated sections of the well by means of a tremie pipe or through the dual swab tool. A tremie line or similar applicator shall be installed inside the dual swab tool if this is the chosen method. The chemicals shall be added from the bottom of the perforations up through the perforated portions of the well. The flow rate of the chemicals shall be metered at the surface and controlled to no more than 10 gpm. The tremie pipe shall be from 1 to 2-inch diameter and consist of non-reactive

materials.

2. All chemicals will be provided by JVWCD. After adding the initial chemical treatment, the well water shall be mechanically agitated with a surge block for at least 30 minutes before checking the pH level with a non-reactive sampling bailer fitted with a ball valve at the bottom. If the pH is above 3 for acid treatment or 5.0 for chlorination, the chemistry of the water should be adjusted by adding a sufficient volume, by means of a tremie pipe, to lower the pH to less than 3.0 for acid and 5.0 for chlorination. While chemicals are in the well, pH should always be kept below these levels.
3. The mechanical development process should be started immediately once the liquid treatment chemicals have been added to the well. Agitation with a surge block shall be started from the bottom of the well and worked upward in even sections and time increments to the static water level. Once the surge block reaches the top of the screen interval, pump any accumulated debris from the bottom of the well. Monitor the content of any debris recovered for color of scale/sludge, percentage of scale/sludge of total debris, sand, etc. Surge for 3-4 hours and check the chemistry for color and pH with an inert sample bailer.
4. Monitoring and Adjusting the pH during Treatment: Samples of well water should be collected every 3-4 hours during treatment time and monitored for pH and color. Samples should be collected with a non-reactive sampling bailer fitted with a ball valve at the bottom. Multiple samples should be collected from various points within the well screen. When the pH rises above the required levels, adjust pH downward by adding a sufficient volume of chemicals to lower the pH to less than these levels. The pH should be checked prior to leaving the site in the evening. After any dosage of chemicals to adjust pH, the well shall be surged for 30 minutes to assure a uniform mixture. In the morning, the well should be surged for 30-60 minutes before checking pH to assure similar well conditions. If pH is greater than the required levels, adjust accordingly. If pH is lower than the required levels, agitate for 2-4 hours and recheck pH. Continue this process until instructed by the engineer to stop (approximately 12 to 16 hours).
5. Record Keeping: Keep a log of time, pH, color, and pH adjustments for review and evaluation of treatment effectiveness. Full treatment is estimated to take 36 hours per chemical treatment.

F. Removal and Disposal of Treatment Water and Debris

1. Once each stage of chemical treatment is complete, the well should be bailed and/or pumped clean of all materials and debris from the bottom of the well. The well shall then be redeveloped by means of a dual swab surge block with simultaneous pumping to remove any development debris. When the well is redeveloped and cleaned of development debris, a development pump shall be installed. The pump suction should be installed to a minimum depth of 10 feet above the first set of screens. The well should then be pumped to purge the treatment water from the well. Pump discharge should be directed to portable surface holding tanks with a minimum total storage capacity of approximately 40,000 gallons.
2. The water in the holding tanks shall be neutralized or de-chlorinated by

adding a neutralizing or dechlorination agent. To assure thorough mixing in the holding tanks, the neutralizing additive should be injected into the pump discharge on a constant feed basis. For acid treatments, pH should return to 6.5 or higher and for chlorine, no chlorine residual shall remain prior to disposal. The discharge from the holding tanks to the designated area shall be monitored with a flow meter and regulated to no greater than 50 gallons per minute. Chlorine or pH readings of the discharge water should be recorded regularly for permitting submittals.

3. When the holding tanks have been emptied, the well pump can be restarted and the process repeated. The residual pH/chlorine levels of subsequent batches will be expected to improve with each batch but may fluctuate somewhat. This process of pumping into the holding tanks should be repeated until the water coming from the well reaches background levels, or as directed by the Engineer
4. When the pH level coming from the well during acid treatment reaches 6.5 or higher, and when chlorine residual of the water coming from the well during chlorine treatments reaches zero, the discharge water may be disposed of directly to the designated discharge area.
 - a. Alternative methods of acid neutralization/de-chlorination must be approved by the Engineer and meet the requirements for discharge prior to allowing any water to be discharged to the designated area.

G. Initial Well Re-Development

1. Initial well re-development will be executed in accordance with Section 33 01 25 - Initial Well Redevelopment

H. Well Development and Pump Testing

1. Contractor shall install a test pump and perform additional development by pumping in accordance with Section 33 20 24 – Well Development by Pumping and test pumping in accordance with Section 33 20 26 – Step Rate Drawdown Test and 33 20 28 – Constant Rate Drawdown Test.

I. Modify Discharge Head

1. The discharge head shall have three (3) ports added for installation of (3) 1½ -inch PVC tremie lines.

J. Clean Permanent Pumping Equipment

1. In order to ensure adequate cleaning of the pumping equipment, the bowls shall be disassembled and all mineral accumulation shall be removed.
2. After disassembly, cleaning is to include wire brushing to remove all iron oxide scale and any mineral deposition prior to steam cleaning.
3. All existing permanent pumping equipment that will be re-installed in the well shall be thoroughly steam cleaned inside and out.
4. Water used for steam cleaning shall maintain a chlorine level of at least 50 parts per million.
5. After steam cleaning the pumping equipment shall be re-assembled and

prepared for installation

K. Installation of Permanent Pumping Equipment

1. Upon completion of all development and well testing work, the contractor shall install the existing or replacement pumping equipment and appurtenant piping and electrical control equipment.

L. Tremie Line

1. The Contractor shall install (3) 1½ -inch schedule 80 PVC tremie lines into the well simultaneously with the pumping equipment.
2. The pipes will either be flush threaded or connected using threaded couplings capable of withstanding the weight of the pipe below each coupling.
3. The tremie lines shall be strapped to the pump column above the bowls and centralizers shall be added below the bowls at 40-foot intervals to center the lines in the well.
4. Contractor shall submit a proposed design for centering lines below bowls, securing lines to pump column and passing the pump bowls.
5. The tremie lines shall be sealed at the surface where it connects to the well head. The Contractor shall submit a plan for sealing these lines with the proposed centering plan.
6. Perforate one of the PVC tremie lines with 1/8- inch diameter holes once every 10 feet in the area below the pump.

PART 4 HEALTH AND SAFETY PROCEDURES

4.1 HEALTH AND SAFETY PROCEDURES

A. Health and Safety Plan

1. There are a number of critical health and safety issues related to general well and pump mechanical and electrical operation and control, as well as specific concerns of handling potentially hazardous well treatment and rehabilitation fluids, and related issues such as electrical supplies including overhead wires and confined space operation.
2. The requirement for overall safety for human health and the environment is of paramount importance. The contractor shall have a health and safety plan that is specific yet is flexible to assure that personnel are thoroughly familiar with chemical use and handling and mechanical activities.
 - a. The contractor is responsible for and shall ensure that all personnel have proper personal protective equipment (PPE) that is appropriate to protect workers from the chemicals to be used for well treatment.

B. Level of Protection for Mixing and Handling Well Treatment Chemicals

1. Well maintenance treatments involve the use of reactive chemicals. Once a chemical regime is selected, the appropriate use of chemical-resistant gloves, boots, and apparel, full-face splash shields, and other specific protection such as for handling hot and cold solutions should be specified. An excellent

strategic policy for safety is to, as a rule, employ treatment mixtures that minimize hazard and the likelihood of personal injury due to error, while still being effective.

C. Chemical Handling Hazards

1. Transferring chemical solutions: Typically, the major exposure injury risk point during treatment is at drums containing concentrated acid, caustic, or oxidizing agent solutions. Spilling or transfer hose troubles may result in skin exposure. Vapors may cause mucous membrane and eye tissue irritation or damage. Persons handling concentrated chemicals should wear full-face splash guards and respirators and chemical resistant clothing and gloves. Persons handling dilute solutions may work with care in OSHA Level D gear (29 CFR 1910).

D. Mixing Chemicals

1. Mixing hazards: Mixing of concentrated reactive solutions can result in personal hazards. For example, neutralization of acids poses a potential hazard if basic compounds are added too rapidly to strongly acidic solutions (pH <5) as significant foaming may occur.
2. Personnel should review how to handle specific chemical source stock and solutions. MSDS provide general guidance but should not be relied upon for complete instructions.
3. General chemical mixing safety requirements are listed below:
 - a. Personnel should always add acid to water and not vice versa.
 - b. Strong oxidants should never be used where hydrocarbon concentrations are high in well water solutions, as ignition is a low-but-not-zero probability.
 - c. Alkaline and caustic compounds should be added slowly to acidic compounds when neutralization is required, and never added to wells when acid solutions are still in the well.
 - d. Hoses, valves, and connections should be secured and not leaking. Spraying acid or oxidant chemicals can result in dermal burns and clothing damage.
 - e. All work should be conducted in unobstructed and/or well-ventilated areas.
 - f. Personnel must routinely review MSDS and company recipe sheets before each treatment event and work at a deliberate pace, avoiding rush.
 - g. Extra lime or soda ash should be kept on hand to treat spills, and eyewash packages and abundant clean water should be kept close at hand for dilution if personnel are splashed.
 - h. An emergency action plan should be prepared by the contractor to cover any spills, accidental contact with chemicals or unanticipated events.
 - i. An emergency evacuation plan should be prepared by the contractor

and in place prior to initiating work on the project.

- j. Phone numbers for emergency responders should be placed in a safe and prominent location on the job site.

E. Site Security

1. The contractor shall ensure that there is no public access to the site during work activities.
2. The contractor shall ensure that the well house is locked and that there is no public access to the well head either during or after work hours.
3. The contractor shall ensure that all chemicals used for treatment and/or neutralization are secured from public access and are protected from tampering or removal from the job site.

END OF SECTION

This page has been left blank intentionally

SECTION 33 01 25 INITIAL WELL REDEVELOPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the labor, supplies, tools, materials, and equipment necessary for the redevelopment of the production well using the dual swab tool or other Engineer approved development method.

1.2 RELATED WORK

- A. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water. Dispose of water and residual drilling fluids generated during surge block and air life or submersible pump development as specified herein.

1.3 REFERENCES

- A. Groundwater and Wells, Second Edition, Pages 507 and 515 (by Fletcher G. Driscoll, 1986, published by Johnson Division, St. Paul, Minnesota 55112).

1.4 SUBMITTALS

- A. Submittals shall include but are not limited to:
 - a. Drilling mud dispersant
 - b. Dual rubber swab
 - c. Well driller's log

1.5 REDEVELOPMENT TIME

- A. The total redevelopment time is estimated to be 36 hours per well using the dual swab tool. However the Engineer shall be the sole judge as to when development is complete and may therefore increase or decrease the total development time.

1.6 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 24-hour advance notice prior to beginning well development by surge block and submersible pump for the well.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.

2.2 SURGING AND BAILING EQUIPMENT

- A. Furnish a surge block consisting of a double rubber swab, submersible pump system, and all necessary appurtenant equipment necessary for developing the well. The swab shall be of sufficient thickness, stiffness, and size to effectively agitate the well. The rubber swab shall be at least 1-inch thick and sized to be 1/2-inch smaller diameter than the well.

2.3 SAND CONTENT MEASURING DEVICE

- A. Provide a sand content measuring device such as an Imhoff cone, Rossum centrifugal sand tester, or equal.

PART 3 EXECUTION

3.1 GENERAL

- A. After the chlorine treatment has been completed, the Contractor shall notify the Engineer and make the necessary arrangements for conducting well development. The time required for development will be recorded by the hour with one-half hour intervals as the smallest units 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. Fractions of an hour less than one hour but exceeding three-quarters of an hour will be considered to be one full hour.
- B. The time to be recorded for well development shall commence when the equipment is installed in the well and is placed in operation, and shall end when development pumping or testing is stopped at the direction of the Engineer. No time will be recorded for delays resulting from equipment stuck in the hole; equipment breakdown; arranging major drilling, pumping or testing apparatus; or failure to conduct the operations in a diligent and workmanlike manner by which the desired results could ordinarily be expected.
- C. The Contractor may be required to add a mud dispersant to aid in removal of any clay particles. Drilling mud dispersants shall be purchased and provided by the Owner. The method for adding the chemical to the well shall be developed by the Contractor and approved by the Engineer.

3.2 SURGE BLOCK AND SUBMERSIBLE PUMP DEVELOPMENT USING CABLE TOOL RIG

- A. Upon completion of the chlorine treatment, the Contractor shall commence development with the cable tool rig or approved equal.
- B. Development shall consist of swabbing with a dual swab while simultaneously pumping with a submersible pump.
- C. The clay dispersant additive (e.g., NW-220 or approved equal) shall be introduced into the well via a tremie pipe or perforated surge block at three different depths specified by the Engineer. The Contractor shall mix and agitate the additive into the

well by swabbing with the surge block. The additive will be allowed to sit in the well for a period of 24 hours and subsequently removed by pumping. No standby charges will be allowed for the 24 hour period the clay dispersant must sit in the well.

- D. Surging shall begin at the top of the upper perforated interval and work continuously downward to the base of the lower perforated interval. The well shall be surged using the spudding action of a cable tool drilling rig. The length of surge strokes and approximate number of strokes per minute shall be recorded by the Contractor on a field log sheet.
- E. A submersible electric pumping system capable of producing a minimum of 250 gallons per minute under conditions existing at the site shall be used to remove water and solids from the well. The Contractor shall supply and install temporary discharge piping of sufficient size and length to conduct water to holding tanks and then to the discharge point shown in the drawings.
- F. A surge block shall consist of a dual rubber swab assembly with two (2) swabs on a 4-inch minimum pipe separated by a 10-foot section of perforated drill pipe. Sufficient perforations shall be drilled between the surge blocks for passage of at least 600 gpm. There shall be a minimum of twenty 1-inch minimum diameter holes in the pipe, between the swabs. The rubber swabs shall fit snugly in the well so as to minimize leakage around the swabs. For an example of a dual rubber swab, refer to Groundwater and Wells, Second Edition, Pages 507 and 515 (by Fletcher G. Driscoll, 1986, published by Johnson Division, St. Paul, Minnesota 55112).
- G. Pumping and surging from each treatment interval shall continue for each perforated interval in the well, or until all sand, silt, mud, and other solids have been removed from the treatment interval or as directed by the Engineer. Multiple development passes shall be used as directed by the Engineer. Pumping and surging shall begin at the top of the perforated interval and work downward to the bottom of the lower-screened interval. The quality, quantity and type of solids removed from the well shall be recorded by the Contractor.
- H. Solids settling is required before the water is discharged from the surface storage tank, as well as adherence to other State of Utah Division of Water Quality requirements. Contractor shall follow Division of Water Quality BMP's which are attached in APPENDIX A.
- I. Periodically, the Contractor shall measure and pump from the well all sand, silt, and clay that has accumulated at the bottom. Development shall be continued until all cuttings, fines and sand have been removed from the well. Upon completion of this operation, the well shall be pumped clean of all accumulations of mud, sand, rock, or sediment to its full depth prior to commencing the pumping of the well.
- J. Sand measurements shall be made with a Rossum centrifugal sand tester during cable tool development pumping.
- K. The total amount of material removed from the well during rehabilitation shall be recorded in the Driller's log.

END OF SECTION

This page has been left blank intentionally.

SECTION 33 20 22 INSTALL DEVELOPMENT PUMP EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to provide, install, and remove the pump and associated appurtenances for development, test pumping, and water level measurement, and includes installation of a 2-inch water level measurement access pipe.

1.2 RELATED WORK

- A. Section 33 20 40 – Plumbness and Alignment
- B. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

Not Used.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.
- B. Plumbness and alignment testing will be performed prior to installing the test pump in accordance with Section 33 20 40 – Plumbness and Alignment.

2.2 PUMPING EQUIPMENT

- A. The test pump shall be a vertical turbine line shaft type pump capable of pumping from 500 to 4000 gallons per minute under the head conditions anticipated for the project. The Contractor shall initially set the pump at a depth of 300 feet below ground surface but be capable of lowering the pump setting to achieve the maximum rated capacity of the pump, if necessary.
- B. The pump motor shall be of a variable-speed type and be equipped with sound deadening devices as appropriate. Discharge piping shall be provided by the Contractor and be of sufficient size and length to conduct water to the wastewater disposal area as specified in Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water. The Contractor shall provide instantaneous and totalizing flow meters or other approved devices that will-measure the flow rate to an accuracy of at

least 5 percent. The Contractor shall also provide an orifice plate and manometer with appropriate apparatuses to measure discharge flow from the well.

2.3 SAMPLE PORT

- A. Provide a sample port at the well head for the collection of water quality samples.
- B. Provide an access port and tube for measurement of water level with an electric water level probe.
- C. Provide a 2-inch diameter access port and tube for water level sensing with a transducer and data logger.

2.4 DATA LOGGER AND ELECTRIC WATER LEVEL PROBE

- A. Provide a water level transducer and data logger along with an electric water level probe acceptable to the Engineer.

2.5 SAND CONTENT MEASURING DEVICE

- A. Provide a sand content measuring device such as a Rossum centrifugal sand separator, or equal.

PART 3 EXECUTION

3.1 GENERAL

- A. Following the completion of initial development with the cable tool rig, the Contractor shall install a deep well high capacity test pump to perform the development of the well by pumping. This pump shall not be removed from the well until all well testing, including recovery monitoring, is complete. All fuel shall be provided by the Contractor.
- B. Provide a 2-inch diameter sounding tube adequate for insertion of water level sensing devices into the well before, during, and after the test pumping. The access pipe must allow free passage of pressure transducers that are 1-inch in diameter and approximately 8-inches long. The sounding tube shall be securely fastened to the pump column assembly, terminate approximately 5 feet above the pump, and be perforated along the bottom 10 feet.
- C. Provide and install a water level transducer and data logger with an electric water level probe to a depth determined by Engineer. Water level transducer and data logger shall remain down-hole until all development and test pumping are complete. Failure of compliance or equipment failure shall result in the contractor performing the test pumping again until satisfactory records are produced from the water level transducer.

END OF SECTION

SECTION 33 20 26 STEP-RATE DRAWDOWN TEST

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to test the production well by the Step-Rate Drawdown Test.

1.2 RELATED WORK

- A. Section 01 00 10 – Special Conditions for Drilling
- B. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

- A. The Contractor shall submit pump test data for the well in hard copy and electronic form.
- B. The submittals shall be made in accordance with Section 01 00 10 – Special Conditions for Drilling.

1.5 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 48-hour advance notice prior to beginning the step rate drawdown test for the well.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.
- B. Provide water level pressure transducer and data logger as specified.

PART 3 EXECUTION

3.1 GENERAL

- A. A step-rate drawdown (discharge) test shall be performed to determine well performance characteristics.

- B. The step-rate drawdown test will be performed after the well has been sufficiently developed by the test pump as approved by the Engineer.
- C. The Contractor shall monitor and document the specific capacity (pumping rate and drawdown) of the well as it is pumped. The monitoring frequency and instrumentation shall be approved by the Engineer.
- D. During the step-rate drawdown test the discharge rates from the pump shall be controlled by both a valve and engine throttle. The discharge rate shall be controlled and maintained at approximately the desired discharge rate for each step with inaccuracy of at least plus or minus 5 percent. Pump discharge rates shall be measured with instantaneous and totalizing flow meters as approved by the Engineer.
- E. Step-Rate Drawdown Test: The well shall be "step" tested at rates of approximately 1/2, 3/4, 1, 1.25, and 1.5 times the design capacity of the well or at rates specified by the Engineer. The test shall be conducted under the supervision of the Engineer.
- F. Whenever continuous pumping at a uniform rate has been specified, failure of pump operation shall require that the test be aborted and further testing suspended until the water level in the pumped well has recovered to its original level for the purposes of this section, recovery shall be considered "complete" after the well has been allowed to rest-for a period at least equal to the elapsed pumping time of the aborted test, with the exception that if any three successive water level, measurements spaced at least 20 minutes apart show no further rise in the water level in the pumped well, the test may be resumed at the direction of the Engineer.
- G. Any test that does not meet the duration requirement specified above; or that is initiated too soon after an aborted test as defined above, shall be declared invalid, and the Contractor will not be paid for the invalid test.
- H. Water used for pump testing shall be disposed of per Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

3.2 WATER LEVEL MEASUREMENT

- A. Equipment needed to adequately monitor water level before, during, and after the step-rate drawdown test include:
 - 1. Electronic water level sounder (Solinst or equal) of sufficient length to monitor water level.
 - 2. Pressure transducer (In-Situ Inc. PXD-261, miniTROLL, or equal) to be placed in the water level sounding tube of sufficient length to remain below the water table during the entire duration of the pumping test.
 - 3. Data logger (Hermit 3000, miniTROLL, or equal) for the purpose of obtaining frequent and automated water level readings during the pump test.

END OF SECTION

SECTION 33 20 28 CONSTANT-RATE DISCHARGE TEST

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to test the production well by the Constant-Rate Discharge Test.
- B. Water generated during pump testing shall be disposed of as specified in Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

1.2 RELATED WORK

- A. Section 01 00 10 – Special Conditions for Drilling
- B. Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water

1.3 REFERENCES

- A. Safe Drinking Water Act

1.4 SUBMITTALS

- A. The Contractor shall submit pump test data for the well in hard copy and electronic form.
- B. The submittals shall be made in accordance with Section 01 00 10 – Special Conditions for Drilling.

1.5 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 48-hour advance notice prior to beginning the step rate drawdown test for the well

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.
- B. Provide water level pressure transducer and data logger as specified.

PART 3 EXECUTION

3.1 GENERAL

- A. A long-term constant-rate discharge test shall be performed to determine local

aquifer characteristics.

- B. The constant-rate test shall be conducted not less than 12 hours after completion of the step test by pumping the well at the design rate for a period of 24 hours, or until the Engineer terminates the test. The test should not commence until drawdown has recovered at least 90% after the step rate drawdown test. When the pumping is terminated, the Contractor shall not conduct any activities for the duration that the well was pumped that might affect water levels in the well during the recovery period.
- C. The Contractor shall monitor and document the specific capacity (pumping rate and drawdown) of the well as it is pumped. The monitoring frequency and instrumentation shall be approved by the Engineer.
- D. During the constant-rate drawdown test, the discharge rate from the pump shall be controlled by both a valve and engine throttle. The discharge rate shall be controlled and maintained at approximately the desired discharge with an accuracy of at least 5 percent. Pump discharge rates shall be measured with an instantaneous and totalizing flow meter and orifice plate and manometer apparatus, as approved by the Engineer.
- E. Whenever continuous pumping at a uniform rate has been specified failure of pump operation shall require that the test be aborted and further testing suspended until the water level in the pumped well has recovered to its original level. For the purposes of this section, recovery shall be considered "complete" after the well has been allowed to rest for a period at least equal to the elapsed pumping time of the aborted test, with the exception that if any "three successive water level measurements spaced at least 20 minutes apart show no further rise in the water level in the pumped well, the test may be resumed at the direction of the Engineer.
- F. Any test that does not meet the duration requirement specified above, or that is initiated too soon after an aborted test, as defined above, shall be declared invalid and the Contractor will not be paid for the invalid test.
- G. The Contractor shall provide all information to the Engineer regarding the type, of pumping equipment used, including engines, drive components, bowls lines, and shafts. The Contractor shall keep records of the operation of equipment during the tests including engine rpm and horsepower, fuel use, and other essential-information that will be useful in designing a pump system.
- H. After completion of water level monitoring, and after the pump has been removed from the well, the Contractor shall remove all sand and debris that has accumulated in the bottom of the well.
- I. During the constant rate pump test, the Contractor will provide assistance and access to the Engineer for collecting water quality samples from the pump discharge water. Approximately one water quality sample may be taken for the full suite of Safe Drinking Water Act parameters near the end of the test.
- J. Water used for pump testing shall be disposed of per Section 33 20 61 – Disposal of Drilling Fluids, Cuttings and Pumped Water.

3.2 WATER LEVEL MEASUREMENT

- A. Equipment needed to adequately monitor water level before, during, and after the constant rate pumping test include:
1. Electronic water level sounder (Solinst or equal) of sufficient length to monitor water level.
 2. Two Pressure transducers (In-Situ Inc. PXD 261, miniTROLL, or equal) to be placed in the water level sounding tube of sufficient length to remain below the water table during the entire duration of the pumping test. Transducers will be placed on both the existing and new Meadowbrook well.
 3. Two Data loggers (Hermit 3000, miniTROLL, or equal) for the purpose of obtaining frequent and automated water level readings during the pump test. Each well (existing and new Meadowbrook wells) will be equipped with a data logger and transducer.
- B. Hand (manual) measurements of depth to water shall be performed before and after the test using an electronic water level sounder to test the accuracy of the transducer. Manual measurements will also be performed during the pumping test -at a frequency approved by the Engineer. The data logger and transducer shall be set-up and started prior to the pump test so that the initial static water level is determined and recorded. Several measurements shall be taken over the 24-hour period before the test. The data logger will be set up to record water level measurements at a logarithmic time frequency as the pumping is started. At a minimum, water level measurements will be collected in accordance with the following table:

Time Since Pumping Started/Stopped	Time Interval for Drawdown Measurements
0-2 minutes	10 seconds
2-5 minutes	30 seconds
5-15 minutes	1 minutes
15-60 minutes	5 minutes
1-2 hours	10 minutes
2-8 hours	30 minutes
8-24 hours	1 hour

- C. Flow rates shall be measured accurately and recorded at the same time interval as drawdown data.
- D. After pumping is terminated (24-hour minimum test duration) the same pumping schedule shall be followed until drawdown has recovered at least 90%.

END OF SECTION

This page has been left blank intentionally.

SECTION 33 20 30 VIDEO CAMERA SURVEY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the work necessary to make the video camera survey.

1.2 RELATED WORK

Not Used.

1.3 REFERENCES

Not Used.

1.4 SUBMITTALS

- A. The Contractor shall provide the Engineer with the original video tape or DVD and two copies within 48 hours of the completion of the survey. These tapes shall be compatible with the VHS format or DVD.

1.5 NOTIFICATION OF THE ENGINEER

- A. The Contractor shall be responsible to give the Engineer 48-hour- advance notice prior to beginning the video camera survey for the well.

PART 2 PRODUCT

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified:

PART 3 EXECUTION

3.1 GENERAL

- A. After completion of well discharge tests, the well shall be cleaned of all accumulated sediment (including fines) and then a color video camera survey shall be run the full depth of the well by the Contractor. The equipment used shall produce a VHS tape or DVD with an automatic depth indication. The camera and cable shall be disinfected prior to being placed in the well. The proposed camera survey shall receive the Engineer's approval before being performed. The survey shall be performed in the presence of the Engineer.
- B. The equipment used shall produce a video with an automatic depth indication at 1-

foot maximum intervals. The beginning and end of the video shall contain the date and well name. The VHS tape or DVD and box/case shall be labeled clearly with the date and well name. The video camera shall have vertical down-hole and horizontal side-hole viewing capability. Horizontal side-hole viewing shall be controllable to allow viewing at any angle within a 360 degree rotation.

1. A dynamic vertical down-hole view video shall be run from the top of the well to the bottom of the well at a speed not exceeding 30 feet per minute.
 2. The video camera during the dynamic vertical down-hole view run shall be interrupted at the direction of the Engineer for periodic static horizontal side-hole viewing.
- C. The Engineer reserves the right to inspect the video tape of the hole for defects in the well casing. Any sediment/debris or defects noted will be either cause for rejection by the Engineer or correction by the Contractor. If sediment or debris is found in the well the Contractor shall bear the cost of re-cleaning and resurveying the well. If defects in the casing are found and the cause is due to installation by the Contractor, the Contractor shall bear the cost for the necessary repairs and the cost of resurveying the hole.

END OF SECTION

SECTION 33 20 61 DISPOSAL OF DRILLING FLUIDS, CUTTINGS AND PUMPED WATER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work to be performed under this Section includes the labor, supplies, tools, materials, and equipment necessary to dispose all drilling fluids, drill cuttings, and water generated during borehole drilling, well construction, well development, and well testing.

1.2 RELATED WORK

- A. Section 01 00 10 – Special Conditions for Drilling
- B. The Contractor shall comply with all applicable permits, laws, and regulations in disposing of drilling fluids, drill cuttings, and water generated during drilling, well construction, well development, well testing, and disinfection. The permits, laws and regulations shall include, but not be limited to all federal, state, and local laws, regulations, and ordinances related to disposing of materials generated in constructing wells.

1.3 REFERENCES

- A. Utah Division of Water Quality Fact Sheet Regarding Water Discharge from Water Well Drilling and Operation

1.4 SUBMITTALS

- A. The Contractor shall submit the following:
 - 1. If applicable, or requested by the Engineer, approved chain-of-custody form(s) demonstrating compliance with federal, state, and local laws, regulations, and ordinances related to disposing of materials generated during well construction.
- B. The submittals shall be made in accordance with Part 10 of Section 01 00 10 – Special Conditions for Drilling.

PART 2 PRODUCTS

2.1 GENERAL

- A. Provide all temporary and permanent materials, supplies, tools, equipment, and labor required to accomplish the work as specified.

2.2 OWNER-SUPPLIED FACILITIES

- A. The Owner will make available to the Contractor the use of an existing storm drain to directly discharge well development water and pump test water. The locations to discharge water are shown on Drawings. The Contractor is responsible for supplying the transmission piping and other appurtenances to convey the water from the well to the designated discharge point. The Contractor is responsible to ensure the discharge water meets all applicable water quality standards prior to discharge.
- B. The Owner will designate an area on owner's property at the construction site where the Contractor may dispose of the drill cuttings and solid earth materials generated from drilling operations. The drill cuttings and solids shall be spread on the existing ground surface in the designated area so as to be consistent with the existing ground surface contours, as directed by the Owner.

PART 3 EXECUTION

3.1 DRILLING FLUIDS FROM FLOODED REVERSE ROTARY DRILLING METHOD

- A. All dewatered drill cuttings and solid materials shall be disposed of at no charge on the Owner's construction site by spreading on the ground surface in an area designated by the Owner. The Contractor shall give the Owner 48-hour advance notice prior to spreading any drill cuttings at the site.
- B. All other materials, both hazardous and non-hazardous shall be removed from the site and disposed of by the Contractor at a State-Approved landfill within five (5) days of generation. The Contractor is responsible for transportation of said wastes. The Contractor shall supply the Owner with documentation that the materials were disposed of properly.
- C. All drilling fluids, all displacement fluids generated during the well construction process, and all initial surge block and airlift development fluids shall be contained onsite in appropriate containers, such as Baker tanks, Frac tanks, or equivalent, as approved by the Engineer.
- D. All drilling fluids and all displacement fluids generated during the construction process and all initial surge block and airlift development fluids shall be disposed by the Contractor off site at a State-Approved landfill within 5 days upon completion of surge block and airlift development. Following disposal, the Contractor shall supply the Owner with documentation in accordance with local, state, and federal regulations to demonstrate compliance. If water quality of the drilling and development fluids- is suitable in accordance with State of Utah regulation, the fluids can be discharged to the Owner-designated location. A copy of the Fact Sheet Regarding Water Discharge from Water Well Drilling and Operation, prepared by the Utah Division of Water Quality, is located in Appendix B.

3.2 DISCHARGE WATER FROM DEVELOPMENT BY PUMPING AND WELL TESTING

- A. All development and testing water shall be contained onsite in appropriate containers, such as Baker tanks, Frac tanks, or equivalent until such time water

quality suitable for discharge is achieved in accordance with State of Utah regulations.

- B. Solid matter will be separated from the drilling fluids and displacement fluids prior to disposal.
- C. The water remaining after separation that meets State of Utah water quality standards shall be discharged to the Owner-designated location.
- D. The dewatered solid matter remaining after separation shall be disposed of on site by the Contractor as described above.
- E. The water discharged from pump development and well testing shall be disposed via temporary pipelines provided by the Contractor. Well development and testing water shall be disposed of at the locations shown on Drawings. The Contractor's pipelines shall have a minimum capacity to convey the maximum test pump rate for the well. The Contractor shall discharge water so as not to create erosion or cause turbidity in any surface water channel.
- F. It is the Contractor's responsibility to prevent the discharge stream from damaging or eroding the site or any drainage channel.
- G. It is the Contractor's responsibility to minimize impacts to access and use of private and public road by the transmission piping and discharge stream. Use of ramps, earthen berms, or similar means for pipeline crossings of public and private accesses shall be employed. In addition, caution signs and speed restrictions shall be employed where public right-of-ways are impacted. The Contractor shall coordinate ramps and signage with the Owner.

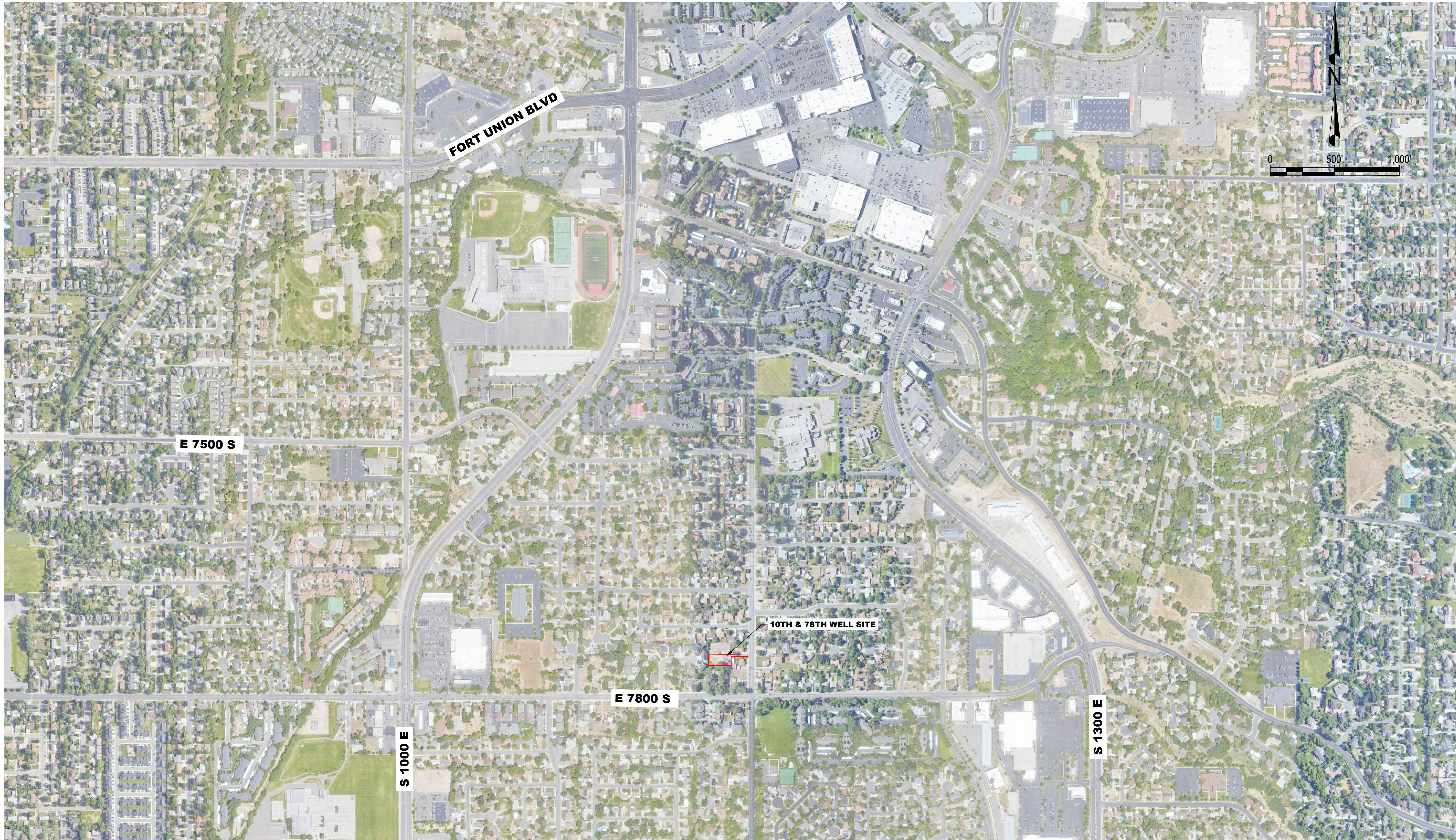
END OF SECTION

This page has been left blank intentionally.

FIGURES

This page has been left blank intentionally.

File Path: P:\2019-0113 JWVCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DESCRIPTION	DATE

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL: M. HIRST PE.
 PROJECT MANAGER: M. CHANDLER PE., PG.
 CHECKED BY: []
 DRAWN BY: C. HATCH
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: JUNE 2019



CRS ENGINEERS
 Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

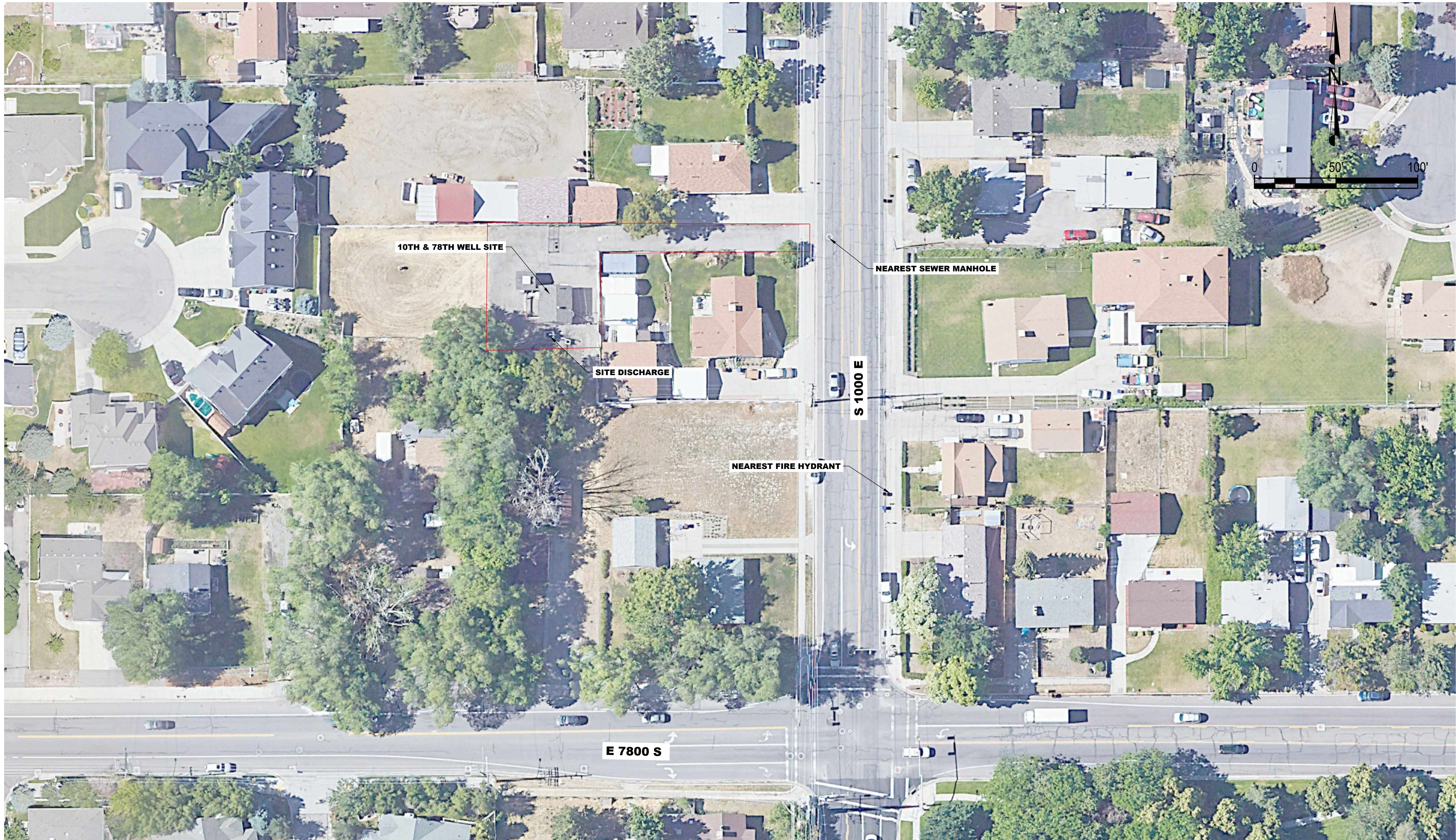
JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWVCD-2019 4 WELL UPGRADE PROJECT
 10TH & 78TH WELL LOCATION MAP

7778 S 1000 E

MIDVALE, UT 84047

PROJECT NUMBER: 2019-0113
 SHEET: 1 OF 8
 SHEET NUMBER: G001

File Path: P:\2019-0113 JWCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DATE	DESCRIPTION

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL:
M. HIRST PE.
PROJECT MANAGER:
M. CHANDLER PE., PG.
CHECKED BY:

DRAWN BY:
C. HATCH
DRAWING SCALE:
AS SHOWN
ISSUE DATE:
JUNE 2019



CRS ENGINEERS
Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

JORDAN VALLEY WATER CONSERVANCY DISTRICT
JWCD-2019 4 WELL UPGRADE PROJECT
10TH & 78TH WELL SITE DISCHARGE MAP

7778 S 1000 E

MIDVALE, UT 84047

STAMP

PROJECT NUMBER
2019-0113

SHEET
2 OF 8

SHEET NUMBER
G002

File Path: P:\2019-0113 JWCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DATE	DESCRIPTION

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL:
M. HIRST PE.
PROJECT MANAGER:
M. CHANDLER PE., PG.
CHECKED BY:

DRAWN BY:
C. HATCH
DRAWING SCALE:
AS SHOWN
ISSUE DATE:
JUNE 2019



CRS ENGINEERS
Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

JORDAN VALLEY WATER CONSERVANCY DISTRICT
JWCD-2019 4 WELL UPGRADE PROJECT
98TH & 23RD WELL LOCATION MAP

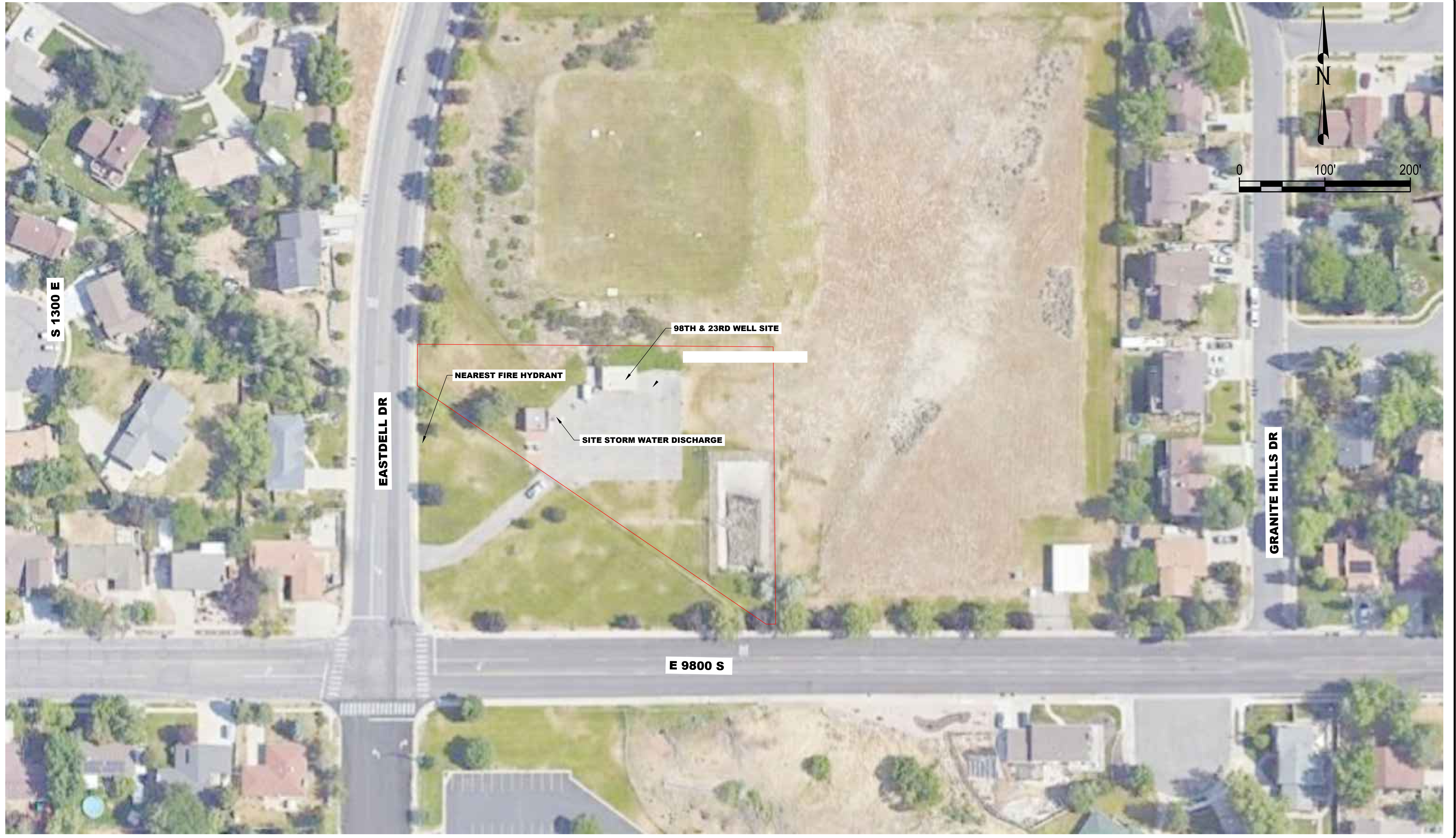
9799 S 2300 E

SANDY, UT 84092

STAMP

PROJECT NUMBER 2019-0113	
SHEET 3	OF 8
SHEET NUMBER G003	

File Path: P:\2019-0113 JWVCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DESCRIPTION	DATE

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL: M. HIRST PE.
 PROJECT MANAGER: M. CHANDLER PE., PG.
 CHECKED BY:
 DRAWN BY: C. HATCH
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: JUNE 2019



CRS ENGINEERS
 Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

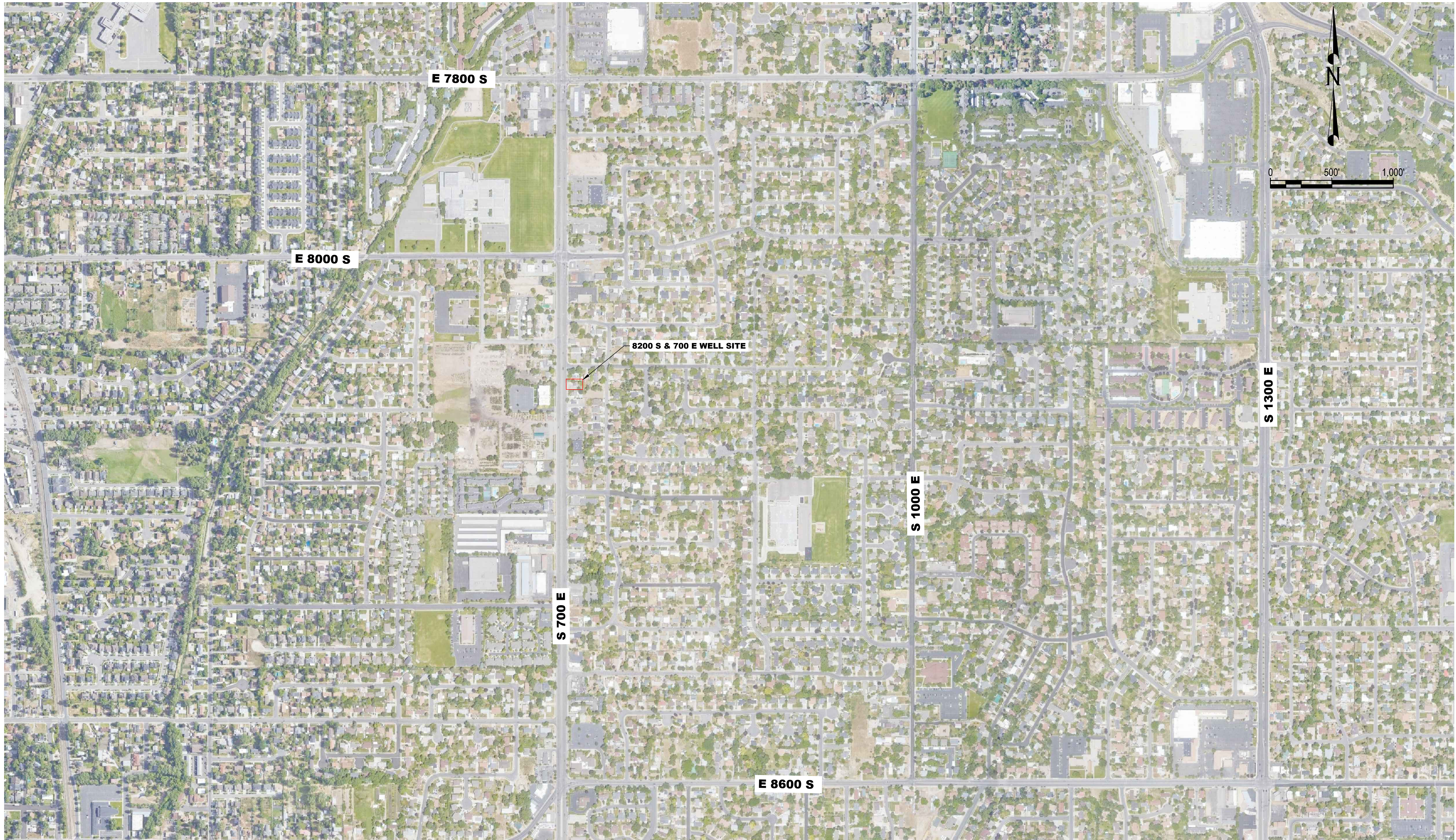
JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWVCD-2019 4 WELL UPGRADE PROJECT
 98TH & 23RD WELL SITE DISCHARGE MAP

9799 S 2300 E SANDY, UT 84092

STAMP

PROJECT NUMBER	2019-0113	
SHEET	4	OF 8
SHEET NUMBER	G004	

File Path: P:\2019-0113 JWCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DATE	DESCRIPTION

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL:
M. HIRST PE.
PROJECT MANAGER:
M. CHANDLER PE., PG.
CHECKED BY:

DRAWN BY:
C. HATCH
DRAWING SCALE:
AS SHOWN
ISSUE DATE:
JUNE 2019



CRS ENGINEERS
Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

JORDAN VALLEY WATER CONSERVANCY DISTRICT
JWCD-2019 4 WELL UPGRADE PROJECT
8200 S & 700 E WELL LOCATION MAP

8190 S 700 E

SANDY, UT 84094

STAMP

PROJECT NUMBER
2019-0113

SHEET
5 OF 8

SHEET NUMBER
G005

File Path: P:\2019-0113 JWVCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 27, 2019 - 5:15pm



NO.	DATE	DESCRIPTION

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL: M. HIRST PE.
 PROJECT MANAGER: M. CHANDLER PE., PG.
 CHECKED BY: _____
 DRAWN BY: C. HATCH
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: JUNE 2019

CRS ENGINEERS
 Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWVCD-2019 4 WELL UPGRADE PROJECT
 8200 S & 700 E WELL SITE DISCHARGE MAP

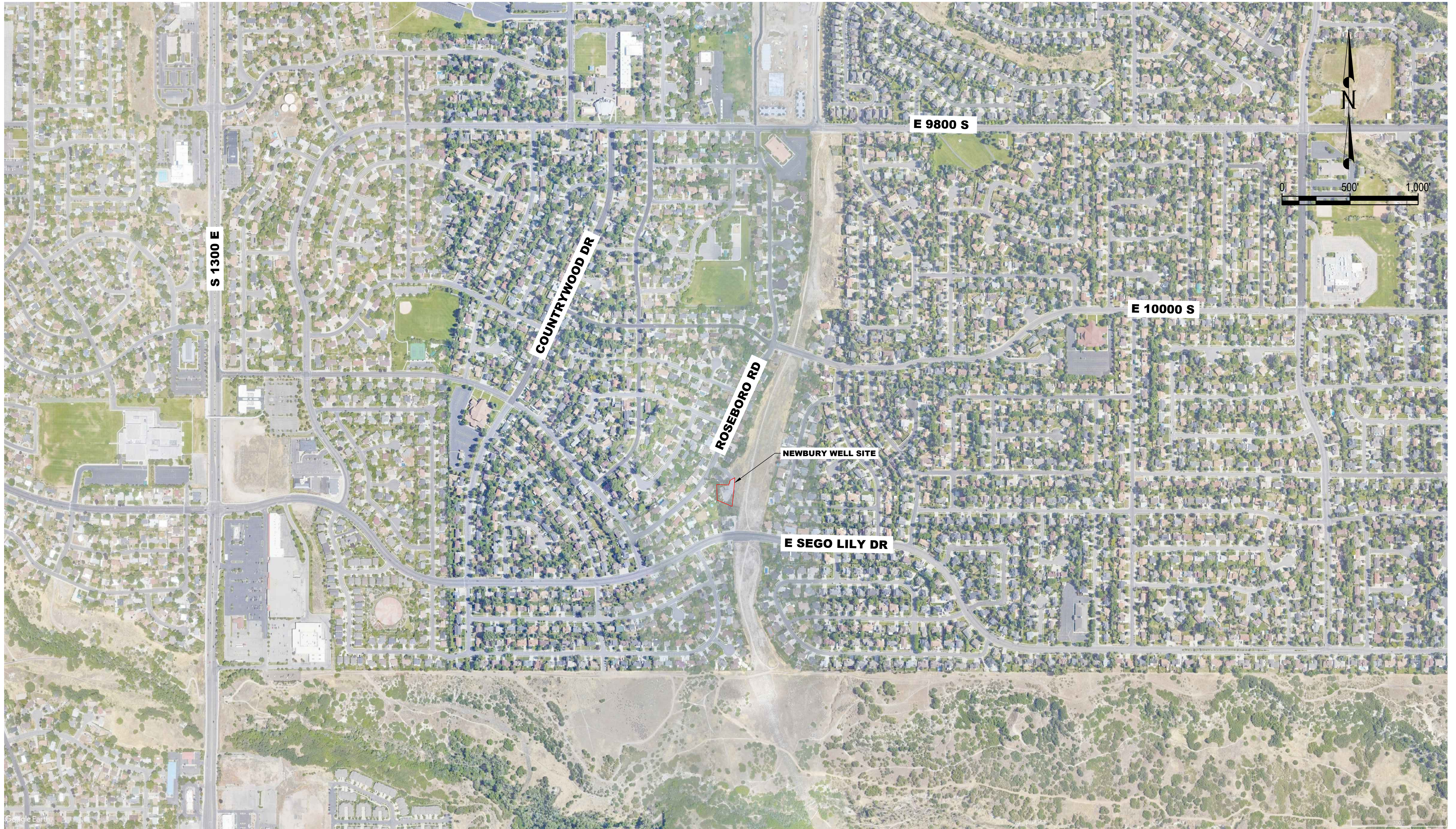
8190 S 700 E

SANDY, UT 84094

STAMP

PROJECT NUMBER: 2019-0113
 SHEET: 6 OF 8
 SHEET NUMBER: G006

File Path: P:\2019-0113 JWCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DATE	DESCRIPTION

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL: M. HIRST PE.
 PROJECT MANAGER: M. CHANDLER PE., PG.
 CHECKED BY: []
 DRAWN BY: C. HATCH
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: JUNE 2019



CRS ENGINEERS
 Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 NEWBURY WELL LOCATION MAP

10190 NEWBURY DR

SANDY, UT 84092

STAMP

PROJECT NUMBER 2019-0113	
SHEET 7	OF 8
SHEET NUMBER G007	

File Path: P:\2019-0113 JWCD-2019 4 Well Upgrade Project\Drawings\LocationMap.dwg Jun 20, 2019 - 12:01 pm



NO.	DATE	DESCRIPTION

IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF CRS ENGINEERS AND IS NOT TO BE REPRODUCED, MODIFIED OR USED FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT EXCEPT BY AGREEMENT WITH CRS ENGINEERS.

PRINCIPAL: M. HIRST PE.
 PROJECT MANAGER: M. CHANDLER PE., PG.
 CHECKED BY:
 DRAWN BY: C. HATCH
 DRAWING SCALE: AS SHOWN
 ISSUE DATE: JUNE 2019

CRS ENGINEERS
 Answers to Infrastructure®

4246 S Riverboat Rd, Ste 200 | Salt Lake City, UT 84123 | P: 801.359.5565 | www.crsengineers.com

JORDAN VALLEY WATER CONSERVANCY DISTRICT
 JWCD-2019 4 WELL UPGRADE PROJECT
 NEWBURY WELL SITE DISCHARGE MAP

10190 NEWBURY DR

SANDY, UT 84092

STAMP

PROJECT NUMBER: 2019-0113
 SHEET: 8 OF 8
 SHEET NUMBER: G008

APPENDICES

This page has been left blank intentionally.

APPENDIX A

SALT LAKE COUNTY NOISE POLLUTION ORDINANCE

This page has been left blank intentionally.

Salt Lake Valley Health Department

Health Regulation

#21

**COMMUNITY NOISE
POLLUTION CONTROL**

**Adopted by the Salt Lake Valley Board of Health
September 6, 1984**

**Amended:
August 1, 1991,
December 7, 1995,
May 3, 2001,
August 7, 2008
August 2, 2012**

**Under Authority of Section 26A-1-114
Utah Code Ann.**

1. PURPOSE & APPLICABILITY OF REGULATION

- 1.1 The purpose of this Regulation is to establish standards for the control of noise pollution within Salt Lake County and to reduce the making and creation of harmful sound to secure, protect, and promote the public health and safety of the residents of Salt Lake County.

2. DEFINITIONS

- 2.1 “dBA or A-Weighted Sound Pressure Level” shall mean the sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The unit for reporting is dB(A) or dBA. Sounds measured with the “A” weighting network approximate the response of human hearing when measuring sounds of low to moderate intensity.
- 2.2 “Ambient Sound” shall mean the sound pressure level which represents the summation of the sound from all the discrete sources affecting a given site at a given time, exclusive of the source under investigation.
- 2.3 “Best Management Practices or BMPs” shall mean auxiliary operational procedures implemented by a business or facility that effectively reduce noise levels. BMPs include but are not limited to scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices or institutional controls that prevent or reduce noise decibel levels.
- 2.4 “CFR” shall mean Code of Federal Regulations.
- 2.5 “Construction” shall mean any site preparation, assembly, erection, substantial repair, alteration or similar action.
- 2.6 “Construction equipment” shall mean any mechanical apparatus used in excavation, construction or demolition.
- 2.7 “Decibel” shall mean a logarithmic unit used in measuring the magnitude of sound. Decibel is abbreviated dB.
- 2.8 “Demolition” shall mean any dismantling, intentional destruction or removal of any right- of-way surfaces, building, structure, utility or similar property.
- 2.9 “Department” shall mean the Salt Lake Valley Health Department (SLVHD).

- 2.10 “Director” shall mean the Director of the Salt Lake Valley Health Department or his or her designated representative.
- 2.11 “Dwelling” shall mean a building or structure that is intended or designed to be used, rented, leased, let or hired out for human habitation.
- 2.12 “Dynamic braking device” shall mean a device used to transform a motor vehicle’s internal combustion engine into an air compressor for the purpose of braking without the use of wheel brakes, commonly referred to as “Jake brakes,” “compression brakes,” or “engine brakes.”
- 2.13 “Emergency power generator” shall mean the equipment used to generate electrical power in the event of an interruption, malfunction, or failure of the electrical power otherwise supplied by the service provider.
- 2.14 “Emergency vehicle” shall mean an authorized motor vehicle, motorboat, or aircraft which can lawfully be used for the transportation of emergency personnel, equipment, and supplies while responding to the scene of an emergency.
- 2.15 “Emergency work” shall mean;
- 2.15.1 Work required to restore property to a safe condition following a disaster or declaration of emergency;
 - 2.15.2 Work required to protect persons or property from an imminent exposure to danger; or
 - 2.15.3 Work that absolutely cannot be done otherwise during the daytime hours to protect the public’s health by private or public entities for providing or restoring immediately necessary utility service.
- 2.16 “EPA” shall mean the U.S. Environmental Protection Agency.
- 2.17 “Exhaust system” shall mean all components responsible for conducting exhaust gasses or reducing sound from a motor vehicle or motorboat including, but not limited to, mufflers, baffles, header pipes, manifolds, air intakes, or any other similar component.
- 2.18 “Gross Vehicle Weight Rating” or “GVWR” shall mean the value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable, the gross combination weight rating (GCWR), which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination of vehicle, shall be used.
- 2.19 “Heating, Ventilation, and Air Conditioning (HVAC)” shall mean any system installed on or within a dwelling, facility, building or structure for the purpose of providing heating, ventilation, or air conditioning. HVAC may include furnaces, air exchangers,

central air condensing units, evaporative “swamp” coolers, heat pumps, exhaust fans, and other heating and cooling equipment.

- 2.20 “Impulse sound” shall mean sound of short duration, generally less than one second, especially of high intensity, abrupt onset and rapid decay, and often rapidly changing spectral composition.
- 2.21 “Infrasound” includes any sound frequency less than or equal to 16 Hz.
- 2.22 “ L_{eq} ” shall mean the average measure of continuous noise that has the equivalent acoustic energy of the fluctuating signal over the same time period. For the purposes of this Regulation, an L_{eq} measurement will be taken for a minimum of two minutes.
- 2.23 “ L_{max} ” shall mean the highest root-mean-square (RMS) sound level measured over 1000 milliseconds in a slow response. For the purpose of this Regulation L_{max} will be the highest A-weighted sound level occurring during a noise event.
- 2.24 “Motor vehicle” shall mean any vehicle required to be licensed for on-road use in the State of Utah, and is propelled by a motorized power source.
- 2.25 “Muffler” shall mean a properly functioning sound dissipative device or system consisting of a series of chambers, baffle plates, or other mechanical devices for abating the sound of escaping exhaust gases.
- 2.26 “Multi-dwelling unit building” shall mean any building comprising two or more dwelling units, including, but not limited to, apartments, condominiums, co-ops, multiple family houses, townhouses, and attached residences.
- 2.27 “Municipal Approved Event” shall mean an assembly of people which continues, and can reasonably be expected to continue for two or more hours per day, and has received a permit, license or authorization from the municipality in whose jurisdiction the event is located.
- 2.28 “Noise” shall mean sound that may be harmful to health.
- 2.29 “Noise control system” shall mean parts, mufflers, assemblies or systems, including all exhaust system components, originally installed by the manufacturer which controls or reduces noise emissions.
- 2.30 “Octave band” shall mean an interval in Hertz between two frequencies having a ratio of 2:1. For purposes of this Regulation, octave band sound pressure levels shall be measured at any of the following center frequencies: 31.5, 63, 125, 250, 500, 1,000, 2,000, 4,000 and 8,000 Hz.
- 2.31 “Off-highway vehicle” shall mean any vehicle not permitted to be licensed for on-road use in the State of Utah and is propelled by an engine.

- 2.32 “Owner” shall mean any person who alone or jointly and severally with others:
- 2.32.3 has legal title to any premise, dwelling, or dwelling unit with or without accompanying actual possession thereof; or
 - 2.32.4 has charge, care, or control of any premises, dwelling, or dwelling unit, as legal or equitable owner, agent of the owner, or is an executor, executrix, administrator, administratrix, trustee, or guardian of the estate of the owner.
- 2.33 “Person” shall mean any individual, public or private corporation and its officers, partnership, association, firm, trustee, executor of an estate, the State or its departments, institutions, bureau or agency thereof, municipal corporation, county, city, or any legal entity recognized by the law.
- 2.34 “Public assembly” shall mean an activity regardless of whether or not a ticket or payment of any type is required for admission.
- 2.35 “Pure tone” shall mean any sound that can be distinctly heard as a single pitch or a set of single pitches. For the purposes of this Regulation a pure tone shall exist if the one-third octave band sound pressure level, within the investigated band of the tone and frequency range, exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by:
- 15 dB for bands with center frequencies less than 160 Hz
 - 8 dB for bands with center frequencies of 160 Hz to 400 Hz
 - 5 dB for bands with center frequencies greater than 400 Hz
- 2.36 “Receiving property” shall mean any property, including an individual unit of a multi-dwelling or multi-use property, that is adversely affected by noise transmitted by another property or from another unit within the same multi-dwelling or multi-use property.
- 2.37 “Repetitive impulse sound” shall mean any impulse sound repeated at intervals such that a sound level meter set at “fast” meter characteristic will show changes in sound pressure level greater than 10 dB(A) within one second.
- 2.38 “Salt Lake Valley Board of Health” shall mean the Salt Lake Valley Board of Health as authorized by Section 26A-1-109, Utah Code Ann.
- 2.39 “Snow removal equipment” shall mean any mechanical equipment used for removing snow from land or building surfaces including snow plows, snow blowers, snow sweepers, and any spreader or applicator employed to apply a snow or ice melting product.

- 2.40 “Sound” shall mean an oscillation in pressure, particle displacement, particle velocity or other physical parameter in a medium with interval forces that cause compression or rarefaction of the medium.
- 2.41 “Sound level meter” shall mean an instrument that includes a microphone, amplifier, RMS detector, integrator, or time averager, output meter and weighing networks used to measure sound pressure levels.
- 2.42 “Sound pressure level” shall mean twenty times the logarithm to the base 10 of the ratio of the RMS sound pressure to the reference pressure of 20 micropascals (20 micronewtons per square meter). The sound pressure level is denoted Lp or SPL and is expressed in decibels (dB).
- 2.43 “Ultrasound” includes any sound frequency higher than 20 kHz.
- 2.44 “Z-Weighted Sound Pressure Level or dBZ or dB(Z)” shall mean the sound pressure level in decibels as measured with a sound level meter using the Z-weighted filter. Infrasound shall be measured with the Z-weighted filter.

3. GENERAL PROVISIONS

3.1 Jurisdiction of the Department.

- 3.1.1 This Regulation is promulgated by the Salt Lake Valley Board of Health as authorized by Section 26A-1-121(1), Utah Code Ann. and Chapter 9.04, Salt Lake County Code of Ordinances.
- 3.1.2 The Department is empowered to enforce this Regulation in all incorporated and unincorporated areas served by the Department as authorized by Section 26A-1-114(1)(a), Utah Code Ann. and Chapter 9.04, Salt Lake County Code of Ordinances.

3.2 The Department and local law enforcement agencies shall have enforcement responsibility for this Regulation.

3.3 Except as otherwise provided for, it shall be unlawful for any person not to comply with any regulation promulgated by the Department unless granted an express variance by the Salt Lake Valley Board of Health.

3.4 Compliance with this Regulation does not constitute a defense if charged with any environmental crime or violation of any local, state, or federal law.

3.5 Legal action taken by the Department under this Regulation does not preclude prosecution for any environmental crime that may have been committed or violation of any other local, state, or federal law.

3.6 Nothing in this Regulation affects or modifies in any way the obligations or liability of any person under any other regulation or provision thereof issued by the Department, any ordinance adopted by Salt Lake County or any municipality located within Salt Lake County, or any state or federally issued law, including common law. However, except as otherwise provided for, Departmental regulations supersede other existing local and county standards, regulations and ordinances pertaining to similar subject matter that are inconsistent.

3.7 **Severance.** If any section, sub-section, sentence, clause, or phrase of this Regulation is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Regulation.

4. SUBSTANTIVE PROVISIONS

4.1 **General Prohibition of Noise.** Notwithstanding the specific noise restrictions in Sub-section 4.7, no person shall emit, nor shall any person cause, allow, permit, or fail to control the emission of any noise source so as to exceed the maximum allowable sound pressure levels set forth in Sub-section 4.2 Tables 1a and Sub-section 4.7 Table 2 when measured from the receiving property.

4.2 **Maximum Permissible Sound Pressure Level Tables.**

Table 1a
Maximum Permissible Sound Pressure Levels (L_{eq}) Table

Receiving Property Use*	Between 10:00 p.m. and 7:00 a.m.	Between 7:00 a.m. and 10:00 p.m.
Type A	5 dBA above ambient sound not to exceed 50 dBA	10 dBA above ambient sound not to exceed 60 dBA
Type B	5 dBA above ambient sound not to exceed 55 dBA	10 dBA above ambient sound not to exceed 65 dBA
Type C	5 dBA above ambient sound not to exceed 70 dBA	10 dBA above ambient sound not to exceed 70 dBA
Type D	5 dBA above ambient sound not to exceed 75 dBA	10 dBA above ambient sound not to exceed 75 dBA

*See Appendix A referencing property use examples.

Table 1b
Maximum Permissible Sound Pressure Levels (L_{max}) Table

Receiving Property Use*	Between 10:00 p.m. and 7:00 a.m.	Between 7:00 a.m. and 10:00 p.m.
Type A & B	70 dBA	100 dBA
Type C & D	100 dBA	100 dBA

*See Appendix A referencing property use examples.

4.3 Sound Pressure Level Measurements.

4.3.1 Sound pressure level measurements shall be made with a calibrated and certified Type 2 sound level meter or better instrument as specified in the American National Standards Institute's (ANSI) publication S1.4-1983 (Reaffirmed 2001) entitled, "Specifications for Sound Level Meters", or its current successor; or the International Electrochemical Commission (IEC) class or type 1 and 2 standard 61672.

4.3.2 All sound level measurements required by this Regulation shall be taken in dBA, unless specifically measuring infrasound and ultrasound which shall be taken in dBZ.

4.4 **Infrasound and Ultrasound.** For any source of sound which emits infrasound (below 16 Hz) or ultrasound (above 20 kHz) frequencies, the sound pressure level shall not exceed 100 dBZ when measured from the receiving property.

4.5 **Pure Tone and Repetitive Impulse Sound.** For any stationary source of sound which emits a pure tone or repetitive impulse sound, the limits set forth in Tables 1a shall be reduced by 5 dBA when measured between the hours of 7:00 a.m. to 10:00 p.m. and reduced by 10 dBA for Type A and Type B property use when measured between the hours of 10:00 p.m. to 7:00 a.m.

4.6 **Non-Sound Based Vibrations.** The transmission of vibrations that are not sound based and cannot be measured by a sound pressure meter are not restricted by this Regulation.

4.7 Specific Noise Restrictions.

4.7.1 **Commercial Refuse Compactors.** No person shall operate or use, nor shall any person cause, allow, permit or fail to control the operation or use of any

commercial refuse compactor within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a and 1b.

- 4.7.2 **Construction Equipment and Activities.** No person shall operate nor shall any person cause, allow, permit, or fail to control the operation of any mechanical construction equipment or conduct any construction or demolition activities outside between the hours of 10 p.m. and 7 a.m. unless a permit has been issued in accordance with Section 5.
- 4.7.3 **Fireworks or Explosives.** No person shall use fireworks or other explosive devices between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a and 1b.
- 4.7.4 **Garbage Collection.** No person shall collect garbage, waste, or refuse nor shall any person cause, allow, permit, or fail to control the collection of garbage, waste, or refuse within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- 4.7.5 **Loading/Unloading Operations.** No person shall load or unload any equipment, vehicle, box, crate, container, garbage container, or other object or open, close, or otherwise handle these objects within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- 4.7.6 **Motor Vehicles.**
- (i) No person shall operate or use, nor shall any person cause, allow, permit, or fail to control the operation or use of any motor vehicle:
 - a. Without a noise control system that meets the original specifications installed by the manufacturer;
 - b. Unless the noise control system is in constant operation and free of defects that affect sound reduction;
 - c. With any cut out, bypass or similar device which increases sound pressure levels;
 - d. When the noise control system has been modified, punctured, or rendered inoperative; and

- e. Unless the noise control system of the motor vehicle or combination of vehicles of a type subject to registration, at any time or under any condition of grade, load, acceleration or deceleration does not exceed the maximum allowable sound pressure levels set forth in Table 2 at a distance of 25 feet or more for the category of motor vehicle, based on the legal speed limit, posted or not, of the road on which such vehicle or vehicles are operated using testing methods as prescribed by the Department.

Table 2
Maximum Sound Pressure Levels for Motor Vehicles
Sound Pressure Level, dBA

	Measured at a Distance of	Speed limit 40 mph or less	Speed limit over 40 mph
Any motor vehicle with a gross manufacturer's gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) of 10,000 pounds or more or any combination of vehicles towed by such motor vehicle	25 ft.	88 dBA	94 dBA
Any other motor vehicle and any combination of motor vehicles towed by such motor vehicle	25 ft.	80 dBA	84 dBA

- (ii) **Defect in Vehicle.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation or use of any motor vehicle that emits excessive or unusual noises because of disrepair or mode of operation.
- (iii) **Dynamic Braking Devices.** No person shall operate, nor shall any person cause, allow, permit or fail to control the operation of any motor vehicle with a dynamic braking device engaged, except for the avoidance of imminent danger.
- (iv) **Motorcycles and Motorcycle Exhaust Systems.**
 - a. **EPA Noise Emission Control Requirements.** No person shall cause, allow, permit or fail to control the operation or use of any motorcycle manufactured after December 31, 1982, without its required Motorcycle Noise Emission Control Label on the motorcycle vehicle itself in accordance with 40 CFR § 205.158 and on any motorcycle exhaust system as required by 40 CFR § 205.169. i. The following is an example of an EPA Noise Control Label: “This (manufacturer’s name) exhaust system (serial

number) meets EPA Noise Emission Requirements of (noise emission standard) dB(A) for the following motorcycles: (list of model specific codes). Installation of this exhaust system on motorcycle models not specified may violate federal law.”

- b. **Label Tampering.** No person shall deface or allow any person to deface any noise emission control label required by federal law which is affixed to any motorcycle or motorcycle part for purposes of identifying the motorcycle or motorcycle part as a federally regulated product.
 - c. **Mismatched Mufflers.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle manufactured to federal noise law standards that does not bear a label or mark on the exhaust system that matches the model specific code of the motorcycle vehicle on which the system is installed.
 - d. **Competition Motorcycles.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle identified by the noise emission control label or mark as being for “competition use only” on any property other than within a motor sports facility for the purpose of participating in a practice session or racing event.
 - e. **Competition Motorcycle Exhaust System.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorcycle fitted with an exhaust system or exhaust system component identified by the noise emission control label or mark as being for “competition motorcycles only” on any property other than a motor sports facility for the purpose of participating in a practice session or racing event.
- (iv) **Motor Vehicle Repair and Testing.** No person shall repair, rebuild, modify, idle, run, accelerate, or test any motor vehicle, nor any auxiliary equipment attached to such vehicle within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless this activity complies with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.
- (v) **Off-Highway Vehicles.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any off-highway vehicle between the hours of 10 p.m. and 7 a.m. unless this activity complies with Sub-section 4.2 Tables 1a and 1b.

4.7.7 **Parking Lot or Road Sweepers.** No person shall operate, nor shall any person cause, allow, permit, or fail to control the operation of any motorized mechanical sweeper, blower or vacuum within 300 feet of a Type A or Type B property use between the hours of 10 p.m. and 7 a.m. unless the responsible party demonstrates to the Department compliance with Sub-section 4.2 Tables 1a, 1b and Sub-section 4.7 Table 2.

4.7.8 **Public Assembly.** No person shall operate, play, nor shall any person cause, allow, permit, or fail to control the operation or playing of any noise emitting device in such a manner:

- (i) That the maximum sound pressure level exceeds 100 dB(A) at a point normally occupied by a patron on the premises of a public assembly unless conspicuous and legible written notification is provided to the public prior to entrance into the event stating, “WARNING: SOUND LEVELS ON THESE PREMISES MAY CAUSE HEARING DAMAGE. HEARING PROTECTION IS AVAILABLE.” In the alternative, the above warning may be provided on a sign of a color and lettering design in high contrast with its background and posted where it is plainly visible at each public entrance in bold letters of at least 1 inch in height. This Sub-part shall not be construed to permit conduct prohibited by any other provision of this Regulation; and
- (ii) Every public assembly with the potential of exceeding 100 dB(A) shall have readily available for public distribution, at a cost not excessive of the retail value, single-use earplugs that have a Noise Reduction Rating (NRR) of at least 20 decibels.

4.8 **Exemptions.**

4.8.1 In the rare event compliance causes extreme or undue hardship to a facility, business or community activity, the Department may allow the activity if the responsible party demonstrates to the Department best management practices are being applied.

4.8.2 **Emergency Events and Equipment.** Noise resulting from a response to any emergency event shall be exempt from this Regulation, including the use of emergency equipment, emergency vehicles, emergency relief valves, emergency work, and emergency power generators which provide emergency power or potable water to any hospital, health clinic, nursing home, similar facilities, or physician prescribed home based personal medical equipment as approved by the Department, where the loss of electrical power or potable water poses an immediate risk to the health, safety, and welfare of any person, or as required by federal or state law shall be exempt from this Regulation. During a power failure, other commercial or personal emergency power generators operating between the hours of 10 p.m. and 7 a.m. may reach but not exceed the

maximum day time sound pressure levels set forth in Sub-section 4.2 Table 1a and 1b when measured from the receiving property.

4.8.3 Fireworks and Explosives. Noise resulting from lawful fireworks and explosives shall be exempt from this Regulation when discharged:

- (i) For lawful mining activities between the hours of 7 a.m. and 10 p.m. the same day;
- (ii) By the public:
 - a. Between the hours of 11 a.m. and 11 p.m. on the days allowed by statute which include July 1 through July 7 and July 21 through July 27, except that on July 4 and July 24, the hours are 11:00 a.m. to midnight;
 - b. Between the hours of 11 a.m. December 31 and 1 a.m. the following day, except when New Year's Eve falls on a Sunday and the local municipality determines to celebrate New Year's Eve on the prior Saturday; and
 - c. Between the hours of 11 a.m. on Chinese New Year's Eve and 1 a.m. the following day.
- (iii) By a licensed display or special effects operator to conduct a professional fireworks display:
 - a. Between the hours of 7 a.m. and 10 p.m. the same day;
 - b. Between the hours of 11 a.m. and midnight on the day officially celebrated as and including July 4th and July 24th;
 - c. Between the hours of 11 a.m. and 11 p.m. for a special event sponsored by a local municipality, provided the municipality has made application and received a mass gathering permit;
 - d. Between the hours of 11 a.m. on December 31 and 1 a.m. the following day; and
 - e. Between the hours of 11 a.m. on Chinese New Year's Eve and 1 a.m. of the following day.

4.8.4 Heating, Ventilation, and Air Conditioning (HVAC). Noise resulting from the operation of a HVAC system used on or within a Type A property use, including central air conditioning units, evaporative coolers, or window cooling units, regardless of the time or frequency of operation, shall be exempt from this Regulation, provided the system is in good repair and operating within manufacturer's specifications.

4.8.5 **Mechanical Equipment.** Noise resulting from the use of portable mechanical equipment shall be exempt from this Regulation between the hours of 7 a.m. and 10 p.m. so long as the equipment is in good repair, performs a legitimate service, and is being used according to the manufacturer's specifications.

4.8.6 **Municipal Approved Event.** Except as otherwise provided for, noise resulting from a municipal approved event shall be exempt from this Regulation on the condition that the municipality shall assume responsibility for responding to any noise-related matters associated with the event approved by the municipality. The Department shall, upon request, provide noise related technical assistance to a municipality.

4.8.7 **Public Assembly.** Noise directly resulting from crowd noise associated with a public assembly shall be exempt from this Regulation.

4.8.8 **Snow Removal.** Noise resulting from the operation of snow removal equipment shall be exempt from this Regulation;

- (i) Beginning at 4 a.m. when snow has accumulated during the prior 12 hours for a Type A or Type B property use;
- (ii) At any time for a Type C or Type D property use NOT within 300 feet of a Type A or Type B property use; and
- (iii) At any time on any street, avenue, road, boulevard or highway by a governing entity.

5. **TEMPORARY NOISE PERMIT and FEES**

5.1 **Department Authority.** The Department has the authority to permit the requirements and restrictions of this Regulation on the basis of undue hardship or for a temporary event. The Department may prescribe any reasonable conditions or requirements upon a permit deemed necessary to minimize adverse health effects upon a community or the surrounding neighborhood.

5.2 **Temporary Noise Permit Requirements.**

5.2.1 To apply for a Temporary Noise Permit, the applicant shall complete and submit the Department-approved application form.

5.2.2 **Permit Duration:** A Temporary Noise Permit is valid only at the location stated in the application and for the length of time approved by the Department on the application.

5.3 **Notice Requirements.**

5.3.1 Upon approval of any permit granted by the Department, the applicant shall notify, in writing, each dwelling and facility located within 800 feet of the event or activity, unless otherwise required by the Department, at least 48 hours in advance. The Department shall approve the content of each notice before it is distributed.

5.3.2 The notice shall contain the following information:

- (i) The name of the event or company name;
- (ii) The name of the coordinator or project manager;
- (iii) The contact phone number(s) of the coordinator or project manager;
- (iv) The name and contact phone number(s) of the on-site manager;
- (v) The address of the event;
- (vi) The specific date(s) and operating time;
- (vii) A detailed description of the activities; and
- (viii) A brief description of all measures taken to maximize the abatement of the noise emission (or to minimize the noise emission) by means of Source Reduction Practices, Best Management Practices, and Best Operational Practices.

5.4 The Department may establish and collect appropriate fees for licenses, certificates, and permits as set out in this Regulation. The Department may collect appropriate fees as set out in this Regulation for the performance of services, including plan reviews. If information on a license, certificate, or permit application changes, the applicant shall notify the Department in writing within 20 calendar days.

5.4.1 **Temporary Noise Permit Fee.** Any applicant who applies for a Temporary Noise Permit shall remit to the Department a Permit fee in the amount of \$120.

5.4.2 The Department may waive the temporary noise permit fees for governmental agencies, departments or municipalities provided compliance with all other requirements of Section 5 are met.

5.4.3 If a governmental agency, department or municipality approves an activity otherwise regulated by the Department as a temporary noise permitted activity, the Department may waive the temporary noise permit fee provided compliance with all other requirements of Section 5 are met.

5.5 **Late Fees.**

- 5.5.1 The Department may impose upon any party subject to this Regulation penalties and charges for failure to timely pay service and permit fees as set out in this Regulation. Attorney's fees and collection fees may also be applied.
- 5.5.2 Fees unpaid to the Department after one month of the due date will be assessed a penalty of 10% of the outstanding balance. Failure to pay the fees and additional charges after two months of the due date will be assessed an additional penalty of 15% of the outstanding balance including previous penalties. Failure to pay the fees and additional charges after 100 days of the due date will result in suspension of the permit and the right to operate. A \$40.00 charge will be assessed for each returned check.
- 5.5.3 An applicant who fails to give at least a ten (10) day notice to the Department of their intent to obtain a Temporary Noise permit shall remit to the Department a late notification fee of \$35.

5.6 **Denial, Suspension, or Revocation of License or Permit.** Any permit applied for or issued pursuant to this Regulation may be denied, suspended, or revoked by the Department for any of the following reasons:

- 5.6.1 Failure of the applicant to show that the temporary noise event will be held or operated in accordance with the requirements of this Regulation;
- 5.6.2 Submission of incorrect, incomplete, or false information in the application;
- 5.6.3 Failure to pay applicable fees;
- 5.6.4 The temporary noise event will be in violation of law;
- 5.6.5 Failure of the coordinator, owner, or operator at a temporary noise event to allow the Department to conduct inspections as necessary to determine compliance with this Regulation;
- 5.6.6 Operation of a temporary noise event in a way that causes or creates a hazard to the public health, safety, or welfare;
- 5.6.7 Failure to operate or maintain the temporary noise event in accordance with the application, report, plans, and specifications approved by the Department; or
- 5.6.8 Failure to comply with any provision of this Regulation.

6. INSPECTIONS & INVESTIGATIONS

6.1. To ensure compliance, the Department has the authority to perform inspections, investigations, reviews, and other actions as necessary.

6.2. **Authority for Department to Enter Premises.**

6.2.1. **Regulated Commercial Premises.** Upon presenting proper identification, authorized representatives of the Department may enter upon the premises of properties regulated by the Department to perform routine inspections to ensure compliance with rules, standards, regulations, and ordinances adopted by the Department, the Departments of Health & Environmental Quality, county or municipal governing bodies, or the Division of Occupational and Professional Licensing.

6.2.2. **Unregulated Commercial Properties.** The Department may enter upon the premises of commercial properties not pervasively regulated by the Department upon the consent of the owner or other party having legal authority or upon a court order.

6.2.3. **Private Dwellings.** Inspections of private dwellings are made by consent of the owner or other party having legal authority or upon a court order.

6.2.4. **Consent by Permit.** The Department shall require permit holders to allow access for inspections as part of their permit. Failure to allow access for inspections as set out in the permit may result in the suspension or revocation of the permit.

7. **ENFORCEMENT MECHANISMS** If the Department has investigated or inspected any property or facility and believes the property owner or other responsible party is in violation of this Regulation or the Department has other reasonable grounds to believe that there has been a violation of any part of this Regulation or that the property owner or otherwise responsible party is not in compliance with this Regulation, the Department may take civil enforcement action as authorized by statute, rule, ordinance, and regulation and may also refer the matter for criminal prosecution. Civil enforcement may involve court or administrative actions, injunctive actions, and closures and may involve cost recovery, penalties, and other remedies. Civil and criminal actions may be brought simultaneously. A person does not need to be first adjudged liable in a civil matter before facing criminal charges.

7.1. **Criminal Enforcement Actions.** The Department may recommend criminal prosecution for environmental violations either alone or in conjunction with civil enforcement. Criminal prosecutions for environmental violations of state or federal law may be filed by the District Attorney, Utah Attorney General, United States Department of Justice, or other enforcement entity. Factors that the Department may

consider in recommending criminal enforcement include the following factors and any other relevant factors:

- 7.1.1. The nature and seriousness of the offense including the immediacy of the threat of danger to the life or safety of another or the harm or threatened harm to human health or environment;
 - 7.1.2. The degree to which the violation was designed to provide economic gain or cost avoidance, or involved a pattern of conduct or a common attitude of illegal conduct;
 - 7.1.3. The degree to which the offender is a known violator and has avoided prior actions by the Department;
 - 7.1.4. The degree to which prosecution might deter future violations;
 - 7.1.5. The person's actual culpability in connection with the offense including the presence in connection with the offense including the presence of criminal intent;
 - 7.1.6. The person's willingness to cooperate in the investigation including whether the violator has attempted to conceal evidence or prosecution of others;
 - 7.1.7. The appropriateness of referring the case to other agencies having prosecutorial interest; and
 - 7.1.8. Possibilities of civil remedies which would be more appropriate than initiating the criminal justice process.
- 7.2. **Civil Enforcement Actions.** The Department may request that the District Attorney bring an action to restrain or enjoin actions in violation of public health, environmental laws, and other laws or abate conditions in violation of such laws.
- 7.3. **Administrative Actions.**
- 7.3.1. The Department may, at its discretion, issue a Notice of Violation & Order of Compliance (NOV).
 - 7.3.2. **Service of NOV.** The Department may provide notice to the owner of the property or otherwise responsible person by sending the NOV via certified mail to the last known address of the owner of the property or other responsible person. If notice is returned undeliverable, the owner of the property or other responsible person may be personally served or be given notice by other methods reasonably calculated to give actual notice to the owner or other responsible party.

7.3.3. **Contents of NOV.** The NOV shall:

- (i) Describe the property and the persons believed to be in violation;
- (ii) Describe the violation;
- (iii) Describe remedial action that will comply with the provisions of this Regulation;
- (iv) Set a reasonable time for the performance of any required remedial action(s);
- (v) Describe the procedure to contest the NOV and the time limits for such a contest; and
- (vi) Notify the owner or other responsible person that if no written contest is filed within the time required, the NOV will become final and unappealable to any administrative entity or court.

7.3.4. **Challenging an NOV.** As detailed in the SLVHD's Adjudicative Hearing Procedures, a party aggrieved by an NOV may request a departmental conference, departmental hearing, or departmental appeal in writing within ten (10) days of the date of the NOV.

7.3.5. **Departmental Conference, Settlement Agreements, and Stipulations & Orders.**

- (i) After issuance of the NOV, the alleged violator has the option to request and attend a Departmental Conference to discuss the NOV and settlement with the Department and its legal counsel. No hearing officer will be present. The process of requesting a Departmental Conference is more fully described in the SLVHD's Adjudicative Hearing Procedures.
- (ii) If the parties agree to a settlement, the Department will prepare, in conjunction with the District Attorney's Office, a binding Settlement Agreement or Stipulation & Consent Order which may require the payment of penalties and the costs of investigation. Parties may also agree to a settlement at any time subsequent to the Departmental Conference. After signing a Settlement Agreement or Stipulation & Consent Decree, the parties waive all rights to further department and court hearings or appeals. Settlement Agreements or Stipulation & Consent orders may be enforced in state courts.

7.3.6. **Hearings & Appeals.** Parties Aggrieved by an NOV may also request a Departmental Hearing or a Departmental Appeal. A hearing officer is present at

these proceedings and makes a written determination. The methods of challenging an NOV are more fully described in the SLVHD's Adjudicative Hearing Procedures. Departmental Hearing Orders and Departmental Appeal Orders may be appealed to the entities and within the time limits set out in the SLVHD's Adjudicatory Hearing Procedures.

7.3.7. **Failing to respond to an NOV.** If a party fails to respond to an NOV within the required time, the NOV becomes a final order unappealable to any administrative entity or court. The Department may then enforce the order in state court.

7.4. **Additional Administrative Enforcement Authority.**

7.4.1. Any variances allowed by the Department to the requirements of this Regulation shall be only by written approval of the Salt Lake Valley Board of Health.

7.4.2. **Emergency Enforcement.** If the Director finds that an emergency exists that requires immediate action to protect the public health, he or she may without notice or hearing issue an order declaring the existence of an emergency and requiring that action be taken as he deems necessary to meet the emergency. The order shall be effective immediately. Any person to whom the order is directed shall comply and abate the nuisance immediately, but may petition the Director for a hearing in accordance with the SLVHD's Adjudicative Hearing Procedures. After the hearing and depending upon the findings as to whether the person has complied with the provisions of this Regulation, the Director shall continue the order in effect or modify or revoke it. If circumstances warrant because of the seriousness of the hazard, the Department may act to correct or abate the emergency without issuance of an order or directive or without waiting for the expiration of compliance time previously given in an order.

8. **CRIMINAL, CIVIL & ADMINISTRATIVE PENALTIES**

8.1. **Criminal Penalties.**

8.1.1. Any person who is found guilty by a court of violating any of the provisions of this Regulation, either by failing to do the acts required herein or by doing a prohibited act, is guilty of a class B misdemeanor, pursuant to Section 26A-1-123, Utah Code Ann.

8.1.2. Each day such violation is committed or permitted to continue shall constitute a separate violation.

8.1.3. Each similar subsequent violation occurring within two years of the initial violation may constitute a class A misdemeanor.

8.2. Civil & Administrative Penalties.

8.2.1. Penalties may be included in a Settlement Agreement or Stipulation & Consent Order. Penalties may be assessed according to the following factors:

- (i) The violator's history of compliance or non-compliance;
- (ii) The violator's economic benefit of non-compliance;
- (iii) The documented costs associated with environmental or health damage;
- (iv) The violator's degree of willfulness or negligence; and
- (v) The violator's good faith efforts to comply and cooperate.

8.2.2. The Director may multiply the penalty by the number of days the violation occurred.

8.3. Recovery of Investigation & Abatement Costs.

8.3.1. The Department may recover its inspection, investigative and abatement expenses and costs from owners or other responsible person.

8.3.2. The Department may record a judgment lien on a violator's property to recover its expenses and costs.

9. EFFECTIVE DATE

9.1. This Regulation shall become effective upon its adoption by the Salt Lake Valley Board of Health.

APPROVED AND ADOPTED this _____ day of _____, 2012.

SALT LAKE VALLEY BOARD OF HEALTH

By: _____
PAULA JULANDER, Chair

ATTEST:

Gary L. Edwards, M.S.
Executive Director
Salt Lake Valley Health Department

APPENDIX A

Noise Area Classifications

Type A Property Use Activities/Examples

- Single family residential structure that does not share a common wall with residential or any other use.

Type B Property Use Activities/Examples

- All other residential use not included in Type A including but not limited to:
 - Apartment/Condominium/Twin Home/Poli-Plex
 - Group home, community living
 - Residential hotel/motel
 - Mobile home park or court
 - Transient lodging
- Correctional institution
- Medical/other health service
- Religious, Church activity
- School, Educational Institution activity
- Cultural activity and nature exhibition
- Camping and picnicking areas (designated)
- Resort, group camp
- Other cultural, recreational activity

Type C Property Use Activities/Examples

- Retail trade
 - building materials
 - hardware
 - farm equipment
 - general merchandise
 - food, eating and drinking, other recreation (bar, discotheques, clubs)
 - automotive & accessories, gas stations
 - marine craft & accessories
 - aircraft & accessories
 - apparel & accessories
 - furniture, home furnishings and equipment
- Other retail trade
 - Finance, insurance, and real estate services
 - Personal services
 - Business services
 - Repair services
 - Legal services

- Other professional services
- Contract construction services
- Governmental services (except correctional institutions)
- Miscellaneous services (except religious activities)
- Amusements (except fairgrounds and amusement parks)
- Parks
- Automobile parking

Type D Property Use Activities/Examples

- Food and kindred products - manufacturing
- Textile mill products - manufacturing
- Apparel & other finished products made from fabrics, leather & similar materials - manufacturing
- Lumber and wood products (except furniture) – manufacturing
- Furniture and fixtures - manufacturing
- Paper and allied products- manufacturing
- Printing, publishing, and allied industries
- Chemicals and allied products – manufacturing
- Petroleum refining and related industries
- Rubber and miscellaneous plastic products – manufacturing
- Stone, clay, & glass products – manufacturing
- Primary metal industries
- Fabricated metal products - manufacturing
- Professional, scientific, and controlling instruments, photographic & optical goods, watches and clocks - manufacturing
- Miscellaneous manufacturing (except motion picture production)
- Railroad, rapid transit, and street railway transportation (except passenger terminals)
- Motor vehicle transportation (except passenger terminals)
- Aircraft transportation (except passenger terminals)
- Marine craft transportation (except passenger and freight terminals)
- Highway and street right-of-way Communication (except telegraph message centers)
- Utilities
- Other transportation, communication & utilities (except transportation services and arrangements)
- Event and entertainment venues
- Race tracks
- Fairgrounds and amusement parks
- Agricultural
- Agricultural and related activities
- Forestry activities and related services (including commercial forest land, timber production, and other related activities)
- Fishing activities and related services
- Mining activities and related services
- Other resource production and extraction

- All other activities not otherwise listed
- Undeveloped and unused land area (excluding noncommercial forest development)
- Noncommercial forest development
- Water areas
- Vacant floor area
- Under construction
- Other undeveloped land and water areas
- All other property uses not previously identified

APPENDIX B

BMP'S – WATER DISCHARGES FROM WATER WELL DRILLING AND OPERATION

This page has been left blank intentionally.

Fact Sheet Regarding Water Discharges From Water Well Drilling and Operation

Prepared by: Utah Division of Water Quality

Updated July 2002

Background:

Utah Administrative Code (UAC) R317-8-2 requires a UPDES discharge permit for the discharge of pollutants from any point source into waters of the State. A point source is defined as “any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, from which pollutants are or may be discharged.”

Through the use of various drilling methods and reasonable best management practices, water well drilling generally can be conducted such that no discharge occurs or that only de minimis (insignificant) amounts of pollutants would be released into waters of the State. As such, it has been the policy of the Division of Water Quality to not require water well drilling operations to obtain a discharge permit as long as they do not discharge or discharge de minimis amounts of pollutants.

There may be circumstances where a discharge permit is necessary or desired by the well driller or owner. However, because a discharge permit can take several months to issue, requires payment of a permit fee, and because the permit would contain specific enforceable effluent quality limits and frequent self-monitoring and reporting requirements, it is highly recommended that all options to avoid discharge or attain the de minimis discharge be explored before pursuing an individual discharge permit.

Best Management Practices (BMP's)

The goal of BMP implementation is to avoid discharge or, if this is not practicable, to obtain a de minimis pollutant discharge during any phase of well development. The primary pollutants of concern are total suspended solids and turbidity in the form of drill cuttings and muds. Occasionally chemicals such as surfactants are used during the drilling operation. It is the responsibility of the operator and/or owner to assure that BMP's are properly installed and operated in order to contain all fluids or to produce a de minimis pollutant discharge to waters of the State. Some BMP's are indicated below:

1. Drill pits or ponds of adequate size for total containment of all fluids containing drill cuttings, surfactants and associated chemicals.
2. Pits or ponds used for settling; followed by filter cloth and/or straw bales which can be used for filtration prior to fluids entering surface waters of the state.
3. Land application of produced waters during drilling, pump testing, and well development where no discharge would occur to waters of the State.
4. Land application where sufficient filtration through vegetation removes solids and turbidity before water is diffused and enters any surface waters.
5. Other sediment and turbidity reduction treatment such as frac tanks, cyclone separators, etc.

Pollution of waters of the state is a violation of the Water Quality Act, UCA 19-5, which provides for significant monetary penalties, and additional penalties for violations that are willful or caused by gross negligence.

If you have any concerns not covered in this fact sheet or any further questions, please contact:

Mike Herkimer
(801) 538-6058
Division of Water Quality
288 North 1460 West
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Jim Goddard
(801) 538-7314
Division of Water Rights
1594 West North Temple, Suite 220
Salt Lake City, Utah 84114-6300

APPENDIX C

ORIGINAL WELL LOGS

This page has been left blank intentionally.

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/09/2003 08:24 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

N 378 ft W 201 ft from S4 CORNER of SECTION 29 T 2S R 1E BASE SL Elevation: 4490.00 feet
7750 S. 1000 E.

DRILLER ACTIVITIES:

ACTIVITY # 1 WELL REPAIR
DRILLER: WIDDISON TURBINE SERVICE, LLC LICENSE #: 533
START DATE: 04/01/1994 COMPLETION DATE: 10/10/1994

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
10/04/1994		(-)above ground 197.92	STATIC

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From To			
+2 326	A53GB	.250	18.0
326 419	A53GB	.250	14.0
419 430	A53GB	.250	10.0
575 620	A53GB	.250	10.0
680 696	A53GB	.250	10.0
703 720	A53GB	.250	10.0
765 805	A53GB	.250	10.0
865 895	A53GB	.250	10.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/# Perf.
From To					
430 475	PERFORATION	.045	10.0		LOW CARBON
620 680	PERFORATION	.045	10.0		LOW CARBON
696 703	PERFORATION	.045	10.0		LOW CARBON
720 765	PERFORATION	.045	10.0		LOW CARBON
805 865	PERFORATION	.045	10.0		LOW CARBON

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft)	Material	Amount	Density(pcf)
From To			
2 895	8-16 CO SILICA SAND	1180	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
10/04/1994	PUMP TEST	2.228	77.04	1.50
10/04/1994	PUMP TEST	2.674	104.40	1.50
10/04/1994	PUMP TEST	3.119	130.52	1.50
10/04/1994	PUMP TEST	3.565	166.15	1.50

WATER QUALITY DATA AVAILABLE

GENERAL COMMENTS:

REPAIR REPORTED 3/26/96

This well was drilled in 1960 by Rosco Moss. We have screened the well developed and test pumped it. A new lineshaft turbine pump was installed.

CONSTRUCTION INFORMATION:

Well head configuration: Line shaft pump head

Casing joint type: Welded

Perforator used: Mills

Filter Pack: a 5' deep neat cement plug was set from 890' to 895' to prevent gravel pack from coming around the bottom of the well

PUMP: Goulds 12 CHC 9 stg

HP: 250

Intake Depth: 417 feet

Approx pump rate: 1400

Well disinfected: Yes

comments: The well was test pumped a total of 84 hours most of it was development pumping. There is a Longmire patch in the well at 421'-425'. The screens were first set with a "K" packer. This packer failed so it was pulled and casing was then run to the surface. The patch joined the two strings of casing together. See the attached drawing.

Additional data not available

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/08/2003 10:20 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 2370 ft E 190 ft from N4 CORNER of SECTION 10 T 3S R 1E BASE SL Elevation: 4948.00 feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: LANG EXPLORATORY DRILLING INC LICENSE #: 568
 START DATE: 07/06/1991 COMPLETION DATE: 08/06/1991

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From	To		
0	960	20	ROTARY

LITHOLOGY:

Depth(ft)	Lithologic Description	Color	Rock Type
From	To		
0	15		SAND, COBBLES
15	110		SAND, COBBLES
110	115		CLAY
115	310		SAND, GRAVEL
310	370		CLAY, SAND, GRAVEL, COBBLES
370	430		SAND, GRAVEL
430	600		CLAY, SAND, GRAVEL
600	630		SAND
630	640		CLAY
640	660		SAND, GRAVEL
660	690		CLAY, SAND, GRAVEL
690	710		SAND, GRAVEL, COBBLES
710	780		CLAY, SAND, GRAVEL
780	850		CLAY
850	960		CLAY, SAND, GRAVEL HARD ROCK

WATER LEVEL DATA:

Date	Time	Water Level (feet)	Status
		(-)above ground	
07/25/1991		492.00	STATIC

ADDITIONAL DATA AVAILABLE, USE OTHER PRINT OPTION

CONSTRUCTION - CASING:

Depth(ft)	Material	Gage(in)	Diameter(in)
From	To		
0	35	.375	32
+3	610	.375	20
630	650	.375	20
750	870	.375	20

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft)	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/#	Perf.
From	To					

610	630	SCREEN	.050	20	JOHNSON HI
650	750	SCREEN	.050	20	JOHNSON HI
870	950	SCREEN	.050	20	JOHNSON HI

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft)	Material	Amount	Density(pcf)
From	To		
0	220	BENTONITE, NEAT CEMENT	
220	960	8-12, 6-9 SIZE GRAVEL	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
/ /	PUMP	1.203	22.67	1.5
/ /	PUMP	2.270	45.18	3
/ /	PUMP	3.291	76.42	5
/ /	PUMP	4.456	107.05	7
/ /	PUMP	5.096	129.40	9

WATER QUALITY DATA AVAILABLE

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/09/2003 08:24 AM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 2611 ft W 78 ft from N4 CORNER of SECTION 32 T 2S R 1E BASE SL Elevation: 4514.00 feet
8200 S. 1000 E.

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
DRILLER: Lee & Sons Drilling LICENSE #: 11
START DATE: 05/16/1960 COMPLETION DATE: 07/25/1960

BOREHOLE INFORMATION:

Depth(ft)	Diameter(in)	Drilling Method	Drilling Fluid
From	To		
0	881	CABLE	

LITHOLOGY:

Depth(ft)	Lithologic Description	Color	Rock Type
From	To		
0	2 OTHER		TOP SOIL
2	6 SAND,BOULDERS		
6	60 CLAY,SAND		
60	113 SAND		
113	123 OTHER		CONGLOMERATE
123	140 CLAY,SAND		
140	163 CLAY	BROWN	
163	205 OTHER		CONGLOMERATE
205	216 SAND,GRAVEL		
216	240 CLAY	BLUE	
240	245 GRAVEL		
245	270 SAND		
270	293 CLAY,SAND		
293	351 SAND		CEMENTED
351	362 CLAY,SAND,GRAVEL		
362	382 OTHER		CONGLOMERATE
382	400 CLAY,GRAVEL		STICKY
400	437 SAND		CEMENTED
437	439 GRAVEL		
439	445 SAND		
445	451 GRAVEL		
	1/2" TO 3" DIAMETER		
451	453 CLAY		
453	456 GRAVEL		
456	468 CLAY	BROWN	
468	475 CLAY,GRAVEL		
475	490 GRAVEL		
	1/2" TO 6" DIAMETER		
490	502 CLAY,GRAVEL		
502	510 OTHER		CONGLOMERATE
510	523 CLAY		STICKY
523	524 GRAVEL		
524	527 SAND		FINE
527	546 CLAY,GRAVEL		

546	547	GRAVEL		
547	558	CLAY, GRAVEL		STICKY
558	562	OTHER		CONGLOMERATE
562	590	CLAY, GRAVEL		STICKY
590	615	CLAY, SAND		
615	618	CLAY	BROWN	
618	626	OTHER		CONGLOMERATE
626	632	GRAVEL		
632	641	CLAY		STICKY
641	650	OTHER		CONGLOMERATE
650	720	CLAY, GRAVEL		STICKY
720	729	OTHER		CONGLOMERATE
729	762	CLAY, GRAVEL		
762	766	OTHER		CONGLOMERATE
766	772	CLAY, GRAVEL		
772	777	OTHER		CONGLOMERATE
777	827	CLAY, GRAVEL		STICKY
827	831	SAND, GRAVEL		
831	867	CLAY, GRAVEL		
867	872	GRAVEL		
872	881	CLAY, GRAVEL	BLUE	

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
07/21/1960		170.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From	To	Material	Gage(in)	Diameter(in)
0	339	NEW	.250	20
319	878	NEW	.250	16

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft) From	To	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/#	Perf.
475	510	PERFORATION	.25		3		
540	580	PERFORATION	.25		3		
620	8870	PERFORATION	.25		3		

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
07/21/1960	PUMP	2.952	75	99

Utah Division of Water Rights



WELLPRT Well Log Information Listing

Version: 2003.09.18.00 Rundate: 10/11/2003 03:05 PM

Utah Division of Water Rights

Water Well Log

LOCATION:

S 20 ft W 1465 ft from NE CORNER of SECTION 16 T 3S R 1E BASE SL Elevation: feet

DRILLER ACTIVITIES:

ACTIVITY # 1 NEW WELL
 DRILLER: BEYLIK DRILLING INC LICENSE #: 471
 START DATE: 09/24/1997 COMPLETION DATE: 11/01/1997

BOREHOLE INFORMATION:

Depth(ft)		Diameter(in)	Drilling Method	Drilling Fluid
From	To			
0	40	38.0	REVERSE CIRCULATION	WATER
40	1030	28.0	REVERSE CIRCULATION	WATER

LITHOLOGY:

Depth(ft)		Lithologic Description	Color	Rock Type
From	To			
50	80	CLAY	GRAY	
80	90	CLAY, GRAVEL BIG ROCKS		ROCK
90	100	CLAY	GRAY	
100	120	GRAVEL ROCK		ROCK
120	125	GRAVEL ROCK		ROCK
125	130	GRAVEL ROCKS/BIG AND LITTLE ROCKS		ROCKS
130	135	SAND, GRAVEL FINE SAND		
135	145	CLAY, SAND		
145	150	CLAY, SAND LITTLE CLAY		
150	160	SAND FINE SAND		
160	165	GRAVEL ROCK		
165	170	CLAY ROCK		
170	175	GRAVEL		
175	180	CLAY		
180	185	GRAVEL ROCKS		
185	190	GRAVEL ROCKS/SMALL ROCKS		
190	195	CLAY, GRAVEL		
195	200	CLAY		
200	210	SAND ROCKS		
210	215	CLAY, SAND		
215	280	GRAVEL		

		ROCKS
280	295	GRAVEL
		ROCKS
295	300	GRAVEL
		ROCKS
300	315	GRAVEL
315	320	GRAVEL
		ROCKS
320	325	GRAVEL
325	345	GRAVEL
		ROCKS
345	355	GRAVEL
		ROCKS/BIG ROCKS
355	405	GRAVEL
		ROCKS
405	415	GRAVEL
415	430	GRAVEL
		ROCKS
430	440	SAND
		ROCKS
440	495	GRAVEL
		ROCKS
495	500	GRAVEL
500	505	GRAVEL
		ROCKS
505	515	SAND
515	520	SAND
520	575	GRAVEL
575	605	CLAY, GRAVEL
615	645	GRAVEL
		ROCKS
645	680	GRAVEL
		ROCK
680	685	SAND, GRAVEL
		ROCKS
685	690	SAND, GRAVEL
		ROCKS
690	695	GRAVEL
		ROCKS/SANDY CLAY
695	700	SAND, GRAVEL
		ROCKS
700	705	SAND, GRAVEL
		ROCKS/LITTLE SAND
705	710	SAND, GRAVEL
		ROCKS
710	715	SAND, GRAVEL
715	720	SAND
720	725	SAND, GRAVEL
725	730	SAND, GRAVEL
730	740	CLAY, SAND
		ROCKS
740	745	CLAY, SAND, GRAVEL
		ROCKS
745	750	SAND
750	755	CLAY, SAND, GRAVEL
		ROCKS
755	760	CLAY, SAND
760	765	CLAY, SAND
765	785	CLAY
785	790	CLAY
		ROCKS
790	795	SAND
795	800	SAND
		ROCKS
800	805	SAND, GRAVEL
		ROCKS
805	810	SAND, GRAVEL
810	815	GRAVEL
		ROCKS
815	840	SAND, GRAVEL
		ROCKS/LITTLE SAND
840	850	SAND, GRAVEL
850	860	SAND, GRAVEL
		ROCKS
860	865	CLAY, SAND

865 870 ROCKS/SOME ROCKS
 CLAY, SAND
 ROCKS
 870 875 SAND, GRAVEL
 ROCKS
 875 880 SAND
 ROCKS
 880 895 SAND
 ROCKS
 895 900 SAND
 900 915 GRAVEL
 ROCKS
 915 925 GRAVEL
 ROCKS/SOME ROCKS
 925 930 SAND
 ROCKS
 930 935 SAND, GRAVEL
 ROCKS
 935 940 SAND
 ROCKS
 940 945 CLAY, SAND
 ROCKS/SOME CLAY
 945 950 SAND
 ROCKS
 950 965 SAND
 ROCKS/SOME ROCKS
 965 1005 SAND
 ROCKS
 1005 1010 SAND
 1010 1025 SAND, GRAVEL
 ROCKS
 1025 1030 SAND
 ROCKS
 1030 1035 SAND
 1035 1045 SAND
 ROCKS/SOME ROCKS
 1045 1050 SAND
 ROCKS/SOME ROCKS
 1050 1055 SAND, GRAVEL
 ROCKS
 1055 1060 SAND, GRAVEL
 ROCKS

WATER LEVEL DATA:

Date	Time	Water Level (feet) (-)above ground	Status
10/29/1997		430.00	STATIC

CONSTRUCTION - CASING:

Depth(ft) From To	Material	Gage(in)	Diameter(in)
0 50	A53B	.375	30.0
+2 610	A53B	.375	20.0
700 810	A53B	.375	20.0
1010 1030	A53B	.375	20.0

CONSTRUCTION - SCREENS/PERFORATIONS:

Depth(ft) From To	Screen(S) or Perforation(P)	Slot/Perf. siz	Screen Diam/Length	Perf(in)	Screen Type/# Perf.
610 700	PERFORATION	.060	20.0		CWW 304 SS
810 1010	PERFORATION	.060	20.0		CWW 304 SS

CONSTRUCTION - FILTER PACK/ANNULAR SEALS

Depth(ft) From To	Material	Amount	Density(pcf)
0 50	CEMENT	26	
0 245	CEMENT	12.6	

WELL TESTS:

Date	Test Method	Yield (CFS)	Drawdown (ft)	Time Pumped (hrs)
10/31/1997	PUMP	8.913	120	20

GENERAL COMMENTS:

CONSTRUCTION INFORMATION:

Well head configuration: No data

Casing Joint Type: Weld

Perforator used: N/A

Additional data not available
