

Culinary Water Project – Trent Brown, Sunrise Engineering

Moroni Water Improvements Project Update – 10/18/2023

- Rocky Mountain Power Service for Well #4 (2 Options). The City can choose to move forward with either option.
 - Option 1 - RMP has been pushing to service the well property underground. They will cross 17200 North overhead, then transition to buried power to the well. The cost of service per their agreement is \$75,467. This does not include trenching and conduit installation from 17200 North to the well site. TRB Construction has submitted an estimate to install the conduit. 1,320 feet of 4" conduit is \$35,237.10. The total cost for the underground service is \$110,704.10. The work can be completed in 4 to 6 weeks.
 - Option 2 - Overhead service to the property would cost approximately \$130,000. Currently there is a shortage of class III utility poles. RMP has provided an anticipated completion schedule of 6 to 9 months.
- Change Order #3 – This change order will add the conduit needed for the underground service to Terry R. Brotherson's contract. \$35,237.10.
- Change Order #4 – This change order is a quantity adjustment change order. This will rectify the installed quantities and the contract quantities. There will be a deduction of \$62,204.97, and an increase of \$61,071.78 with a net decrease of \$1,133.19.
- Project Contingency – With anticipation of change order #3 & #4 being approved, the estimated project contingency is \$88,000. If this money is not needed to finish out the project, it could be used for the following:
 - AMI Transmitter for meters - \$16,000
 - SCADA Item B Well #3 Old Pump Control Panel - \$1,620
 - SCADA Item C SCADA Flow Data Reporting - \$7,200
 - SCADA Item D Well #3 Tank/Pond selection flow switch - \$2,500
 - SCADA Item E Well #4 Tank/Pond selection flow switch - \$2,500
 - Additional electrical improvements inside the existing well buildings.
 - SCADA Computer.
 - Updating existing flow meters inside well buildings.
 - Valve Exerciser
 - *Additional valve replacements

*Engineering Construction Administration Budget – The estimated remaining construction administration budget at the end of October will be approximately \$35,000. It is anticipated that the remaining budget will close out the existing contract work within budget, which does include the extra time for the 40 valves being replaced. If more valve replacement is added to the project, then it is likely more budget will be needed to oversee any additional valves.

- Schedule Update - The remaining contracted valve replacement should be completed by the end of October. The well pump installation will begin in the next few days. Most of the remaining items will be contingent on the power service being in place. Completing the electrical items at the well house will be completed as soon as the power service is in place.

REV05042015

Return to:

Rocky Mountain Power

Lou Montoya

1407 West North Temple Ste. 110

Salt Lake City, UT 84116

Project Name:

WO#:

RW#:

RIGHT OF WAY EASEMENT

For value received, MORONI TOWN, ("Grantor"), hereby grants Rocky Mountain Power, an unincorporated division of PacifiCorp its successors and assigns, ("Grantee"), an easement for a right of way being 30 FEET WIDE, more or less, for the construction, reconstruction, operation, maintenance, repair, replacement, enlargement, and removal of electric power transmission, distribution and communication lines and all necessary or desirable accessories and appurtenances thereto, including without limitation: supporting towers, poles, props, guys and anchors, including guys and anchors outside of the right of way; wires, fibers, cables and other conductors and conduits therefore; and pads, transformers, switches, vaults and cabinets, on, over, or under the surface of the real property of Grantor in SANPETE County, State of UTAH more particularly described as follows and as more particularly described and/or shown on Exhibit "A" attached hereto and by this reference made a part hereof:

Legal Description: A 30 FOOT WIDE EASEMENT FOR INGRESS, EGRESS AND FOR UTILITIES OVER AND ACROSS PARCEL S-19153, SAID EASEMENT BEING 15 FEET EITHER SIDE OF THE FOLLOWING DESCRIBED CENTERLINE: BEGINNING AT A POINT ON THE NORTH LINE OF PARCEL S-19153, SAID POINT LIES 981.15 FEET WEST AND 755.87 FEET SOUTH FROM THE CENTER QUARTER CORNER OF SECTION 9, TOWNSHIP 15 SOUTH, RANGE 3 EAST, SALT LAKE BASE AND MERIDIAN; AND RUNNING THENCE 10.45 FEET ALONG A 100 FOOT RADIUS CURVE TO THE LEFT (LONG CHORD BEARS SOUTH 32°34'32" EAST 10.45 FEET); THENCE SOUTH 35°34'10" WEST 639.14 FEET, MORE OR LESS TO THE POINT OF TERMINATION, SAID POINT BEING ON THE SOUTH LINE OF PARCEL S-19153.

ENCUMBERING 0.45 ACRES, MORE OR LESS.

Assessor Parcel No. S-19153

Together with the right of access to the right of way from adjacent lands of Grantor for all activities in connection with the purposes for which this easement has been granted; and together with the present and (without payment therefore) the future right to keep the right of way and adjacent lands clear of all brush, trees, timber,

structures, buildings and other hazards which might endanger Grantee's facilities or impede Grantee's activities.

At no time shall Grantor place, use or permit any equipment or material of any kind that exceeds twelve (12) feet in height, light any fires, place or store any flammable materials (other than agricultural crops), on or within the boundaries of the right of way. Subject to the foregoing limitations, the surface of the right of way may be used for agricultural crops and other purposes not inconsistent, as determined by Grantee, with the purposes for which this easement has been granted.

The rights and obligations of the parties hereto shall be binding upon and shall benefit their respective heirs, successors and assigns.

To the fullest extent permitted by law, each of the parties hereto waives any right it may have to a trial by jury in respect of litigation directly or indirectly arising out of, under or in connection with this agreement. Each party further waives any right to consolidate any action in which a jury trial has been waived with any other action in which a jury trial cannot be or has not been waived.

Dated this _____ day of _____, 20____.

STATE OF UTAH)
) ss.
County of SANPETE)

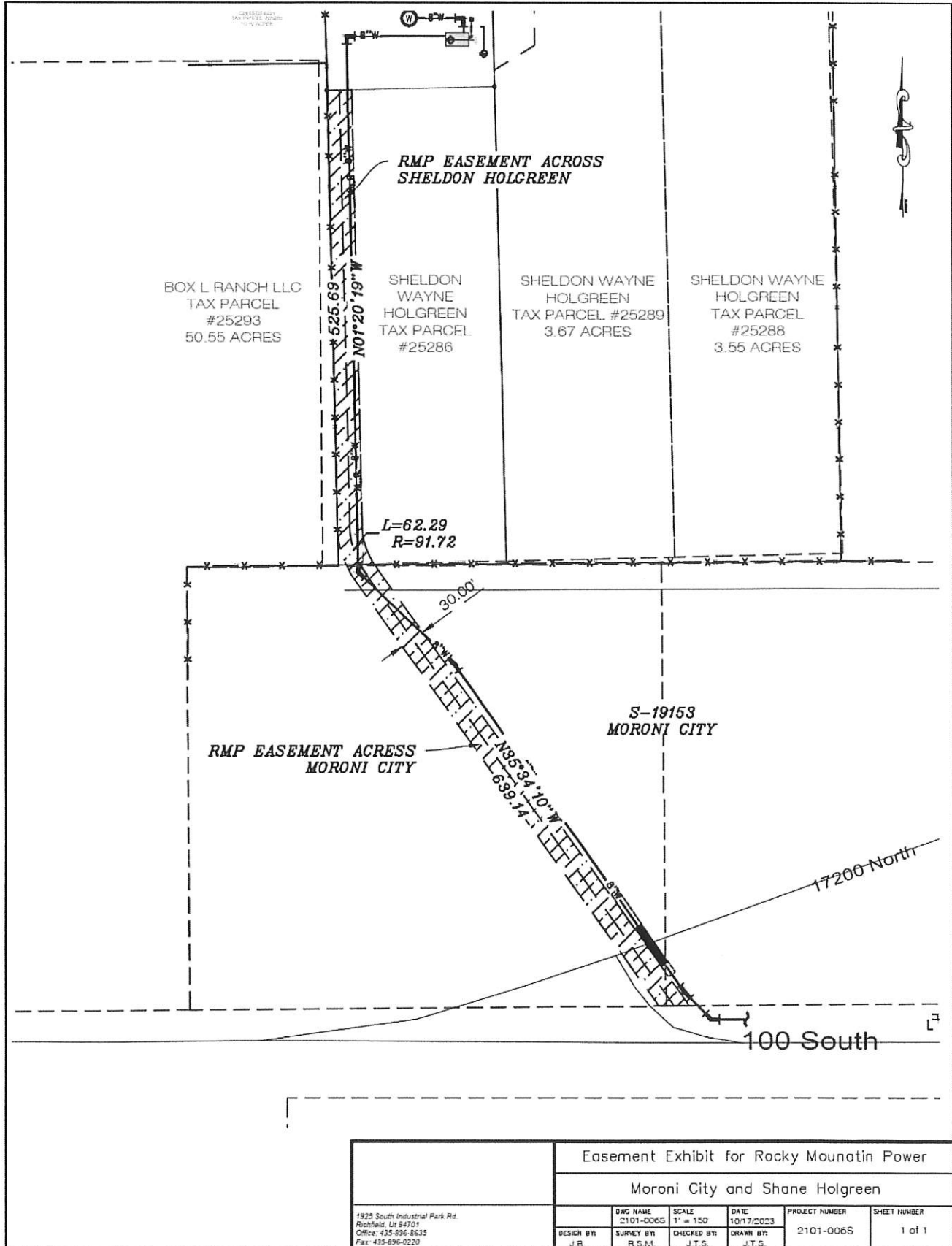
On this ____ day of _____, 20____, before me, the undersigned Notary Public in and for said State, personally appeared _____
(representative's name), known or identified to me to be the person whose name is subscribed as _____ (office or title) of MORONI CITY
and acknowledged to me that (he/she/they) executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

(notary signature)

NOTARY PUBLIC FOR _____ (state)
Residing at: _____ (city, state)
My Commission Expires: _____ (d/m/y)

EXHIBIT "A"



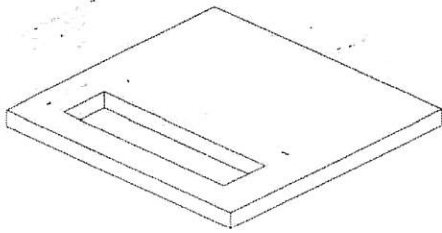
RMP Portion

- 10) Install 3ph tap assembly
Install 115', 3#2-AL, N#2-AL, OH primary slack span to Seq (20)
- 20) Install 45' double dead-end pole w/down guy & anchor
Install 100', 3#2-AL, N#2-AL, OH primary to Seq (30)
- 30) Install 45' dead-end pole w/down guy & anchor
Install riser, and cutout assembly with 25T fuse (per Engineer)
Install 120', 3#1/0-AL, UG primary to Seq (40)
- 40) Install 3ph ground sleeve
Install 550', 3#1/0-AL, UG primary to Seq (50)
- 50) Install 3ph ground sleeve
Install 700', 3#1/0-AL, UG primary to Seq (60)
- 60) Install 150kva, 277/480 transformer
Install 100', 4/0-QX service
Install CT's & meter for 400amp panel

**Contact Rocky Mountain Power before installing conduit.
Inspection of facilities by Rocky Mountain Power is required. A minimum of 3 business days of notice for inspection is required.
Inspector: Bryan Burrows - 435-979-7528
Estimator: Jim Evans - 435-896-2232

Customer Portion

- 30) Install 70' 4" schedule 40 PVC to Seq (40)
- 40) Install 550', 4" schedule 40 PVC to Seq (50)
- 50) Install 700', 4" schedule 40 PVC to Seq (60)
- 60) Install 2 runs of 3" schedule 40 PVC to 400a meter base
Supply and install 84"x82", 3phase transformer flat pad
RMP standard GV131, SI#1790021



A flat pull line or poly rope capable of 1,000lbs of tension shall be installed with 6' of extra line at both ends in all conduit.

All conduit shall be installed per Rocky Mountain Power standards



Electric Service Requirements

Underground Conduit Systems



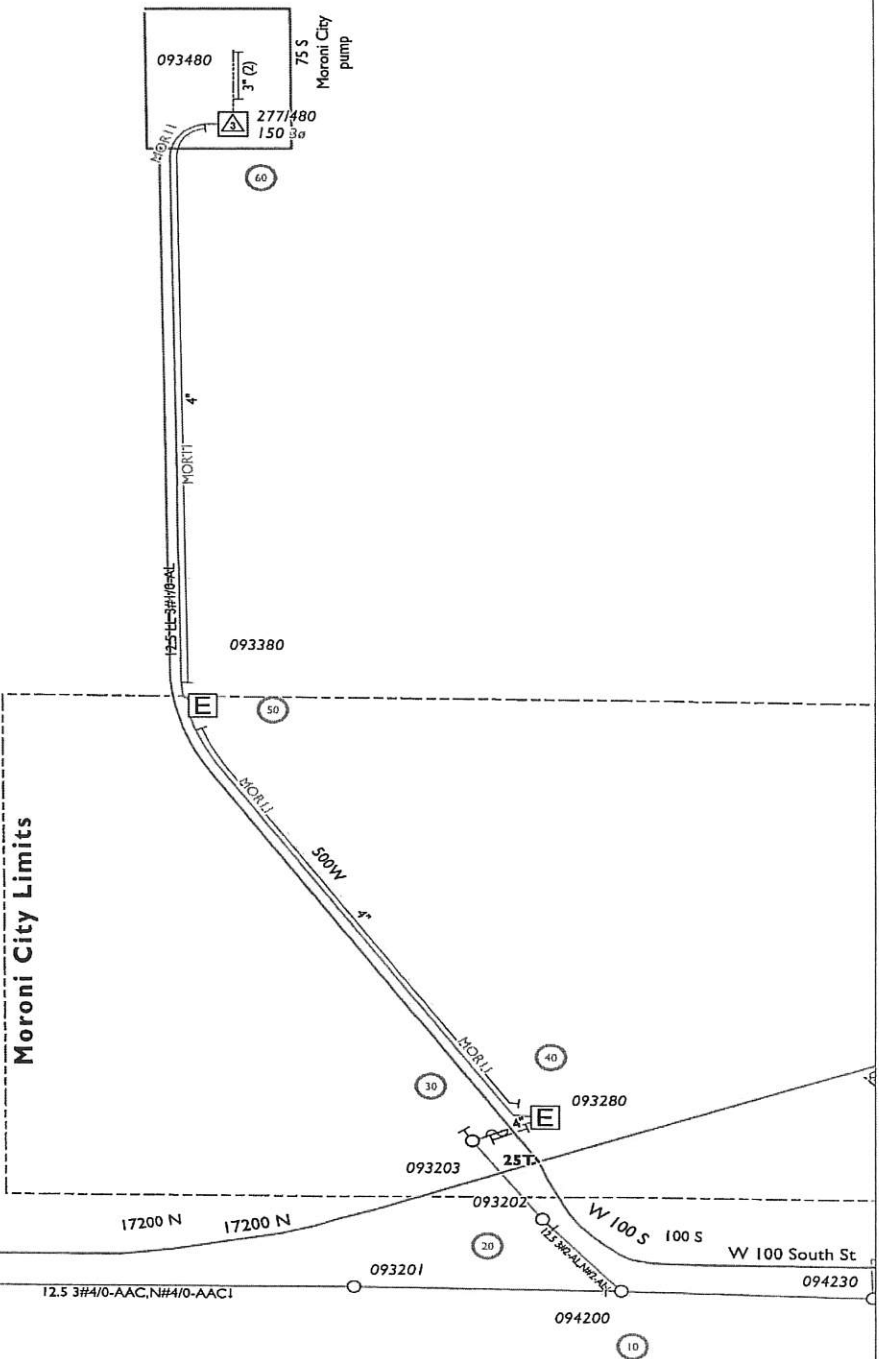
Obtain and record underground easement for route of primary conductor

EXHIBIT "A"

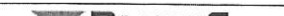
SIGNED: _____

TITLE: _____

DATE: _____



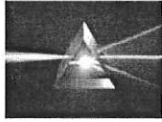
Know what's below.
Call before you dig.

Foreman		Emp #	Job Start Date		W N E S  PACIFICCORP A BERKSHIRE HATHAWAY ENERGY COMPANY Page 1 of 1		
CC# 11371	WO# / REQ# 007093811	Map String 11415003.0	Job Comp Date				
Customer: MORI MORONI CITY PUMP 3PH 75KW Address: 75 S 500 W, MORONI, UT 84646			Circuit MORI	Post Jobs RQII Posted	EST ID# P15461	Print Date 9/27/2023	Scale 1 in = 128'

CONTRACT CHANGE ORDER					ORDER NO. 3	
CONTRACT FOR: Moroni City Culinary Well Improvements 2021					DATE: 10/19/2023	
OWNER: Moroni City						
CONTRACTOR: Terry R. Brotherson Excavating, Inc.						
You are hereby requested to comply with the following changes from the contract plans and specifications. The following Bid Items will be revised on the Contractor's Bid Schedule						
Bid Item	Description of Changes (Supplemental Drawings & Specifications Attached)	Qty	Unit	Unit Price	Decrease in Contract Price	Increase in Contract Price
11	Untreated Base Course	170	C.Y.	\$ 29.28	\$ -	\$ 4,977.60
12	Imported Pipe Bedding	950	L.F.	\$ 4.59	\$ -	\$ 4,360.50
13	Imported Trench	-500	L.F.	\$ 10.11	\$ 5,055.00	\$ -
73	Install 4" Schedule 40 PVC Electrical Conduit	1320	L.F.	\$ 23.45	\$ -	\$ 30,954.00
TOTALS					\$ 5,055.00	\$ 40,292.10
NET CHANGE IN CONTRACT PRICE						\$ 35,237.10
Change Order initiated by: Moroni City						
JUSTIFICATION: Rocky Mountain Power has a shortage of power poles due to wildfires and worker strikes. In order to provide power to the well building in a timely manner Bid Item 73 shall be added to accomodate the underground service to the well building. Bid Items 11-13 include a quantity reconciliation (QR) for the original project along with budgeted material that may be used to install the conduit. Item 11: 131.75 (QR) + 38.25=170, Item 12: -370 (QR) + 1320=950, Item 13: -770 (QR) + 270 = 500.						
The amount of the Contract will be increased/decreased by the sum of:						\$ 35,237.10 DOLLARS
The Contract total prior to this change order is:						\$ 4,534,654.75 DOLLARS
The Contract total including this and previous change orders will be:						\$ 4,569,891.85 DOLLARS
The Contract period provided for completion will be-(increased)-(decreased)-(unchanged) by:						11 days
New Completion date:						December 30, 2023
This document will become a supplement to the Contract and all provisions will apply thereto.						
Requested (OWNER) _____ Date: _____ Recommended (PROJECT MANAGER)  Date: 10/18/2023 Accepted (CONTRACTOR) _____ Date: _____						

CONTRACT CHANGE ORDER					ORDER NO. 4	
CONTRACT FOR: Moroni City Culinary Well Improvements 2021					DATE: 10/19/2023	
OWNER: Moroni City						
CONTRACTOR: Terry R. Brotherson Excavating, Inc.						
You are hereby requested to comply with the following changes from the contract plans and specifications. The following Bid Items will be revised on the Contractor's Bid Schedule						
Bid Item	Description of Changes (Supplemental Drawings & Specifications Attached)	Qty	Unit	Unit Price	Decrease in Contract Price	Increase in Contract Price
5	Solid Rock Excavation	280	L.F.	\$ 35.00	\$ -	\$ 9,800.00
7	Chain Link Fence	-10	L.F.	\$ 53.86	\$ 538.60	\$ -
14	Imported Structural Backfill	-600	L.F.	\$ 12.73	\$ 7,638.00	\$ -
15	Bituminous Surfacing 3"	233.11	S.Y.	\$ 87.13	\$ -	\$ 20,310.87
17	Decorative Driveway Gravel	-52.85	Ton	\$ 25.44	\$ 1,344.50	\$ -
18	Decorative Gravel Mulch	-5	Ton	\$ 42.40	\$ 212.00	\$ -
19	6-Inch PVC Pipe AWWA C900 DR18	60	L.F.	\$ 60.98	\$ -	\$ 3,658.80
20	8-Inch PVC Pipe AWWA C900 DR18	-197	L.F.	\$ 61.04	\$ 12,024.88	\$ -
22	12-Inch PVC Pipe AWWA C900 DR18	-261	L.F.	\$ 93.77	\$ 24,473.97	\$ -
26	Remove & Dispose of Concrete Landscape Curb	-10	L.F.	\$ 89.00	\$ 890.00	\$ -
27	Remove & Dispose of Concrete Sidewalk	5	S.Y.	\$ 315.00	\$ -	\$ 1,575.00
28	Remove & Dispose of Concrete Driveway Slabs	-40	S.Y.	\$ 38.50	\$ 1,540.00	\$ -
29	Replace Concrete Landscape Curb	-10	L.F.	\$ 107.50	\$ 1,075.00	\$ -
30	Replace Concrete Sidewalk 4" Thick	15.5	S.Y.	\$ 219.00	\$ -	\$ 3,394.50
31	Replace Concrete Driveway	-10	C.Y.	\$ 492.00	\$ 4,920.00	\$ -
32	6-Inch Gate Valve	1	EA	\$ 2,425.43	\$ -	\$ 2,425.43
33	8-Inch Gate Valve	-2	EA	\$ 3,544.21	\$ 7,088.42	\$ -
35	12-Inch Butterfly Valve	1	EA	\$ 5,046.72	\$ -	\$ 5,046.72
40	Imported Pipe Bedding	84	L.F.	\$ 5.16	\$ -	\$ 433.44
41	12-Inch PVC Pipe AWWA C900 DR25	43	L.F.	\$ 76.68	\$ -	\$ 3,297.24
42	10-Inch DI Pipe Class 53	8	L.F.	\$ 346.59	\$ -	\$ 2,772.72
43	12-Inch DI Pipe Class 53	8	L.F.	\$ 709.60	\$ -	\$ 5,676.80
44	16-Inch DI Pipe Class 51	3	L.F.	\$ 397.42	\$ -	\$ 1,192.26
51	Removal of Fences	248	L.F.	\$ 6.00	\$ -	\$ 1,488.00
52	Chain Link Fence	-10	L.F.	\$ 45.96	\$ 459.60	\$ -
TOTALS					\$ 62,204.97	\$ 61,071.78
NET CHANGE IN CONTRACT PRICE					\$ (1,133.19)	
Change Order initiated by: Moroni City						
JUSTIFICATION:						
Quantities are hereby adjusted as shown in the schedule of values based on updated quantity requirements for the work.						
The amount of the Contract will be ~~increased~~ /decreased by the sum of:					\$ (1,133.19) DOLLARS	
The Contract total prior to this change order is:					\$ 4,569,891.85 DOLLARS	
The Contract total including this and previous change orders will be:					\$ 4,568,758.66 DOLLARS	
The Contract period provided for completion will be ~~(increased)~~ (decreased)(unchanged) by:						
New Completion date:					December 30, 2023	
This document will become a supplement to the Contract and all provisions will apply thereto.						
Requested (OWNER) _____				Date: _____		
Recommended (PROJECT MANAGER)  _____				Date: 10/18/2023		
Accepted (CONTRACTOR) _____				Date: _____		

**Full
Spectrum Inc.
Engineering**



August 18, 2023

Moroni City
80 South 200 West
Moroni, UT 84646

Attention: Brennen Russel, Water Department Superintendent

Reference: **New Water Tank/New Well SCADA System Upgrades**

Proposal: 20230801Rev:20230818:

Dear Mr. Russel:

As per the City's request Full Spectrum Inc. Engineering is pleased to provide the following proposal to upgrade the SCADA System on your water systems, including The New Well, the New Tank, The existing wells and the irrigation pond systems.

Item #1 Upgrade the water office computer (Software and Program): \$16,300

The water office has a computer that is currently running windows 7. Windows 7 is no longer supported after January 1, 2020. This upgrade would require new HMI (human machine interface) SCADA (supervisory control and data acquisition) software and programing, and both are included in the cost. The city will need to provide a new computer with Microsoft Office Professional to allow upgraded reporting functionality.

Note HMI Computer: Typically, we are recommending the HMI computer be a laptop not a desktop. The laptop will continue to operate during power outages, etc. and the laptop can be in the clean SCADA MTU panel to avoid inadvertent use and access to the SCADA system.

Item #2 Upgrade the water office MTU: \$7,200

The existing MTU (master terminal unit) is currently mounted on the wall in the northwest corner of the water office. The MTU PLC facilitates communications between all sites thus eliminating the computer and HMI as a critical operational component. The HMI computer allows the monitoring of the system and the changing of system setpoints, if the SCADA computer becomes inoperable, the system and MTU PLC would continue to operate according to the last provided setpoints. Etc.

A new enclosure will be mounted on the wall (in the same MTU location) to house the new MTU equipment. The new equipment will include a new PLC and a new callout device to facilitate emergency callouts. The MTU PLC will be programed to handle emergency call outs as well as any multi-site operational functionality, such as Well #2 blending control, so that these critical operations are performed regardless if the SCADA computer is functioning.

A new battery backup panel and battery will also be installed in the MTU location typically below the MTU panel.

The MTU panel will need both a land phone line and ethernet internet connection to facilitate call outs and remote access to the SCADA system.

There are currently two radios, and two radio networks, that the existing SCADA system uses. The two networks have been maintained to allow a stepped upgrade, from old to new, of the existing RTU sites. The antenna pole and antenna located on the northwest corner of the water office building will be used for the new SCADA system and once completed all sites will be on one network.

Item #3 New Well #4 SCADA RTU: \$13,430

As part of this project a new SCADA control panel will be mounted on the wall in the water house building. This panel would contain a PLC (Programable Logic Controller). The PLC would also monitor the tank level at the tank site via radio telemetry communications and turn the well on and off based on setpoints. The PLC can monitor the following if available at the site:

		Well VFD
DI	(Hand)-Off-Auto	Yes
DI	Hand-off-(Auto)	Yes
DO	Run Command	Yes
DI	Runback	Yes
DI	Fault	Yes
AI	Well Flow	Yes (Required)
AI	Well Water Level	Yes (if available) optional
AI	System Pressure	Yes (if available) optional
AI	Speed Feedback	Yes (if available)
AO	Speed Control	Yes (if available) (4-20 ma)
DI	Power On	Yes
	Other Items?	Optional

The PLC could also monitor the following: floor high water, well room door, chlorine room door, well discharge pressure, flow to waste, flow to system, well water level, chlorine leak, chlorine bottles 1 and 2 Weight, and well flow. If the flow meter is equipped with a pulse output or a 4-20 milli amp output, then this pulse, or flow signal, could also be added in and the PLC programed to monitor total flows (Kgallons) for the meter as well as current flows gpm.

As part of this proposal Full Spectrum Inc. will provide the SCADA control panel and all equipment located inside the panel. Others are to provide all field instrumentation as detailed on the drawings, and a flow meter, including the mounting of the SCADA Panel, all conduits, all wiring outside the SCADA panel, shall be ran to the SCADA panel, Full Spectrum Inc. will terminate/land the wiring inside the panel.

The PLC would monitor tank level and communicate tank level information to the well. On/Off set points based on tanks levels would be programed into the SCADA system. This well PLC would be programed to allow water blending with the other wells as needed.

A radio antenna mast (10 foot) shall be mounted to the top of the new building (By the general or Electrical Contractor) and an antenna will be mounted atop the mast (By the SCADA Provider) and will be directed towards Water Office building. The antenna, and appurtenant cable are included in the scope of work here in proposed.

When the system is in Auto the PLC would monitor the tank level via radio communication and turn the well on/off as required including day and night set points for power savings.

Well Note (Typical for all well sites): SCADA systems provide high level supervisory control not safety and interlock control. For example, If a well needs to flow to waste before flowing into the water system, or if a well needs to remain off for 5 minutes when turned off to allow for back spin and prevent damage, or the closure or opening, of the flow to waste valve needs to occur slowly to prevent system spikes, or a minimum VFD speed (such as 42 hz) is required to prevent pump damage. This functionality should be handled in the pump control panel not the SCADA panel. The pump control panel should be equipped with a Hand Off Auto switch. Hand allows the pump to be operated regardless of if the SCADA system is functioning. The Hand functionality is critical for emergency operations should SCADA system failure occur. The Auto position allows the SCADA system to control the pump. Off guarantees the pump remains off regardless of the SCADA system signals. If the pump is a VFD a local speed pod should be included on the pump control panel that sets the speed of the pump when in hand. If the VFD drive supports SCADA 4-20 ma (0-100%) speed control, then the drive can be wired to allow the SCADA system to control the speed when the drive is in "AUTO". All safety interlocks shall be handled in the pump drive, so they occur regardless of if the pump is controlled in HAND or AUTO. Also, in the I/O table above points such as Fault or Runback are listed but the pump control panel may not have this functionality and as such this data may or may not be available to the SCADA systems.

Typical PLC is a Beijer BCS-XP315 (or xp340) Typical Radio is a Schneider Electric TRIO-K-series KP900

Item #4 Existing New Tank (Booster station) SCADA RTU: \$13,430

As part of this project, the control panel mounted on the wall in the existing booster building will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new communications radio. The PLC would monitor tank level and communicate tank level information to the new well and the existing wells.

This system herein proposed replaces all SCADA control components located in the booster building.

Included Items:

- 1> Identify and label all existing I/O wiring in existing SCADA panel.
- 2> Remove all existing equipment from SCADA panel.
- 3> Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4> Clean/neutralize any battery leak residue before installing new panel equipment.
- 5> Install new battery panel and backup battery.
- 6> Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7> Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

Unknown Items:

- Who is providing the new tank level sensors and other tank equipment?
- Who is providing the new overflow vault sensors and equipment?

Who is providing the Level Probe sensor for the overflow vault?

Who is providing the Conduit and wire from booster building to tank and vault?

		Two pumps (none VFD)
DI	(Hand)-Off-Auto Pump 1	Yes
DI	Hand-off-(Auto) pump 1	Yes
DO	Run Command pump 1	Yes
DI	Runback pump 1	Yes
DI	Fault pump 1	Yes
AI	Flow Pump 1	Yes (if available)
AI	Amps Pump 1	Yes (if available)
DI	Hand-off-(Auto) pump 2	Yes
DO	Run Command pump 2	Yes
DI	Runback pump 2	Yes
DI	Fault pump 2	Yes
AI	Flow Pump 2	Yes (if available)
AI	Amps Pump 2	Yes (if available)
AI	Tank Water Level	Yes
DI	Tank intrusion switch	Yes (if available) optional
AI	Overflow Vault water level	Yes (if available) optional
DI	Overflow High Level float	Yes
DI	Power On	
	Other Items?	Optional

All new equipment, including tank Level sensors, overflow vault Level sensors, shall be provided by the Electrical or General Contractor, including the wire and conduits from the sensor locations into the existing SCADA panel located in the booster building.

Item #5 Existing Upper Tank SCADA RTU: \$6,100

As part of this project, the control panel mounted on the pole at the existing tank site will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new communications radio. The PLC would monitor tank level and communicate tank level information to the new well and the existing wells.

This system herein proposed replaces all SCADA control components located in the existing panel.

Included Items:

- 1> Identify and label all existing I/O wiring in existing SCADA panel.
- 2> Remove all existing equipment from SCADA panel.
- 3> Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4> Clean/neutralize any battery leak residue before installing new panel equipment.

- 5> Install new battery panel and backup battery on the pole below existing panel.
- 6> Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7> Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

		Tank
AI	Tank level	Yes
DI	Tank intrusion	Yes (if available)
AI	Battery Voltage	Yes
	Other Items?	Optional

Item #6 Existing Well02 SCADA RTU: \$7,500

As part of this project, the control panel mounted on the wall in the existing building will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new communications radio.

This system herein proposed replaces all SCADA control components located in the well building.

Included Items:

- 1> Identify and label all existing I/O wiring in existing SCADA panel.
- 2> Remove all existing equipment from SCADA panel.
- 3> Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4> Clean/neutralize any battery leak residue before installing new panel equipment.
- 5> (This site is not power outage critical) and does not include a battery panel and backup battery.
- 6> Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7> Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

		Well soft start
DI	(Hand)-Off-Auto	Yes
DI	Hand-off-(Auto)	Yes
DO	Run Command	Yes
DI	Runback	Yes
DI	Fault	Yes
AI	Well Flow	Yes (required)
AI	Well Water Level	Yes (if available) optional
AI	System Pressure	Yes (if available) optional
DI	Power On	Yes
DI	Tank or Pond Select	Yes (required)
	Other Items?	Optional

A two-position switch will be mounted on the SCADA panel and label (Flow To: Tank or Middle Pond). When the system is in Auto the PLC would monitor the Well #2 percent of flow or the pond level via radio communication

and turn the well on/off as required. The flowmeter may need to be replaced or upgraded to allow the SCADA System to monitor flows. Replacement of this flow meter is not a part of the work herein proposed.

Item #7 Existing Well01 SCADA RTU: \$7,500

As part of this project, the control panel mounted on the wall in the existing building will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new communications radio.

This system herein proposed replaces all SCADA control components located in the well building.

Included Items:

- 1> Identify and label all existing I/O wiring in existing SCADA panel.
- 2> Remove all existing equipment from SCADA panel.
- 3> Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4> Clean/neutralize any battery leak residue before installing new panel equipment.
- 5> (This site is not power outage critical) and does not include a battery panel and backup battery.
- 6> Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7> Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

		Well soft start
DI	(Hand)-Off-Auto	Yes
DI	Hand-off-(Auto)	Yes
DO	Run Command	Yes
DI	Runback	Yes
DI	Fault	Yes
AI	Well Flow	Yes (optional)
AI	Well Water Level	Yes (if available) optional
AI	System Pressure	Yes (if available) optional
DI	Power On	Yes
	Other Items?	Optional

When the system is in Auto the PLC would monitor the pond level via radio communication and turn the well on/off as required. The flowmeter may need to be replaced or upgraded to allow the SCADA System to monitor flows. Replacement of this flow meter is not a part of the work herein proposed.

Item #8 Existing Well03 SCADA RTU: \$10,300

As part of this project, the control panel mounted on the wall in the existing building will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new communications radio.

This system herein proposed replaces all SCADA control components located in the well building.

Included Items:

- 1> Identify and label all existing I/O wiring in existing SCADA panel.
- 2> Remove all existing equipment from SCADA panel.
- 3> Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4> Clean/neutralize any battery leak residue before installing new panel equipment.
- 5> (This site is not power outage critical) and does not include a battery panel and backup battery.
- 6> Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7> Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

Optional Item (Well 03 Pump Control Panel)

- 1> Identify and label all existing I/O wiring in existing Pump Control Panel. (Flow to waste Valve etc.)
- 2> Remove all unused equipment from the pump control panel.
- 3> Get the Flow to waste valve operating from the pump control panel.

		Well soft start
DI	(Hand)-Off-Auto	Yes
DI	Hand-off-(Auto)	Yes
DO	Run Command	Yes
DI	Runback	Yes
DI	Fault	Yes
AI	Well Flow	Yes (required)
AI	Well Water Level	Yes (if available) optional
AI	System Pressure	Yes (if available) optional
DI	Power On	Yes
	Other Items?	Optional

When the system is in Auto the PLC would monitor the Tank level via radio communication and turn the well on/off as required including day and night set points for power savings. The flowmeter may need to be replaced or upgraded to allow the SCADA System to monitor flows. Replacement of this flow meter is not a part of the work herein proposed.

As part of this project, The control panel mounted on the wall in the existing Well03 building will be replaced with a new SCADA Panel and new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and communications radio. The PLC would monitor pond levels and communicate level information to the well for on off operation. The flowmeter may need to be replaced or upgraded to allow the SCADA system to monitor flows. Replacement of this flow meter is not a part of the work herein proposed.

Item #9 Existing Lower Pond RTU: \$7,400

As part of this project, the control panel mounted in the original pump control panel will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new

communications radio. The PLC would monitor the middle pond level and turn the booster pumps on and off as needed with day and night setpoints. The PLC would also communicate pond level to the water office.

This system herein proposed replaces all SCADA control components located at the lower pond.

Included Items:

- 1> Identify and label all existing I/O wiring in existing SCADA panel.
- 2> Remove all existing equipment from SCADA panel.
- 3> Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4> Clean/neutralize any battery leak residue before installing new panel equipment.
- 5> Install new battery panel and backup battery.
- 6> Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7> Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

Optional Item (Lower Pond Control Panel)

With the installation of the two new pump drives there is some obsolete equipment in the original pump control panel. This option is to clean up this panel, label existing wiring and remove obsolete equipment to simplify pump control trouble shooting and testing.

- 1> Identify and label all existing wiring in existing Pump Control Panel.
- 2> Remove all unused equipment from the pump control panel.
- 3> Remove obsolete equipment and install cover plates on the face of the PCP panel.

		Two pumps (none VFD)
DI	(Hand)-Off-Auto Pump 1	Yes
DI	Hand-off-(Auto) pump 1	Yes
DO	Run Command pump 1	Yes
DI	Runback pump 1	Yes
DI	Fault pump 1	Yes (if available)
AI	Flow Pump 1	Yes (if available)
AI	Amps Pump 1	Yes (if available)
DI	Hand-off-(Auto) pump 2	Yes
DO	Run Command pump 2	Yes
DI	Runback pump 2	Yes
DI	Fault pump 2	Yes (if available)
AI	Flow Pump 2	Yes (if available)
AI	Amps Pump 2	Yes (if available)
AI	Pond Water Level	Yes
DI	Power On	
	Other Items?	Optional

Item #10 Existing Middle Pond RTU: \$7,400

As part of this project, the control panel mounted in the original pump control panel will be used to house the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and new communications radio. The PLC would monitor the upper pond level and turn the booster pumps on and off as needed with day and night setpoints. The PLC would also communicate middle and upper pond level to the water office.

This system herein proposed replaces all SCADA control components located at the lower pond.

Included Items:

- 1>Identify and label all existing I/O wiring in existing SCADA panel.
- 2>Remove all existing equipment from SCADA panel.
- 3>Remove obsolete equipment and install cover plates on the face of the SCADA panel.
- 4>Clean/neutralize any battery leak residue before installing new panel equipment.
- 5>Install new battery panel and backup battery.
- 6>Program, wire/install, new RTU PLC and associated terminal blocks, etc. (layout typical like new well)
- 7>Program, wire/install, new (serial) Radio and antenna utilizing existing antenna cable and pole.

Optional Item (middle Pond Control Panel)

With the installation of the two new pump drives there is some obsolete equipment in the original pump control panel. This option is to clean up this panel, label existing wiring and remove obsolete equipment to simplify pump control trouble shooting and testing.

- 1>Identify and label all existing wiring in existing Pump Control Panel.
- 2>Remove all unused equipment from the pump control panel.
- 3>Remove obsolete equipment and install cover plates on the face of the PCP panel.

		Two pumps (none VFD)
DI	(Hand)-Off-Auto Pump 1	Yes
DI	Hand-off-(Auto) pump 1	Yes
DO	Run Command pump 1	Yes
DI	Runback pump 1	Yes
DI	Fault pump 1	Yes
AI	Flow Pump 1	Yes (if available)
AI	Amps Pump 1	Yes (if available)
DI	Hand-off-(Auto) pump 2	Yes
DO	Run Command pump 2	Yes
DI	Runback pump 2	Yes
DI	Fault pump 2	Yes
AI	Flow Pump 2	Yes (if available)
AI	Amps Pump 2	Yes (if available)

AI	Tank Water Level	Yes
AI	Upper Pond Level	Yes
DI	Power On	
	Other Items?	Optional

As part of this project, the existing control panel mounted at the Middle Pond will be utilized for the new SCADA equipment. This panel would contain a new PLC (Programable Logic Controller) and communications radio. The PLC would monitor pond level and communicate Pond level information to the two booster pumps. The SCADA system will be programed to provide booster pumps pond level control.

Item #11 Upper Pond RTU: (Included with Middel Pond)

As part of this project, the existing control panel mounted at the Middle Pond will be utilized/programed to monitor the Upper Pond Level. The PLC would communicate Pond level information to the two booster pumps. The SCADA System will be programed to provide booster pumps pond level control.

Project Summary:

Item #1 Upgrade the water office computer (Software and Program): \$16,300

Item #2 Upgrade the water office MTU: \$7,200

Item #3 New Well #4 SCADA RTU: \$13,430

Item #4 Existing New Tank (Booster station) SCADA RTU: \$13,430

Item #5 Existing Upper Tank SCADA RTU: \$6,100

Item #6 Existing Well02 SCADA RTU: \$7,500

Item #7 Existing Well01 SCADA RTU: \$7,500

Item #8 Existing Well03 SCADA RTU: \$10,300

Item #9 Existing Lower Pond RTU: \$7,400

Item #10 Existing Middle Pond RTU: \$7,400

Item #11 Upper Pond RTU: (Included with Middel Pond)

Total Project: \$96,560

Project Timing: This project will proceed in a step by step process to allow the existing SCADA system to function (with minimal down time) during the upgrade. The priority order of sites may be determined by the city (for example Well #1 may be having problems and perhaps should be first) As each existing remote site is updated to the new PLC and new program format the existing HMI computer will be updated (re-programed) to allow communications and current operation and functionality to continue. At some point the New and Old HMIs will operate side by side for a time until the Old HMI is de-commissioned. Depending on project approval timing and the timing of the General and Electrical contractors, It is anticipated that the project should be completed by Dec. 31, 2023 .

Measurements of completion and Payments:

Item	Name	Cost	Paid	Balance
Item #1	Office HMI	\$16,300	\$0	\$16,300
Item #2	Office MTU	\$7,200	\$0	\$7,200
Item #3	Well #4 (new)	\$13,430	\$6,715	\$6,617
Item #4	New Tank Booster	\$13,430	\$5,120	\$8,310
Item #5	Upper Tank	\$6,100	\$0	\$6,100
Item #6	Well, #2	\$7,500	\$6,250	\$1,250
Item #7	Well, #1	\$7,500	\$4,250	\$3,250
Item #8	Well #3	\$10,300	\$5,150	\$5,150
Item #9	Lower Pond	\$7,400	\$3,700	\$3,700
Item #10	Middle Pond	\$7,400	\$5,450	\$1,950
Item #11	Upper Pond	\$0	\$0	\$0
	Total	\$96,560	\$36,635	\$59,925

Payments: As each Item above is completed and/or approved by the city, an Invoice will be sent for the Balance amount. In the case of Item #1 Once the HMI Software license is obtained the city will be invoiced \$10,000 of the \$16,300.

Based on the scope of work Full spectrum Inc will provide a certification of liability insurance to Moroni City with \$1,000,000 each occurrence and \$2,000,000 aggregate from the dates 7/31/2023 to 7/31/2024. The typical cost for insurance certification would be \$1,000/year billed to the city. Based on the scope of work as detailed in this proposal the insurance costs will be covered by Full Spectrum Inc. for the 2023-2024 period.

Please let me know If you have any questions regarding this proposal.

Thanks for the opportunity!

Sincerely,



Andrew Robinson PE

Mission Statement: Provide quality engineering services to safeguard life, health, and the property of clients, with integrity, ensuring that the services provided are worthy of the clients investment.

Full Spectrum Inc.

P.O. Box 358

Nephi, UT 84648

Email: fullspec@juno.com

Phone: 435-623-4713

Cell: 435-660-0489

Measurements of completion and Payments:

Item	Name	Cost	Paid	Balance
Item #1	Office HMI	\$16,300	\$0	\$16,300
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Item #7	Well, #1	\$7,500	\$4,250	\$3,250
Item #8	Well #3	\$10,300	\$5,150	\$5,150
Item #9	Lower Pond	\$7,400	\$3,700	\$3,700
Item #10	Middle Pond	\$7,400	\$5,450	\$1,950
Item #11	Upper Pond	\$0	\$0	\$0
	Total	\$96,560	\$36,635	\$59,925

Payments: As each Item above is completed and/or approved by the city, an Invoice will be sent for the Balance amount. In the case of Item #1 Once the HMI Software license is obtained the city will be invoiced \$10,000 of the \$16,300.

Optional Items: (for details See next page) Please Circle YES/NO indicating to include optional item:

☒ YES/ ☐ NO Item A Ethernet Radio Network: \$15,000.

☒ YES / ☐ NO Item B Well #3 Old Pump Control Panel \$1,620. (T&M) (other site panels?)

☒ YES / ☐ NO Item C SCADA Flow Data Reporting: \$7,200.

☒ YES / ☐ NO Item D Well #3 Tank / Pond selection flow switch: \$2,500.

☒ YES / ☐ NO Item E Well #4 Tank / Pond selection flow switch: \$2,500.

Total Amount: \$15,000 Approved for Optional Items.

Moroni City Representative Signature:  Date: 8/22/2023

Sincerely,



Andrew Robinson PE

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Nephi, UT 84648

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Optional Item Details:**Item A Ethernet Radio Network: \$15,000**

The current partially upgraded radio communications network utilizes serial communications. The project proposed here plans to continue upgrading the remaining sites to the same serial radio communications network. These radios have been around for many years, are currently available and widely used, and currently not marked for obsolescence. Many SCADA providers have switched completely to ethernet. If the city would like to upgrade to an Ethernet network which does provide some added functionality this perhaps would be a good time to make that move.

Item B Well #3 Old Pump Control Panel: \$1,620 (T&M)

Several sites have upgraded pump control panels and the old pump control panels have been obsoleted. In the case of Well #3 some parts of the old pump control panel are still required while the majority is obsolete. The well flow to waste valve is not functioning and this functionality is a part of the old pump control Panel. With the installation of the new pump starter, most of the equipment in the old pump control panel should be removed. The Identification of necessary vs obsoleted equipment is the intent of this item. Necessary equipment will be identified, labeled, and made functional while obsoleted equipment will be identified and removed. (Other upgraded pump control panels sites also fit into this category and should be cleaned up) The \$1,620 is an estimate that should allow the Well #3 work to be completed at the current Full Spectrum bill rate of \$135/hr.

Item C SCADA FLOW Data Reporting system/program: \$7,200 (Optional)

Daily data logging/ reporting system to the HMI computer to daily log flow totals. Add reporting functionality that allows the generation of daily, weekly, monthly, and yearly flow total reports. This option would require that the city provide a licensed copy of Microsoft Office Professional for the SCADA Computer.

If you have questions regarding these additional items or perhaps other items you would like cost estimates on please contact me at your earliest convenience.

Item D Well # 3 Optional Tank / Pond selection flow switch: \$2,500

Install a operator selection switch in the SCADA panel at the Well #3 site that allows the selection of system valving to Tank or to Pond. Based on Switch position the SCADA system would control the well on/off from tank level or pond level, and would provide for nitrate blending when in the tank position and would separate flow kgal to Pond from flow kgal to tank for reporting purposes

Item E Well # 4 Optional Tank / Pond selection flow switch: \$2,500 (same as Item D for Well #3)

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