Wyoming Water Development Commission & Select Water Committee Meeting
BLM Conference Room
1625 West Pine St.
Pinedale, WY
June 15, 2018

Audio only links for the workshop and meeting can be found on our website: http://wwdc.state.wy.us/
Please check back for any updates to the E-Notebook materials on our website

Workshop Agenda: Thursday, June 14, 2018 8:00am (Joint Ag-SWC-WWDC)

1. Joint Ag, Select Water Committee, Water Development Commission workshop on Colorado River Issues

Meeting Agenda: Friday, June 15, 2018 8:30 a.m.:

1. **Call to Order**

2. **Recognition of Members present to establish quorum**

3. **Approval of Minutes (F)**
   - WWDC May 18, 2018 – Meeting Minutes
   - SWC April 3, 2018 – Meeting Minutes

4. **Audience Introductions**

5. **Update on the Gillette Madison Pipeline Project – Private Well Issues**

6. **Closeout Memos (G)**
   - New Fork River Watershed Study, Level I

7. **Planning Amendments (H)**
   - Kirby Ditch Rehabilitation, Level II, Amendment No. 1
   - Fontenelle Dam & Outworks Infrastructure Completion, Level II, Amendment No. 1
   - Glendo Reservoir Full Utilization Project, Level II, Amendment No. 2

8. **New Planning Contracts:**
   - Bedford Water Supply Master Plan, Level I (I)
   - Big Laramie River Oasis Ditch Diversion Rehabilitation, Level II (J)
   - Big Sandy Watershed Study, Level I (K)
   - Cheyenne Municipal Storage, Phase I, Level II (L)
   - GR-RS-SC-JPWB Pump Station and Transmission, Level II (M)
   - Hanover Irrigation District Bighorn Flume Replacement, Level II (Mc)

- Horse Creek Watershed Study, Level I (N)
- Lander Test Well Study, Level II (O)
- Little Snake River Valley Municipal Water Supply, Level II (P)
- Lower Laramie River Watershed Study, Level I (Q)
- Middle Big Horn River Watershed Study, Level I (R)
- Osage Water Master Plan, Level I (S)
- Popo Agie Watershed Study, Phase II, Level I (T)
- River Basin Planning, GIS Data Model Implementation, Level I (U)
- River Basin Planning, NHD Plus HR (V)
- River Basin Planning, Water Supply Index, Level I (W)
- Saratoga Water Master Plan, Level I (XYZ)
- Sheridan Municipal Watershed Wildfire Hazard Mitigation Study, Level I (HH)
- Sheridan Water Master Plan, Level I (II)
- Silver Lake Dam Rehabilitation, Level II (JJ)

9. Ground Water Exploration Grant (KK)

- Town of Guernsey – Guernsey RV Park Well Replacement

10. Aladdin Water District Service (LL)

- List of idle State-owned wells
- Consideration of Water Service Agreement

11. UW Office of Water Programs (MM)

- Consideration of the 2019-2020 Biennium MOU

12. UW Water Research Program (McMc)

- Consideration of 2019 RFP for the UW Water Research Program

13. Consideration of Awarding a Construction Contract for Middle Piney Reservoir Rehabilitation (NN)

14. Consideration of the Purchase Agreement for Lake DeSmet Water Assets (OO)

- Executive Session to discuss legal issues (if necessary)
- Consideration of the Purchase Agreement for Lake DeSmet Water Assets
- Authorization to transfer remaining appropriated funds to the Lake DeSmet Reservoir Account

15. Consideration of adding a Planning Project to the 2019 Program (PP)

- Lake DeSmet/Healy Reservoir Utilization Level II Study

16. Construction Project Progress Report (QQ)

- Austin-Wall Canal Rehabilitation
- Dry Creek Irrigation District Pipeline Replacement 2017
- Sheridan 4 MG WTP Tank

17. Consideration and Ranking of Colorado River Basin MOA Applications (RR)

18. Intended Use Plan (IUP) – Drinking Water State Revolving Fund (DWSRF) – SWC

- (Select Water Review and Recommendation) (SS)

19. Discussion

- Town of Deaver letter (TT)
- Fontenelle Riprap Project Press Release (UU)

20. Future Meetings Schedule (VV)

- July 18, 2018 – 2:00pm – Groundbreaking Ceremony at Middle Piney Reservoir
- August 15-17, 2018 – Gillette, WY – Summer Tour & Meeting (WWDC/SWC)
    - Hotel Reservations and Information
- October 3-5, 2018 – Cheyenne, WY – Consultant Selection Interview and Meeting
- November 7-9, 2018 – Casper, WY

WYOMING WATER DEVELOPMENT COMMISSION
COMMISSIONERS
March 2017

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WYOMING WATER DEVELOPMENT COMMISSION

COMMISSIONERS

Nick Bettas	Water Division IV
Karen Budd-Falen, Vice-Secretary	Member-at-Large
David Evans, Chairman	Water Division I
Gerald Geis	Water Division III
Clinton W. Glick	Wind River Indian Reservation
Kellen Lancaster, Secretary	Water Division IV
Sheridan Little	Water Division II
Jeanette Sekan	Water Division III
Larry Suchor, Vice-Chairman	Water Division II
Rodney Wagner	Water Division I

STAFF

Harry LaBonde	Director
Andrea Odell	Administrative/Fiscal Manager
Janet Belmonte	Accountant
Nancy Casner	Office Support Specialist
Barry Lawrence	Deputy Director – Planning
Kevin Boyce	Project Manager
Keith Clarey	Project Manager
Julie Gondzar	Project Manager
Dave Myer	Project Manager
Jodie Pavlica	Project Manager
Katie Talbott	Outreach Coordinator
Chace Tavelli	Project Manager
Jodee Pring	Supervisor-River Basin Planning
Peter Gill	Project Manager
Jason Mead	Deputy Director – Dams & Reservoirs
Andrew Linch	Project Manager
Tony Rutherford	Project Manager
Brian Smith	High Savery Dam Technician
Bryan Clerkin	Deputy Director – Construction
Bill Brewer	Project Manager
Keenan Hendon	Project Manager
Ken Mitchell	Project Manager
Chris Schabron	Project Manager
Wade Verplancke	Project Manager

ADVISORS

Daniel Solish	Attorney General's Office
Pat Tyrrell	State Engineer
Greg Kerr	University of Wyoming
Shawn Reese	Wyoming Business Council

SELECT WATER COMMITTEE
REVISED 10/16/17

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Wyoming Water Development Commission Meeting
Water Development Office, 6920 Yellowtail Rd.
Cheyenne, Wyoming
May 18, 2018

1. Chairman Sheridan Little called the meeting to order at 8:35am.

2. Roll Call – Recognition of Members present to establish a quorum
   Commission attendance:
   Sheridan Little, Chairman
   Nick Bettas, Vice-Chairman
   Rodney Wagner
   Karen Budd-Falen
   Larry Suchor
   David Evans
   Gerald Geis
   Kellen Lancaster
   Jeanette Sekan
   Clinton Glick – absent

   Advisors in Attendance:
   Daniel Solish, Attorney General's Office

3. **Election of Officers**
   Gerry Geis made a motion to nominate David Evans as Chairman, Kellen Lancaster seconded the motion; motion carried unanimously.

   Kellen Lancaster made a motion to nominate Larry Suchor as Vice-Chairman, Rodney Wagner seconded the motion; motion carried unanimously.

   Gerry Geis made a motion to nominate Rodney Wagner as Secretary, seconded by Kellen Lancaster. Rodney Wagner declined the nomination. Gerry Geis withdrew his motion.

   Larry Suchor made a motion to nominate Kellen Lancaster for Secretary, seconded by Gerry Geis; motion carried unanimously.

   Kellen Lancaster made a motion to nominate Karen Budd-Falen for Vice-Secretary, seconded by Rodney Wagner; motion carried unanimously.

4. **Approval of Agenda**

Director LaBonde indicated he added the approval of Chapter 8 of the Rules to the agenda after the agenda had gone to the public, but a new notice was provided to the public at least a day in advance.

Jeanette Sekan made a motion to approve the agenda; Sheridan Little seconded the motion; motion carried unanimously.

5. **Approval of Minutes**

Rod Wagner made a motion to approve the minutes of the March 15-16, 2018 workshop and meeting. Gerry Geis seconded the motion; the motion carried unanimously.

6. **Audience Introductions**

7. **Closeout Memos**

- *Rolling Hills Well 2-2R Ground Water Exploration Grant*

  Kevin Boyce, Project Manager, provided a brief summary of the project findings. The closeout memo recommends acceptance of the Rolling Hills Well 2-2R Ground Water Exploration Grant project report as final.

  Larry Suchor made a motion to accept the closeout memo, Gerry Geis seconded the motion; the motion carried unanimously.

- *UW Irrigation Water Supply Study, Level II*

  Keith Clarey, Project Manager, provided a brief summary of the project findings. The closeout memo recommends acceptance of the UW Irrigation Water Supply Study, Level II project as complete and further, makes the following findings relative to this project:

  1. That the Commission recommend terminating further consideration of the proposed project.
  2. Based on the findings in the final report, the project is determined to be in the public interest.
  3. The project functions and services cannot realistically be provided by any person, association or corporation engaged in private enterprise.

  Jeanette Sekan made a motion to accept the closeout memo, Nick Bettas seconded the motion; motion carried unanimously.

8. Planning Amendments

- *Goose Creek Watershed Study, Level I, Amendment No. 1*
  An interim amendment to the engineering contract with EnTech Inc., was presented. The amendment serves to extend the term of the Contract from June 30, 2018 through December 31, 2018. The Contract amount is not changed by this amendment.

  Gerry Geis made a motion to approve the Goose Creek Watershed Study, Level I, Amendment No. 1. Sheridan Little seconded the motion; motion carried unanimously.

9. Construction Amendments

- *Gillette Madison Pipeline Agreement, Amendment Eight*
  An interim amendment to the Project Agreement with the City of Gillette was presented. The amendment serves to modify the Project Agreement by changing the conditions for the management of the completed project.

  Larry Suchor made a motion to approve the Gillette Madison Pipeline Agreement, Amendment Eight. Rodney Wagner seconded the motion; motion carried unanimously.

10. Idle State-Owned Wells

Director LaBonde provided the Commission with a list of idle State owned wells. The Commission questioned whether the Sponsors were aware of the obligation to purchase the wells at completion of their projects and also requested a list of the costs of the wells.

11. Water Service Contract Renewal

- *Aladdin Water District*
  The original contract was executed on October 22, 1999, renewed April 3, 2012 and the 2012 contract has expired. The Aladdin Water District would like to continue buying water from the State so a new contract is needed. Discussion followed regarding the current rate.

  Nick Bettas moved to table the discussion until June, Jeanette Sekan seconded the motion; motion carried unanimously.

12. 2019 Planning Level I and II Project Applications

Director LaBonde recommended handling the applications separately.

- *Evanston Water Master Plan*
  The Director's recommendation was to proceed with the Level I Planning Study of the City's culinary water system to prepare for current and anticipated development in two residential/business pressure zones of the community.

  Gerry Geis made a motion to approve proceeding with the selection process for the Evanston Water Master Plan, Level I Study. Nick Bettas seconded the motion; motion carried unanimously.

- *Salt Creek-Edgerton-Midwest Water Master Plan*
  The Director's recommendation was to proceed with the Level I Planning Study to evaluate the current condition of the water system(s) and to provide the tools and guidance necessary to assist in the planning, rehabilitation, upgrading, and managing of the system(s).

  Gerry Geis made a motion to approve proceeding with the selection process for the Salt Creek-Edgerton-Midwest Water Master Plan, Level I Study. Larry Suchor seconded the motion; motion carried unanimously.

- *Torrington Water Master Plan*
  The Director's recommendation was to proceed with the Level I Planning Study to evaluate the current condition of the water system(s) and to provide the tools and guidance necessary to assist in the planning, rehabilitation, upgrading, and managing of the system(s).

  Gerry Geis made a motion to approve proceeding with the selection process for the Torrington Water Master Plan, Level I Study. Rodney Wagner seconded the motion; motion carried unanimously.

- *Bluff/Upper Bluff Irrigation Districts Master Plan*
  The Director's recommendation was to proceed with the Level I Planning Study to assess structures on their system, investigate conveyance losses, and identify capital improvement projects for financial planning.

  Gerry Geis made a motion to approve proceeding with the selection process for the Bluff/Upper Bluff Irrigation Districts Master Plan, Level I Study. Sheridan Little seconded the motion; motion carried unanimously.

- *Big Horn Regional Southern Water Supply*
  The Director's recommendation was to not proceed with the Level II Reconnaissance Study.
  Jeanette Sekan made a motion to not proceed with the Big Horn Regional Southern Water Supply, Level II Study. Rodney Wagner seconded the motion; motion carried unanimously.

- *Buffalo Groundwater Supply*
  The Director's recommendation was to not proceed with the Level II Reconnaissance Study.

  Larry Suchor made a motion to not proceed with the Buffalo Groundwater Supply, Level II Study. Sheridan Little seconded the motion; motion carried unanimously.

- *Hog Island Water Supply*
  The Director's recommendation was to not proceed with the Level II Reconnaissance Study.

  Rodney Wagner made a motion to not proceed with the Hog Island Water Supply, Level II Study. Larry Suchor seconded the motion; motion carried unanimously.

- *Sundance West Water Supply*
  The Sponsor withdrew the application prior to the meeting.

- *Boulder Irrigation District Rehabilitation*
  The Director's recommendation was to proceed with the Level II Reconnaissance Study to explore options available to the Boulder Irrigation District to improve efficiency and reduce seepage on their main canal, and assess the condition of their reservoir spillway.

  Kellen Lancaster made a motion to approve proceeding with the selection process for the Boulder Irrigation District Rehabilitation, Level II Study. Karen Budd-Falen seconded the motion; motion carried unanimously.

- *LaPrele Irrigation District Rehabilitation*
  The Director's recommendation was to proceed with the Level II Reconnaissance Study to build on the Level I Master Plan that is inventorying

and assessing their storage and transmission system, investigating conveyance losses, and identifying and prioritizing capital improvement projects for financial planning. The focus of the Level II study should be to identify mitigation options for the loose boulders on the cliff walls that threaten the LaPrele Dam.

Larry Suchor made a motion to approve proceeding with the selection process for the LaPrele Irrigation District Rehabilitation, Level II Study. Rodney Wagner seconded the motion; motion carried unanimously.

13. Approval of Consultant Selection

- *Bedford Master Plan, Level I Project*

  Nick Bettas made a motion that the Director be instructed to begin negotiations for consulting services on the Bedford Master Plan, Level I Project in accordance with the following ranking of the firms interviewed.

  1. Sunrise Engineering
  2. Rendezvous Engineering
  3. Forsgren Associates.

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *Negotiate a reasonable cost reduction to Tasks 3, 4, and 6 relative to the Sponsor's recent expenditures on GIS, the Hydraulic Model, and Leak Detection of system losses, respectively.*

  The motion was seconded by Kellen Lancaster. The motion carried unanimously.

- *Big Laramie River Oasis Ditch Diversion, Level II Project*

  Karen Budd-Falen made a motion that the Director be instructed to begin negotiations for consulting services on the Big Laramie River Oasis Ditch Diversion, Level II Project in accordance with the following ranking of the firms interviewed:

  1. S E H
  2. WWC Engineering
  3. Anderson Consulting Engineers, Inc.

  The motion was seconded by Rodney Wagner. The motion carried unanimously.

- *Big Sandy Watershed Study, Level I Project*

  Nick Bettas made a motion that the Director be instructed to begin negotiations for consulting services on the Big Sandy Watershed Study, Level I Project in accordance with the following ranking of the firms interviewed:

  1. Rio Verde
  2. Confluence
  3. Biota Research

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *Accept scope alternate of additional mapping task, but without the $400.00 additional cost.*

  Gerry Geis seconded the motion. The motion carried unanimously.

- *Cheyenne Municipal Storage, Level II, Phase I Study*

  Gerry Geis made a motion that the Director be instructed to begin negotiations for consulting services on the Cheyenne Municipal Storage, Level II Phase I Project in accordance with the following ranking of the firms interviewed:

  1. Trihydro
  2. HDR
  3. AECOM

  Jeanette Sekan seconded the motion; the motion carried unanimously.

- *Green River – Rock Springs – Sweetwater County Joint Powers Water Board Pump Station and Transmission, Level II Study*

  Karen Budd-Falen made a motion that the Director be instructed to begin negotiations for consulting services on the Green River-Rock Springs-Sweetwater County Joint Powers Water Board Pump Station and Transmission, Level II Study in accordance with the following ranking of the firms interviewed:

  1. Sunrise Engineering
  2. Keller Associates
  3. Forsgren Associates

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *Negotiate a cost for the aerial survey only as a scope alteration.*

  Larry Suchor seconded the motion; the motion carried unanimously.

- *Hanover Irrigation District Bighorn Flume Replacement, Level II Study*
  Jeanette Sekan made a motion that the Director be instructed to begin negotiations for consulting services on the Hanover Irrigation District Bighorm Flume Replacement Level II Project:
    1. Inberg-Miller Engineers

  Gerry Geis seconded the motion; the motion carried unanimously.

- *Horse Creek Watershed Study*
  Rodney Wagner made a motion that the Director be instructed to begin negotiations for consulting services on the Horse Ceek Watershed Study, Level I Project accordance with the following ranking of the firms interviewed:
    1. Anderson Consulting Engineers, Inc
    2. Adaptive Resources
    3. Olsson Associates.

  Larry Suchor seconded the motion; the motion carried unanimously.

- *Lander Test Well, Level II Study*
  Larry Suchor made a motion that the Director be instructed to begin negotiations for consulting services on the Lander Test Well, Level II Study Project in accordance with the following ranking of the firms interviewed:
    1. Wyoming Groundwater
    2. Wenck Associates
    3. Weston Engineering

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Negotiate with the Consultant to add a Task to Phase I with no increase in Cost: Phase I, Task I – Project Meetings, Task 2 – Definition of Water Supply Objectives (New Task), Task 3 – Geo-Hydrologic Investigation & Well Siting*

  Gerry Geis seconded the motion; the motion carried unanimously.

- *Little Snake River Valley Municipal Water Supply, Level II Project*
  Karen Budd-Falen made a motion that the Director be instructed to begin negotiations for consulting services on the Little Snake River Valley Municipal Water Supply, Level II Project in accordance with the following ranking of the firms interviewed:
    1. Wenck Associates

2. Western Engineering and Geologists
3. Engineering Associates

Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Accept the scope alternate to update the existing Baggs GIS to reflect the 2018 as-built drawings, create a Dixon GIS (reflective of 2018 conditions), and to work with the towns of Dixon and Baggs in the maintenance requirements of the GIS by providing a one-day course for the Towns' operators, clerks, and other pertinent staff.*

Gerry Geis seconded the motion; the motion carried unanimously.

- *Lower Laramie River Watershed, Level I Study*

  Jeanette Sekan made a motion that the Director be instructed to begin negotiations for consulting services on the Lower Laramie River Watershed Level I Project in accordance with the following ranking of the firms interviewed:
  1. Anderson Consulting Engineers
  2. Golder Associates

  Larry Suchor seconded the motion; the motion carried unanimously.

- *Middle Big Horn River Watershed, Level I Study*

  Gerry Geis made a motion that the Director be instructed to begin negotiations for consulting services on the Middle Big Horn River Watershed, Level I Study in accordance with the following ranking of the firms interviewed:
  1. Y2 Consultants
  2. Woodard & Curran
  3. Confluence

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Incorporate the proposed scope alternative regarding the Lower Hanover Canal into the contract using the discretionary funds provided in the proposed budget. 2. Integrate the proposed scope alternative on Climate Science into the scope of work with funding being absorbed from other proposed task budgets.*

  Rodney Wagner seconded the motion; the motion carried unanimously.

- *Osage Water Master Plan, Level I Study*

Larry Suchor made a motion that the Director be instructed to begin negotiations for consulting services on the Osage Water Master Plan, Level I Study in accordance with the following ranking of the firms interviewed:

1. Jorgensen Associates
2. James Gores & Associates
3. Dowl

Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Accept the scope alteration, $5,000.00 to hydro-vac valves.*

Sheridan Little seconded the motion; the motion carried unanimously.

- *Popo Agie Watershed Study, Level I, Phase II*

  Gerry Geis made a motion that the Director be instructed to begin negotiations for consulting services on the Popo Agie Watershed Study, Level I, Phase II Project in accordance with the following ranking of the firms interviewed:

  1. Olsson Associates
  2. Strike Consulting Group
  3. Golder Associates

  Rodney Wagner seconded the motion; the motion carried unanimously.

- *GIS Data Model Implementation*

  Kellen Lancaster made a motion that the Director be instructed to begin negotiations for consulting services on the GIS Data Model Implementation, Level I Study Project in accordance with the following ranking of the firms interviewed:

  1. Confluence Consulting, Inc.
  2. GDA
  3. Ecology and Environment, Inc.

  Larry Suchor seconded the motion; the motion carried unanimously.

- *Water Supply Index Level I Study*

  Rodney Wagner made a motion that the Director be instructed to begin negotiations for consulting services on the Water Supply Index Level I Study Project in accordance with the following ranking of the firms interviewed:

  1. WEST Environmental & Statistical Consultants
  2. GDA

3. WWC Engineering

Gerry Geis seconded the motion; the motion carried unanimously.

- *Saratoga Water Master Plan, Level I*
  Karen Budd-Falen made a motion that the Director be instructed to begin negotiations for consulting services on the Saratoga Water Master Plan, Level I Study Project in accordance with the following ranking of the firms interviewed:
  1. Forsgren Associates
  2. WLC
  3. North Fork Engineering

  Gerry Geis seconded the motion; the motion carried unanimously.

- *Sheridan Municipal Watershed Wildfire Hazard Mitigation Assessment, Level I Study*
  Sheridan Little made a motion that the Director be instructed to begin negotiations for consulting services on the Sheridan Municipal Watershed Wildfire Hazard Mitigation Assessment, Level I Study Project in accordance with the following ranking of the firms interviewed:
  1. Anchor Point
  2. SWCA
  3. Y2 Consultants

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Accept the scope alteration of extending the fire behavior model to include the HUC 10 watersheds of Fool Creek and South Piney Creek at no additional cost.*

  Rodney Wagner seconded the motion; the motion carried unanimously.

- *Sheridan Water Master Plan, Level I Study*
  Larry Suchor made a motion that the Director be instructed to begin negotiations for consulting services on the Sheridan Water Master Plan, Level I Study Project in accordance with the following ranking of the firms interviewed:
  1. DOWL
  2. EnTech
  3. Woodard & Curran

Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Integrate DOWL's proposed no-cost alternatives into the contract scope of work.*

Sheridan Little seconded the motion; the motion carried unanimously.

- *Silver Lake Dam Rehabilitation, Level II Study*

  Nick Bettas made a motion that the Director be instructed to begin negotiations for consulting services on the Silver Lake Dam Rehabilitation, Level II Study Project in accordance with the following ranking of the firms interviewed:

  1. Rio Verde Engineering
  2. S E H
  3. Golder Associates

  Further, the Selection Committee offers the following suggestions to the Director during the negotiations: *1. Revise the cost itemization to include the cost associated with the additional overall cost of the project due to its location and limitations which will be imposed by the Forest Service.*

  Larry Suchor seconded the motion; the motion carried unanimously.

14. Construction Project Progress Report

Bryan Clerkin gave an update on the following Level III Construction projects:

- Boulder Flats Water Supply
- Buffalo Main Street Pipeline
- Buffalo Tank Valve Project
- Cowley Tank 2017
- Manville Well Connection
- Northwest Rural Water System Improvements 2018
- Rock River Transmission Pipeline Replacement
- Shoshone Transmission Pipeline 2016
- Thermopolis Pipeline 2017

15. Proposed Chapter 8 Rules – Approval and recommendation for adoption

Director LaBonde informed the Commission no comments were received during the public comment period on Chapter 8 – Delegation of Duties.

Karen Budd-Falen made a motion for final approval of Chapter 8 and to proceed with the final rule submittal to the Secretary of State and Governor's Office.

Larry Suchor seconded the motion; motion carried unanimously.

16. Discussion

Review of Survey questions for Gillette area water districts: Bryan Clerkin presented the Commission with the draft survey.

Director LaBonde provided and update on the Pathfinder Proposal in the Platte River Recovery Program. He informed the Commission the State supports the proposed extension of the PRRIP, but not the Pathfinder Proposal at this time.

Director LaBonde provided an update on the negotiations for Lake DeSmet Water Assets. There will most likely be a consideration for purchase agreement presented in June to the Commission and Select Water Committee.

Director LaBonde also provided the Commission with a list of the interim topics to be discussed by Joint Ag, and Select Water Committees.

17. Future Meetings Schedule

The next meeting is a joint meeting with Joint Ag and SWC in Pinedale, WY on June 14-15, 2018.

A groundbreaking will be scheduled most likely in July for the Middle Piney Reservoir Rehabilitation. Director LaBonde will keep the Commission informed as to the details.

The August meeting will be held in Gillette. Room reservations have been made and details will be forthcoming.

Kellen Lancaster made a motion to adjourn at 12:03pm.

Respectfully submitted,

Kellen Lancaster, Secretary

‘F²’

Select Water Committee Minutes

April 3, 2018

FINAL PROJECT CLOSEOUT MEMO
FOR LEVEL II PROJECTS
WYOMING WATER DEVELOPMENT OFFICE
PLANNING DIVISION

The Planning Project listed below is complete and scheduled for closeout. This memo serves to summarize the findings of the final report and to document the final contract amount.

PROJECT: **New Fork River Watershed Study**
LEVEL: I
SPONSOR: Sublette County Conservation District
LOCATION: Pinedale, Wyoming
PROGRAM: New Development
PROJECT MGR: Andrew Linch
WWDC MTG DATE: June 15, 2018

AUTHORIZING LEGISLATION:

Purpose	Chapter	Session	Account	Appropriation	Due Date
Level I	38	2016	I	$375,000	2019

CURRENT CONTRACT:

Consultant
Tetra Tech, Inc.

Contract Number	Executed	Original Contract Amount	Final Contract Amount	Contract Savings Amount	Expiration Date
05SC0296642	6-20-16	$368,891	$345,553.63	$23,337.37	6-30-18

PROJECT DESCRIPTION:

During the 2016 General Session, the Sublette County Conservation District applied for, and received, funding to conduct a Level I watershed study to evaluate current watershed function, irrigation diversion/conveyance systems, and upland livestock/wildlife water management and rehabilitation opportunities. Surface water storage including enlargement and/or rehabilitation of existing water storage facilities, current condition of wetlands and riparian areas within the drainage, and geomorphic classification were also of interest. This data would provide baseline information and identify projects from which the District can pursue implementation of management practices that address the natural resource opportunities within the drainage.

The New Fork River Watershed, located entirely within Sublette County, covers approximately 1,230,000 acres. The watershed includes the primary stream system of the New Fork River and numerous tributaries including, Willow Creek, Pine Creek, Pole Creek, Boulder Creek, and East Fork River.

PROJECT FINDINGS/RECOMMENDATIONS:

A multidisciplinary inventory of the New Fork River Watershed was conducted in an effort to identify and evaluate key resource issues, concerns, and opportunities related to watershed function and condition. A comprehensive GIS was completed in conjunction with the inventory. The GIS incorporates the data collected and results generated during the study and collates it with information collected from a variety of sources.

The Watershed Management and Rehabilitation Plan, compiled through coordination and input from local landowners, identified 27 irrigation projects, 20 livestock/wildlife water projects, 7 small water storage projects, and 3 large water storage projects. Furthermore, general recommendations for the improvement

of stream channel condition and stability and grazing management were identified. Most of the recommended improvements fall within the criteria of the Small Water Program; however, several projects were recommended for further study as WWDC Level II feasibility studies including the upcoming Silver Lake Dam Rehabilitation project. Conceptual designs, cost estimates, and permitting considerations were included as well for the projects identified.

The District has been presented with the results of the study, and the final report and all associated deliverables have been submitted to the Office.

PUBLIC REPORT PRESENTATION HEARING: N

Date	Location	City/Town
6-12-17	Hampton Inn, 55 Bloomfield Ave.	Pinedale, WY

FINAL REPORT/EXECUTIVE SUMMARIES ONLINE:

Final Report:
http://library.wrds.uwyo.edu/wwdcrept/New_Fork_River/New_Fork_River_Watershed-Level_I_Study-Final_Report-2018.html

Executive Summary:
http://library.wrds.uwyo.edu/wwdcrept/New_Fork_River/New_Fork_River_Watershed-Level_I_Study-Executive_Summary-2018.html

WWDO RECOMMENDATION:
The Watershed Study provides analysis of watershed conditions and, through the projects identified in the Management and Rehabilitation Plan, demonstrates how these types of projects provide public benefit. Based on this study, the Office recommends supporting the funding of Small Water Program Projects, and conventional projects, within the New Fork River watershed pending submittal of an appropriate application by a legal entity as described by WWDC Criteria.

WWDC PROPOSED MOTION:

I move acceptance of the New Fork River Watershed, Level I Study report as being complete and further, the WWDC makes the following findings relative to this project:

1. That the Commission recommend:
    - Proceeding to the next level of project development upon the submittal of an appropriate funding application by the Sponsor.

THE STATE OF WYOMING
Water Development Office
6920 YELLOWTAIL ROAD TELEPHONE: (307) 777-7626 CHEYENNE, WY 82002

MEMORANDUM

DATE: June 15, 2018

TO: Harry C. LaBonde, Jr., P.E., Director

FROM: Chace Tavelli, P.E.

SUBJECT: Kirby Ditch Rehabilitation, Level II Study - Amendment No. 1

This memo is to serve as an explanation for Amendment No. 1 to the Kirby Ditch Rehabilitation Level II Study. The amendment requires Sage Civil Engineering (Consultant) to analyze additional rehabilitation alternatives for the portion of the Kirby Ditch below the slide area (discussed below). The additional analysis results in a budget increase of $9,450.00, and a due date of July 20, 2018, for the draft results of the analysis.

Kirby Irrigation District (Sponsor) requested a Level II study to develop ditch rehabilitation alternatives for two areas of the Kirby Ditch. The ditch flows through a slide area; this part of the ditch is being shut down often due to slides putting irrigators out of water and suffering crop loss. The study was to consider options to remedy the slide issue. Additionally, there is a diversion on the upper end of the ditch where the land owner is required to check the ditch to raise the water level enough to get water in his ditch. This backs up water creating algae issues, increased seepage, and affects measuring the water in Kirby Ditch. The study was to consider options to remedy these issues. During the study the Sponsor indicated their desire to have rehabilitation alternatives identified for the ditch below the slide area as well. The potential rehabilitation alternatives for this section of the ditch would help with operations, decreased maintenance, and conservation of water. Additionally, this is the only section of the Kirby ditch that has not been previously studied by the WWDC. Including this section of the ditch in this study results in the WWDC having studied the entire Kirby Ditch.

Encl:
Amendment No. 1 to Consultant Contract for Services No. 05SC0296981
Kirby Ditch Rehabilitation, Level II Study

AMENDMENT ONE TO
CONSULTANT CONTRACT FOR SERVICES NO. 05SC0296981
KIRBY DITCH REHABILITATION, LEVEL II STUDY BETWEEN
WYOMING WATER DEVELOPMENT COMMISSION
AND
SAGE CIVIL ENGINEERING

1. Parties. This Amendment is made and entered into by and between the Wyoming Water Development Commission [Commission], whose address is: 6920 Yellowtail Road, Cheyenne, Wyoming 82002; and Sage Civil Engineering [Consultant], 2824 Big Horn Avenue, Cody, WY, 82414.

2. Purpose of Amendment. This Amendment shall constitute the first amendment to the Contract between the Commission and the Consultant. The purpose of this Amendment is to: a) increase the total Contract dollar amount by nine thousand four hundred and fifty dollars ($9,450.00) to eighty-five thousand three hundred fifty dollars ($85,350.00); and b) add responsibilities of the Consultant to investigate additional alternatives for the Kirby Ditch below the slide area.

The original Contract, dated June 14, 2017, required the Consultant to complete the Kirby Ditch Rehabilitation, Level II Study for a total Contract amount of seventy-five thousand, nine hundred dollars ($75,900.00) with an expiration date of June 30, 2019.

3. Term of the Amendment. This Amendment shall commence immediately upon the date the last required signature is affixed hereto, (Effective Date), and shall remain in full force and effect through the term of the Contract, as amended, unless terminated at an earlier date pursuant to the provisions of the Contract, or pursuant to federal or state statute, rule or regulation.

4. Amendments.

A. The second sentence of Section 4.A. of the original Contract is hereby amended to read as follows:

> The total payment under this Contract shall not exceed eighty-five thousand three hundred fifty dollars ($85,350.00).

B. The entire section of 4.B. of the original Contract is hereby amended to read as follows:

4.B. Project Budget. The Project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
1	Scoping and Project Meetings	$ 5,600
2	Information Collection and Literature Review	$ 3,400
3	Rehabilitation Plan	$ 9,860
4	Conceptual Level Designs and Cost Estimates	$ 22,130
5	Economic Analysis and Project Financing	$ 6,120
6	Creation of a Geographic Information System	$ 12,600
7	Draft Report	$ 11,660
8	Report Presentations	$ 6,400
9	Final Report and Deliverables	$ 7,580
	TOTAL PROJECT COST	**$ 85,350**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms provided by the Office. The Consultant may use alternate billing forms if approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

5. Amended Responsibilities of the Consultant.

Responsibilities of the Consultant are hereby amended. The Scope of Services described in Section 5.A and attached to the Contract as Attachment A and incorporated by reference as part of the Contract is amended as follows:

The following additional scope of work shall be appended to Task 3. Rehabilitation Plan:

> "The Consultant shall investigate additional rehabilitation alternatives for the Kirby Ditch below the slide area. The draft work and reporting for the additional alternatives will be due July 20, 2018."

6. Amended Responsibilities of the Commission.

Responsibilities of the Commission have not changed.

7. Special Provisions.

A. Same Terms and Conditions. With the exception of items explicitly delineated in this Amendment, all terms and conditions of the original Contract, and any previous amendments, between the Commission and the Consultant, including but not limited to sovereign immunity, shall remain unchanged and in full force and effect.

B. Counterparts. This Amendment may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Amendment. Delivery by the Consultant of an originally signed counterpart of this Amendment by PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

8. General Provisions.

A. Entirety of Contract. The Original Contract consisting of thirteen (13) pages, Attachment A, consisting of ten (10) pages, and Attachment B, consisting of one (1) page, and Amendment One, consisting of four (4) pages represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements whether written or oral.

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9. Signatures. The parties to this Amendment, through their duly authorized representatives, have executed this Amendment on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Amendment.

This Amendment is not binding on either party until approved by A&I Procurement and the Governor of the State of Wyoming or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____
David Evans Date
Chairman

_____ _____
Kellen Lancaster Date
Secretary

Attest: _____

SAGE CIVIL ENGINEERING

_____ _____
James Evans, P.E., Vice President Date
Employer Identification Number: 83-0337130

Attest: _____

ATTORNEY GENERAL'S OFFICE APPROVAL AS TO FORM

_____ _____
Tyler M. Renner Date
Assistant Attorney General

THE STATE OF WYOMING
Water Development Office
6920 YELLOWTAIL ROAD TELEPHONE: (307) 777-7626 CHEYENNE, WY 82002

MEMORANDUM

DATE: May 25, 2018

TO: Wyoming Water Development Commission

FROM: Tony Rutherford, Project Manager

SUBJECT: Fontenelle Dam and Outworks Infrastructure Completion, Level II Study — Amendment No. 1

This memo is to serve as an explanation for Amendment No. 1, which is to extend the Contract Expiration date for the referenced study. The current Contract expiration date is June 30, 2018, and this amendment is to extend that date until December 31, 2018.

To date, the Consultant has progressed with the Scope of Services outlined in said Contract and has produced a draft report. The Office has received comments and input from all members of the interagency team that was assembled as part of the Project, with the exception of the Bureau of Reclamation (Reclamation). The delay in receiving Reclamation comments has in turn delayed the completion of the final report. However, it is our understanding that Reclamation's comments are now forthcoming.

The Fontenelle Dam and Outworks Infrastructure Completion Project is a water development initiative in Governor Mead's 2015 Wyoming Water Strategy and being that the dam is a Reclamation facility, it is paramount to the Project's advancement that Reclamation's input be garnered.

In short, Amendment No. 1 to the Project serves to extend the current Contract expiration date to incorporate input from Reclamation on the feasibility study into the final report, and subsequently hold the results presentation meeting in the project area.

Encl.
Amendment No. 1 to Consultant Contract for Services No. 05SC0296683
Fontenelle Dam and Outworks Infrastructure Completion, Level II Study

AMENDMENT ONE TO
CONSULTANT CONTRACT FOR SERVICES NO. 05SC0296683
FONTENELLE DAM AND OUTWORKS INFRASTRUCTURE COMPLETION
LEVEL II STUDY BETWEEN
WYOMING WATER DEVELOPMENT COMMISSION
AND
ENGINEERING ANALYTICS, INC.

1. Parties. This Amendment is made and entered into by and between the Wyoming Water Development Commission [Commission], whose address is: 6920 Yellowtail Road, Cheyenne, Wyoming 82002; and Engineering Analytics, Inc. [Consultant], whose address is: 1600 Specht Point Road, Suite 209, Fort Collins, Colorado, 80525

2. Purpose of Amendment. This Amendment shall constitute the first amendment to the Contract between the Commission and the Consultant. The purpose of this Amendment is to: extend the term of the Contract through December 31, 2018. The Contract amount is not changed by this Amendment.

The original Contract, dated June 17, 2016, required the Consultant to render certain technical and professional services for a total Contract amount of one hundred ninety-seven thousand, three hundred thirty-nine dollars ($197,339.00) with an expiration date of June 30, 2018.

3. Term of the Amendment. This Amendment shall commence immediately upon the date the last required signature is affixed hereto, (Effective Date), and shall remain in full force and effect through the term of the Contract, as amended, unless terminated at an earlier date pursuant to the provisions of the Contract, or pursuant to federal or state statute, rule or regulation.

4. Amendments.

A. The second sentence of Section 3 of the original Contract is hereby amended to read as follows:

The term of this Contract is from the date of last signature through December 31, 2018.

5. Amended Responsibilities of the Consultant.

Responsibilities of the Consultant have not changed.

6. Amended Responsibilities of the Commission.

Responsibilities of the Commission have not changed.

7. Special Provisions.

A. Same Terms and Conditions. With the exception of items explicitly delineated in this Amendment, all terms and conditions of the original Contract, and any previous amendments, between the Commission and the Consultant, including but not limited to sovereign immunity, shall remain unchanged and in full force and effect.

B. Counterparts. This Amendment may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Amendment. Delivery by the Consultant of an originally signed counterpart of this Amendment by facsimile or PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

8. General Provisions.

A. Entirety of Contract. The Original Contract consisting of twelve (12) pages, Exhibit A consisting of twelve (12) pages, and Exhibit B consisting of one (1) page, and Amendment One, consisting of three (3) pages, represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements whether written or oral.

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9. Signatures. IN WITNESS THEREOF, the parties to this Amendment through their duly authorized representatives have executed this Amendment on the days and dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Amendment as set forth herein.

This Amendment is not binding on either party until approved by A&I Procurement and the Governor of the State of Wyoming or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____
David Evans Date
Chairman

_____ _____
Kellen Lancaster Date
Secretary

ENGINEERING ANALYTICS, INC.

_____ _____
Daniel Overton, President Date
Employer Identification Number: 26-1853339

ATTORNEY GENERAL'S OFFICE APPROVAL AS TO FORM

_____ _____
Tyler M. Renner Date
Assistant Attorney General

THE STATE OF WYOMING
Water Development Office
6920 YELLOWTAIL ROAD TELEPHONE: (307) 777-7626 CHEYENNE, WY 82002

MEMORANDUM

DATE: May 31, 2018

TO: Wyoming Water Development Commission

FROM: Andrew Linch, P.E., Project Manager

SUBJECT: Glendo Reservoir Full Utilization, Level II Study —Amendment No. 2

This memo is to serve as an explanation for Amendment No. 2, which is to extend the Contract Expiration date for the referenced study. The current Contract expiration date is June 30, 2018, and this amendment is to extend that date until December 31, 2018.

To date, the Consultant has been engaged in completing this Level II study, but due to several factors, requests a time extension to bring the Project to completion. Currently, the Consultant is assembling the draft report and expects to have it submitted to the WWDO in the next few weeks. The compilation of the draft report was delayed for the reasons explained below.

Generally, due to the complex nature of the Project and the Office's observation of the firm's limited progress on the Project during the transition period when the original firm (Riverside Technology, Inc.) was purchased by Research Triangle Institute dba RTI International, it has taken the Consultant longer than anticipated to complete the original Contract schedule. Furthermore, in response to comments from the Army Corps of Engineers (USACE) Omaha office on October 23, 2017, the Consultant explored a secondary modeling strategy for the Project. After discussing the revised modeling strategy in detail with the USACE, it was decided to move forward with the original modeling approach since it provided the potential for more benefits to be realized from the Project. However, upon further discussions with State Parks, the increase in impacts to their operations and facilities was determined to be too great. Ultimately, it was decided to move forward with the secondary modeling strategy developed from the original USACE comments. Needless to say, the evolution of this modeling approach and the additional coordination with agency personnel, which took longer than expected, suspended the report development period.

The Glendo Reservoir Full Utilization Project is a water development initiative in Governor Mead's 2015 Wyoming Water Strategy and being that the dam is a Reclamation facility with USACE oversight and the Project could impact State Parks, it is paramount to the Project's advancement that all details are coordinated thoroughly with the involved agencies.

In short, Amendment No. 2 to the Project serves to extend the current Contract expiration date to provide the additional time needed to coordinate with the affected agencies and wrap up the final report and results presentation.

Encl.
Amendment No. 2 to Consultant Contract for Services No. 05SC0296633
Glendo Reservoir Full Utilization, Level II Study

AMENDMENT TWO TO
CONSULTANT CONTRACT FOR SERVICES NO. 05SC0296633
GLENDO RESERVOIR FULL UTILIZATION
LEVEL II STUDY BETWEEN
WYOMING WATER DEVELOPMENT COMMISSION
AND
RESEARCH TRIANGLE INSTITUTE DBA RTI INTERNATIONAL

1. Parties. This Amendment is made and entered into by and between the Wyoming Water Development Commission [Commission], whose address is: 6920 Yellowtail Road, Cheyenne, Wyoming 82002; and Research Triangle Institute dba RTI International [Consultant], whose address is: 3040 Cornwallis Road, Research Triangle Park, NC 27709.

2. Purpose of Amendment. This Amendment shall constitute the second amendment to the Contract between the Commission and the Consultant. The purpose of this Amendment is to: extend the term of the Contract through December 31, 2018. The Contract amount is not changed by this Amendment.

The original Contract, dated June 15, 2016, required the Consultant to render certain technical and professional services for a total Contract amount of two hundred ninety-six thousand, nine hundred eighty-four dollars ($296,984.00) with an expiration date of June 30, 2018.

Amendment One, dated March 21, 2017 amended the Contract to acknowledge the acquisition of specific assets of Riverside Technology, Inc. by Research Triangle Institute dba RTI International. The Contract amount and expiration date were not changed by this Amendment.

3. Term of the Amendment. This Amendment shall commence immediately upon the date the last required signature is affixed hereto, and shall remain in full force and effect through the term of the Contract, as amended, unless terminated at an earlier date pursuant to the provisions of the Contract, or pursuant to federal or state statute, rule or regulation.

4. Amendments.

A. The second sentence of Section 3 of the original Contract is hereby amended to read as follows:

The term of this Contract is from the date of last signature through December 31, 2018.

5. Amended Responsibilities of the Consultant.

Responsibilities of the Consultant have not changed.

6. Amended Responsibilities of the Commission.

Responsibilities of the Commission have not changed.

7. Special Provisions.

A. Same Terms and Conditions. With the exception of items explicitly delineated in this Amendment, all terms and conditions of the original Contract, and any previous amendments, between the Commission and the Consultant, including but not limited to sovereign immunity, shall remain unchanged and in full force and effect.

B. Counterparts. This Amendment may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Amendment. Delivery by the Consultant of an originally signed counterpart of this Amendment by facsimile or PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

8. General Provisions.

A. Entirety of Contract. The Original Contract consisting of twelve (12) pages, Exhibit A consisting of twelve (12) pages, and Exhibit B consisting of three (3) pages, Amendment One, consisting of three (3) pages, and Amendment Two, consisting of three (3) pages represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements whether written or oral.

THE REMAINDER OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

9. Signatures. IN WITNESS THEREOF, the parties to this Amendment through their duly authorized representatives have executed this Amendment on the days and dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Amendment as set forth herein.

This Amendment is not binding on either party until approved by A&I Procurement and the Governor of the State of Wyoming or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____

David Evans Date
Chairman

_____ _____

Kellen Lancaster Date
Secretary

RESEARCH TRIANGLE INSTITUTE DBA RTI INTERNATIONAL

_____ _____

Alicia Brown, Sr. Contracting Officer Date
Employer Identification Number: 56-0686338

ATTORNEY GENERAL'S OFFICE APPROVAL AS TO FORM

_____ _____

Tyler M. Renner Date
Assistant Attorney General

BEDFORD WATER SUPPLY MASTER PLAN, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Sunrise Engineering, Inc. [Consultant], P.O. Box 609, 47 E. 4th Avenue, Afton, WY 83110.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed eighty-two thousand three hundred and two dollars ($82,302).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
Task 1. Project Meetings	$ 1,634
Task 2. Information Review	$ 3,370
Task 3. Inventory, Evaluation, and GIS	$ 10,191
Task 4. Hydraulic Model	$ 3,436
Task 5. Water Source	$ 12,300
Task 6. System Losses and Leak Detection	$ 8,185
Task 7. Growth and Demand Projections	$ 5,390
Task 8. Recommendations and Cost Estimates	$ 12,063
Task 9. Water System Financing	$ 3,443
Task 10. Draft Report and Presentations	$ 14,469
Task 11. Final Report and Deliverables	$ 7,821
Total Project Cost	**$ 82,302**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

E. Withholding of Payment. If a work element has not been received by the Commission by the dates established in Attachment A, the Commission may withhold all payments beginning with the month following that date until such deficiency has been corrected.

F. Final Payment. The final payment shall be made upon acceptance of the final report and receipt of the final billing.

5. Responsibilities of Consultant.

A. Scope of Services. The Consultant shall perform the specific services required under this Contract in a satisfactory and proper manner as outlined in Attachment A.

B. Personnel. All of the services required hereunder will be performed by the Consultant or under its supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized, licensed, or permitted under state law to perform such services, if state law requires such authorization, license, or permit.

C. Subcontracts.

(i) Approval Required for Subcontracts. Any subcontractors and outside associates or consultants required by the Consultant in connection with the services, work performed or rendered under this Contract will be limited to such individuals or firms as were specifically identified in the proposal and agreed to during negotiations or are specifically authorized by the Commission during the performance of this Contract. The Consultant shall submit a list of the proposed subcontractors, associates or consultants; the scope and extent of each subcontract; and the dollar amount of each subcontract prior to Contract execution to the Commission for approval. During the performance of the Contract, substitutions in or additions to such subcontracts, associates, or consultants will be subject to the prior approval of the Commission. The Commission approval of subcontractors will not relieve the Consultant from any responsibilities outlined in this Contract. The Consultant shall be responsible for the actions of the subcontractors, associates, and sub-consultants.

(ii) Billings for Subcontractors. Billings for subcontractor, associates or sub-consultants services will not include any mark up. The subcontract costs will be billed to the Commission at the actual costs as billed to the Consultant. Subcontract costs will be documented by attaching subcontractor billings to the Consultant's billing submittals. Subcontractors will utilize billing forms provided by the Office, or alternate forms if approved in advance by the Office project manager.

(iii) Copies of Subcontracts. The Consultant shall provide to the Commission copies of each sub-contractor contract immediately following execution with the subcontractor. All subcontracts between the Consultant and a subcontractor shall

refer to and conform to the terms of this Contract. However, nothing in this Contract shall be construed as making the Commission a party of any subcontract entered between the Consultant and a subcontractor.

D. Requests from the Commission. The Consultant shall be responsible and responsive to the Commission and the Office in their requests and requirements related to the scope of this Contract.

E. Presentation of Data. The Consultant shall select and analyze all data in a systematic and meaningful manner so as to contribute directly in meeting the objectives of the project, and shall present this information clearly and concisely, in a professional and workmanlike manner.

F. Draft of Final Report. The Consultant shall provide to the Commission in Cheyenne, Wyoming, a draft of the final report covering all work elements of the project including maps, charts, conclusions and recommendations prior to the publication of any final report and no later than the date specified in Attachment A. The Commission will respond with written comments to the Consultant as soon as possible. The Consultant will address the comments of the Commission in the final report.

G. Project Completion Report. A final project completion report in the form described in Attachment A shall be submitted to the Commission by the date specified in Attachment A.

H. Reports, Maps, Plans, Models and Documents. One (1) copy of maps, plans, worksheets, logs, field notes or other documents prepared under this Contract, and one (1) copy of each unpublished report prepared under this Contract shall be submitted to the Commission. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. All user manuals shall be submitted by the Consultant to Commission providing complete documentation of computer programs developed under this Contract. The user manual shall also specify the source code language and the type of computer equipment necessary to operate the program(s). Any programs or computer software generated as a part of this Contract shall be the sole property of the Commission.

6. Responsibilities of the Commission.

A. Designated Representative. The Director of the Office shall act as the Commission's representative with respect to the Consultant’s service to be performed under this Contract and shall have complete authority to transmit instructions, receive

information, and interpret the Commission's policies and decisions with respect to services covered by this Contract.

B. Data to be Furnished to the Consultant. All information, data, reports, and maps as are available to the Commission and necessary for the carrying out of the Scope of Services set forth herein shall be furnished to the Consultant without charge and the Office shall cooperate with the Consultant in every way possible in the carrying out of the project.

C. Review Reports. The Office shall examine all studies, reports, sketches, opinions of the construction costs, and other documents presented by the Consultant to the Commission and shall promptly render in writing the Commission's decisions pertaining thereto within the time periods specified in Attachment A.

D. Provide Criteria. The Office shall provide all criteria and full information regarding its requirements for the project.

7. <u>Special Provisions</u>.

A. No Finder's Fees. No finder's fee, employment agency fee, or other such fee related to the procurement of this Contract, shall be paid by either party.

B. Publicity. Any publicity given to the projects, programs or services provided herein, including, but not limited to, notices, information, pamphlets, press releases, research, reports, signs, and similar public notices in whatever form, prepared by or for the Contractor, shall identify the Agency as the sponsoring agency and shall not be released without prior written approval from the Commission.

C. Monitoring Activities. The Commission shall have the right to monitor all activities related to this Contract that are performed by Consultant or its subcontractors. This shall include, but not be limited to, the right to make site inspections at any time and with reasonable notice; to bring experts and consultants on site to examine or evaluate completed work or work in progress; to examine the books, ledgers, documents, papers, and records pertinent to this Contract; and to observe all Consultant personnel in every phase of performance of Contract related work.

D. Kickbacks. The Consultant certifies and warrants that no gratuities, kickbacks, or contingency fees were paid in connection with this Contract, nor were any fees, commissions, gifts, or other considerations made contingent upon the award of this Contract. If the Consultant breaches or violates this warranty, the Commission may, at its discretion, terminate this Contract without liability to the Commission, or deduct from the Contract price or consideration, or otherwise recover, the full amount of any commission, percentage, brokerage, or contingency fee.

8. General Provisions.

A. Amendments. Any changes, modifications, revisions, or amendments to this Contract which are mutually agreed upon by the parties to this Contract shall be incorporated by written instrument, executed by all parties to this Contract.

B. Applicable Law, Rules of Construction, and Venue. The construction, interpretation, and enforcement of this Contract shall be governed by the laws of the State of Wyoming, without regard to conflicts of law principles. The terms "hereof," "hereunder," "herein," and words of similar import, are intended to refer to this Contract as a whole and not to any particular provision or part. The Courts of the State of Wyoming shall have jurisdiction over this Contract and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

C. Assignment Prohibited and Contract Shall Not be Used as Collateral. Neither party shall assign or otherwise transfer any of the rights or delegate any of the duties set out in this Contract without the prior written consent of the other party. The Consultant shall not use this Contract, or any portion thereof, for collateral for any financial obligation, without the prior written permission of the Commission.

D. Audit and Access to Records. The Commission and its representatives shall have access to any books, documents, papers, electronic data, and records of the Consultant which are pertinent to this Contract. The Consultant shall immediately, upon receiving written instruction from the Commission, provide to any independent auditor or accountant all books, documents, papers, electronic data, and records of the Consultant which are pertinent to this Contract. The Consultant shall cooperate fully with any such independent auditor or accountant during the entire course of any audit authorized by the Commission.

E. Availability of Funds. Each payment obligation of the Commission is conditioned upon the availability of government funds which are appropriated or allocated for the payment of this obligation and which may be limited for any reason including, but not limited to, congressional, legislative, gubernatorial, or administrative action. If funds are not allocated and available for continued performance of the Contract, the Contract may be terminated by the Commission at the end of the period for which the funds are available. The Commission shall notify the Consultant at the earliest possible time of the services which will or may be affected by a shortage of funds. No penalty shall accrue to the Commission in the event this provision is exercised, and the Commission shall not be obligated or liable for any future payments due or for any damages as a result of termination under this section.

F. Award of Related Contracts.

(i) The Commission may undertake or award supplemental or successor contracts for work related to this Contract or may award contracts to other contractors for work related to this Contract. The Consultant shall cooperate fully with other contractors and the Commission in all such cases.

(ii) The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional phases beyond the scope of services included in this Contract.

G. Certificate of Good Standing. The Consultant shall provide to the Commission a Certificate of Good Standing from the Wyoming Secretary of State, or other proof that Consultant is authorized to conduct business in the State of Wyoming, if required, before performing work under this Contract. Consultant shall ensure that all annual filings and corporate taxes due and owing to the Secretary of State's office are up-to-date before signing this Contract.

H. Compliance with Laws. The Consultant shall keep informed of and comply with all applicable federal, state, and local laws and regulations in the performance of this Contract.

I. Confidentiality of Information. All documents, data compilations, reports, computer programs, photographs, data, and other work provided to or produced by the Consultant in the performance of this Contract shall be kept confidential by the Consultant unless written permission is granted by the Commission for its release. If and when Consultant receives a request for information subject to this Contract, Consultant shall notify Commission within ten (10) days of such request and shall not release such information to a third party unless directed to do so by Commission.

J. Conflicts of Interest

(i) Consultant shall not engage in providing consultation or representation of clients, agencies or firms which may constitute a conflict of interest which results in a disadvantage to the Commission or a disclosure which would adversely affect the interests of the Commission. Consultant shall notify the Commission of any potential or actual conflicts of interest arising during the course of the Consultant's performance under this Contract. This Contract may be terminated in the event a conflict of interest arises. Termination of the Contract will be subject to a mutual settlement of accounts. In the event the contract is terminated under this provision, the Consultant shall take steps to insure that the file, evidence, evaluation and data are provided to the Commission or its designee. This does not prohibit or affect the Consultant's ability to engage in consultations, evaluations or representation under agreement with other agencies, firms, facilities, or attorneys so long as no conflict exists.

(ii) A conflict of interest warranting termination of this Contract may include, but is not necessarily limited to, acting on behalf of a client in an adversarial proceeding against the State of Wyoming, its agencies, boards, commissions, or the University of Wyoming, or initiating suits in equity including injunctions, declaratory judgments, writs of prohibition, or quo warranto.

K. Entirety of Contract. This Contract, consisting of fourteen (14) pages, Attachment A, consisting of sixteen (16) pages, and Attachment B, consisting of two (2) pages, represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements, whether written or oral. In the event of a conflict or inconsistency between the language of this Contract and the language of any attachment or document incorporated by reference, the language of this Contract shall control.

L. Ethics. Consultant shall keep informed of and comply with the Wyoming Ethics and Disclosure Act (Wyo. Stat. § 9-13-101, *et seq.*), and any and all ethical standards governing Consultant's profession.

M. Force Majeure. Neither party shall be liable for failure to perform under this Contract if such failure to perform arises out of causes beyond the control and without the fault or negligence of the nonperforming party. Such causes may include, but are not limited to, acts of God or the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, and unusually severe weather. This provision shall become effective only if the party failing to perform immediately notifies the other party of the extent and nature of the problem, limits delay in performance to that required by the event, and takes all reasonable steps to minimize delays.

N. Indemnification. The Consultant shall release, indemnify, and hold harmless the State, the Commission, and their officers, agents, and employees from any and all claims, suits, liabilities, court awards, damages, costs, attorneys' fees, and expenses arising out of Consultant's failure to perform any of Consultant's duties and obligations hereunder or in connection with the negligent performance of Consultant's duties or obligations, including, but not limited to, any claims, suits, liabilities, court awards, damages, costs, attorneys' fees, and expenses arising out of Consultant's negligence or other tortious conduct.

O. Independent Contractor. The Consultant shall function as an independent contractor for the purposes of this Contract and shall not be considered an employee of the State of Wyoming for any purpose. Consistent with the express terms of this Contract, the Consultant shall be free from control or direction over the details of the performance of services under this Contract. The Consultant shall assume sole responsibility for any debts or liabilities that may be incurred by the Consultant in fulfilling the terms of this Contract and shall be solely responsible for the payment of all federal, state, and local taxes which may accrue because of this Contract. Nothing in this Contract shall be interpreted as authorizing the Consultant or its agents or employees to act as an

agent or representative for or on behalf of the State of Wyoming or the Commission or to incur any obligation of any kind on behalf of the State of Wyoming or the Commission. The Consultant agrees that no health or hospitalization benefits, workers' compensation, unemployment insurance, or similar benefits available to State of Wyoming employees will inure to the benefit of the Consultant or the Consultant's agents or employees as a result of this Contract.

P. Notices. All notices arising out of, or from, the provisions of this Contract shall be in writing either by regular mail, e-mail, or delivery in person at the addresses provided under this Contract. Notice provided by e-mail shall be delivered as follows:

Office: Kevin J. Boyce, P.G., kevin.boyce@wyo.gov, (307) 777-7626.
Consultant: Jason Linford, P.E., jlinford@sunrise-eng.com, (307) 885-8500.

Q. Notice of Sale or Transfer. The Consultant shall provide the Commission with notice of any sale, transfer, merger, or consolidation of the assets of the Consultant. Such notice shall be provided in accordance with the notices provision of this Contract and, when possible and lawful, in advance of the transaction. If the Commission determines that the sale, transfer, merger, or consolidation is not consistent with the continued satisfactory performance of the Consultant's obligations under this Contract, then the Commission may, at its discretion, terminate or renegotiate the Contract.

R. Ownership and Destruction of Documents and Information. Commission owns all documents, data compilations, reports, computer programs, photographs, data, and other work provided to or produced by the Consultant in the performance of this Contract. Upon termination of services, for any reason, Consultant agrees to return all such original and derivative information and documents to the Commission in a useable format. In the case of electronic transmission, such transmission shall be secured. The return of information by any other means shall be by a parcel service that utilizes tracking numbers. Upon Commission's verified receipt of such information, Consultant agrees to physically and electronically destroy any residual Commission-owned data, regardless of format, and any other storage media or areas containing such information. Consultant agrees to provide written notice to Commission confirming the destruction of any such residual Commission-owned data.

S. Patent or Copyright Protection. The Consultant recognizes that certain proprietary matters or techniques may be subject to patent, trademark, copyright, license or other similar restrictions, and warrants that no work performed by the Consultant or its subcontractors will violate any such restriction. The Consultant shall defend and indemnify the Commission for any infringement or alleged infringement of such patent, trademark, copyright, license, or other restrictions.

T. Prior Approval. This Contract shall not be binding upon either party, no services shall be performed, and the Wyoming State Auditor shall not draw warrants

for payment, until this Contract has been fully executed, approved as to form by the Office of the Attorney General, filed with and approved by A&I Procurement, and approved by the Governor of the State of Wyoming, or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

U. Insurance Requirements.

(i) During the term of this Contract, the Consultant shall obtain and maintain, and ensure that each subcontractor obtains and maintains, each type of insurance coverage specified in Insurance Coverage, below.

(ii) All policies shall be primary over any insurance or self-insurance program carried by the Consultant or the State of Wyoming. All policies shall include clauses stating that each insurance carrier shall waive all rights of recovery under subrogation or otherwise against Consultant or the State, its agencies, institutions, organizations, officers, agents, employees, and volunteers.

(iii) The Consultant shall provide Certificates of Insurance to the Commission verifying each type of coverage required herein. If the policy is a "claims made" policy instead of an "occurrence" policy, the information provided shall include, but is not limited to, retroactive dates and extended reporting periods or tails.

(iv) All policies shall be endorsed to provide at least thirty (30) days advance written notice of cancellation to the Commission. A copy of the policy endorsement shall be provided with the Certificate of Insurance.

(v) In case of a breach of any provision relating to Insurance Requirements or Insurance Coverage, the Commission may, at the Commission's option, obtain and maintain, at the expense of the Consultant, such insurance in the name of the Consultant, or subcontractor, as the Commission may deem proper and may deduct the cost of obtaining and maintaining such insurance from any sums which may be due or become due to the Consultant under this Contract.

(vi) All policies required by this Contract shall be issued by an insurance company with an A.M. Best rating of A- VIII or better.

(vii) The Commission reserves the right to reject any policy issued by an insurance company that does not meet these requirements.

V. Insurance Coverage. The Consultant shall not commence work under this Contract until it has obtained all the insurance required by the Commission and the State. The Consultant shall obtain and maintain the following insurance in accordance with the Insurance Requirements set forth above:

(i) Commercial General Liability Insurance. Commercial general liability insurance (CGL) coverage, occurrence form, covering liability claims for bodily injury and property damage arising out of premises, operations, products and completed operations, and personal and advertising injury, with minimum limits as follows:

(a) $1,000,000.00 each occurrence;
(b) $1,000,000.00 personal injury and advertising injury;
(c) $2,000,000.00 general aggregate; and
(d) $2,000,000.00 products and completed operations.

The CGL policy shall include coverage for Explosion, Collapse and Underground property damage. This coverage may not be excluded by endorsement.

(ii) Workers' Compensation and Employer's Liability Insurance. Employees hired in Wyoming to perform work under this Contract shall be covered by workers' compensation coverage obtained through the Wyoming Department of Workforce Services' workers' compensation program, if statutorily required. Employees brought into Wyoming from Consultant's home state to perform work under this Contract shall be covered by workers' compensation coverage obtained through the Wyoming Department of Workforce Services' workers' compensation program or other state or private workers' compensation insurance approved by the Wyoming Department of Workforce Services, if statutorily required.

The Consultant shall provide the Commission with a Certificate of Good Standing or other proof of workers' compensation coverage for all of its employees who are to perform work under this Contract, if such coverage is required by law. If workers' compensation coverage is obtained by Consultant through the Wyoming Department of Workforce Services' workers' compensation program, Consultant shall also obtain Employer's Liability "Stop Gap" coverage through an endorsement to the CGL policy required by this Contract, with minimum limits as follows:

(a) Bodily Injury by Accident: $1,000,000.00 each accident;
(b) Bodily Injury by Disease: $1,000,000.00 each employee; and
(c) Bodily Injury by Disease: $1,000,000.00 policy limit.

(iii) Unemployment Insurance. The Consultant shall be duly registered with the Department of Workforce Services and obtain such unemployment insurance coverage as required. The Consultant shall supply Commission with a Certificate of Good Standing or other proof of unemployment insurance coverage.

(iv) Automobile Liability Insurance. Automobile liability insurance covering any auto (including owned, hired, and non-owned) with minimum limits of $1,000,000.00 each accident combined single limit.

(v) Professional Liability or Errors and Omissions Liability Insurance. Professional liability insurance or errors and omissions liability insurance protecting against any and all claims arising from the Consultant's alleged or real professional errors, omissions, or mistakes in the performance of professional duties under this Contract, with minimum limits as follows:

(a) $1,000,000.00 each occurrence; and
(b) $1,000,000.00 general aggregate.

The policy shall have an extended reporting period of two (2) years.

W. Severability. Should any portion of this Contract be judicially determined to be illegal or unenforceable, the remainder of the Contract shall continue in full force and effect, and the parties may renegotiate the terms affected by the severance.

X. Sovereign Immunity and Limitations. Pursuant to Wyo. Stat. § 1-39-104(a), the State of Wyoming and Commission expressly reserve sovereign immunity by entering into this Contract and specifically retain all immunities and defenses available to them as sovereigns. The parties acknowledge that the State of Wyoming has sovereign immunity and only the Wyoming Legislature has the power to waive sovereign immunity. Designations of venue, choice of law, enforcement actions, and similar provisions shall not be construed as a waiver of sovereign immunity. The parties agree that any ambiguity in this Contract shall not be strictly construed, either against or for either party, except that any ambiguity as to sovereign immunity shall be construed in favor of sovereign immunity.

Y. Taxes. The Consultant shall pay all taxes and other such amounts required by federal, state and local law, including, but not limited to, federal and social security taxes, workers' compensation, unemployment insurance, and sales taxes.

Z. Termination of Contract. This Contract may be terminated, without cause, by the Commission upon thirty (30) days written notice. This Contract may be terminated immediately for cause if the Consultant fails to perform in accordance with the terms of this Contract.

AA. Third-Party Beneficiary Rights. The parties do not intend to create in any other individual or entity the status of third-party beneficiary, and this Contract shall not be construed so as to create such status. The rights, duties, and obligations contained in this Contract shall operate only between the parties to this Contract. The provisions of this Contract are intended only to assist the parties in determining and performing their obligations under this Contract.

BB. Time is of the Essence. Time is of the essence in all provisions of the Contract.

CC. Titles Not Controlling. Titles of sections and subsections are for reference only and shall not be used to construe the language in this Contract.

DD. Waiver. The waiver of any breach of any term or condition in this Contract shall not be deemed a waiver of any prior or subsequent breach. Failure to object to a breach shall not constitute a waiver.

EE. Counterparts. This Contract may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Contract. Delivery by the Consultant of an originally signed counterpart of this Contract by PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

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9. Signatures. The parties to this Contract, either personally or through their duly authorized representatives, have executed this Contract on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Contract.

The Effective Date of this Contract is the date of the signature last affixed to this page.

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____
David Evans Date
Chairman

_____ _____
Kellen Lancaster Date
Secretary

SUNRISE ENGINEERING, INC.

_____ _____
Jason J. Linford, P.E., Principal Engineer Date
Employer ID #87-0395347

ATTORNEY GENERAL'S OFFICE: APPROVAL AS TO FORM

_____ _____
Tyler M. Renner Date
Assistant Attorney General

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. (42°53'58" N., 110°56'16" W., Approx.)
   The Greater Bedford Water & Sewer District is centered on the Town of Bedford (unincorporated) in Lincoln County. The area is situated in the eastern margins of the Lower Star Valley, in the Salt River drainage, two miles east and southeast of the Town of Thayne.

2. Purpose. To perform a Level I study for the Greater Bedford Water & Sewer District [Sponsor].

3. History. "The Bedford water system storage tank located in Strawberry [Creek] Canyon is near capacity according to DEQ rules. The District would like to explore options to increase storage in the existing steel tank (i.e. add a ring) or construct a second tank at another location. Currently, the "Big Spring" is the primary source for the system. Also, the portion of the District upstream of the Strawberry Canyon PRV (see map) can only be supplied from the spring. The [Bedford No. 1] well cannot pump water upstream of the PRV. The District would be interested in exploring additional water supply options as EPA regulations of springs continue to be more stringent." (From funding application received August 11, 2017.)

   Previous WWDC Planning Studies:
   http://library.wrds.uwyo.edu/wwdcrept/Bedford/Bedford-Water_Supply_Level_I-Final_Report-1986.html

   http://library.wrds.uwyo.edu/wwdcrept/Bedford/Bedford-Water_Supply_Level_II-Final_Report-1987.html

   http://library.wrds.uwyo.edu/wwdcrept/Thayne/Thayne_Area-Water_Supply_Level_I_Study-Final_Report-1995.html

   http://library.wrds.uwyo.edu/wwdcrept/Thayne/Thayne_Area-Water_Supply_Level_II_Study-Final_Report-1997.html

http://library.wrds.uwyo.edu/wwdcrept/Thayne/Thayne-Area_Water_Supply_Level_II_Turnerville_Water_Supply-Final_Report-1998.html

http://library.wrds.uwyo.edu/wwdcrept/Star_Valley/Star_Valley-Regional_Master_Plan-Final_Report-2009.html

http://library.wrds.uwyo.edu/wwdcrept/Star_Valley/Star_Valley-Regional_Master_Plan_Water_System_Investigation_and_Evaluations-Book_1_of_2-2009.html

http://library.wrds.uwyo.edu/wwdcrept/Star_Valley/Star_Valley-Regional_Master_Plan_Water_System_Investigation_and_Evaluations-Book_2_of_2-2009.html

http://waterplan.state.wy.us/plan/snake/snake-plan.html

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to

operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	

Contingency (Subtotal #3 x 15%) $_____
Construction Cost Total (Subtotal #4) $_____

Total Project Cost (Subtotal #1 + Subtotal #4) $_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and

Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Project Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

Additional project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant

should assume a minimum of one (1) public project meeting in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

Task 2. Information Review

The Consultant will gather and review all existing information related to the Sponsor's water supply and distribution system. This includes information available through the Sponsor, the funding application submitted by the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer's Office, Wyoming Department of Environmental Quality Water Quality Division (DEQ), U.S. EPA Region 8, USDA Forest Service, Federal Energy Regulatory Commission (FERC), Lincoln County and any other sources as appropriate. The Consultant shall coordinate with Sponsor and system operator to obtain all past relevant studies and data that need to be reviewed. Improvements recommended to the water system in any of these reports should be documented. In addition, the status of those recommended improvements should be identified (i.e.: disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies and other regulations that may affect this project. The Consultant shall provide a summary of existing information in the final report.

Task 3. Inventory, Evaluation, and GIS

The Consultant shall confer with the Sponsor and system operator to identify specific problem areas and concerns that should be focused on during this task. The Consultant shall then propose the extent of inventory and evaluation to be performed in this task. Inventory and evaluations shall primarily focus on facilitating the objectives of this project that in part include addressing the Sponsor's areas of concern, identifying system deficiencies, and formulating improved GIS mapping. The Consultant shall coordinate with the Office project manager and Sponsor regarding the expectations and limitations of this effort and shall be mindful of the following intentions of this task:

a. Inventory and evaluate the existing infrastructure to determine its ability to meet current water demands and future demands developed in Task 7.

    i. Identify those components that presently require repair or replacement.

    ii. Identify those components that will require repair or replacement within the next twenty (20) years and provide a schedule for the needed improvements as described in Task 8.

b. Assess the capacity and serviceability of existing water treatment facilities, transmission and distribution pipelines, storage tanks, pump stations, PRV stations, flow monitoring devices, and other major components of the water supply system as applicable. Identify deficiencies and make recommendations for improvements needed to address these limitations. In conjunction with the hydraulic modeling task, pipe materials and pressure classes shall be examined in terms of suitability to provide adequate service.

The Consultant shall evaluate the management and operation of the public water system in the study area to determine if procedural changes would be beneficial. If so, the Consultant shall detail those changes. Results of the hydraulic model simulations can serve as a basis for this task along with observations and discussions with system operators. The Consultant shall evaluate the existing water metering system to ensure water bills can be or are based on metered usage. The Consultant may offer suggestions relating to the existing billing and metering procedures.

The Consultant shall confer with the Sponsor to ascertain the Sponsor existing GIS, determining where the files are housed (i.e.: with a Consultant or with the Sponsor), the extent of the mapping, and required updates. The Consultant shall then propose the scope of further mapping to be completed in this task. Updates to the Sponsor's existing GIS are expected to include verification of the accuracy of the water system mapping in terms of piping connectivity, looping, location of system components, etc. Coordinate with the Sponsor during field work so the Sponsor may perform any required pot-holing to help verify and true-up the Sponsor's existing data.

All mapping and corresponding data sets, existing and updated, shall be consolidated into a comprehensive GIS. Mapping shall be extended as needed to facilitate objectives of this project that include the hydraulic model, addressing the Sponsor's areas of concern, identification of system deficiencies, and development of a modern and efficient GIS. Coordination shall take place with the Sponsor and Office project manager on field survey limitations and any mapping logistics.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC's home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

b. Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

c. Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

Deliverables to the Sponsor shall include at least one set of large size hard copy printouts of the service areas and associated features for the Sponsor's use. These items are in addition to the GIS deliverables described in Task 11. The Consultant shall coordinate with the Office project manager and Sponsor on final production of all hard copy mapping media and its delivery.

Task 4. Hydraulic Model

In conjunction with the updated GIS and water system information obtained in Task 3, the Consultant shall update the Sponsor's existing hydraulic model of its water system, if available. The Consultant shall model the current system and proposed system improvements. Acceptable software platforms include the following or an Office approved equal:

- Innovyze/MWH Soft: InfoWater (ArcGIS based); H2OMap Water (stand-alone); or H2ONet (AutoCAD based)
- Bentley/Haestad Methods: WaterGEMS (ArcGIS based); WaterCAD (AutoCAD based or stand-alone)

The model shall analyze the system using an extended period simulation and shall be properly calibrated to available data sets or known system behavior. The Consultant shall evaluate the adequacy of the water transmission and distribution lines, pumping stations, and storage capacities to meet current and future pressure and flow requirements based on maximum day demands. System storage shall be modeled in terms of volume and water quality (i.e.: tank turnover, water age, etc.). System pressures shall be determined in the model and compared against the pressure classes of existing pipes to identify problem areas. The Consultant shall consider domestic, rural, commercial, municipal, and industrial demands as needed in the evaluation (i.e.: hospitals, colleges, golf courses, hotels, trailer park, schools, etc.) and incorporate planned development areas and all independent water systems that are supplied from the Sponsor's system. All pressure zones shall be properly accounted for and simulated in the model. All pump stations shall be simulated in the model, and the Consultant should assess the adequacy of the existing pumps in terms of capacity, hydraulic head, run-time, variable frequency drive (VFD) operation, etc. as deemed necessary. The Consultant shall use the model to size new pumps, transmission and distribution lines, storage, and other facilities as needed.

In terms of fire flow, the Consultant shall coordinate with the Sponsor to ascertain the Sponsor's expectations (rural vs. urban ISO for fire protection) in providing fire flow to its service areas and the subsequent extent of fire flow simulations required. The model shall incorporate the recommended system upgrades or modifications and shall be detailed enough to satisfy the needs of the project.

The Consultant shall construct and execute the hydraulic model to determine system capacity limits in terms of maximum growth potential. Any inactive or planned water taps within the system shall be incorporated into the model. The Consultant shall investigate whether the system has the capacity to effectively serve these taps should they eventually become active.

Within the final report, the Consultant shall fully describe all modeling efforts particularly in terms of the model extents and acquisition of model input, including but not limited to the following:

- Nodal Elevations
- Demands
- Diurnal Curve(s)
- Pump Curves
- Valve Settings
- Pipe Diameters and Material
- Pipe Friction Factors
- Tank Geometry

Task 5. Water Source

The Consultant shall gather and analyze data and information as needed to examine the Sponsor's water supply sources for its public water supply system. Capacities, diversion rates, pumping rates, pump capacities, and water treatment plant capacities shall be investigated as applicable. The Consultant shall determine if the water supply sources are limiting the ability to meet present and future water demands and if so, identify water supply alternatives to meet those demands. The Sponsor's existing main transmission lines shall be assessed in terms of sizing, condition, and possible redundancy use. Any future potential raw water storage projects that the Sponsor is considering shall be documented and discussed.

The Consultant shall review existing water quality reports to determine if water supply sources and distributed water complies with EPA drinking water standards. If the reports indicate that the standards are not being met or suggest potential water quality problems, recommendations will be presented to mitigate these problems. Where applicable, the Consultant shall collect data on the number of households using septic systems, enhanced septic systems, sewage lagoon systems, or wastewater treatment plants to handle wastewater treatment within the Sponsor's water service area. These data will be used to determine if wastewater treatment, or lack thereof, is presently impacting the water quality or could impact the water quality of the Sponsor's water supply.

The Consultant will review the status of the Sponsor's water rights and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under each permit will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant will also review any water supply contracts held by the Sponsor and discuss their purpose and importance to the Sponsor.

Task 6. System Losses and Leak Detection

The purpose of this evaluation is to establish current water losses to help determine future water demand for the area. Water system leaks may be affecting current estimates of water demand. The area of evaluation shall include the storage, transmission, and a review of the recent distribution line leak detection survey conducted by the Sponsor. A water balance determination shall be conducted utilizing available flowmeter data at source, storage, and points of use. Results of the hydraulic model in Task 4 can serve as an indicator for potential leakage locations along with observations and discussions with system operators. This task may include acquiring a field "listening" leak location survey contractor if determined appropriate by the Office project manager. The Consultant shall evaluate the value of the field survey for transmission pipelines, provide a written recommendation regarding whether to proceed, and conduct the survey only upon written authorization of the Office project manager.

Task 7. Growth and Demand Projections

The Consultant shall develop population growth projections for the Sponsor's water service area. Planning boundaries of the service area will be based on discussions with the Sponsor as to where future growth may occur. For example, the growth may occur within the corporate limits, the existing service area, or outside of both. This may result in the consideration of an expanded water service area that could reasonably be served by the Sponsor considering the investments in infrastructure.

Historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) will be used as the basis of the projections. (Refer to http://eadiv.state.wy.us/.) Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I, and projections from other sources including, but not limited to those that may be available from the Sponsor and county planning agencies. Another information source may be population projections available in environmental impact statements generated for mineral resource development in the area. The Consultant shall provide graphic representations of each alternate population projection.

Water demand projections will be developed based on historical water use records. Alternate demand projections may be developed that consider the effects of an increasing tiered water rate system. Demand projections should include bulk water sales to rural or independent water districts or systems, industries, and others as applicable. The potential for any future high-impact water demand scenarios shall be examined.

The Consultants shall also investigate any water service regionalization opportunities that may exist to satisfy future water demands. This would involve discussing regionalization concepts with neighboring systems such as Turnerville Water & Sewer District, the Town of Thayne, and other systems in reasonable distance.

Task 8. Recommendations and Cost Estimates

The Consultant shall develop a listing and descriptions of recommendations for system improvements identified during the study. The recommendations shall address needed infrastructure capital improvement projects along with non-structural improvements suggested for the funding, operation, maintenance, and replacement of the system. The Consultant will prioritize the recommendations in coordination with the Sponsor. A schedule shall be developed that identifies a phased approach for the implementation of the recommendations in accordance with their priority.

The Consultant shall prepare construction cost estimates in tabular form for each of the recommended system improvements. The table will identify both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Attachment B, Section C.3. The Level III cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials

and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall then suggest an appropriate inflation factor that may be applied to the project's current year total cost and projected into the future per the schedule developed in this task.

Task 9. Water System Financing

The Consultant shall work with the Sponsor to acquire all necessary financial data required for this task to determine the current and anticipated future water system revenues and expenditures. To initiate this task, the Consultant shall determine if the Sponsor has a water enterprise fund in which existing water revenues allow the water system to be financially self-supporting or if the Sponsor must subsidize the water system from other budgets and revenues such as bonds, grants, etc. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.
- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses
- Provide a fund that accrues sufficient reserves to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Consultant.

The Consultant shall first use the above criteria to make recommendations on the Sponsor's current water revenue structure (rates, tap fees, and other) that would support the existing water system based on a revenue structure that encourages water conservation (tiered water rates). The current water revenues shall be compared against current water expenditures based on the last five (5) years of data (if available). The Consultant shall prepare a suggested itemized annual budget for the existing water system that would result in the system becoming and staying financially self-supporting. As an alternative, the Consultant shall consider the Wyoming RATES Program under the direction of the Wyoming Association of Rural Water Systems to perform a rate study (https://gettinggreatrates.com/consulting/WyRATES.pdf).

Next, the Consultant shall prepare two (2) funding scenarios for consideration by the Sponsor that demonstrate the adjustments in revenues that may be necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 8. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting as defined by the above criteria. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average

monthly bill for residential water users. These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These two (2) scenarios shall be presented in the draft and final reports in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e.: the Consultant shall demonstrate the necessary adjustments in water system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.
>
> Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan from WWDC (4%, 30-year term), and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF

Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/

Contact: Bill Tillman, SRF Principal Engineer

WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS
Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs
Contact: Lorraine Werner, Community Programs Director, USDA RUS
Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602
Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 10. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than May 1, 2019. Four (4) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device. The project Sponsor shall be provided a copy of this draft report for their review.

After submittal of the draft report, the Consultant shall present the draft findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 11. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office project manager 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before July 20, 2019. These final documents and deliverables shall consist of the following:

- Fifteen (15) hard copies of the final report and fifteen (15) hard copies of the executive summary. This count is inclusive of the copies previously submitted to the Office project manager. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include cost estimates. The summary should not exceed ten (10) pages.

- Five (5) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. The pdf version will be completely assembled into one stand-alone file and shall be exactly the

same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." This is in addition to delivery of hard copy mapping media as desired and described in Task 3. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

SUNRISE ENGINEERING, INC.

Work Code	Work Classification	Hourly Rate	Work Code	Work Classification	Hourly Rate
101	Engineer Intern (E.I.T.) I	$ 96	451	Training Specialist I	$ 77
102	Engineer Intern (E.I.T.) II	112	452	Training Specialist II	91
103	Engineer III	128	455	Training Supervisor	110
104	Engineer IV	145	456	Training Manager	123
105	Engineer V	160	460	Training Director	154
110	Principal Engineer	175	500	Funding Specialist	115
121	Electrical Eng. Int. (E.I.T.) I	99	510	Plan Reviewer	107
122	Electrical Eng. Int. (E.I.T.) II	109	511	Building Inspector I	59
123	Electrical Engineer III	134	512	Building Inspector II	82
124	Electrical Engineer IV	155	513	Building Inspector III	102
125	Electrical Engineer V	170	525	Building Official	118
126	Principal Electrical Engineer	185	604	GIS Tech IV	83
301	Engineering Tech I	75	611	GIS Analyst	105
302	Engineering Tech II	79	51	Administrative I	42
303	Engineering Tech III	95	52	Administrative II	58
304	Engineering Tech IV	120	53	Administrative III	62
311	Electrical Tech I	81	721	Water Rights Specialist I	91
312	Electrical Tech II	89	722	Water Rights Specialist II	102
313	Electrical Tech III	102	723	Water Rights Specialist III	116
314	Electrical Tech IV	112	711	Project Manager I	96
315	Electrical Tech V	125	712	Project Manager II	120
351	Construction Observer I	70	930	Survey CAD Tech	100
352	Construction Observer II	80	935	One Man Survey Crew	140
353	Construction Observer III	95	940	Survey Manager	150
354	Construction Observer IV	100	945	Registered Surveyor	158
401	CAD Drafter I	62	950	Principal Surveyor	175
402	CAD Drafter II	72			
403	CAD Drafter III	92			
404	CAD Drafter IV	98			

Reimbursable Expense Schedule

Expense	Rate
Mileage	$ 0.545 per mile
Field Vehicle (on site)	$ 50 per day
Per Diem Meals	$ 35 per day
Snowmobile/ATV & Trailer	$ 250 per day
Troxler Nuclear Density Gauge	$ 40 per day
High Density Scanner	$ 150 per hour
Material Testing Lab Work	Actual Cost
Outside Consultants, Aerial Photography, etc.	Actual Cost
Lodging	Actual Cost
Other Expenses incurred	Actual Cost

BIG LARAMIE RIVER OASIS DITCH DIVERSION REHABILITATION, LEVEL II STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Short-Elliott-Hendrickson, Incorporated [Consultant], 3535 Vadnais Center Drive, St. Paul, MN 55110-5196.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed ninety-four thousand four hundred fifty-six dollars and ten cents ($94,456.10).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
1. Project Meetings	$ 15,517.20
2. Information Review	$ 7,568.00
3. Assessment, Design, Cost Estimates	$ 43,125.20
4. Economic Analysis & Project Financing	$ 3,220.00
5. Draft Report & Presentations	$ 20,149.70
6. Final Report & Deliverables	$ 4,876.00
Total Project Cost	**$ 94,456.10**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

E. Withholding of Payment. If a work element has not been received by the Commission by the dates established in Attachment A, the Commission may withhold all payments beginning with the month following that date until such deficiency has been corrected.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: The project is located on the Laramie River, north of Laramie, WY, in Albany County, in the North Platte River Drainage.

2. Purpose: To perform a Level II study for the Big Laramie River Oasis Ditch Diversion.

3. History: The Laramie Valley Municipal Irrigation District diversion dam and headgates are in need of evaluation for structural integrity and functionality. This is the sole diversion for the District. It is very difficult to operate the ditch due to fluctuating flows in the Laramie River. The study will also investigate automation of the headgates, SCADA, debris/trash screening, fish passage, and sedimentation mitigation issues upstream of the dam.

   Previous reports in the area include:
   Upper Laramie River Watershed Study, Level I

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as

the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media

as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Please note that this project will operate on a shortened timeline compared to past WWDC studies.

Task 1. Project Meetings

A scoping meeting shall be held early in the project schedule, in the project area, to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

The Consultant shall budget for two (2) project meetings to be held in the project area. One of these meetings will be to discuss developments in the project, and one will be held at the discretion of the Office project manager depending on developments during the study. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study. In the interest of economy, meetings will be scheduled to coincide with fieldwork. The Consultant shall notify the WWDO project manager in advance of any meetings with the project sponsor.

Task 2. Information Review

The Consultant shall gather and review all existing information related to this study. This includes information available through the Sponsor, Office, Water Resources Data System (WRDS), Wyoming State Engineer's Office (SEO), Wyoming Department of Environmental Quality (DEQ), and any other sources as appropriate. The Consultant shall review and document existing access agreements, permits with other entities, and any other policies and/or regulations that may affect this project and future projects that may be identified in this study.

The Consultant shall review the status of the Sponsor's water rights and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. If applicable, historic use of water under each permit will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. If applicable, the Consultant shall also review any water supply contracts held by the Sponsor and discuss their purpose and importance to the Sponsor.

The Consultant shall review any flow records maintained by the Sponsor and work with District personnel to document typical seasonal flows. If flows are not available, it may be necessary for the Consultant to gather flow data to aid in the proper design of alternatives. The Consultant shall work with the Sponsor for gathering necessary flow data.

The Consultant shall provide a summary of the existing information, identified in this task, in the final report.

Task 3. Assessment, Design, Cost Estimates

The purpose of this task is to investigate the diversion structure and headgate. The Consultant shall assess both structures for integrity and longevity in the system. The Consultant shall perform a geotechnical investigation to provide information on the internal structure of the diversion dam and quality of the underlying soils. This will include four borings for laboratory testing and a final geotechnical report to be included in the draft and final reports. All borings will be filled and compacted with native or select fill materials when complete. The Consultant shall provide recommended projects for either the necessary repair and/or replacement of both structures, including designs and cost estimates for each project. The designs and cost estimates shall be of sufficient detail to support the application for WWDC Level III funding. Cost estimates shall be in the format described in Attachment B, Section C.3., of this document.

The Consultant shall consider fish passage, sedimentation mitigation, access to the diversion, headgate automation and SCADA for stabilizing flows in the ditch and reacting to fluctuating flows in the Big Laramie River, and debris mitigation at the headgate. The Consultant shall coordinate with the Wyoming Game and Fish regarding fish ladder design. The Consultant shall consider the improvement of water delivery to the Smith headgates and provide proposed projects for those improvements. The Consultant shall identify and document all the required easements, permits, legal costs, etc., for the proposed projects and cost estimates.

The Consultant shall consider current and future operations of the system and, if applicable, include potentially irrigable lands added to the system in the future. The

Consultant shall consult with the Office project manager and the Sponsor to include other design considerations that are not specifically listed above.

The Consultant shall evaluate whether the project(s) are in the public interest, stipulating if the proposed project's functions and services can be served by any person, association or corporation engaged in private enterprise, or if private enterprise has refused to provide the functions and services identified as being required by the proposed project(s). This information shall be included in the draft and final reports of this study.

Task 4. Economic Analysis & Project Financing

The Consultant shall provide an ability to pay analysis and, if necessary, recommend adjustments to the District's revenues/rates. This analysis will be used to determine if the Sponsor has the ability to pay for projects based on their current revenue structure or if the Sponsor will need to raise their rates. The Consultant shall generate recommendations for rate structures based on annual financial commitments of the sponsor needed to cover construction costs, operation and maintenance obligations, and a repair and replacement account. The Consultant shall consider all of the District's income and expenditures. The analysis will be based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e.: the Consultant shall demonstrate the necessary adjustments in the District's system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.
>
> Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan (4% interest / 30-year term) from the WWDC, and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed revenues.

The Consultant shall then identify additional funding sources outside of the WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund potential WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The U.S. Department of Agriculture, U.S. Bureau of Reclamation, Wyoming DEQ-WQD Clean Water Act Section 319 and other eligible state and federal funding sources shall be considered for loans, grants, and combinations thereof. For more information on project funding assistance see Section C.6, of Attachment B.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, document the amount of grant or loan funds that may be available through the additional funding sources, and analyze the probability of the Sponsor securing a grant or loan from one or

more of the additional funding sources for the project(s) in question. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency, and contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall document all of this information in the final report including conversations held.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the available funding. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 5. Draft Report & Presentations

The Consultant shall submit to the Office five (5), or a previously agreed upon number of hard copies of a draft report describing the results of all work completed in this study no later than April 1, 2019. Three (3) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

The Consultant shall address all review comments and present the draft findings of the study at a public hearing near the project area. Information and materials to be presented at the public hearing shall be developed by the Consultant after coordination with the Office project manager. The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

The report presentation for this Level II Study will serve as a public hearing, with WWDC Office personnel serving as the hearing officer. The script for the hearing will be developed by the Office project manager and shall include the question as to whether there is a private entity interested in providing the proposed project functions and services in lieu of the sponsor. The Office is responsible for publishing a legal notice of the meeting

in a statewide newspaper, once each week for three (3) weeks prior to the hearing; and in the local publication up to three (3) times prior to the hearing.

The Consultant shall be responsible for developing a record of the hearing which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. Following the hearing, there will be a ten day public comment period. Any comments received will be included in the aforementioned appendix.

The Consultant shall budget for a meeting in Casper or Cheyenne to present the results to the Commission. The presentations described in this task are independent of the meetings included in Task 1.

Task 6. Final Report & Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials, to the Office on or before August 1, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages.

- Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same

version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identifying the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

SHORT-ELLIOTT-HENDRICKSON, INCORPORATED

Classification – Office Staff	Billable Rate (Hourly)
Principal	$210.00
Project Manager	$156.00
Structural Engineer QA/QC	$240.00
Senior Structural Engineer	$183.00
Structural Engineer	$146.00
Graduate Structural Engineer	$102.00
Senior Project Engineer	$195.00
Project Engineer	$134.00
Staff Engineer	$118.00
Senior Project Architect	$154.00
Project Architect	$137.00
Staff Architect	$122.00
SCADA Specialist	$217.00
Project Scientist	$120.00
Staff Scientist	$ 95.00
Senior Project Planner	$195.00
Project Planner	$135.00
Staff Planner	$ 95.00
Project GIS Analyst	$125.00
Lead Technician	$124.00
Senior Technician	$112.00
Technician	$ 90.00
Word Processor	$ 95.00
Accountant	$118.00
General Clerical	$ 95.00
Graphic Designer	$ 88.00

Classification – Field Staff	Billable Rate (Hourly)
Licensed Land Surveyor	$150.00
Lead Project Representative	$145.00
Sr. Project Representative	$125.00
Project Representative	$120.00
Survey Crew Chief	$120.00
Survey Instrument Operator	$ 95.00

Vehicle Mileage Rates

$0.545/mile

Vehicle Allowance Costs

Rental vehicle.....$55/day

Survey Equipment

Robotic Total Station $30.00/hour
Global Positioning System (GPS) $30.00/hour

Computer Equipment

Computer Charges per Direct Hour of Labor $3.00/hour

Other Equipment Expenses

SEH uses many different types of equipment, such as traffic counters; flow meters; air, water, and soil sampling kits; inspection cameras; density meters; and many others. Our equipment is frequently upgraded to utilize current technology. You will be charged for equipment usage per your agreement with SEH.

Flow Meter ……. $30/hour
Inspection Cameras……..... $300/day
Electrical Volt Meter …… $30/day
Communication Cable Tester … $80/day
Power Quality Analyzer …….. $150/day
Handheld Rebar Locator ……... $45/hour
Concrete Probe Tester ……..…. $40/hour
Concrete Rebar Hammer …….. $45/hour

Lodging and MI&E

Lodging ..... @ Cost
MI&E (per diem)..... $51/day

Identifiable Reproduction and Reprographic Costs

Item	8½x11	11x17	Large Format	Per Item
Black/White Copy	0.07	0.24	0.95 + 0.50/sq. ft.	
Color Copy	0.46	1.02	0.95 + 2.55/sq. ft.	
Mylar			5.00	
CD Copy				3.00
Lamination	2.00	3.50	3.50/sq. ft.	

Identifiable Reproduction and Reprographic Costs (continued)

Item	8½x11	11x17	Large Format	Per Item
Laminated Foamcore				
– up to 30"x 42"			40.00	
– larger than 40"x 60"			75.00	
3-Ring Binder				
size	1”	2”	3”	4”
cost	3.20	4.80	5.60	7.24
Machine Folding				0.02
Binding				
wire				3.60
comb				3.20
Covers				
custom				0.15
blank				0.03
Tabs (white)				0.20
Mailing/Processing				UPS or USPS rates

Other reproduction costs not listed will be charged at cost.

BIG SANDY WATERSHED, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Rio Verde Engineering, 804 Hoback Street, P.O. Box 642, Pinedale, Wyoming 82941.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred seventy-one thousand dollars ($271,000).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
Task 1.	Project Meetings and Public Participation	$ 25,800
Task 2.	Review of Background Information	$ 6,000
Task 3.	Watershed Inventory and Descriptions	$ 73,000
Task 4.	Streamflow Hydrology	$ 19,700
Task 5.	Watershed Management and Rehabilitation Plan	$ 84,400
Task 6.	Cost Estimates	$ 4,800
Task 7.	Economic Analysis	$ 2,500
Task 8.	Permits	$ 4,000
Task 9.	Geographic Information System Deliverables	$ 35,600
Task 10.	Draft Report	$ 6,600
Task 11.	Report Presentations	$ 4,600
Task 12.	Final Report and Deliverables	$ 4,000
Total Project Cost		**$ 271,000**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. The Big Sandy Watershed covers 1,147,813 acres and is located within Sublette, Fremont and Sweetwater Counties. The extent of the study area includes the following HUC 10 sub-watersheds: Upper Big Sandy River (1404010401), Little Sandy Creek (1404010403), Pacific Creek (1404010402), Lower Big Sandy River (1404010406), Bone Draw (1404010405) and Sublettes Flat (1404010404).

3. Purpose. To perform a Level I study for the Big Sandy Watershed, with focus on providing a comprehensive water rights GIS database/tool and in depth designs for independent projects.

4. History. The Sublette County Conservation District (SCCD) and the Sweetwater County Conservation District (SWCCD) requests a watershed study to evaluate current watershed function, irrigation diversion/conveyance systems, and upland livestock/wildlife water management and rehabilitation opportunities. Surface water storage including enlargement and/or rehabilitation of existing water storage facilities, detailed geospatial data regarding water rights, ditches and points of diversion are also of interest. This information would provide baseline information from which the SCCD and SWCCD can pursue implementation of management practices and tools that address the natural resource issues within the watershed.

   The Big Sandy Watershed includes the primary stream system of Big Sandy River, Little Sandy Creek, Long Draw and Pacific Creek. Big Sandy Reservoir and Eden Valley Reservoir are storage facilities located within the watershed and predominantly used for irrigation purposes, managed by the Eden Valley Irrigation and Drainage District.

   The completion of this study will allow for the completion of a comprehensive study of resources within the watershed in order to focus on

identifying future projects aimed at improving the conditions, health and function of the watershed. The SCCD and SWCCD is also interested in identifying potential fish barrier projects as various fish species (flannelmouth sucker and bluehead sucker) are near being listed as threatened and endangered.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Throughout the course of this study, the Consultant shall remain mindful of the following objective statement that pertains to all Wyoming Water Development Commission (WWDC) Watershed Studies:

> *The objective of a Watershed Study is to evaluate an individual watershed's existing conditions, and, from collaboration with landowners, stakeholders, and public outreach, develop a Watershed Management and Rehabilitation Plan and identify projects that are eligible for funding from WWDC and other sources that may improve or maintain watershed function and systems.*

Task 1. Project Meetings and Public Participation

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsor and Office project manager.

Public meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of status and progress. The Consultant should assume a minimum of five (5) public meetings in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices and needed materials and prepare the meeting record. Meetings should be scheduled to coincide with fieldwork whenever possible. In addition to the public meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

The Consultant shall assist the Sponsor with public participation in terms of meetings and outreach that communicates the nature, status, and findings of this study. During the study, public outreach shall also occur as needed for information gathering and to help identify WWDC Small Water Projects and other WWDC water development opportunities. Public participation meetings and outreach are anticipated to involve local landowners, stakeholders, agencies, organizations, representatives of land management activities, and any other interested parties. Outreach may take the form of flyers, postcards, postings, newspaper advertisements, mailings, etc. If determined to be valuable for the project by the Office project manager and Sponsor, the Consultant may coordinate with the Sponsor in the development of a website to facilitate information dissemination. Or, if the Sponsor is willing to do so, the Consultant may coordinate with the Sponsor to provide information on the Sponsor's website. The website may provide information postings, project updates, mailing signups, and general information exchange/request for information from interested parties.

Task 2. Review of Background Information

The Consultant shall gather and review existing background information and data available through any number of relevant sources, including, but not limited to: WWDC; Water Resources Data System (WRDS); Wyoming Department of Environmental Quality (WDEQ); Wyoming Game and Fish Department (WGFD); Wyoming State Engineer's Office (WSEO) and the Wyoming Water Rights Attribute GeoDataBase; Wyoming Association of Conservation Districts (WACD) SuiteWater; Wyoming State Geological Survey (WSGS); Wyoming Oil and Gas Conservation Commission (WOGCC); University of Wyoming (UW); U.S. Geological Survey (USGS); Natural Resources Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); U.S. Army Corps of Engineers (USACE); Bureau of Land Management (BLM); local conservation districts; and other local agencies and local landowners as appropriate. Gathered and reviewed data may include published and unpublished literature, public records, research material, numeric data, spatial data, aerial photography data, topographic data, and existing river basin plans.

The Consultant shall recognize existing completed or ongoing studies that have already addressed many of the watershed systems, categories and topics shown in Table 1.

Existing studies include, but are not limited to the Green River Basin Plans, EVIDD Master Plan and GIS Package, and Big Sandy Reservoir Enlargement Study. The Consultant shall avoid efforts to duplicate work, particularly within the portion of the watershed managed by the EVIDD.

Deliverables under this task shall include a bibliography of existing studies and descriptions of their applicability to the watershed. A map showing the general location of completed WWDC planning and construction projects and studies shall be provided. Data deliverables shall include a spreadsheet that lists existing studies and links or copies of the referenced study and a Geographic Information System (GIS) file that shows existing and completed WWDC planning and construction project locations.

Task 3. Watershed Inventory and Descriptions

This task of the Watershed Study involves an inventory, description, and in some cases, an analyses of the Physical, Biological, and Anthropogenic Systems within the watershed followed by the preparation of written descriptions, maps, charts, tables, GIS data, etc. of specific watershed topics or areas of concern. In some instances, further analyses may be needed in order to formulate conclusions on specific watershed topics. Although the overall intention of this task is to provide a snapshot of existing conditions within the study area, the Consultant shall provide more detail where directed. Intended deliverables for this task for each distinctive watershed topic are as specified within the outlined sections below.

Inventory: The inventory is intended as a data gathering effort on specific watershed topics. Overall, it includes the acquisition of information from any number of relevant sources either through remote gathering of various datasets or through field reconnaissance performed specific to this task or in conjunction with Task 5 efforts. Inventoried items and information are expected to be inclusive of, but not limited to historic reports, maps, and documents; interviews with the Sponsor, landowners and stakeholders; databases, electronic files and website downloads; and any field reconnaissance investigations and surveys that are conducted. As part of the inventory, the Consultant shall assess and evaluate each watershed topic to the degree necessary to formulate conclusions and recommendations with respect to fulfilling the objectives of the watershed study. Furthermore, the Consultant should remain cognizant of any previously inventoried features and avoid duplicating work efforts.

Descriptions: Written descriptions are expected to consist of narratives contained within the final report. Although the narratives are envisioned to be brief, the Consultant may prepare each to the degree and detail necessary to accurately communicate the nature of each watershed topic. The Consultant shall generally describe the role of each topic in influencing the physical, biological and anthropogenic integrity of the watershed and draw conclusions as applicable.

Analyses: Analyses may be required on various watershed topics as agreed upon during the course of this study by the Consultant and the Office project manager. The intention of these analyses is to further refine the acquired information and formulate conclusions necessary to achieve the objectives of this study and subsequent preparation of a watershed plan and project recommendations. All analyses shall be conducted to the degree necessary to suit the nature of the topic and documented within the final report to fully support any conclusions, plans, or recommendations that are reached. Furthermore, the Consultant should remain cognizant of any previously analyzed topics and avoid duplicating work efforts.

Due to the nature and inherit complexity of topics contained within a watershed study, while conducting this task, the Consultant shall remain responsive to the likelihood of overlap in many of the categories, watershed topics, and issues in terms of inventorying, data collection efforts, written descriptions, and analyses. In addition, the Consultant should maintain a dynamic approach during the course of the study, recognizing limitations of what can be accomplished from a timing and budgetary standpoint, balancing efforts accordingly, and regularly coordinating with the Office project manager and Sponsor.

Table 1 presents an outline of the watershed systems, categories, and watershed topics. This outline is intended as a guide to help organize the following task objectives and steer the Consultant's focus and structure of the final report. Items within the outline as well as its structure are not intended to be all-inclusive and absolute. During the course of this study, the Consultant may propose additions to, deviations from, or combinations thereof, etc. to any items contained within the outline.

Table 1: Outline of Watershed Systems, Categories, and Topics

Systems	Categories	Topics
A. Physical Systems	**(I) Surface Water**	a. Hydrography
		b. Water Quality
	(II) Geology	a. Topography
	(III) Climate	a. Precipitation, Temperature, Climate Zones
B. Biological Systems	**(I) Fish and Wildlife**	a. Fisheries
		b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal)
		c. Sage Grouse
	(II) Land Cover	a. Riparian Areas
		b. Wetlands
		c. Vegetation and Plant Communities
C. Anthropogenic Systems	**(I) Agricultural Water Use**	a. Irrigated Lands
		b. Irrigation Systems
	(II) Domestic, Municipal, and Industrial Water Use	a. Potable Water Systems
	(III) Water Storage	a. Reservoirs
		b. Upland Water Storage
	(IV) Land	a. Land Use
		b. Land Ownership
		c. Land Management and Upland Water Resources
		d. Cultural Resources

A. Physical Systems

The Physical Systems within the watershed shall be catalogued as outlined below with respect to the following categories: Surface Water; Geology; and Climate.

(I) Surface Water

Specific watershed topics and their respective deliverables under the Surface Water category are described below. In the interest of maintaining consistency, the Consultant shall utilize the National Hydrography Dataset (NHD) as the foundation for all Surface Water inventories, descriptions, and analyses.

a. Hydrography: The Consultant shall establish a foundation for this study by utilizing existing information and sources to develop mapping of all pertinent surface water hydrology features within the watershed, including but not limited to river and stream networks, reservoirs, wetlands, ditches, etc. Inventory and briefly summarize the physical hydrology of the watershed. Utilizing existing information where available, the Consultant shall attribute and label streams accordingly as perennial, intermittent, or ephemeral.

Deliverables under the Hydrography topic are anticipated to consist of a narrative or description contained within the final report; referenced GIS data source(s) in the final report; and any necessary maps, charts, tables, etc. inserted into the final report.

b. Water Quality: Water quality for the watershed, including any relevant data associated with Clean Water Act Section 303d listed streams, will be mapped using existing data. Information available from WDEQ, conservation districts and other agencies will be used to develop this map. Wyoming Pollutant Discharge Elimination System (WyPDES) permits shall also be mapped. The latest Wyoming Surface Water Classification List available from the WDEQ-Water Quality Division should be obtained and presented.

Deliverables for Water Quality are anticipated to consist of a written description and a single map and table inserted into the final report.

(II) Geology

Watershed topics and their respective deliverables under the Geology category are envisioned to consist of the following:

a. Topography: The Consultant shall provide a description of the topography within the watershed. The overall terrain, landforms, contours, relief, etc. within the study area should be characterized. Hills, valleys, mountains, plains, plateaus should be described in order to provide a mental picture of the landscape. Provide information on land slope and slope stability relative to its potential effect on water development and storage projects.

Deliverables for Topography are anticipated to consist of a written description inserted into the final report.

(III) Climate

Specific topics and their deliverables under the Climate category are anticipated to involve the following:

a. Precipitation, Temperature, Climate Zones: The overall climate conditions within the watershed shall be characterized in terms of precipitation, temperature, and climate zones. The range of elevations across the watershed should be considered, and the growing season should be assessed and described along with first and last frost dates. The Consultant may make use of local weather sites and PRISM Climate Data

(http://prism.oregonstate.edu) for this effort which is obtainable from the online mapping server developed by WRDS (http://www.wrds.uwyo.edu/sco/data/PRISM/PRISM.html).

Deliverables for the Climate category are anticipated to consist of a written description and any necessary maps, charts, tables, etc. contained within the final report.

B. Biological Systems

The Biological Systems within the watershed shall be inventoried as outlined below with respect to the following general categories: Fish and Wildlife; and, Land Cover.

(I) Fish and Wildlife

Watershed topics and their respective deliverables under the Fish and Wildlife category are anticipated to consist of some combination of the following topics:

a. Fisheries: Fish distribution, fish passage barriers and all other relevant information shall be described and mapped. The Consultant should refer to WGFD or other applicable agencies. In addition, stream classifications that have been developed by WGFD as related to fisheries shall be acquired and mapped. Existing state-held instream flow water rights within the watershed shall be identified, mapped, and described.

b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal): The Consultant shall describe and acquire available mapping (or provide reference to online mapping sources) from WGFD of seasonal ranges and migration corridors for big game species as well as critical habitat and birthing areas. Also, the Wyoming Natural Diversity Database (WYNDD) may list many non-game species of concern that may be present within the study area, including fish, birds, amphibians, mollusks, mammals, and reptiles. A review of literature should be conducted to compile information on wildlife habitat distribution, sensitive, and endangered plant and animal species. The WYNDD should be queried to generate a list of Species of Concern that have been categorized as rare, endemic, disjunct, threatened or otherwise biologically sensitive in the watershed. In addition, species from the BLM or USFS Sensitive Species list will be identified. The most current iterations of the WGFD mapped seasonal, crucial, parturition, migration corridor and migration barrier mapping may be acquired and presented.

c. Sage Grouse: The Consultant shall describe and map the Greater Sage Grouse core area as recognized by WGFD. The Greater Sage Grouse is considered a species of concern and requires additional management consideration throughout the state. Greater Sage Grouse Core Area

Mapping and applicable stipulation buffers as defined by Executive Order 2015-4 will be presented.

Deliverables for the Fish and Wildlife topics are anticipated to consist of written descriptions; referenced GIS data source(s) in the final report; and any necessary maps or reference to online maps, charts, etc. described and inserted into the final report.

(II) Land Cover

For the Land Cover inventory, describe the influence of land cover on the hydrologic systems and its current conditions. Data may be complied from the National Land Cover Dataset (NLCD), National GAP Analysis Program (GAP), Landscape Fire and Resource Management Planning Tools (LANDFIRE), and other sources as applicable. Overall, the Consultant shall describe the roles of riparian areas, wetlands, vegetation, and plant communities in enhancing water quality, reducing flood impact, streambank stabilization, and mitigating erosion activity and sediment transport. Topics and deliverables under the Land Cover category are envisioned to consist of the following:

a. Riparian Areas: The Consultant shall describe riparian zones within the watershed. Riparian plant and animal communities should be documented using any available data sources. All riparian features within the watershed should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of riparian areas in influencing the chemical, physical, and biological integrity of the watershed.

b. Wetlands: The Consultant shall describe existing wetlands within the watershed utilizing the National Wetlands Inventory (NWI) created by the USFWS and supplemented with any other available data sources. This description should be in paragraph form, generally describing the role of wetlands in influencing the chemical, physical, and biological integrity of the watershed.

c. Vegetation and Plant Communities: Existing vegetative cover within the study area shall be assessed using available data sources such as LANDFIRE datasets to help describe existing vegetation types, existing canopy cover, and existing vegetation height. Describe the collective plant life within the study area and discuss how regional climate affects types of plants that survive within the plant community. Vegetation features should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of vegetation and plant communities in influencing the chemical, physical, and biological integrity of the watershed.

Deliverables for Land Cover topics are anticipated to consist of written descriptions and any applicable analyses and respective conclusions fully documented within the final report.

C. Anthropogenic Systems

The Anthropogenic Systems (or those systems relating or resulting from the influence of human activity) within the watershed shall be inventoried as outlined below in terms of the following categories: Agricultural Water Use; Domestic, Municipal, and Industrial Water Use; Storage; and, Land.

(I) Agricultural Water Use

Within the Agricultural Water Use category, the Consultant shall acquire any existing irrigated lands mapping and other relevant information pertaining to Agricultural Water Use available from WWDC River Basin Plans (http://waterplan.state.wy.us/) or completed WWDC irrigation district master plans (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). This includes but is not limited to the Wyoming Water Rights Attribution GeoDataBase (WYRAGS), New Fork Watershed Study and the WWDC's EVIDD Master Plan GIS Package. The Consultant should remain cognizant of previously mapped irrigation features and avoid duplicating work efforts. Supplemental data and information pertaining to water rights and irrigated lands may also be obtained from the WSEO. Specific topics and deliverables under the Agricultural Water Use category are anticipated to be comprise of the following:

a. Irrigated Lands: The Consultant shall gather, review, and describe available irrigated lands mapping and then further evaluate, map, and describe significant changes in irrigated lands by using aerial photos or other remotely sensed data as applicable. Irrigation methods should be identified, mapped, and described according to center pivot, flooding, or other methods. The Consultant shall associate all irrigated lands mapping generated in this task with either a dry, average, or wet year in terms of streamflow hydrology. Methods to classify the dry, average, and wet years may be as defined in WWDC River Basin Plans or proposed by the Consultant. In addition, the Consultant shall also map irrigated lands specific to each adjudicated surface water supply outside of the EVIDD boundaries.

b. Irrigation Systems: Irrigation water systems within the watershed will be described and mapped. Mapping should include diversions and their main conveyance systems (ditches, pipelines, etc.) for irrigation systems. Points of diversions and scanned plat maps of ditch locations and names may be sourced from water rights data obtained from the WSEO e-Permit system and its online plat viewer. Consultant shall include water right and all permit data where applicable. Resources to acquire such data include, but are not

limited to the Wyoming Water Rights Attribution GeoDataBase (WYRAGS) and the EVIDD Master Plan GIS Package. The Consultant shall coordinate with the Office Project Manager regarding distribution of these data. Where applicable, the Consultant may utilize diversion records obtained from annual hydrographer records and the SEO Realtime Streamflow Data website (seoflow.wyo.gov). Reservoirs and wells that supply irrigation districts will be identified on the map. Trans-watershed diversions shall be identified, mapped, and quantified.

Based upon meetings with the Sponsor, stakeholders, and landowners, the Consultant may identify existing smaller irrigation systems and conduct subsequent evaluations. The Consultant shall acquire information necessary to ascertain any rehabilitation that may relate to improving water delivery along with annual or seasonal shortages of water supply or irrigation water delivery issues. Evaluations may define existing issues with water supply, erosion, conveyance losses, seepage, etc. Features such as headgates, diversion structures, and conveyance methods should be evaluated and mapped in the field as needed. Opportunities to improve diversion methods and reduce maintenance through the installation of grade control structures, channel stabilization efforts, or other in-stream improvements may be identified.

The Consultant shall use the format of the New Fork Watershed Study's GIS mapping tool as an example when gathering and displaying data for GIS purposes, due to the Sponsor's desire to build upon the New Fork Watershed Study GIS package/tool.

Deliverables for Agricultural Water Use topics are anticipated to consist of written descriptions; GIS data (packaged and delivered); any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

(II) Domestic, Municipal, and Industrial (DMI) Water Use

Within the DMI Water Use category, the Consultant shall acquire any existing information from WWDC River Basin Plans (http://waterplan.state.wy.us/) or master plans that have been prepared (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped and described features and avoid duplicating work efforts. Supplemental data and information pertaining to water rights may also be obtained from the WSEO. Specific watershed topics and deliverables under the DMI Water Use category are envisioned to consist of the following:

a. Potable Water Systems: Municipal, rural, or regional potable water transmission and distribution systems present in the watershed will be

identified with key infrastructure features described and mapped. Mapping should include source water diversions, wells, and primary conveyance and storage features. Reservoirs and groundwater sources that supply municipalities, rural, and regional systems should also be identified. Water use should be quantified for domestic, municipal, and rural water users as estimated from water right information obtained from the WSEO e-Permit system or any other available source.

Deliverables for DMI Water Use topics are anticipated to consist of a written description; GIS data (packaged and delivered); and any necessary maps, charts, tables, etc. inserted into the final report.

(III) Water Storage

Topics and their respective deliverables under the Water Storage category are anticipated to involve the following:

a. Reservoirs: The Consultant shall identify and map existing reservoirs based on aerial photography and WSEO data and examine any possible needs and opportunities for new or enlarged water storage facilities. Descriptions and mapping of existing water storage facilities greater than 500-acre-feet capacity should include an aerial mapping of the reservoir, water right permits, permitted capacity, end of month average storage, water use type, general condition as it relates to holding water (viable or non-viable), and where the stored water is used. Describe and quantify the permitted total storage at a HUC 10 subwatershed level.

The Consultant shall develop and present a complete and comprehensive document review of previous storage studies done for the proposed watershed study area and provide an evaluation of the outcomes of those studies. An evaluation matrix shall be prepared which summarizes pertinent attributes of each storage opportunity. Summarize the status of any ongoing projects.

Deliverables for the Reservoirs topic are anticipated to consist of GIS data (packaged and delivered); any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any applicable analyses and respective conclusions fully documented within the final report.

b. Upland Water Storage: Existing wildlife and livestock water sources and storage facilities, including but not limited to springs, stock reservoirs, tanks, ponds, and stock wells, etc. will be mapped, evaluated, and described. Such facilities will be mapped after confirmation of their existence and supplemented by a brief description of their general condition as it relates

to holding water (viable or non-viable). Based on this inventory, an assessment of areas in need of additional watering facilities shall be identified, mapped, and described.

Deliverables for the Upland Water Storage topic are anticipated to consist of a written description; GIS data (packaged and delivered); any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

(IV) Land

Specific watershed topics and their respective deliverables under the Land category are anticipated to be inclusive of the following:

a. Land Use: All land uses within the study area shall be described and mapped, including, but not limited to agricultural, urban, commercial, industrial, transportation, power systems, utilities, easements, etc. The Consultant shall acquire Land Use data sets from existing sources or provide reference to Natural Resource and Energy Explorer (https://nrex.wyo.gov/). The watershed shall be characterized according to its level of development, dominant land use type, and relative water use.

b. Land Ownership: The Consultant shall identify, describe, and map essential details about Land Ownership within the watershed. The composition of federal, state, and private lands and the orientation and locations of ownership parcels should be discussed as related to future development or management strategies and project planning. Land ownership information may be obtained from available sources including the county assessor's office.

c. Land Management and Upland Water Resources: The Consultant shall identify, describe, and map or provide reference to SuiteWater GIS, or Natural Resource and Energy Explorer (https://nrex.wyo.gov/) details about Land Management and Upland Water Resources within the study area. Ascertain where private and public grazing uses are located and identify grazing radius of influence from existing water sources or implementation of any upland water development.

Where requested by the landowner(s), evaluations should be conducted on existing upland water resources. Any potential enhancement and improved water distribution for livestock and wildlife that facilitates grazing management for range resource improvement should be documented. NRCS Ecological Site Descriptions (ESD) may be acquired and mapped as needed to help identify and describe common plant communities and other

land cover characteristics of the watershed. The Consultant should identify potential benefits to the watershed through plant community invigorations, reduction of erosion, and stream channel stabilization achieved from water development projects strategically implemented within the watershed. Other issues and opportunities, such as making beneficial use of produced water and removal of high water demand invasive species, can be examined.

As appropriate, discuss any existing BMP for livestock grazing and ascertain their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

Deliverables for the Land Use, Land Ownership, and Land Management and Upland Water Resources topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; and any necessary maps, charts, tables, etc. described and incorporated into the final report.

d. Cultural Resources: The Consultant shall identify and produce a summary map of any Cultural Resources (or evidence of past human activity) that may exist within the study area. For instance, these may include pioneer homes, buildings or old roads; structures with unique architecture; prehistoric sites; historic or prehistoric artifacts or objects; rock inscription; human burial sites; and, earthworks such as battlefield entrenchments, prehistoric canals, or mounds. The Consultant should acquire or reference information on cultural resources from the Wyoming State Historic Preservation Office as well as the Natural Resource and Energy Explorer (*https://nrex.wyo.gov/), or SuiteWater GIS.*

*Deliverables for the Cultural Resources are anticipated to consist of references to online map applic*ations and any necessary maps, charts, tables, etc. contained within the final report.

Task 4. Streamflow Hydrology

The Consultant shall use previously prepared hydrologic models, existing flow estimates, newly collected gage data, or alternative applicable techniques to characterize streamflow in the watershed. The Consultant should draw upon any previous hydrologic models and sources to avoid unnecessary duplication of efforts. Existing sources may include the spreadsheet models created for WWDC River Basin Plans; WWDC planning and reservoir studies where more comprehensive models may have been developed; or WWDC instream flow hydrologic feasibility reports (http://library.wrds.uwyo.edu/).

Coordinate with the Office project manager on availability of past hydrologic models or water supply analyses that may be useful for this task.

Streamflow for each HUC 10 should be summarized on a monthly and annual basis for dry, average, and wet years. Methods to classify the dry, average, and wet years may be as used in any prior analyses or proposed by the Consultant. The resulting classification of dry, average, and wet years shall be presented in the final report. Based on the extent and suitability of available past hydrologic models that contain streamflow information, the Consultant may review and summarize that information, refine and update those models, or explore or supplement past efforts with other techniques such as regression equations based on specific basin characteristics like catchment area, elevation, and stream channel geometry. Concurrent discharge measurements and temporary gaging sites may also be considered in order to further quantify streamflow estimates. The methodologies ultimately selected should be fully described in the final report with all supporting data. All modeling input data, regression analysis techniques, assessment methodologies, results, conclusions and any assumptions or limitations therein shall be described and presented. Clearly stipulate whether the resulting streamflow data should be considered gage flow, synthesized flow, virgin flow, depleted or undepleted flow, etc.

Existing stream gage coverage and periods of record shall be assessed and mapped. A map of specific stream reaches and locations shall be labeled according to annual volume for dry, average, and wet streamflow conditions. Hydrographs shall be included in the report to illustrate monthly streamflow for dry, average, and wet years. Specific stream locations within the presented and delivered GIS mapping and files shall be attributed according to a monthly and annual streamflow basis for dry, average, and wet years. This should be done at a HUC 10 subwatershed level and at all gauge locations.

In terms of water supply, this task should also describe when and where water shortages may be an issue in the watershed and who or what is most likely affected by a dry water year. The Consultant shall explain and map areas that are commonly in regulation and when they typically go into regulation based on discussions with landowners, WSEO hydrographers, and review of annual Hydrographer reports.

> Temporary Gaging: Should it be necessary to verify streamflows, the Consultant shall acquire and install stage monitoring equipment and develop a rating curve (stage-discharge relationship) for applicable streams. To establish each stream gage site, the Consultant shall choose the most suitable location possible. The Consultant will be responsible for landowner clearance, permitting, equipment acquisition, protocol, installation, operation, maintenance, development of rating curves, data collection, and all appurtenances associated with the operation of the stream gages during the life of the Contract. Gaging sites selected for this study shall be clearly identified within the final report by written description and displayed on maps.

Stage recording and data logging devices may be acquired from the Office for use in this project. The Consultant shall be responsible for providing all other required equipment, including data transfer units, laptops and computers for data upload and processing, software, and all equipment required for the physical installation of each unit. Based upon site requirements and proximities, the Consultant shall determine and install the proper number of pressure transducers to ensure proper calibration to barometric pressure at each stage recording site if needed. Any equipment provided by the Office under this Contract and all data collected shall be the sole property of the Office and returned to the Office prior to close of Contract. Note that surcharges or rental fees of any kind shall not be billable within this Contract should the Consultant chose not to install equipment available from the Office.

As applicable, the Consultant shall be responsible for seasonal removal of all equipment to prevent its damage. Depending on weather conditions and site accessibility, it is anticipated that equipment may need to be removed for winter and reinstalled in spring.

Deliverables for this task are anticipated to consist of newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any necessary analyses and respective conclusions fully documented within the final report.

Task 5. Watershed Management and Rehabilitation Plan

The Consultant shall prepare a Management and Rehabilitation Plan (Plan) that establishes specific project suggestions to improve watershed condition and function and provide benefit for wildlife, livestock, and the environment. The Plan is expected to provide an overview of specific improvements that can be implemented to address key opportunities identified within the watershed.

Projects identified in the Plan should be tailored to address any problems or opportunities identified in Tasks 3 and 4 and in collaboration with (or as requested by) landowners, stakeholders, land management agencies, and any other interested parties. The Plan shall identify improvements to land and water management practices within the watershed considering private property and water rights. Landowner and land management agency interviews will be conducted to determine past and present historical management activities and to identify watershed development, management, and rehabilitation opportunities.

The Plan shall identify and recommend watershed development, management, and rehabilitation opportunities in relation, but not limited to, the following watershed functions and facilities:

- Surface water storage: The Consultant may evaluate the potential for new or increased water storage to address seasonal or annual shortages, augment late season streamflow to benefit riparian habitat and wildlife, address flood impacts and control, enhance recreation opportunities, or improve water quality and stream channel stability. Opportunities may be identified through discussions with the Sponsor, local stakeholders, irrigators, and landowners within the basin.
- Irrigation supply systems with emphasis on upgrades, operational improvements, and efficient management techniques including, but not limited to, issues with water quantity, erosion control, conveyance loss, infrastructure, and seepage.
- Livestock/wildlife upland water development.
- Groundwater recharge: Identify areas for potential groundwater recharge projects, if appropriate.
- Grazing management.

The Consultant shall develop a summary table of the recommendations generated during the watershed study. The intention of the table is to provide a guide for the Sponsor in the selection and implementation of the Plan's project recommendations. The following evaluation criteria may be used by the Consultant in the development of the summary table. The Consultant may propose alternate evaluation criteria for consideration with approval by the Office project manager.

- Project type as described above in watershed functions and facilities.
- WWDC program identification: (e.g., Small Water Project Program, conventional, other).
- Supply type: Identify projects as new water supply or rehabilitation.
- Practicality of implementation: Provide a narrative that describes ownership issues, funding concerns, institutional issues, and project durability and sustainability.
- Estimated cost: Proposed project cost estimates as described in Task 6 shall be considered and included in the Plan.
- Funding or financing opportunities: Funding/financing opportunities shall be included in the Plan as described in Task 7.
- Overall benefits to the watershed: (e.g., riparian, wetland, water quality, wildlife, fish passage improvement, and other environmental and recreational purposes, etc.).
- Permitting issues: (e.g., WSEO, USACE, WDEQ, NEPA requirements, environmental reviews, etc.).
- Current public Sponsor: Ascertain whether a current public Sponsor exists to take the project to the next level.

The Consultant shall prepare conceptual-level designs for project recommendations identified in the Plan. All projects should follow the same format and layout as project designs included in the New Fork Watershed Study. Project designs should include a description of the project and its purpose. Project designs should be of sufficient detail to estimate costs (Task 6), identify fatal flaws (pipelines, transportation, energy transmission, cultural resources), and any socio-economic impediments to moving forward. The description should include information relevant to completing a WWDC project application.

Within the final report, the Consultant shall include a detailed description of the WWDC Small Water Project Program and the steps necessary to take a project from the application phase to final payment. This shall include a listing of the Sponsor's responsibilities for permitting, design, and project completion.

Deliverables for this task shall include a description and tabulation of the Plan's project recommendations and a supporting map that shows the location of all the identified projects. GIS file deliverables should contain information such as the project location, a project identifier, project type, WWDC program, alternative funding sources, supply type, overall benefits, cost estimates, and potential volume to be supplied or saved through the development of the project.

Task 6. Cost Estimates

The Consultant shall provide cost estimates for the Plan identified in Task 5. Cost estimates shall be included in the Plan summary table and be calculated and presented by both the total project cost and as unit costs. Costs shall be structured to allow the Sponsor to evaluate proposed project recommendations and shall identify those components that are both eligible and non-eligible for WWDC and Small Water Project Program (SWPP) funding. Estimates shall be based on the year the watershed study is completed.

Cost estimates for small scale projects, such as those eligible for WWDC SWPP grants, shall be inclusive of the above and take into account the past and present project component average costs.

Cost estimates for large scale projects, such as those eligible for WWDC Level III construction grants/loans, shall also be inclusive of the above and include operation and maintenance costs, administrative costs, and debt retirement. WWDC "Repair and Maintenance Account" funding and the cost(s) for water shall be incorporated. Cost estimates for large scale projects shall be prepared as outlined in Section C of this Scope of Services.

Task 7. Economic Analysis

Project funding and financing is a critical aspect associated with the implementation of watershed development, management, and rehabilitation projects. This task will provide the necessary information to estimate end costs of project implementation utilizing alternative sources of funding. The Consultant shall provide local, state and federal information regarding potential funding sources, application requirements, and funding eligibility requirements with respect to funding agency criteria and conditions. In addition, the Consultant shall identify the types of Wyoming entities eligible to apply for funding from these funding sources, discuss the process of forming each eligible entity, and the benefits of becoming an eligible entity.

When applicable (i.e., projects requiring extensive engineering and design), the Consultant shall provide an ability to pay analysis which should include the following:

- A financing plan.
- An annual operation cost estimate.
- Identification of sinking fund requirements.
- A determination of the eligibility requirements and level of assistance available for implementation.

The Consultant shall also generate funding and financing recommendations based on annual financial commitments of the Sponsor needed to cover construction costs and meet operation and maintenance obligations.

Task 8. Permits

The Consultant shall identify all permits, easements, and clearances necessary for implementation of the Plan and any associated proposed projects or construction activities. This task will include recognition of State of Wyoming Executive Order 2015-4, Greater Sage-Grouse Core Area Protection.

Task 9. Geographic Information System Deliverables

The Consultant shall provide three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. Links to these documents are available at http://wwdc.state.wy.us/index.html. Consultants are strongly encouraged to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection.

a. FEATURE MAPPING. The Consultant will request a data template for feature mapping from the Office project manager prior to any GIS work. These templates define the organization and naming of “core” GIS data. Auxiliary GIS data layers, as needed for the project and described in the final contract, can be linked to the

templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the Technical Memorandum of WWDC GIS Framework Plan. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the Technical Memorandum of the WWDC GIS Framework Plan. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a Decimal Degree Coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office geodatabase template provided by the Office project manager. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

Task 10. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study, no later than August 15, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached. The project Sponsor shall be provided a copy of this draft report for their review.

Task 11. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the

meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly.

Task 12. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before October 15, 2019. These final documents and materials, shall include: 1) Twelve (12) hard copies of the final report, and 2) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date. From the above copies, the Consultant will provide the project Sponsor with three (3) hard copies.

Four (4) CD, DVD, or USB drive copies containing the final report, and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) CD, DVD, or USB drive copies containing the final report, and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or

USB drive shall have a hard copy table of contents attached. From the above copies, the Consultant will provide the project Sponsor with one (1) copy.

Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook.

Three (3) CD, DVD, USB drive or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. See Task 9 for further details.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

RIO VERDE ENGINEERING

Engineering Services	Hourly Rate
Consulting Principal (P.E. or L.S.)	$105.00
Professional Engineer	$ 95.00
Party Chief/Surveyor	$ 90.00
Engineering Technician	$ 75.00
Clerical	$ 60.00

Other Equipment	
GPS Surveying Equipment	$ 60.00 per hour
All Vehicles	$ 0.545 per mile
All-Terrain Vehicles	$ 75.00 per day
Ranger	$200.00 per day

Related Expenses	
Travel – Meals & Hotel	At Cost
4 Foot Lath	$30 per bundle
1 x 2 Stakes	$25 per bundle
Steel Post	$10 each
24” x 36” Copy	$ 5 per sheet
24” x 36” Plot	$20 per page
Copies (Black)	$0.15 – $0.30 per page
Copies (Color)	$0.50 – $1.00 per page
All other reimbursables	At Cost

All third party billing will be invoiced at cost.

CHEYENNE MUNICIPAL STORAGE, LEVEL II, PHASE I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Trihydro Corporation [Consultant], 1252 Commerce Drive, Laramie, WY 82070.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through March 31, 2021. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed three hundred twenty-eight thousand, five hundred dollars ($328,500).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
1. Project Management and Project Meetings	$ 25,500
2. Review of Background Information	$ 16,000
3. Growth and Demand Projections	$ 19,500
4. Hydrologic and Infrastructure Analysis	$ 38,500
5. Purpose and Need	$ 3,500
6. Alternatives Development and Screening	$ 54,000
7. Conceptual Analysis, Designs, and Cost Estimates	$ 56,000
8. Geotechnical Investigation	$ 24,000
9. Environmental Analysis and Permitting	$ 13,000
10. Economic Analysis	$ 13,000
11. Discretionary Task	$ 30,000
12. Draft Report	$ 21,000
13. Report Presentations	$ 4,000
14. Final Report and Deliverables	$ 10,500
Total Project Cost	**$ 328,500**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. Green River and Platte River Basins in Albany, Carbon, and Laramie Counties.

2. Purpose. To perform a Level II, Phase I study for the Cheyenne Municipal Storage Study.

3. History. The City of Cheyenne – Board of Public Utilities (BOPU), a regional supplier to an estimated 75,000 people in the City of Cheyenne, WY, the South Cheyenne Water and Sewer District, and F.E. Warren Air Force Base, has requested a Level II study to evaluate options to enlarge the capacity of its raw water storage system.

   The BOPU utilizes a complex system that includes trans-basin diversions, water-right exchanges, reservoirs, pipelines, and other infrastructure that spans across Albany, Carbon, and Laramie counties in southeast Wyoming. Ultimately, the water supply is gravity fed from the Snowy Range in Albany County to Granite Springs and Crystal Lake Reservoirs in Laramie County and on to the Sherard Water Treatment Plant west of Cheyenne. In the 2013 Cheyenne Water and Wastewater Master Plan, population and land use projections for 10, 20, and 50 year planning horizons were developed. The additional projected total annual demand for the 50 year projection equates to approximately 16,081 acre-feet per year. The Master Plan concluded that, additional source water supplies would be required to meet the demand projections, and recommendations included investigation into storing additional surface water.

   Additional surface water storage alternatives that will be analyzed will include raising the existing dams at Granite Springs, Crystal Lake, and Rob Roy Reservoirs. Other alternatives that have been recommended for further evaluation in past studies conducted on behalf of BOPU include additional pipelines to connect raw water and / or other existing storage

facilities to their water treatment plant and dredging of sedimentation that has accumulated in the reservoirs, affecting actual storage capacity.

The study will build upon existing work created by and for BOPU and will include an analysis of the Purpose and Need of the project, hydrologic analysis, alternatives analysis, permitting considerations, and field reconnaissance to investigate the various alternatives analyzed.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Project Management and Project Meetings

One formal project kick-off meeting, open to the public, shall be conducted early in the project schedule. The purpose is to familiarize interested parties with the scope of the project and to obtain input from those parties. The Consultant shall prepare a presentation including maps and other visual aids to explain the project.

In addition, monthly project update meetings will be conducted via teleconference with the Office and Sponsor. The Consultant shall, after coordinating with both the Office and Sponsor, set a monthly recurring teleconference meeting and supply call-in/login information.

Face-to-face project meetings will be conducted as necessary for the coordination of project activities and for keeping the Cheyenne Board of Public Utilities (BOPU / Sponsor) informed of project progress. The Consultant shall assume that they will conduct a minimum of three (3) informal, face-to-face, project meetings with the Office and Sponsor. The Consultant shall also assume a minimum of two (2) formal meetings. Formal meetings shall be open to the public and are in addition to other meetings listed within this scope of services. The Consultant will be responsible for setting and conducting the informal and formal meetings in coordination with the Office project manager and

Sponsor. No meeting shall be conducted without approval in advance by the Office project manager.

For any formal meeting listed in this Scope, unless otherwise specifically stated, the Consultant is responsible for publishing notice of the meeting(s) in a local publication at least two (2) times prior to the meeting. In the interest of economy, all meetings shall be scheduled to coincide with fieldwork whenever possible. The Consultant will prepare all notices, needed materials, and minutes for the meetings.

Task 2. Review of Background Information

The Consultant will gather and review all existing background information related to the Sponsor's water supply and distribution system. This includes information available through the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer's Office, Wyoming Department of Environmental Quality (DEQ), and any other sources as appropriate. The Consultant shall coordinate with the Sponsor to obtain all past relevant work including studies, as-built drawings, etc. that need to be reviewed. Relevant improvements recommended to the water system in any past work should be documented. In addition, the status of those recommended improvements should be identified (i.e.: disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies, and other regulations that may affect this project.

Of particular importance is the review of the following literature available through the Sponsor: Volumes 1 - 10, Cheyenne Water and Wastewater Master Plans, Final, by HDR Engineering, Nov., 2013.

As applicable, special attention shall be directed toward the review of the North Platte River Decree, 1945 (and Modified, 2001), the Platte River Recovery Implementation Program, the Laramie River Decree, 1922, the Colorado River Compact (1922), and the Upper Colorado River Basin Compact, 1948, and their impacts to both existing and future water use in the study area. The Consultant shall be provided a summary of the Modified North Platte Decree and a summary of the Platte River Recovery Implementation Plan that will be incorporated into the report, as deemed appropriate by the Office.

In addition, there is a large volume of documentation available via: http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html with specific reports stored under the following headings:

Cheyenne
Crow Creek
Crystal Lake and Granite Springs
Laramie County
Little Snake

Upper Laramie River

There has been a significant amount of work completed on water storage, supply, and use for the City of Cheyenne, and it is the Consultants responsibility to review this and any other applicable material to ensure that no duplication of effort occurs. The Consultant shall develop and present a "digital library" of documents reviewed. This information shall be summarized and referenced in the final report.

Review of background information should be completed prior to any meetings being held.

Task 3. Growth and Demand Projections

Based on previous work completed and new work developed under this scope of services, the Consultant shall verify/develop population growth projections for the Sponsor's water service area. Planning boundaries of the service area will be based on discussions with the Sponsor as to where future growth may occur. For example, the growth may occur within the corporate limits, the existing service area, or outside of both. This may result in the consideration of an expanded water service area that could reasonably be served by the Sponsor considering the investments in associated infrastructure.

Where necessary, historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) will be used as the basis of the projections (refer to http://eadiv.state.wy.us/). Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I, and projections from other sources including, but not limited to those that may be available from the city and county planning agencies. The Consultant shall provide graphic representations of each alternate population projection.

Water demand projections will be developed based on the Consultant's review of previous work completed and verified with the Sponsor. Demand projections should consider the Sponsor's tiered water rate system and any water conservation strategies in place. Demand projections should include bulk water sales to rural or independent water districts or systems, industries, and others as applicable. The potential for any future high-impact water demand scenarios shall be examined. The Consultant shall also investigate any water service regionalization opportunities that may exist to satisfy future water demands.

Task 4. Hydrologic and Infrastructure Analyses

The Consultant shall gather and analyze data and information as needed to examine the Sponsor's water supply sources and system. Capacities, diversion rates, pumping rates, pump capacities, and water treatment plant capacities shall be reviewed as applicable. The Consultant shall determine if the water supply sources are limiting the ability to meet present and future water demands and if so, identify, in subsequent scope tasks, water

supply alternatives to meet those demands. The Sponsor's existing main transmission lines and collection points shall be assessed in terms of sizing, condition, and possible redundancy use.

The Consultant will review the status of the Sponsor's water rights and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under each permit will be quantified to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant shall, in close coordination with the Office, Sponsor, SEO, and any other pertinent agency/entity, gather, review, and document historic and current operations associated with the Sponsor's water supply facilities such that an overview of the beneficial use, timing, duration, reservoir levels, volumes of releases, inflows, and outflows can be summarized. It will be important to note and list any and all operational changes over time. The Consultant will also review any water supply contracts or agreements held by the Sponsor and discuss their purpose and importance with the Sponsor.

In close coordination with the Office, Sponsor, SEO, and others as necessary, the Consultant shall, from the Task 2 review of the North Platte River Decree (1945) (and Modified, 2001), the Platte River Recovery Implementation Program, and the Laramie River Decree (1922), as well as review of the Colorado River Compact (1922), and the Upper Colorado River Basin Compact (1948), determine implications to both existing and future water use in the study area. Federal policies and authorizations will be analyzed and documented to determine compliance and necessary actions required with future use and operations scenarios.

Hydrologic data shall be gathered, analyzed, and summarized to a point sufficient to determine the availability of increased utilization of water resources under existing rights, permits, contracts, etc. The Consultant shall identify a study period that captures the historic variability required for this project and is well supported by data. It will be the responsibility of the Consultant to determine the means in which to accomplish the hydrologic analysis, considering the Sponsor's water supply system, the critical information required to complete the study, and contract budget.

Information gathered and developed under this task shall be coordinated with information gathered and developed under other tasks in this scope of services to ascertain the volume of water "available" under existing constraints and limitations to meet the future needs identified in Tasks 3 and 5.

Task 5. Purpose and Need

Data gathered during this study, particularly information from Tasks 1 - 4, should address

the following areas: the Purpose, the Need, and Goals and Objectives. The Purpose will define the problem to be solved. The Need will provide data to support the problem (Purpose). The Goals and Objectives will describe other issues that need to be resolved or opportunities that can be realized as part of a successful solution to the problem. Goals and objectives can also be thought of as ancillary or secondary benefits and may have the potential to mitigate adverse effects of a project.

As appropriate, the objectives of the US Army Corps of Engineers (USACE), Bureau of Land Management, US Forest Service, State of Wyoming, Sponsor, Office, the local community, and others as applicable should be considered during this effort. This will include, but not be limited to, the Clean Water Act, section 404 permitting process, and the National Environmental Policy Act (NEPA).

Consideration should be given to a single purpose approach to permitting. The data gathered shall be summarized and set the stage for the consideration of alternatives.

Task 6. Alternatives Development and Screening

Utilizing the information gathered in Tasks 1 – 5 above, a long list of alternatives shall be developed that are available to address the purpose and need including those meeting USACE requirements and guidelines that are practicable and reasonable. This could not only include surface water, but groundwater, increased conservation efforts, management improvements, etc. Any potential raw water storage or other supply/system projects that have been evaluated by or on behalf of the Sponsor shall be documented and discussed. In developing the long list of alternatives, the Consultant shall rely on desktop analyses and discussions with the Office, Sponsor, and regulatory agencies, to focus on the ***need*** developed herein. The Consultant will then conduct a screening of the long list of alternatives to identify potential fatal flaws. Screening criteria will be approved by the Office project manager and Sponsor and include, but not be limited to, purpose and need, technological feasibility, reliability and yield, environmental impacts, cost, and other unique considerations such as legal and institutional matters, social acceptance, land ownership, access, ancillary benefits, etc.

Screening shall be utilized to develop the top three (3) alternatives. The Consultant shall work with the Office project manager and Sponsor on documenting alternative site characteristics, scoring process, and screening results.

Prior authorization is required from the Office project manager before any work is performed under this task.

Task 7. Conceptual Analysis, Designs, and Cost Estimates

The Consultant, in close coordination with the Office project manager and Sponsor, will

perform all analyses necessary to support and compare the top three (3) alternatives. The Consultant will also analyze the potential impacts to existing water rights and any implications related to any water right decree and/or compact. In addition, recreational opportunities and needs, and determination of public benefits such as enhanced flows and other aquatic, wildlife, or other resource benefits will be evaluated.

The Consultant will prepare conceptual level designs and cost estimates of the top three (3) alternatives. If for a reservoir alternative, the designs and cost estimates will include the dam, spillway, conveyance, appurtenances, and support facilities such as access roads, boat ramps, and any other features necessary for the comparison of alternatives. For alternatives other than reservoirs, designs and cost estimates will be to a sufficient level of detail necessary for evaluation against other alternatives.

If any alternatives appear favorable for hydropower potential, a reconnaissance level evaluation will be performed, or relevant past hydropower analysis will be updated. The analysis will include an assessment of power generation based on flow duration and head available. Previously summarized, and/or newly developed, reservoir water levels and releases will be used to determine turbine head and flowrate. Revenue generated from the hydropower unit will be quantified based on an estimated power purchase price. Where applicable, this analysis will be included in Task 10 as a potential direct benefit.

The Consultant will prepare construction cost estimates in tabular form for each of the top three (3) alternatives. The table will be broken down into both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement will be prepared as outlined in Section C of Attachment “B”. The cost estimates should be based on the year this study is completed. The Consultant will then work with the Office project manager to determine an appropriate inflation factor that will be applied to the project’s current year total cost and projected into the future per the schedule of activities and time-lines developed herein.

The Consultant shall prepare a life-cycle cost analysis for the top three alternatives. This analysis should include, but not be limited to initial construction costs, loan payments, operation, maintenance, and replacement costs.

Prior authorization is required from the Office project manager before any work is performed under this task.

Task 8. Geotechnical Investigation

The Consultant will prepare detailed, site specific, geological reports for the top three (3) alternatives. Neither a drilling program nor back-hoe test pit program is included as part of this study; however, the plans shall be developed by the Consultant for the preferred alternative as part of this study. Depending on the results of this study, the plans may be executed in subsequent phases. Moreover, the intent of this task is for the Consultant to

conduct the necessary desktop analyses of the preferred alternatives to be followed up with field reconnaissance for verification as outlined below. The geological investigations for this study will include:

a. Surface and Bedrock Geological Conditions

The Consultant will prepare a detailed, site specific report of the surface and bedrock geology. If for a reservoir alternative, this shall include the areas of the dam, spillway, reservoir area, the diversion, and the necessary conveyance associated with any of the top three (3) alternatives. For alternatives other than reservoirs, analysis areas shall be determined by the Consultant, in coordination with the Office project manager, to determine geologic conditions, requirements, and limitations associated with the proposed alternative. The report will include a detailed geologic map of the project site delineating the rock types, their age relationships, and the structural characteristics of the site, including faults, folds, etc. The Consultant will utilize existing information to the extent possible and field reconnaissance to confirm conditions as they are described in other reports, journals, and geologic maps/records etc.

b. Borrow Material Investigation

The Consultant will use existing data, i.e. geologic maps/studies, etc., coupled with field reconnaissance to identify whether potential sources of material are available to meet the requirements of the top three (3) alternatives. Depending upon the results of this study, drilling and/or coring programs may be undertaken during subsequent phases of study to verify the adequacy of the borrow area.

c. Seismic Considerations

The Consultant shall review, and update as appropriate, seismic analysis described in any and all previous reports pertaining to the study area. A design earthquake will be determined for the sites and the seismicity characteristics of the area will be considered for the proposed projects. The goal is to reflect the geologic limitations and/or strengths in the conceptual designs and cost estimates prepared for the top three (3) alternatives.

Prior authorization is required from the Office project manager before any work is performed under this task.

Task 9. Environmental Analysis and Permitting

The Consultant will identify all of the permits and clearances needed for construction/implementation of the top three (3) alternatives; including but not limited to those that fall within the jurisdiction of the Clean Water Act, Endangered Species Act, Historic Preservation Act, 1964 Wilderness Act, the Fish and Wildlife Coordination Act, the Wyoming State Engineer's Office, the Wyoming Department of Environmental Quality,

the US Forest Service, the Wyoming Game and Fish Department, the State Lands and Investments Board, and the Bureau of Land Management or any other agency with jurisdiction that may affect the construction/implementation of the alternative. The Consultant will seek initial feedback from agencies as to potentially significant issues and related permitting requirements for the top three (3) alternatives, i.e.:

Aquatic Resources: The Consultant will review National Wetland Inventory Maps to determine the extent of wetlands present at each of the top three (3) alternatives. The Consultant will review recent court decisions and agency guidelines relative to aquatic resource issues, including stream mitigation, and will contact the US Army Corps of Engineers Cheyenne Field Office to seek their input in order to determine potential impacts of each of the top three (3) alternatives. The Consultant will also estimate the number of acres of wetland mitigation likely to be required under each potential alternative and recommend/outline a process which best implements the watershed approach, as described in "40 CFR Part 230, Compensatory Mitigation for Losses of Aquatic Resources; Final Rule." An on-the-ground wetland delineation program is not included in this study but, depending on the results of this Study, may be included in subsequent phases of analysis. However, the Consultant shall plan for field reconnaissance of each of the top three (3) alternatives to estimate accuracy of NWI acreage and to identify other potential aquatic resource impacts.

Wildlife/Fisheries Habitat: The Consultant will seek council of the US Fish and Wildlife Service and Wyoming Game and Fish Department to identify potential environmental impacts of the top three (3) alternatives.

Safety of Dams, High Hazard Dam Classification: The Consultant will seek council of the Wyoming State Engineer's Office, the US Army Corps of Engineers, Federal Emergency Management Agency, and affected populations to identify potential hydrologic consequences downstream of the top three (3) alternatives, as applicable.

Cultural: The Consultant shall complete a Class I literature search to determine if any significant cultural resources are present that could affect the feasibility of the top three (3) alternatives.

Prior authorization is required from the Office project manager before any work is performed under this task.

Task 10. Economic Analysis

a. Benefits Analysis

The Consultant will perform a benefit-cost analysis on the top three (3) alternatives utilizing data generated herein and from various state and federal agencies. The analysis should include an estimate of direct and indirect benefits. The Consultant shall then use

this data, together with information developed from previous tasks, to determine a "preferred alternative". The Consultant shall work with the Office project manager to then estimate a potential level of State funding assistance based on Program Criteria.

b. Ability to Pay and System Financing

The purpose of this task is to determine the amount that the Sponsor could pay for the preferred alternative project along with all of the operation, maintenance, and replacement costs and to provide information that can be used to develop a financing plan.

For the preferred alternative, the Consultant shall work with the Sponsor to acquire all necessary financial data required to determine the current and anticipated future water system revenues and expenditures. Information developed in previous tasks should be utilized and expanded as necessary for the analysis.

The Consultant shall prepare a funding scenario for consideration by the Sponsor that demonstrates the adjustments in revenues that may be necessary to accommodate the preferred alternative developed herein. The Consultant shall present the amended water revenue structures that would support the identified project while maintaining the system as financially self-supporting. The Consultant shall demonstrate the effects on the average monthly bill for residential water users. These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. The funding scenario shall be presented in the draft and final reports in a tabular, or other clear and concise, format. The adjustment in revenues will be presented based on the type of project represented by the preferred alternative and the associated eligible components and funding levels/terms allowed for under the WWDC Program Criteria. Funding for WWDC non-eligible components will only be in the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor may pursue in lieu of WWDC funds, to obtain the loan component, and/or to fund WWDC non-eligible components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze

the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans.

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

c. Public Interest

The Consultant shall evaluate whether the preferred alternative is in the public interest stipulating if the proposed project functions and services can be served by any person, association, or corporation engaged in private enterprise or if private enterprise has refused to provide the functions and services identified as being required by the proposed project. This information shall be included in the draft and final reports for the project.

Prior authorization is required from the Office project manager before any work is performed under this task.

Task 11. Discretionary Task

The Consultant will place **$30,000** of the proposed project budget in this discretionary task. The task is to allow changes in the scope as the project develops or as new issues are discovered.

No work will be initiated or funds spent for this task without prior written authorization from the Office project manager.

Task 12. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than July 1, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

The project Sponsor shall be provided a copy of this draft report for their review as well.

Task 13. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of other meetings included under this scope of services.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 14. Final Report and Deliverables

After incorporation of the Office’s and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office at least two (2) weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before

September 1, 2019. These final documents and materials shall include: Twelve (12) [MIN] hard copies of the final report and Twelve (12) [MIN] hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant, and date. Lettered or enumerated chapter and appendix tabs shall also be included with hard copy reports.

Four (4) [MIN] CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Two (2) [MIN] CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) [MIN] CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook.

As applicable, the Consultant shall provide three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. Links to these documents are available at http://wwdc.state.wy.us/index.html. Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection.

a. FEATURE MAPPING. As applicable, the Consultant will request a data template for feature mapping from the Office project manager prior to any GIS work. These templates define the organization and naming of “core” GIS data. Auxiliary GIS data layers, as needed for the project and described in the final contract, can be linked to the templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the Technical Memorandum of WWDC GIS Framework Plan. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. As applicable, simplified metadata shall be completed in accordance with standards described in the Technical Memorandum of the WWDC GIS Framework Plan. Attribute codes not included as part of the “core” data templates shall be defined in the metadata. GIS data shall be saved in a Decimal Degree Coordinate system with a NAD83 datum, specifically “GCS_North_American_1983,” as indicated in the Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office geodatabase template provided by the Office project manager. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. As applicable, project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

TRIHYDRO CORPORATION

PERSONNEL	UNIT RATE[1, 2, 3]
Administrative 1	48.00/hour
Administrative 2	58.00/hour
Administrative 3	68.00/hour
Administrative 4	72.00/hour
Technician Level 1	48.00/hour
Technician Level 2	58.00/hour
Technician Level 3	68.00/hour
Technician Level 4	78.00/hour
Technician Level 5	88.00/hour
Technician Level 6	96.00/hour
Technician Level 7	105.00/hour
Technician Level 8	115.00/hour
Professional Level 1	54.00/hour
Professional Level 2	67.00/hour
Professional Level 3	84.00/hour
Professional Level 4	95.00/hour
Professional Level 5	110.00/hour
Professional Level 6	118.00/hour
Professional Level 7	130.00/hour
Professional Level 8	141.00/hour
Professional Level 9	153.00/hour
Professional Level 10	163.00/hour
Professional Level 11	173.00/hour
Professional Level 12	180.00/hour
Technical Specialist 1	190.00/hour
Technical Specialist 2	205.00/hour
Technical Specialist 3	220.00/hour
Technical Specialist 4	240.00/hour
Project Principal	180.00/hour
Principal	200.00/hour
Senior Principal	220.00/hour

EXPENSES	
Subcontracts (Labor, Equipment and Services)	Cost
Shipping (i.e. Documents, Equipment, Supplies)	Cost

TRAVEL EXPENSES	
Meal Per Diem	$45/day/person
Airline Tickets	Cost
Hotel/Motel	Cost
Rental Vehicle	Cost

FIELD EXPENSES AND EQUIPMENT	
Consumable Field Supplies (Project Specific)	Cost
Rental Equipment (Project Specific)	Cost
Purchased Equipment (Project Specific)	Cost
Company Vehicles (daily)	54.5 cents/mile

Survey-Grade/Robotic Total Station GPS	$420.00/day or $70.00/hour
Map-Grade GPS	$90/day
Total Station, Levels	$75.00/day or $15.00/hour
Unmanned Aerial Vehicle (UAV)	$500.00/day

1. The above charges include fringe benefits, overhead and profit. No multiplier is used for billing.
2. Payment of invoices shall be due within thirty days; delinquent amounts due shall accrue a late charge of 1 1/2% per month from date of invoice.
3. Expert testimony services, including but not limited to review and preparation of documents, preparation for and time spent in depositions, and preparation for and time spent during arbitration or trial testimony, as well as related research and evaluation, shall be charged at 1.5 times the individual's billing level.

GR-RS-SC JPWB PUMP STATION & TRANSMISSION, LEVEL II STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Sunrise Engineering, Inc. [Consultant], P.O. Box 609, 47 E. 4th Avenue, Afton, WY 83110.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred seventy-one thousand, four hundred sixty-seven dollars ($171,467).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
1. Project Meetings	$ 5,502
2. Information Review	$ 7,691
3. Inventory, Evaluation, Aerial Survey, and GIS	$ 50,916
4. Hydraulic Model	$ 16,832
5. Growth and Demand Projections	$ 6,008
6. Recommendations and Cost Estimates	$ 27,964
7. Geotechnical Investigation	$ 8,655
8. Water System Financing	$ 9,527
9. Draft Report and Presentations	$ 24,962
10. Final Report and Deliverables	$ 13,410
Total Project Cost	**$ 171,467**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: The project is located at the pump station of the Green River Water Treatment Facility (WTF) and the adjacent area, which is located in Sweetwater County, Wyoming. The project area is located within the Green River Basin. This project is sponsored by the Green River-Rock Springs-Sweetwater County Joint Powers Water Board (GR-RS-SC JPWB).

2. Purpose: To perform a Level II study for the GR-RS-SC JPWB Pump Station & Transmission study. The JPWB is seeking a Level II feasibility study to investigate providing supplemental and redundant pumping capacity from the Green River Water Treatment Facility (WTF) into the transmission lines that serve Green River and Rock Springs. The existing pump station is a single point of potential failure in the transmission systems. The 2009 Master Plan contemplated simply replacing the existing pumps with higher capacity pumps. With the anticipated completion of the redundant transmission line to Rock Springs, the existing pump station becomes the “weak-link” in the transmission system. Additionally, the existing pump station cannot be operated with the standby generator, thus making it more vulnerable to interruptions in pumping. The JPWB would like to investigate an additional pump station, with dedicated transmission connections, that would add the needed capacity and also provide redundancy provided elsewhere in the system. This Level II study will develop conceptual designs, cost estimates, and provide a financing/funding analysis of Level III construction for improvements in the pump station and pumping capacity, and redundant pumping and associated components.

3. History: From 2005 to 2009, the WWDC conducted the GR-RS-SC JPWB Water System Master Plans (Phase 1 and Phase 2) to study the JPWB’s system in Green River and Rock Springs. Those studies identified areas of the system that required improvements and helped to prioritize those improvements. The need for these pump station & transmission improvements

have been identified in Task 6 of the 2009 WWDC GR-RS-SC JPWB Water System Master Plan (Phase 2), Level I, Final Report, January 2009, by Nelson Engineering.

Previous relevant reports:

Nelson Engineering, 2007, Final Report, Green River, Rock Springs, Sweetwater County, Joint Powers Water Board, Master Plan, Level I Study, Jan. 2007.

Nelson Engineering, 2009, Final Report, Green River, Rock Springs, Sweetwater County, Joint Powers Water Board, Water System Master Plan Phase 2, Jan. 2009.

Hansen, Allen & Luce, Inc., Final Report, Green River-Rock Springs-Sweetwater County Joint Powers Water Board Pipeline Feasibility Study, Level II, Nov. 2016.

Additional information may be found at the Water Resources Data System (WRDS), located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to

operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	

Contingency (Subtotal #3 x 15%) $_____
Construction Cost Total (Subtotal #4) $_____

Total Project Cost (Subtotal #1 + Subtotal #4) $_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and

Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Project Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

Additional public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant should assume a minimum of one (1) public project meeting in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

The Consultant shall evaluate whether the project is in the public interest, stipulating if the proposed project functions and services can be served by any person, association or corporation engaged in private enterprise, or if private enterprise has refused to provide the functions and services identified as being required by the proposed project. This information shall be included in the draft and final reports for the project.

Task 2. Information Review

The Consultant will gather and review all existing information related to the Sponsor's water supply and distribution system. This includes information available through the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer's Office, Wyoming Department of Environmental Quality Water Quality Division (DEQ), and any other sources as appropriate. Coordinate with the Sponsor to obtain all past relevant studies that need to be reviewed. Improvements recommended to the water system in any of these reports should be documented. In addition, the status of those recommended improvements should be identified (i.e., disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies and other regulations that may affect this project. The Consultant shall provide a summary of existing information in the final report.

Task 3. Inventory, Evaluation, Aerial Survey, and GIS

The Consultant shall complete the following tasks, as applicable and as needed for this Level II pump station and transmission study. The Consultant shall confer with the Sponsor to identify specific problem areas and concerns that should be focused on during this task.

The Consultant shall then propose the extent of inventory and evaluation to be performed in this task. Inventory and evaluations shall primarily focus on facilitating the objectives of this project that in part include addressing the Sponsor's areas of concern, identifying system deficiencies, and formulating improved GIS mapping. The Consultant shall coordinate with the Office project manager and the Sponsor regarding the expectations and limitations of this effort and shall be mindful of the following intentions of this task:

a. Update the JPWB master plans' (Phase 1 and Phase 2) inventory and evaluate the existing infrastructure within the pump station and downstream demands within the system to determine its ability to meet current and future water demands.

   i. Identify those components that presently require repair, replacement, and any redundancy requirements that improve reliability.

   ii. Identify those components that will require repair or replacement within the next twenty (20) years and provide a schedule for the needed improvements as described in Task 7.

b. Assess the capacity and serviceability of existing water treatment facilities, transmission and distribution pipelines, storage tanks, pump stations, PRV stations, flow monitoring devices, and other major components of the water supply system as applicable. Identify deficiencies and make recommendations for improvements needed to address these limitations. In conjunction with the hydraulic modeling task, pipe materials and pressure classes shall be examined in terms of suitability to provide adequate service.

c. Evaluate the system for water losses, including leaks and other non-revenue water. Results of the hydraulic model can serve as an indicator for potential leakage locations along with observations and discussions with system operators. Identify locations that may warrant a future leak detection study.

The Consultant shall evaluate the management and operation of the public water system in the study area to determine if procedural changes would be beneficial. If so, the Consultant shall detail those changes. Results of the hydraulic model simulations can serve as a basis for this task along with observations and discussions with system operators. The Consultant shall evaluate the existing water metering system to ensure water bills can be or are based on metered usage. The Consultant may offer suggestions relating to the existing billing and metering procedures.

The Consultant shall confer with the Sponsor to ascertain the Sponsor's existing GIS, determining where the files are housed (i.e., with a Consultant or with the Sponsor), the extent of the mapping, and required updates. The Consultant shall then propose the scope of further mapping to be completed in this task. Updates to the Sponsor's existing GIS are expected to include verification of the accuracy of the water system mapping in terms of piping connectivity, looping, location of system components, etc. Coordinate with the Sponsor during field work so the Sponsor may perform any required pot-holing to help verify and true-up the Sponsor's existing data.

All mapping and corresponding data sets, existing and updated, shall be consolidated into a comprehensive GIS. Mapping shall be extended as needed to facilitate objectives

of this project that include the hydraulic model, addressing the Sponsor's areas of concern, identification of system deficiencies, and development of a modern and efficient GIS. Coordination shall take place with the Sponsor and Office project manager on field survey limitations and any mapping logistics. Mapping will be performed using a method acceptable to the Office project manager and the Sponsor.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from our home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

b. Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_ North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

c. Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

Deliverables to the Sponsor shall include at least one set of large size hard copy printouts of the service areas and associated features for the Sponsor's use. These items are in addition to the GIS deliverables described in Task 10. The Consultant shall coordinate with the Office project manager and the Sponsor on final production of all hard copy mapping media and its delivery.

The accepted Consultant's Scope Alternative to conduct an aerial survey of the project site in Green River shall be conducted as part of Task 3. The $5,300.00 cost for the aerial site survey is included within the Task 3 budget amount.

Task 4. Hydraulic Model

In conjunction with the updated GIS and water system information obtained in Task 3, the Consultant shall update an existing hydraulic model of the Sponsor's water system and evaluate the proposed system modifications for the existing and proposed pump station and associated pipelines. The Consultant shall update the background images to the most currently available aerial images.

In addition, the Consultant shall evaluate and if necessary, update the daily demand figures within the demand scenarios. The Consultant shall update the water system's representation within the current model and assign appropriate node demands.

The Consultant shall utilize the following software platform or an Office project manager-approved equal:

- Bentley/Haestad Methods: WaterGEMS (ArcGIS based).

The JWPB currently utilizes <u>Water GEMS, Version V8i</u> to hydraulically model its water system. All computer hydraulic modeling shall be completed within this software suite. All modeling files shall also be submitted to the JPWB at the conclusion of the study.

The Consultant shall evaluate the adequacy of the existing and proposed pump station and pipeline system improvements to meet current and future water supply demands.

The Consultant shall use the model to size new pumps, transmission and distribution lines, storage, and other facilities as needed. In terms of fire flow, coordinate with the Sponsor to ascertain the Sponsor's expectations in providing fire flow to its service areas and the subsequent extent of fire flow simulations required. The model shall incorporate the recommended system upgrades or modifications and shall be detailed enough to satisfy the needs of the project.

The Consultant shall construct and execute the hydraulic model to determine system capacity limits in terms of maximum growth potential. Any inactive or planned water taps within the system shall be incorporated into the model. The Consultant shall investigate

whether the system has the capacity to effectively serve these taps should they eventually become active.

The Consultant shall perform a transient analysis to evaluate the existing transmission system and the implications of the proposed modifications. The Consultant shall include any necessary appurtenances or facilities that are necessary to alleviate transient concerns. This analysis should consider any and all conditions which might generate a transient condition.

Within the final report, the Consultant shall fully describe all modeling efforts particularly in terms of the model extents and acquisition of model input, including but not limited to the following:

- Nodal Elevations
- Demands
- Diurnal Curve(s)
- Pump Curves
- Valve Settings
- Pipe Diameters and Material
- Pipe Friction Factors
- Tank Geometry

The Consultant shall coordinate with the Sponsor and the Office project manager in the completion of this task.

Task 5. Growth and Demand Projections

Using recently developed population growth projections and future water demand projections from other studies (within particular areas of the Rock Springs water system) and in coordination with the approval of the Office project manager and the Sponsor, the Consultant may use existing projections to accomplish this task, or alternately, the Consultant may develop new population growth projection and demand projections.

Task 6. Recommendations and Cost Estimates

The Consultant shall develop a listing and descriptions of recommendations for system improvements identified during the study. The recommendations shall address needed infrastructure capital improvement projects along with non-structural improvements suggested for the funding, operation, maintenance, and replacement of the system. The Consultant will prioritize the recommendations in coordination with the Sponsor. A schedule shall be developed that identifies a phased approach for the implementation of the recommendations in accordance with their priority.

The Consultant shall prepare construction cost estimates in tabular form for each of the recommended system improvements. The table will identify both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Attachment B, Section C.3.

The Level III cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall then suggest an appropriate inflation factor that may be applied to the project's current year total cost and projected into the future per the schedule developed in this task.

Task 7. Geotechnical Investigation

As directed by the Office project manager and the Sponsor, the Consultant may need to conduct a geotechnical investigation in the areas of proposed construction, if conditions of concern arise. The Consultant shall conduct a geotechnical investigation at the sites of the proposed construction areas to determine foundation type and any special considerations that may need to be taken into account in the cost estimates.

Task 8. Water System Financing

The Consultant shall work with the Sponsor to acquire all necessary financial data required for this task to determine the current and anticipated future water system revenues and expenditures. To initiate this task, the Consultant shall determine if the Sponsor has a water enterprise fund in which existing water revenues allow the water system to be financially self-supporting or if the Sponsor must subsidize the water system from other budgets and revenues such as bonds, grants, etc. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.
- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses.
- Provide a fund that accrues sufficient reserves to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Consultant.

The Consultant shall first use the above criteria to make recommendations on the Sponsor's current water revenue structure (rates, tap fees, and other) that would support

the existing water system based on a revenue structure that encourages water conservation (tiered water rates). The current water revenues shall be compared against current water expenditures based on the last five (5) years of data (if available). The Consultant shall prepare a suggested itemized annual budget for the existing water system that would result in the system becoming and staying financially self-supporting.

Next, the Consultant shall prepare two (2) funding scenarios for consideration by the Sponsor that demonstrate the adjustments in revenues that may be necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 6. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting as defined by the above criteria. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users.

These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These two (2) scenarios shall be presented in the draft and final reports in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e., the Consultant shall demonstrate the necessary adjustments in water system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.
>
> Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan (4% interest / 30-year term) from WWDC, and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The

Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF
Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/
Contact: Bill Tillman, SRF Principal Engineer
WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS
Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs
Contact: Lorraine Werner, Community Programs Director, USDA RUS
Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602
Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies.

Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is

documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 9. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than April 1, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached. The project Sponsor shall be provided a copy of this draft report for their review.

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data.

The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The report presentation for this Level II Study shall also serve as a public hearing, with WWDC Office personnel serving as the hearing officer. The script for the hearing will be developed by the Office project manager and shall include the question as to whether there is a private entity interested in providing the proposed project functions and services in lieu of the sponsor. The Office is responsible for publishing a legal notice of the meeting in a statewide newspaper, once each week for three (3) weeks prior to the hearing; and in the local publication up to three (3) times prior to the hearing.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 10. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office project manager 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before July 1, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary. This count is inclusive of the copies previously submitted to the Office project manager. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include cost estimates. The summary should not exceed ten (10) pages.

- Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the “WWDO GIS Framework Data Plan” and the accompanying “GIS Standards Technical Memorandum.” This is in addition to delivery of hard copy mapping media as described in Task 3. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device.

- Any final reports or project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

SUNRISE ENGINEERING, INC.

Work Code	Work Classification	Hourly Rate	Work Code	Work Classification	Hourly Rate
101	Engineer Intern (E.I.T.) I	$ 96	451	Training Specialist I	$ 77
102	Engineer Intern (E.I.T.) II	112	452	Training Specialist II	91
103	Engineer III	128	455	Training Supervisor	110
104	Engineer IV	145	456	Training Manager	123
105	Engineer V	160	460	Training Director	154
110	Principal Engineer	175	500	Funding Specialist	115
121	Electrical Eng. Int. (E.I.T.) I	99	510	Plan Reviewer	107
122	Electrical Eng. Int. (E.I.T.) II	109	511	Building Inspector I	59
123	Electrical Engineer III	134	512	Building Inspector II	82
124	Electrical Engineer IV	155	513	Building Inspector III	102
125	Electrical Engineer V	170	525	Building Official	118
126	Principal Electrical Engineer	185	604	GIS Tech IV	83
301	Engineering Tech I	75	611	GIS Analyst	105
302	Engineering Tech II	79	51	Administrative I	42
303	Engineering Tech III	95	52	Administrative II	58
304	Engineering Tech IV	120	53	Administrative III	62
311	Electrical Tech I	81	721	Water Rights Specialist I	91
312	Electrical Tech II	89	722	Water Rights Specialist II	102
313	Electrical Tech III	102	723	Water Rights Specialist III	116
314	Electrical Tech IV	112	711	Project Manager I	96
315	Electrical Tech V	125	712	Project Manager II	120
351	Construction Observer I	70	930	Survey CAD Tech	100
352	Construction Observer II	80	935	One Man Survey Crew	140
353	Construction Observer III	95	940	Survey Manager	150
354	Construction Observer IV	100	945	Registered Surveyor	158
401	CAD Drafter I	62	950	Principal Surveyor	175
402	CAD Drafter II	72			
403	CAD Drafter III	92			
404	CAD Drafter IV	98			

Reimbursable Expense Schedule

Expense	Rate
Mileage	$ 0.545 per mile
Field Vehicle (on site)	$ 50 per day
Per Diem Meals	$ 35 per day
Snowmobile/ATV & Trailer	$ 250 per day
Troxler Nuclear Density Gauge	$ 40 per day
High Density Scanner	$ 150 per hour
Material Testing Lab Work	Actual Cost
Outside Consultants, Aerial Photography, etc.	Actual Cost
Lodging	Actual Cost
Other Expenses incurred	Actual Cost

HANOVER IRRIGATION DISTRICT BIGHORN FLUME REPLACEMENT, LEVEL II STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Inberg-Miller Engineers [Consultant], 124 East Main St., Riverton, WY 82501.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed sixty-three thousand, four hundred ninety-nine dollars ($63,499).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
1.	Scoping and Project meetings	$ 9,904
2.	Review of Existing Information	$ 2,800
3.	Flume and Canal Evaluation	$ 4,501
4.	Site Investigations, Preliminary Designs, & Cost Est.	$ 25,020
5.	Economic Analysis & Project Financing	$ 1,000
6.	Rehabilitation Plan	$ 3,000
7.	Draft Report	$ 10,431
8.	Report Presentations	$ 3,433
9.	Final Report and Deliverables	$ 3,410
Total Project Cost		**$ 63,499**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. Bighorn Basin, South of the Town of Worland.

2. Purpose. To perform a Level II study for the Hanover Irrigation District Bighorn Flume Replacement. This study will look at design alternatives for replacing the flume bridge and their associated costs.

3. History. The Bighorn Flume Bridge was identified as a top priority for repair or replacement in the 2017 Hanover Irrigation District Master Plan. The Master Plan sets the cost of repair at $729,000, and a rough estimate for replacement is $2.28 Million. The District prefers replacement, but before investing District and State resources in this costly project a better understanding of the alternatives and the cost is needed. This study will assess the options for replacement and recommend the best method to move water across the river.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

D. SCOPE OF SERVICES

Task 1. Scoping and Project Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsors and other interested parties with the scope of the project, as well as obtain input from the Hanover Irrigation District. The Consultant will prepare any maps or other visual aids as necessary to discuss the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsor and Office project manager.

The Consultant shall budget for a minimum of two (2) additional project meetings in the area to discuss options and receive feedback from affected parties. The Consultant shall coordinate with the Office project manager prior to organizing any meetings.

The consultant will prepare notices and provide meeting summaries, presentations, and copies of meeting materials.

Task 2. Review of Existing Information

The Consultant shall review the 2017 Hanover Irrigation District Level I Master Plan and gather and review any other existing information related to the project. This includes a structural assessment of the bridge in Appendix A, and an evaluation of the cost to repair the flume bridge. The current and future capacity of the flume shall be verified. The Consultant shall also review easements, land ownership, and all local area plans, annexation policies and other regulations that may affect this project.

Task 3. Flume and Canal Evaluation

The Consultant shall visit the flume, bridge deck, and adjoining canal sections that presently requires repair or replacement. The flume shall be assessed in terms of its current and future ability to safely convey water and maintenance vehicles across the river. The level I structural assessment, repair costs, and life cycle shall be reviewed. The existing assessment and repair costs shall form the basis for plans to repair or replace the structure.

Task 4. Site Investigations, Preliminary Designs, and Cost Estimates

The Consultant shall evaluate construction options to replace the flume bridge in situ as well as the feasibility of installing a new structure at an upstream or downstream location. The structures should be designed with the needs of the sponsor in mind, including the capacity of the flume, maintenance and operations, life cycle, and conveyance of maintenance vehicles.

Site investigations of alternatives should consider construction access, easements and right-of-ways, engineering a structure that spans the entire river, fluvial geomorphic characteristics of the river, and geotechnical aspects. Consideration should be paid to lands in proximity to the canal section in question, including left and right bank areas as well as nearby topography. Subsurface stability shall be assessed during this task. Ground penetrating radar, drilling, concrete coring, and other forms of investigation may be utilized. Foundations, structural instability, and potential damage to piers should be considered. Two geotechnical borings to bedrock will be conducted so appropriate bridge foundation alternatives can be evaluated.

The hydraulics of the Bighorn River at the project site shall be assessed for adequate flood passage under the existing and proposed flume bridge.

Easements, cost of land acquisition, federal, state, and local permitting issues should be described. Timing of construction to minimize disturbance to irrigators should be considered and described.

Conceptual designs, including plan view and standard cross section drawings, will be of suitable detail and accuracy to allow the sponsor to move the project to WWDC Level III construction funding. Two foot contours of the project site will be developed in an area large enough to include access easements, utilities and easements, and riverbank slopes.

Design drawings will be prepared of a preferred route that would allow construction equipment, and heavy trucks as necessary to access to the site. Needed improvements for "lay-down areas" and existing access roads will be identified that may involve widening, cross section alterations, placement of turnouts, installation of culverts, etc. Quantities will be estimated for any needed base materials, road surface toppings, fill materials culvert/pipe crossings, etc.

The Consultant shall be responsible for the means and methods of the canal evaluation and shall coordinate with the District on all onsite activities, access, and timing. Exploratory activities that are conducted shall not threaten the condition or operation of the canal.

Cost estimates shall be prepared according to the outline in Attachment B, Section C, Project Requirements, and must be of sufficient accuracy to move to funding partners. The construction cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed.

Deliverables include conceptual design of at least three alternatives. This will include a written description not limited to issues described above, plans for alternatives, cost estimates, and digital design files (CAD).

Task 5. Economic Analysis & Project Financing

The Consultant shall provide an ability to pay analysis and, if necessary, recommend adjustments to the District's revenues/rates. This analysis will be used to determine if the Sponsor has the ability to pay for projects based on their current revenue structure or if the Sponsor will need to raise their rates. The Consultant shall generate recommendations for rate structures based on annual financial commitments of the sponsor needed to cover construction costs, operation and maintenance obligations, and a repair and replacement account. The Consultant shall consider all of the District's

income and expenditures based on the assessment done in the Hanover Irrigation District Master Plan (Western Heritage, 2017). The analysis will be based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e.: the Consultant shall demonstrate the necessary adjustments in the District's system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.
>
> Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan (4% interest / 30-year term) from the WWDC, and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed revenues.

The Consultant shall then identify additional funding sources outside of the WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund potential WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The U.S. Department of Agriculture, U.S. Bureau of Reclamation, Wyoming DEQ-WQD Clean Water Act Section 319 and other eligible state and federal funding sources shall be considered for loans, grants, and combinations thereof.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the available funding. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 6. Rehabilitation Plan

The Consultant shall prepare a rehabilitation plan for the flume bridge based on the findings and results of the previous tasks presented herein. Recommendations for repair or replacement shall be made, and a prioritized schedule shall be prepared.

The Consultant shall consider all construction options and perform a comparison analysis for recommended options. Issues such as cost, permitting, operation and maintenance, capacity, construction schedule, and life cycle requirements will be compared.

Estimated costs from Task 4 will be based on current day prices. Alternatives that scheduled into the future should factor in a 2-3% per year inflation factor.

The Consultant shall evaluate whether the project is in the public interest, stipulating if the proposed project functions and services can be served by any person, association or corporation engaged in private enterprise, or if private enterprise has refused to provide the functions and services identified as being required by the proposed project. This information shall be included in the draft and final reports for the project.

Task 7. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than July 1, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

From the above copies, the Consultant will provide the project Sponsor with three (3) hard copies and a pdf copy of the draft report.

Task 8. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

The report presentation for this Level II Study shall also serve as a public hearing, with WWDC Office personnel serving as the hearing officer. The script for the hearing will be developed by the Office project manager and shall include the question as to whether there is a private entity interested in providing the proposed project functions and services in lieu of the sponsor. The Office is responsible for publishing a legal notice of the meeting in a statewide newspaper, once each week for three (3) weeks prior to the hearing; and in the local publication up to three (3) times prior to the hearing.

Task 9. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials, shall include: 1) Twelve (12) hard copies of the final report, 2) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date. From the above copies, the Consultant will provide the project Sponsor with three (3) hard copies.

Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) CD, DVD, or USB drive copies containing the final report, and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All

electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. From the above copies, the Consultant will provide the project Sponsor with one (1) copy.

Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook.

Three (3) CD, DVD, USB drive or portable hard drive copies of the GIS data (if applicable) according to the WWDC GIS Framework Plan and Technical Memorandum.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

INBERG-MILLER ENGINEERS

PERSONNEL

Professional Engineer VII	$145.00 /Hour
Professional Land Surveyor III	$110.00 /Hour
Professional Engineer VI	$125.00 /Hour
Staff Engineer II	$85.00 /Hour
CAD Drafting Technician III	$95.00 /Hour
GPS Technician/Party Chief III	$95.00 /Hour
Drilling Manager	$85.00 /Hour
Project Support	$80.00 /Hour
Engineering Technician II (Clerical)	$54.00 /Hour

EQUIPMENT

Vehicle	$0.545 /Mile
One-Ton Flat Bed Truck	$1.50 /Mile
Drill Rig	$2.30 /Mile
ATV	$100.00 /Day
UTV	$250.00 /Day
GPS/RTK System	$300.00 /Day
Robotic Total Station	$200.00 /Day

EXPENSES

Additional Hard Copies of Bound Reports (Less Than 100 Pages)	$35.00 /Copy
Motel, Meals, Prints, Postage, Equipment Rental, Photocopies, and Other Miscellaneous Supplies	At Cost
Subconsultant Services Secured With Client's Approval	At Cost

NOTES:

- All field charges begin at the time of departure and terminate at the time of return to the point of origin and/or place of lodging while away from the principal office, less time off for the convenience of the personnel.
- All rates apply to travel time, project management, consultation, and report preparation time, unless noted otherwise.
- Final invoiced amounts may vary from estimated amounts depending on variations in scope, time of performance, and/or changes in anticipated conditions. Any items not specifically listed are by quotation.

HORSE CREEK WATERSHED, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Anderson Consulting Engineers, Inc. [Consultant], 375 E Horsetooth Rd Bldg 5, Fort Collins, CO 80525.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred sixty-seven thousand dollars ($267,000).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
Task 1.	Project Meetings and Public Participation	$ 17,000
Task 2.	Review of Background Information	$ 6,000
Task 3.	Inventory and Description	$ 105,000
Task 4.	Streamflow Hydrology	$ 17,000
Task 5.	Management and Rehabilitation Plan	$ 72,000
Task 6.	Cost Estimates	$ 7,000
Task 7.	Economic Analysis	$ 6,000
Task 8.	Permits	$ 5,000
Task 9.	Geographic Information System Deliverables	$ 5,000
Task 10.	Draft Report	$ 15,000
Task 11.	Report Presentations	$ 5,000
Task 12.	Final Report and Deliverables	$ 7,000
Total Project Cost		**$ 267,000**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location The Horse Creek watershed is located in Southeast Wyoming and includes the Wyoming portion of the following HUC's:

HUC 10 #	Name	HUC 10 #	Name
1018001201	Upper Horse Creek	1018001205	Fox Creek
1018001202	Middle Horse Creek	1018001206	Lower Horse Creek
1018001203	Bear Creek	1018001207	Kiowa Creek
1018001204	Little Bear Creek	1018001301	Pumpkin Creek

2. Purpose. To perform a Level I study for the Horse Creek Watershed within Wyoming. Watershed Studies evaluate an individual watershed's existing conditions and, from collaboration with landowners, stakeholders, and public outreach, develop a Watershed Management and Rehabilitation Plan that identifies projects that are eligible for funding from WWDC and other sources that may improve or maintain watershed function and systems.

3. History. The South Goshen Conservation District is requesting a watershed study to evaluate current watershed condition and function. Wetland and riparian areas within the drainage will be analyzed, an investigation of stock water needs across the basin will be completed, a geomorphic classification of the rivers and streams will be provided, and a hydro-geologically based groundwater resource utilization and recharge analysis will be developed. The District would also like to look at making improvements to surface and groundwater irrigation systems within the watershed. This study will provide baseline data from which the District can pursue implementation of management practices that address the natural resource issues within the drainage.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information

of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Throughout the course of this study, the Consultant shall remain mindful of the following objective statement that pertains to all Wyoming Water Development Commission (WWDC) Watershed Studies:

> *The objective of a Watershed Study is to evaluate an individual watershed's existing conditions and, from collaboration with landowners, stakeholders, and public outreach, develop a Watershed Management and Rehabilitation Plan and identify projects that are eligible for funding from WWDC and other sources that may improve or maintain watershed function and systems.*

Task 1. Project Meetings and Public Participation

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsor and Office project manager.

Public meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant should assume a minimum of three (3) public meetings in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices and needed materials and prepare the meeting record. Meetings should be scheduled to coincide with fieldwork whenever possible. In addition to the public meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

The Consultant shall assist the Sponsor with public participation in terms of meetings and outreach that communicates the nature, status, and findings of this study. During the study, public outreach shall also occur as needed for information gathering and to help identify WWDC Small Water Projects and other WWDC water development opportunities. Public participation meetings and outreach are anticipated to involve local landowners, stakeholders, agencies, organizations, representatives of land management activities, and any other interested parties. Outreach may take the form of flyers, postcards, postings, newspaper advertisements, mailings, etc. If determined to be valuable for the project by the Office project manager and Sponsor, the Consultant may utilize a website to facilitate information dissemination. If the Sponsor is willing to do so, the Consultant may coordinate with the Sponsor to provide information on the Sponsor's website. The website may provide information postings, project updates, mailing signups, and general information exchange/request for information from interested parties.

Task 2. Review of Background Information

The Consultant shall gather and review existing background information available through any number of relevant sources, including, but not limited to: WWDC; Water Resources Data System (WRDS); Wyoming Department of Environmental Quality (WDEQ); Wyoming Game and Fish Department (WGFD); Wyoming State Engineer's Office (WSEO); Wyoming State Geological Survey (WSGS); Wyoming Oil and Gas Conservation Commission (WOGCC); University of Wyoming (UW); U.S. Geological Survey (USGS); Natural Resources Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); U.S. Army Corps of Engineers (USACE); Bureau of Land Management (BLM); local conservation districts; and other local agencies and local landowners as appropriate. Gathered and reviewed data may include published and unpublished literature, public records, research material, numeric data, spatial data, aerial photography data, topographic data, and existing river basin plans.

Deliverables under this task shall include a bibliography of existing studies and descriptions of their applicability to the watershed. A map showing the general location of completed WWDC planning and construction projects and studies shall be provided. Data deliverables shall include a spreadsheet that lists existing studies and links or copies of the referenced study and a Geographic Information System (GIS) file that shows existing and completed WWDC planning and construction project locations.

Task 3. Inventory and Descriptions

This task of the Watershed Study involves an inventory, description, and in some cases, an analyses of the Physical, Biological, and Anthropogenic Systems within the watershed followed by the preparation of written descriptions, maps, charts, tables, GIS data, etc. of specific watershed topics or areas of concern. In some instances, further analyses may be needed in order to formulate conclusions on specific watershed topics. The overall intention of this task is to provide a snapshot of existing conditions within the study area.

Intended deliverables for this task for each distinctive watershed topic are as specified within the outlined sections below.

Inventory: The inventory is intended as a data gathering effort on specific watershed topics. Overall, it includes the acquisition of information from any number of relevant sources either through remote gathering of various datasets or through field reconnaissance performed specific to this task or in conjunction with Task 5 efforts. Inventoried items and information are expected to be inclusive of, but not limited to historic reports, maps, and documents; interviews with the Sponsor, landowners and stakeholders; electronic files and website downloads; and any field reconnaissance investigations and surveys that are conducted. As part of the inventory, the Consultant shall assess and evaluate each watershed topic to the degree necessary to formulate conclusions and recommendations with respect to fulfilling the objectives of the watershed study. Furthermore, the Consultant should remain cognizant of any previously inventoried features and avoid duplicating work efforts.

Descriptions: Written descriptions are expected to consist of narratives contained within the final report. Although the narratives are envisioned to be brief, the Consultant may prepare each to the degree and detail necessary to accurately communicate the nature of each watershed topic. The Consultant shall generally describe the role of each topic in influencing the physical, biological and anthropogenic integrity of the watershed and draw conclusions as applicable.

Analyses: Analyses may be required on various watershed topics as agreed upon during the course of this study by the Consultant and the Office project manager. The intention of these analyses is to further refine the acquired information and formulate conclusions necessary to achieve the objectives of this study and subsequent preparation of a watershed plan and project recommendations. All analyses shall be conducted to the degree necessary to suit the nature of the topic and documented within the final report to fully support any conclusions, plans, or recommendations that are reached. Furthermore, the Consultant should remain cognizant of any previously analyzed topics and avoid duplicating work efforts.

Due to the nature and inherit complexity of topics contained within a watershed study, while conducting this task, the Consultant shall remain responsive to the likelihood of overlap in many of the categories, watershed topics, and issues in terms of inventorying, data collection efforts, written descriptions, and analyses. In addition, the Consultant should maintain a dynamic approach during the course of the study, recognizing limitations of what can be accomplished from a timing and budgetary standpoint, balancing efforts accordingly, and regularly coordinating with the Office project manager and Sponsor.

Table 1 presents an outline of the watershed systems, categories, and watershed topics. This outline is intended as a guide to help organize the following task objectives and steer

the Consultant's focus and structure of the final report. Items within the outline as well as its structure are not intended to be all-inclusive and absolute. During the course of this study, the Consultant may propose additions to, deviations from, or combinations thereof, etc. to any items contained within the outline.

Table 1: Outline of Watershed Systems, Categories, and Topics

Systems	Categories	Topics
A Physical Systems	**(I) Surface Water**	a. Hydrography
		b. Water Quality
		c. Flooding and Runoff
	(II) Geomorphology	a. Stream Classification
		b. Channel Structure and Stream Stability
		c. Sediment Transport
	(III) Groundwater	a. Hydrogeology
		b. Aquifers and Springs
		c. Groundwater Use, Base Flow, and Recharge
	(IV) Geology	a. Topography
		b. Soils
		c. Bedrock
	(V) Climate	a. Precipitation, Temperature, Climate Zones
B. Biological Systems	**(I) Fish and Wildlife**	a. Fisheries
		b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal)
		c. Sage Grouse
	(II) Land Cover	a. Riparian Areas
		b. Wetlands
		c. Vegetation and Plant Communities
C. Anthropogenic Systems	**(I) Agricultural Water Use**	a. Irrigated Lands
		b. Irrigation Systems
	(II) Domestic, Municipal, and Industrial Water Use	a. Potable Water Systems
		b. Industrial and Mining
		c. Produced Water
	(III) Water Storage	a. Reservoirs
		b. Upland Water Storage
	(IV) Land	a. Land Use
		b. Land Ownership
		c. Land Management and Upland Water Resources
		d. Cultural Resources

A. Physical Systems

The Physical Systems within the watershed shall be cataloged as outlined below with respect to the following categories: Surface Water; Geomorphology; Groundwater; Geology; and, Climate.

(I) Surface Water

Specific watershed topics and their respective deliverables under the Surface Water category are described below. In the interest of maintaining consistency, the Consultant shall utilize the National Hydrography Dataset (NHD) as the foundation for all Surface Water inventories, descriptions, and analyses.

a. Hydrography: The Consultant shall establish a foundation for this study by utilizing existing information and sources to develop mapping of all pertinent surface water hydrology features within the watershed, including but not limited to river and stream networks, reservoirs, wetlands, ditches, etc. Inventory and briefly summarize the physical hydrology of the watershed. Utilizing existing information where available, the Consultant shall attribute and label streams accordingly as perennial, intermittent, or ephemeral. Hydrographic features within the watershed shall be identified, mapped, and described.

Deliverables under the Hydrography topic shall consist of a description contained within the final report and any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9). If using existing GIS material, it shall be referenced within the final report as applicable.

b. Water Quality: Water quality for the watershed, including any relevant data associated with Clean Water Act Section 303d listed streams, will be mapped using existing data. Information available from WDEQ, conservation districts and other agencies will be used to develop this map. Wyoming Pollutant Discharge Elimination System (WyPDES) permits shall also be mapped. The latest Wyoming Surface Water Classification List available from the WDEQ-Water Quality Division should be obtained and presented. Additionally, the Ayers Westcot Irrigation suitability diagram should be utilized to determine the effects of irrigation water on the infiltration capacity of the soils based on the EC/SAR relationship.

Deliverables for Water Quality are anticipated to consist of a written description and a single map and table inserted into the final report, or sourced and referenced (SuiteWater GIS) as appropriate.

c. Flooding and Runoff: The Consultant shall inventory and describe areas and occurrences of flooding, runoff issues, and areas prone to cross-drainage problems within the watershed based on any in-field

reconnaissance that takes place. Document problem areas through discussions with landowners and other stakeholders within the watershed. As appropriate, discuss any existing Best Management Practices (BMP) that mitigate flooding, runoff, and stormwater issues and appraise their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

Deliverables concerning Flooding and Runoff shall consist of a written description. Any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data.

(II) Geomorphology

Topics and deliverables under the Geomorphology category are projected to consist of the following elements and described individually or in some combination thereof:

a. Stream Classification: The stream systems within the watershed shall be classified using a Rosgen Analysis. In addition, any stream classifications relevant to geomorphology that have been developed by WGFD or WDEQ shall be acquired and presented. The intention of morphologic classifications is to better understand channel processes based upon channel form and, for example, to help identify which diversion improvement techniques, channel stabilization measures, and stream restoration or water development projects are appropriate for a particular stream segment. Floodplain connectivity may be mapped using Federal Emergency Management Agency (FEMA) floodplain data, empirical evidence, local input, etc., and integrated into Rosgen analysis to show the floodplain area still connected to the stream.

b. Channel Structure and Stream Stability: Channel structure, morphology, and stability of stream systems will be assessed where appropriate. Channel segments of specific interest will be identified for future study and mapped. Locations of headcuts, nickzones, geologic controls, man-made grade control structures and “hard points” shall be identified and mapped. Proper Functioning Condition (PFC) and NRCS Stream Visual Assessment Protocol (SVAP) assessments may also be incorporated where applicable.

c. Sediment Transport: The Consultant shall inventory and describe occurrences of erosion and sedimentation primarily based on interviews

with landowners and others or empirical evidence obtained during any in-field reconnaissance and public outreach. Opportunities for improvement shall be identified and mapped.

Deliverables for all topics under the Geomorphology category shall consist of a written description and any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

(III) Groundwater

Watershed topics and deliverables under the Groundwater category are anticipated to consist of some combination of the following elements:

a. Hydrogeology: The Consultant shall present the available mapped hydrogeologic units, or hydrostratigraphy, of the aquifer formulated on the basis of hydraulic properties that have considerable lateral extent and that also form a geologic framework for a reasonably distinct hydrogeologic system. Information from the USGS and the WSGS regarding surficial and bedrock geology shall be obtained for mapping purposes. Information on bedrock units, structural elements and geologic hazards shall be obtained and mapped from existing sources. Information gathered under this topic may be useful in evaluating opportunities for development of groundwater resources.

b. Aquifers and Springs: In order to characterize the hydrogeology of the watershed and the groundwater utilization in the subwatersheds, aquifers will be described and mapped using existing data. Alluvial aquifers, general groundwater flow direction, bedrock aquifers, artesian conditions, spring locations, and groundwater usage shall be discussed and mapped as appropriate. More detailed analysis may be provided where geology or soils have a significant effect on watershed functions.

c. Groundwater Use and Recharge: Groundwater base flow contributions and groundwater recharge rates will be summarized based on information drawn from any available past studies and research that may have involved geology, soils, precipitation, surficial aquifers, and flow measurements. To the best extent possible using existing data the consultant shall estimate systems, patterns, and rates of natural recharge, and identify natural ground water discharge (e.g., springs, gaining streamflow, etc.). Map all groundwater use and features in the watershed (wells, spring discharge, etc.). Identify any groundwater control areas designated by the WSEO.

Deliverables for all topics under the Groundwater category are anticipated to consist of written descriptions; GIS data (packaged and delivered or sourced and referenced within the final report as applicable); any necessary maps, charts, tables, etc. inserted into the final report; and any necessary analyses and respective conclusions fully documented within the final report.

(IV) Geology

Watershed topics and their respective deliverables under the Geology category are envisioned to consist of the following:

a. Topography: The Consultant shall provide a description of the topography within the watershed. The overall terrain, landforms, contours, relief, etc. within the study area should be characterized. Hills, valleys, mountains, plains, plateaus should be described in order to provide a mental picture of the landscape. Provide information on land slope and slope stability relative to its potential effect on water development and storage projects.

Deliverables for Topography are anticipated to consist of a written description inserted into the final report.

b. Soils: Soils within the watershed will be described and mapped using existing available data obtained from sources such as the NRCS Soil Survey, SSURGO, etc. More detailed analysis may be provided where geology or soils have a significant effect on watershed characteristics. Soil descriptions may be presented to help depict what plant community composition may exist in a given area.

c. Bedrock: Bedrock within the watershed will be described and mapped using existing available data obtain from sources such as the WSGS. More detailed analysis may be provided where geology or bedrock may have a significant effect on watershed characteristics.

Deliverables for Soils and Bedrock are anticipated to consist of referenced GIS data source(s), such as SuiteWater, in the final report; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

(V) Climate

Specific topics and their deliverables under the Climate category are anticipated to involve the following:

a. Precipitation, Temperature, Climate Zones: The overall climate conditions within the watershed shall be characterized in terms of precipitation, temperature, and climate zones. The range of elevations across the watershed should be considered, and the growing season should be assessed and described along with first and last frost dates. The Consultant may make use of local weather sites and PRISM Climate Data (http://prism.oregonstate.edu) for this effort which is obtainable from the online mapping server developed by WRDS (http://www.wrds.uwyo.edu/sco/data/PRISM/PRISM.html).

Deliverables for the Climate category are anticipated to consist of a written description and any necessary maps, charts, tables, etc. contained within the final report.

B. Biological Systems

The Biological Systems within the watershed shall be inventoried as outlined below with respect to the following general categories: Fish and Wildlife; and, Land Cover.

(I) Fish and Wildlife

Watershed topics and their respective deliverables under the Fish and Wildlife category are anticipated to consist of some combination of the following topics:

a. Fisheries: Fish distribution, fish passage barriers and all other relevant information shall be described and mapped. The Consultant should refer to WGFD or other applicable agencies. In addition, stream classifications that have been developed by WGFD as related to fisheries shall be acquired and mapped. Existing state-held instream flow water rights within the watershed shall be identified, mapped, and described.

b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal): The Consultant shall describe and acquire available mapping (or provide reference to online mapping sources, e.g. NREX, SuiteWater GIS) from WGFD of seasonal ranges and migration corridors for big game species as well as critical habitat and birthing areas. Also, the Wyoming Natural Diversity Database (WYNDD) may list many non-game species of concern that may be present within the study area, including fish, birds, amphibians, mollusks, mammals, and reptiles. A review of literature should be conducted to compile information on wildlife habitat distribution, sensitive, and endangered plant and animal species. The WYNDD should be queried to generate a list of Species of Concern that have been categorized as rare, endemic, disjunct, threatened or otherwise biologically sensitive in the watershed. In addition, species from the BLM or USFS Sensitive Species list will be identified. The most current iterations of the WGFD mapped

seasonal, crucial, parturition, migration corridor and migration barrier mapping may be acquired and presented.

c. Sage Grouse: The Consultant shall describe and map the Greater Sage Grouse core area as recognized by WGFD. The Greater Sage Grouse is considered a species of concern and requires additional management consideration throughout the state. Greater Sage Grouse Core Area Mapping and applicable stipulation buffers as defined by Executive Order 2015-4 will be presented.

Deliverables for the Fish and Wildlife topics are anticipated to consist of written descriptions; referenced GIS data source(s) in the final report; and any necessary maps or reference to online maps (SuiteWater GIS), charts, etc. described and inserted into the final report.

(II) Land Cover

For the Land Cover inventory, describe the influence of land cover on the hydrologic systems and its current conditions. Data may be complied from the National Land Cover Dataset (NLCD), National GAP Analysis Program (GAP), Landscape Fire and Resource Management Planning Tools (LANDFIRE), and other sources as applicable. Overall, the Consultant shall describe the roles of riparian areas, wetlands, vegetation, and plant communities in enhancing water quality, reducing flood impact, streambank stabilization, and mitigating erosion activity and sediment transport. Topics and deliverables under the Land Cover category are envisioned to consist of the following:

a. Riparian Areas: The Consultant shall describe and map riparian zones within the watershed. Riparian plant and animal communities should be documented using any available data sources. All riparian features within the watershed should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of riparian areas in influencing the chemical, physical, and biological integrity of the watershed.

b. Wetlands: The Consultant shall map the existing wetlands within the watershed utilizing the National Wetlands Inventory (NWI) created by the USFWS and supplemented with any other available data sources. Generally describe the role of wetlands in influencing the chemical, physical, and biological integrity of the watershed.

c. Vegetation and Plant Communities: Existing vegetative cover within the study area shall be assessed and mapped using available data sources such as LANDFIRE datasets to help describe existing vegetation types, existing canopy cover, and existing vegetation height. Describe the

collective plant life within the study area and discuss how regional climate affects types of plants that survive within the plant community. Vegetation features should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of vegetation and plant communities in influencing the chemical, physical, and biological integrity of the watershed. The consultant shall also include a discussion of weeds and invasive species.

Deliverables for Land Cover topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications (SuiteWater GIS) in the final report; any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

C. Anthropogenic Systems

The Anthropogenic Systems (or those systems relating or resulting from the influence of human activity) within the watershed shall be inventoried as outlined below in terms of the following categories: Agricultural Water Use; Domestic, Municipal, and Industrial Water Use; Storage; and, Land.

(I) Agricultural Water Use

Within the Agricultural Water Use category, the Consultant shall acquire any existing irrigated lands mapping and other relevant information pertaining to Agricultural Water Use available from WWDC River Basin Plans (http://waterplan.state.wy.us/) or completed WWDC irrigation district master plans (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped irrigation features and avoid duplicating work efforts. Supplemental data and information pertaining to water rights and irrigated lands may also be obtained from the WSEO. Specific topics and deliverables under the Agricultural Water Use category are anticipated to be comprise of the following:

a. Irrigated Lands: The Consultant shall gather, review, and describe available irrigated lands mapping and then further evaluate, map, and describe significant changes in irrigated lands by using aerial photos or other remotely sensed data as applicable. Irrigation methods should be identified, mapped, and described according to center pivot, flooding, or other methods. The Consultant shall associate all irrigated lands mapping generated in this task with either a dry, average, or wet year in terms of streamflow hydrology. Methods to classify the dry, average, and wet years may be as defined in WWDC River Basin Plans or proposed by the Consultant.

b. Irrigation Systems: Irrigation water systems within the watershed will be described and mapped. Mapping should include diversions (greater than 2 cfs or as directed by the Office project manager) and their main conveyance systems (ditches, pipelines, etc.) for irrigation systems. Points of diversions and scanned plat maps of ditch locations and names may be sourced from water rights data obtained from the WSEO e-Permit system and its online plat viewer. ePermit conversion tools for initial plotting of diversions may be used as a starting point for mapping irrigation systems, this tool is documented in the WWDO GIS Standards Technical Memo and available on the WWDC's website. Where applicable, the Consultant may utilize diversion records obtained from annual hydrographer records and the SEO Realtime Streamflow Data website (seoflow.wyo.gov). Reservoirs and wells that supply irrigation districts will be identified on the map. Trans-watershed diversions shall be identified, mapped, and quantified in the report.

Based upon meetings with the Sponsor, stakeholders, and landowners, the Consultant may identify existing smaller irrigation systems and conduct subsequent evaluations. The Consultant shall acquire information necessary to ascertain any rehabilitation that may relate to improving water delivery along with annual or seasonal shortages of water supply or irrigation water delivery issues. Evaluations may define existing issues with water supply, erosion, conveyance loses, seepage, etc. Features such as headgates, diversion structures, and conveyance methods should be evaluated and mapped in the field as needed. Opportunities to improve diversion methods and reduce maintenance through the installation of grade control structures, channel stabilization efforts, or other in-stream improvements may be identified.

Deliverables for Agricultural Water Use topics shall consist of written descriptions. Any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9). Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

(II) Domestic, Municipal, and Industrial (DMI) Water UseWithin the DMI Water Use category, the Consultant shall acquire any existing information from WWDC River Basin Plans (http://waterplan.state.wy.us/) or master plans that have been prepared (http://library.wrds.uwyo.edu/ wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped and described features and avoid duplicating work efforts. Supplemental data and information pertaining to water rights may also be obtained from the WSEO. Specific watershed topics and

deliverables under the DMI Water Use category are envisioned to consist of the following:

a. Potable Water Systems: Municipal, rural, or regional potable water transmission and distribution systems present in the watershed will be identified with key infrastructure features described and mapped. Mapping should include source water diversions, wells, and primary conveyance and storage features. Reservoirs and groundwater sources that supply municipalities, rural, and regional systems should also be identified. Water use should be quantified for domestic, municipal, and rural water users as estimated from water right information obtained from the WSEO e-Permit system or any other available source.

b. Industrial and Mining: The Consultant shall identify, describe, and map significant industrial water users or mining activities within the watershed. Water use should be quantified as estimated from water right information obtained from the WSEO e-Permit system or other available sources. Briefly describe any water quality or environmental concerns that have been identified as the result of mining or other industrial activities. Information on active or abandoned oil and gas wells within the watershed should be presented as obtained from the WOGCC.

c. Produced Water: The Consultant shall identify, describe, and map the existence of any produced water sources from underground formations that are brought to the surface as a byproduct of oil and gas production. The volume of produced water from these wells over time should be estimated from available sources. If available from WDEQ or other state agencies, the chemical and physical properties shall be described.

Deliverables for DMI Water Use topics are anticipated to consist of a written description; GIS data (packaged and delivered); and any necessary maps, charts, tables, etc. inserted into the final report.

(III) Water Storage

Topics and their respective deliverables under the Water Storage category are anticipated to involve the following:

a. Reservoirs: The Consultant shall identify and map existing reservoirs based on aerial photography and WSEO data. Descriptions and mapping of existing water storage facilities greater than 500-acre-feet capacity should include an aerial mapping of the reservoir, water right permits, permitted capacity, end of month average storage if available, water use type, general condition as it relates to holding water (viable or non-viable),

and where the stored water is used. Describe and quantify the permitted total storage at a HUC 10 subwatershed level.

Deliverables for the Reservoirs topic shall consist of any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

b. Upland Water Storage: Existing wildlife and livestock water sources and storage facilities, including but not limited to springs, stock reservoirs, tanks, ponds, and stock wells, etc. will be mapped, evaluated, and described. Such facilities will be mapped after confirmation of their existence and supplemented by a brief description of their general condition as it relates to holding water (viable or non-viable). Based on this inventory, an assessment of areas in need of additional watering facilities shall be identified, mapped, and described.

Deliverables for the Upland Water Storage topic shall consist of a written description; and any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data.

(IV) Land

Specific watershed topics and their respective deliverables under the Land category are anticipated to be inclusive of the following:

a. Land Use: All land uses within the study area shall be described and mapped, including, but not limited to agricultural, urban, commercial, industrial, transportation, power systems, utilities, easements, etc. The Consultant shall acquire Land Use data sets from existing sources or provide reference to SuiteWater GIS, or Natural Resource and Energy Explorer (https://nrex.wyo.gov/). The watershed shall be characterized according to its level of development, dominant land use type, and relative water use.

b. Land Ownership: The Consultant shall identify, describe, and map essential details about Land Ownership within the watershed. The composition of federal, state, and private lands and the orientation and locations of ownership parcels should be discussed as related to future development or management strategies and project planning. Land

ownership information may be obtained from available sources including the county assessor's office.

c. Land Management and Upland Water Resources: The Consultant shall identify, describe, and map or provide reference to SuiteWater GIS, or Natural Resource and Energy Explorer (https://nrex.wyo.gov/) details about Land Management and Upland Water Resources within the study area. Ascertain where private and public grazing uses are located and identify grazing radius of influence from existing water sources or implementation of any upland water development.

Where requested by the landowner(s), evaluations should be conducted on existing upland water resources. Any potential enhancement and improved water distribution for livestock and wildlife that facilitates grazing management for range resource improvement should be documented. NRCS Ecological Site Descriptions (ESD) may be acquired and mapped as needed to help identify and describe common plant communities and other land cover characteristics of the watershed. The Consultant should identify potential benefits to the watershed through plant community invigorations, reduction of erosion, and stream channel stabilization achieved from water development projects strategically implemented within the watershed. Other issues and opportunities, such as making beneficial use of produced water and removal of high water demand invasive species, can be examined.

As appropriate, discuss any existing BMP for livestock grazing and ascertain their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

Deliverables for the Land Use, Land Ownership, and Land Management and Upland Water Resources topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; and any necessary maps, charts, tables, etc. described and incorporated into the final report.

d. Cultural Resources: The Consultant shall identify and produce a summary map of any Cultural Resources (or evidence of past human activity) that may exist within the study area. For instance, these may include pioneer homes, buildings or old roads; structures with unique architecture; prehistoric sites; historic or prehistoric artifacts or objects; rock inscription; human burial sites; and, earthworks such as battlefield entrenchments, prehistoric canals, or mounds. The Consultant should

acquire or reference information on cultural resources from the Wyoming State Historic Preservation Office as well as the Natural Resource and Energy Explorer (https://nrex.wyo.gov/), or SuiteWater GIS.

Deliverables for the Cultural Resources are anticipated to consist of references to online map applications and any necessary maps, charts, tables, etc. contained within the final report.

Task 4. Streamflow Hydrology

The Consultant shall use previously prepared hydrologic models, existing flow estimates, newly collected gage data, or alternative applicable techniques to characterize streamflow in the watershed. The Consultant should draw upon any previous hydrologic models and sources to avoid unnecessary duplication of efforts. Existing sources may include the spreadsheet models created for WWDC River Basin Plans; WWDC planning and reservoir studies where more comprehensive models may have been developed; or WWDC instream flow hydrologic feasibility reports (http://library.wrds.uwyo.edu/). Coordinate with the Office project manager on availability of past hydrologic models or water supply analyses that may be useful for this task.

Streamflow for each HUC 10 should be summarized on a monthly and annual basis for dry, average, and wet years. Methods to classify the dry, average, and wet years may be as used in any prior analyses or proposed by the Consultant. The resulting classification of dry, average, and wet years shall be presented in the final report. Based on the extent and suitability of available past hydrologic models that contain streamflow information, the Consultant may review and summarize that information, refine and update those models, or explore or supplement past efforts with other techniques such as regression equations based on specific basin characteristics like catchment area, elevation, and stream channel geometry. Concurrent discharge measurements and temporary gaging sites may also be considered in order the further quantify streamflow estimates. The methodologies ultimately selected should be fully described in the final report with all supporting data. All modeling input data, regression analysis techniques, assessment methodologies, results, conclusions and any assumptions or limitations therein shall be described and presented. Clearly stipulate whether the resulting streamflow data should be considered gage flow, synthesized flow, virgin flow, depleted or undepleted flow, etc.

Existing stream gage coverage and periods of record shall be assessed and mapped. A map of specific stream reaches and locations shall be labeled according to annual volume for dry, average, and wet streamflow conditions. Hydrographs shall be included in the report to illustrate monthly streamflow for dry, average, and wet years. Specific stream locations within the presented and delivered GIS mapping and files shall be attributed according to a monthly and annual streamflow basis for dry, average, and wet years. This should be done at a HUC 10 subwatershed level and at all gauge locations.

In terms of water supply, this task should also describe when and where water shortages may be an issue in the watershed and who or what is most likely affected by a dry water year. The Consultant shall explain and map areas that are commonly in regulation and when they typically go into regulation based on discussions with landowners, WSEO hydrographers, and review of annual Hydrographer reports.

Temporary Gaging: Should it be necessary to verify streamflows, the Consultant shall acquire from the Office, and install stage monitoring equipment and develop a rating curve (stage-discharge relationship) for applicable streams. To establish each stream gage site, the Consultant shall choose the most suitable location possible. The Consultant will be responsible for landowner clearance, permitting, equipment acquisition, protocol, installation, operation, maintenance, development of rating curves, data collection, and all appurtenances associated with the operation of the stream gages during the life of the Contract. Gaging sites selected for this study shall be clearly identified within the final report by written description and displayed on maps.

Stage recording and data logging devices may be acquired from the Office for use in this project. The Consultant shall be responsible for providing all other required equipment, including data transfer units, laptops and computers for data upload and processing, software, and all equipment required for the physical installation of each unit. Based upon site requirements and proximities, the Consultant shall determine and install the proper number of pressure transducers to ensure proper calibration to barometric pressure at each stage recording site. Any equipment provided by the Office under this Contract and all data collected shall be the sole property of the Office and returned to the Office prior to close of Contract. Note that surcharges or rental fees of any kind shall not be billable within this Contract should the Consultant chose not to install equipment available from the Office.

As applicable, the Consultant shall be responsible for seasonal removal of all equipment to prevent its damage. Depending on weather conditions and site accessibility, it is anticipated that equipment may need to be removed for winter and reinstalled in spring.

Deliverables for this task are anticipated to consist of any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 9) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any necessary analyses and respective conclusions fully documented within the final report.

Task 5. Management and Rehabilitation Plan

The Consultant shall prepare a Management and Rehabilitation Plan (Plan) that establishes specific project suggestions to improve watershed condition and function and provide benefit for wildlife, livestock, and the environment. The Plan is expected to provide an overview of specific improvements that can be implemented to address key opportunities identified within the watershed.

Projects identified in the Plan should be tailored to address any problems or opportunities identified in Tasks 3 and 4 and in collaboration with (or as requested by) landowners, stakeholders, land management agencies, and any other interested parties. The Plan shall identify improvements to land and water management practices within the watershed considering private property and water rights. Landowner and land management agency interviews will be conducted to determine past and present historical management activities and to identify watershed development, management, and rehabilitation opportunities.

The Plan shall identify and recommend watershed development, management, and rehabilitation opportunities in relation, but not limited to, the following watershed functions and facilities:

- Surface water storage: The Consultant may evaluate the potential for new or increased water storage to benefit riparian habitat and wildlife, address flood impacts, and control or improve water quality and stream channel stability. Opportunities may be identified through discussions with the Sponsor, local stakeholders, irrigators, and landowners within the basin.
- Irrigation supply systems with emphasis on upgrades, operational improvements, and efficient management techniques including, but not limited to, issues with water quantity, erosion, conveyance loss, infrastructure, and seepage.
- Livestock/wildlife upland water through the development of stock ponds or groundwater supply.
- Groundwater recharge: Identify areas for potential groundwater recharge projects, if appropriate.
- Stream channel condition and stability.
- Wetland development and enhancement.
- Grazing management.

The Consultant shall develop a summary table of the recommendations generated during the watershed study. The intention of the table is to provide a guide for the Sponsor in the selection and implementation of the Plan's project recommendations. The following evaluation criteria may be used by the Consultant in the development of the summary table. The Consultant may propose alternate evaluation criteria for consideration with approval by the Office project manager.

- Project type as described above in watershed functions and facilities.
- WWDC program identification: (e.g., Small Water Project Program, conventional, other).
- Supply type: Identify projects as new water supply or rehabilitation.
- Practicality of implementation: Provide a narrative that describes ownership issues, funding concerns, institutional issues, and project durability and sustainability.
- Estimated cost: Proposed project cost estimates as described in Task 6 shall be considered and included in the Plan.
- Funding or financing opportunities: Funding/financing opportunities shall be included in the Plan as described in Task 7.
- Overall benefits to the watershed: (e.g., riparian, wetland, water quality, wildlife, fish passage improvement, and other environmental and recreational purposes, etc.).
- Permitting issues: (e.g., WSEO, USACE, WDEQ, NEPA requirements, environmental reviews, etc.).
- Current public Sponsor: Ascertain whether a current public Sponsor exists to take the project to the next level.

The Consultant shall prepare conceptual-level designs for project recommendations identified in the Plan. Project designs should include a description of the project and its purpose. Project designs should be of sufficient detail to estimate costs (Task 6), identify fatal flaws (pipelines, transportation, energy transmission, cultural resources, and any socio-economic impediments to moving forward. The description should include information relevant to completing a WWDC project application.

Within the final report, the Consultant shall include a detailed description of the WWDC Small Water Project Program and the steps necessary to take a project from the application phase to final payment. This shall include a listing of the Sponsor's responsibilities for permitting, design, and project completion.

Deliverables for this task shall include a description and tabulation of the Plan's project recommendations and a supporting map that shows the location of all the identified projects. GIS file deliverables should contain information such as the project location, a project identifier, project type, WWDC program, alternative funding sources, supply type, overall benefits, overall benefits, rough estimates of construction cost and potential volume to be supplied or saved through the development of the project, consistent with WWDC GIS standards referenced in Task 9.

Task 6. Cost Estimates

The Consultant shall provide cost estimates for the watershed development, management, and rehabilitation projects identified in Task 5. Cost estimates shall be included in the Plan summary table and be calculated and presented by both the total

project cost and as unit costs. Costs shall be structured to allow the Sponsor to evaluate proposed project recommendations and shall identify those components that are both eligible and non-eligible for WWDC and Small Water Project Program (SWPP) funding. Estimates shall be based on the year the watershed study is completed.

Cost estimates for small scale projects, such as those eligible for WWDC SWPP grants, shall be inclusive of the above and take into account the past and present project component average costs.

Cost estimates for large scale projects, such as those eligible for WWDC Level III construction grants/loans, shall also be inclusive of the above and include operation and maintenance costs, administrative costs, and debt retirement. WWDC "Repair and Maintenance Account" funding and the cost(s) for water shall be incorporated. Cost estimates for large scale projects shall be prepared as outlined in Section C of this Scope of Services.

Task 7. Economic Analysis

Project funding and financing is a critical aspect associated with the implementation of watershed development, management, and rehabilitation projects. This task will provide the necessary information to estimate end costs of project implementation utilizing alternative sources of funding. The Consultant shall provide local, state and federal information regarding potential funding sources, application requirements, and funding eligibility requirements with respect to funding agency criteria and conditions. In addition, the Consultant shall identify the types of Wyoming entities eligible to apply for funding from these funding sources, discuss the process of forming each eligible entity, and the benefits of becoming an eligible entity.

When applicable (i.e., projects requiring extensive engineering and design), the Consultant shall provide an ability to pay analysis which should include the following:

- A financing plan.
- An annual operation cost estimate.
- Identification of sinking fund requirements.
- A determination of the eligibility requirements and level of assistance available for implementation.

The Consultant shall also generate funding and financing recommendations based on annual financial commitments of the Sponsor needed to cover construction costs and meet operation and maintenance obligations.

Task 8 Permits

The Consultant shall identify all permits, easements, and clearances necessary for implementation of the Plan and any associated proposed projects or construction activities. This task will include recognition of State of Wyoming Executive Order 2015-4, Greater Sage-Grouse Core Area Protection.

Task 9. Geographic Information System Deliverables

The Consultant shall provide three (3) CD/DVD/Flash Drive/Portable Hard Drive copies of the GIS data. GIS data shall be composed and delivered according to the according to the "WWDO GIS Data Framework Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection. The Consultant may also view a prerecorded webinar that is available on the GIS Standards website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. FEATURE MAPPING. The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated into the geodatabase template or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the "GIS Standards Technical Memorandum." Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked non-spatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase template. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS (.mxd) files saved with relative path names to data sources.

Task 10. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study, no later than September 27, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

The project Sponsor shall be provided a copy of this draft report for their review.

Task 11. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly.

Task 12. Final Report and Deliverables

After incorporation of the Office’s and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior

to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials, to the Office on or before December 13, 2019. These final documents and materials, shall include: 1) Twelve (12) hard copies of the final report, and 3) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

Four (4) CD, DVD, or USB drive copies containing the final report, and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Two (2) CD, DVD, or USB drive copies containing the final report, and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook.

Three (3) CD, DVD, USB drive or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. See Task 9 for further details.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for

the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

ANDERSON CONSULTING ENGINEERS, INC.

Labor Category	Hourly Rate
Senior Principal Engineer	$190.00
Principal Engineer	$180.00
Senior Project Manager	$155.00
Project Manager	$130.00
Senior Engineer/Scientist II	$118.00
Senior Engineer I	$105.00
Project Engineer II	$99.00
Project Engineer I	$92.00
Engineer II	$85.00
Engineer I	$80.00
Senior GIS/CAD Technician	$90.00
GIS/CAD Technician II	$85.00
GIS/CAD Technician I	$73.00
Senior Project Assistant	$65.00
Project Assistant	$60.00

ACE Affiliates

Donald Tranas	$80.00
Ron Vore	$80.00

Other Directs Costs

Airfare …….@ cost	In-house B&W Copies…….$ 0.10/copy
Meals/Lodging ……@ cost	In-house Color Copies…….$ 1.00/copy
Mileage ……..$0.545/mile	In-house B&W Plotter…….$ 5.00/plot
	In-house Color Plotter…….$10.00/plot

All other direct costs such as communications, equipment rental, materials, laboratory services, shipping and reproduction will be charged at cost.

LANDER TEST WELL, LEVEL II STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Wyoming Groundwater, LLC [Consultant], 710 Garfield, Suite 345, Laramie, Wyoming 82070.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through December 31, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two million three hundred thirty-five thousand dollars ($2,335,000).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
PHASE I – Project Meetings, Objectives & Demand, Geo-hydrologic Investigation, Well Siting		
Task 1.	Project Meetings	$ 15,000
Task 2.	Definition of Objectives and Demand	$ 35,000
Task 3.	Geo-hydrologic Investigation, Well Siting	$ 70,000
PHASE II – Well Construction		
Task 1.	Permits, Access, Testing Program Development	$ 6,000
Task 2.	Environmental Report	$ 10,000
Task 3.	Bidding Specifications, Bidding Process	$ 10,000
Task 4.	Consultant Services During Well Construction/Testing	$ 120,000
Task 5.	Water Quality, Water Treatment, Reclamation	$ 20,000
Task 6a.	Well Construction Subcontracts	$ 1,867,000
Task 6b.	Liability Insurance Differential	$ 60,000
PHASE III – Conceptual Designs, Cost Estimates, and Reports		
Task 1.	Geotechnical Analysis	$ 0
Task 2.	Identification of Alternatives	$ 7,000
Task 3.	Preparation of Preliminary Cost Estimates	$ 5,000
Task 4.	Selection of Preferred Alternatives	$ 4,000
Task 5.	Conceptual Designs and Cost Estimates	$ 50,000
Task 6.	Identification of Permits and ROW for Construction	$ 2,000
Task 7.	Water System Financing	$ 4,000
Task 8.	Draft Report and Presentations	$ 38,000
Task 9.	Final Report and Deliverables	$ 12,000
TOTAL PROJECT COST		**$2,335,000**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. (42°50'03" N, 108°43'45" W, Approx.)
   Lander, The county seat of Fremont County, is located on the southwestern margin of the Wind River Basin on the Middle Fork of the Popo Agie River (tributary Popo Agie River>trib. Wind River>Big Horn River), access is via US HWY 287 and State HWY 789.

2. Purpose. To perform a Level II study for the City of Lander [City].

3. History.
   The City of Lander currently only has one source of useable potable water supply which is treated from the Middle Fork of the Popo Agie River. At certain times of the year there is high potential for the City of Lander to face deficits in meeting their current demands based on both water supply and not having the most senior territorial water rights. Also, the City of Lander cannot perform maintenance on the water treatment plant or intake infrastructure and supply water to their customers at the same time. The City of Lander also believes that they are nearing ultimate capacity of their current supply and need additional supply to allow the city to satisfy future demands. Finding an alternate potable water supply is of high priority of the city. Test drilling in 2004-2006 revealed potential production from the Tensleep Formation, Madison Limestone, and Flathead Sandstone aquifers and represents an opportunity for supplemental water supply.

   Previous WWDC Planning Studies:

   http://library.wrds.uwyo.edu/wwdcrept/Wind_River_Reservation/Wind_River-Water_Supply_Project_Groundwater_Exploration_Program-Final_Report-1996.html

   http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander-Water_Supply_Project_Master_Plan_Level_I-Final_Report-1996.html

http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander-Water_Supply_Project_Level_II_Phase_II-Final_Report-1998.html

http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander-Water_Supply_Project_Level_II_Phase_III-Final_Report-1999.html

http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander-Level_II_Paleozoic_Aquifer_Well_Siting_Study-Final_Report-2002.html

http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander-Level_II_Paleozoic_Aquifer_Well_Siting_Study-Final_Report-2002.html

http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander-Level_II_Water_Supply_Project_Exploration_Well_Deepening-Executive_Summary-2007.html

http://library.wrds.uwyo.edu/wwdcrept/Shoshone/Shoshone-Ground_Water_Development_Level_II-Final_Report-2008.html

http://waterplan.state.wy.us/plan/bighorn/bighorn-plan.html

http://library.wrds.uwyo.edu/wwdcrept/Lander/Lander_Master_Plan_Level_I_Study-Final_Report-2011.html

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for

approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____

Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for

municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

PHASE I – PROJECT MEETINGS, OBJECTIVES & DEMAND, GEO-HYDROLOGIC INVESTIGATION, WELL SITING

Task 1. Project Meetings

A scoping meeting shall be held early in the project schedule, in the project area, to familiarize the sponsor with the scope of the project, and to obtain input from affected parties. The Consultant will prepare a presentation including maps and other visual aids to explain the project. The Consultant shall budget for a minimum of three additional meetings in the project area. Two project status meetings will be scheduled at the discretion of the Office project manager depending on developments during the study. The Consultant shall budget for project coordination meetings at the project site as necessary. In the interest of economy, meetings shall be scheduled to coincide with fieldwork if possible. The Consultant shall notify the Office project manager in advance of any meetings with the project sponsor.

Task 2. Definition of Objectives and Demand

In consultation with the Sponsor and the WWDO, the Consultant will further define the groundwater demand objectives of the study. The Consultant will consider demand objectives with respect to quantity (e.g. redundant supply, emergency/temporary supply, projected growth, etc.), quality, seasonality, location, and water rights relating to priority regulation and the ability to divert surface water to the water treatment plant. The Consultant will assume the continuing validity of the basic demand projections developed in the 2011 Master Plan, focusing on the dissection of those demands to provide guidance to groundwater development objectives.

To facilitate the demand analysis, the Consultant will perform a firm-yield analysis on the municipal use (irrigation and treated) of Lander's Worthen Meadows Reservoir storage water right. The reservoir analysis will include consideration of the special-use permit with the US Forest Service.

Results and conclusions of this Task shall be presented to the Sponsor and Office project manager in a report form of a technical memorandum that will include alternatives and recommendations for expansion of the Sponsor's drinking water supply source portfolio.

Task 3. Geo-hydrologic Investigation, Well Siting

The Consultant shall evaluate the existing ground water source(s) and make recommendations that would provide for an adequate expansion to serve a public water system source supply.

The geo-hydrologic portion of the study shall begin with a survey of existing reports and studies on geology, geo-hydrology, drill-hole data, and well testing in the

locality. Other information, as may be available, such as seismic data, remote sensing coverage, etc., may be obtained and incorporated into the study. Field mapping of surface exposures of bedrock units may assist in further characterizing structure and compartmentalization of the target aquifer(s), and may be utilized as appropriate.

In addition to conventional methods of ground water resource exploration, the Consultant may incorporate a project specific geophysics data collection program. In that regard, a surface resistivity and/or seismic approach may be considered to be implemented in order to clarify the hydro-structural fabric of the aquifer and delineate enhanced permeability therein.

The Consultant shall then prepare plan maps, isopachous/structure/potentiometric contour representations, cross-sections, and/or other graphic projections as needed to illustrate surface and subsurface conditions as related to the target aquifer(s) and drilling conditions. From this comprehensive research, best well completion design shall be chosen in addition to selecting best potential drilling sites.

A tabulation of potential well sites shall be presented which includes:

(a). Location (Legal and Lat.-Long.) and ground surface elevation
(b). Surface ownership
(c). Total depth or estimated drilling depth
(d). Completion zone or targeted hydro-stratigraphic horizon
(e). Known or expected aquifer parameters
(f). Estimated flow or production potential
(g). Difficulty of drilling and/or completion
(h). Water quality potential
(i). Existing surface and ground water rights
(j). Distance to key municipal system facilities (diversions, storage, transmission pipeline(s), treatment, power, etc.)
(k). Well spacing requirements
(l). Federal, State, Tribal, or other Institutional nexus
(m) Cost-benefit analysis
(n). Other defining and/or unusual characteristics
(o). Site ranking

The Consultant shall anticipate, plan for, and schedule the scoping meeting with the Sponsor and Office Manager at the conclusion of Task 3 in advance of committing project time and resources to permit applications, site access, and drilling program design.

PHASE II – WELL CONSTRUCTION

Task 1. Permits, Access, Testing Program Development

The Consultant shall utilize information determined in Phase I, Task 2 and provide a siting/access plan to determine a location for the exploratory drilling program to be conducted herein.

The Consultant shall acquire all permits, access easements (between the WWDC and the Landowner), and clearances necessary for well construction, i.e.: State Engineer's Office, Wyoming Department of Environmental Quality-Water Quality Division, United States Bureau of Land Management, United States Forest Service, Wyoming Office of State Lands, archeological clearance, utility locates, etc. The Consultant shall prepare a plan for determining the feasibility of exploring the selected groundwater source as a public water supply. This plan shall include detailed well designs and construction methods, a description of geophysical logging to be performed, a description of an optional fracturing program to enhance permeability/flow, and a detailed description of the aquifer testing program to be conducted. **The Consultant shall submit this plan to the Office project manager for written approval prior to proceeding.**

Task 2. Environmental Report

The Consultant shall assume a budget of $10,000 for this task.

The Consultant shall not begin work on this Task unless specifically authorized in writing by the Office project manager.

Several sources of federal funding are available to public entities to help defray costs associated with construction of a water related project. These monies may also be used to fund portions of the construction that the Commission cannot pay for such as distribution and treatment. In order to secure federal funds, it is necessary to comply with the National Environmental Policy Act (NEPA).

The primary objective of this task is to provide adequate information for state and federal funding agencies to prepare environmental documents required under NEPA (42 U.S. C. 4321) for this project. This is done by preparing an “Environmental Report” (ER).

Before beginning this task the Consultant, in close coordination with the sponsor and Office project manager, shall determine whether the sponsor will be seeking funding from Drinking Water State Revolving Fund (SRF) and/or the Rural Utilities Service (RUS). If the sponsor is seeking funding from the SRF then they shall download the guidance document from the following website and contact the

Wyoming Department of Environmental Quality.
http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/forms-guidance/

If the sponsor is seeking funding from the RUS then the Consultant shall download RUS Bulletins 1794A -602 and Wyoming Supplements at the following website and contact Lorraine Werner, Community Programs Director at (307) 233-6710.

http://www.rurdev.usda.gov/WYEnvironmentalPrograms.html

The Consultant shall send the letters described in the documentation, compile the responses, and provide a summation of potential impacts to each of the resources listed in the following section. If the sponsor is seeking funding from both agencies, the Consultant shall send the letters listed for each agency and compile the information gathered separately. The Consultant shall prepare an ER and summarize the information from the letters in a format provided by the Office.

The ER will be a separate document from the project report described in Phase III, Task 8, and is not considered complete until all letters and follow up phone calls have been completed with appropriate Federal and State environmental regulatory agencies.

The Consultant shall provide a cost analysis of mitigation requirements outlined in the ER.

If any regulatory agency's correspondence indicates that the potential exists to impact resources under their jurisdiction, additional field assessments may be necessary to confirm impacts and to recommend mitigation. Field assessment work and the timing of efforts will be completed under guidance from the funding agencies.

Additionally, the Consultant shall summarize the work that is left to be completed for the NEPA requirements in the project report, and make sure the project sponsor is aware of the remaining tasks to be completed.

Task 3. Bidding Specifications, Bidding Process

The Consultant shall prepare a bidding package for use in selection of contractors to construct the well. The Consultant shall submit this package to the Office project manager for review prior to proceeding with the bidding process.

The Consultant shall conduct a public bidding process, in accordance with State of Wyoming statutes, for selection of contractors to perform the construction services required herein. The Consultant shall analyze the bids received and

select a contractor(s), after consulting with the Office project manager. The Consultant shall contract directly with the contractor(s).

Task 4. Consultant Services during Well Construction, Aquifer Testing

a. The Consultant shall serve as the owner's representative at the construction site during the construction process. The Consultant shall insure the project is constructed in accordance with the bid documents. The Consultant shall provide full time supervision during well construction by a Professional Geologist licensed in the State of Wyoming.

b. The Consultant shall generate a drilling log containing the following information:

1) Depth, thickness, type, general characteristics, and drilling characteristics of each material encountered.

2) Time required to drill each foot of depth, along with the speed of rotation.

3) Depth at which bit diameters change.

4) Detailed "as built" well completion specifications, including hole and casing diameters, depths at which these diameters change, casing thickness and material, manufacturer, depths, diameters, and opening size of well screen or perforated casing, gravel packed intervals and gravel size installed, casing centralizer types and their spacing, cemented intervals, cement type, etc.

c. The Consultant shall generate a geologic log containing the following information:

1) Reference point for all depth measurements.

2) Depth at which each change of formation occurs.

3) Thickness of each formation.

4) Depth at which each stratum is encountered.

5) Thickness of each stratum.

6) Description of the material composing each stratum.

7) Depth at which water is first encountered.

8) Depth to the static water level (SWL) and changes in SWL with increasing well depth.

9) Total depth of completed well.

10) Any and all other pertinent information for a complete and accurate log.

d. Formation samples shall be collected and described in detail at each change in stratum, not to exceed 10-foot intervals, or more frequently to accurately depict lithologic changes encountered during construction. Washed samples shall be labeled (well name, sample number, depth interval, and date) and stored in sample vials or chip trays. Formation samples shall be delivered to the Office project manager upon completion of the project.

All aquifer testing activities shall be supervised by a Professional Geologist licensed in the State of Wyoming.

e. Testing of non-flowing well:

After completion and isolation of the aquifer to be tested has been insured the well shall be developed by water jetting or other approved methods to remove contaminants and foreign material. The aquifer will then be allowed to recover to 98% of its original SWL before any testing begins.

1) Step test:

Monitoring of water level shall be done during each step of the test at logarithmic time intervals. Each step should continue until a distinct change in the rate of drawdown occurs. It is suggested that Q be set at 25%, 50%, 75%, 100%, and 150% of the estimated design discharge. The Consultant shall refer also to DEQ-WQD PWS source development testing requirements in WQD Rules and Regulations, Chapter XII, Section 9(b)(ii).

2) Recovery test:

Following the step test water level shall be monitored at logarithmic time intervals until the well has recovered to 98 percent of its original SWL.

3) Constant discharge test:

Following the recovery test pumping at a constant discharge (rate determined by the Consultant based on the step test) will be maintained for seven (7) days or until a stable drawdown is attained.

Water levels and pumping rate shall be monitored at logarithmic time intervals during the test. The Office project manager must approve in advance if the test is to be terminated prior to the seven (7) days specified.

4) Recovery test:

Following the constant discharge test well recovery shall be monitored until the well has recovered to 98% of its original SWL, with water levels measured at logarithmic time intervals. Analysis of all aquifer testing, recovery, and surface water monitoring data will be performed to determine aquifer characteristics including transmissivity, storativity, specific capacity, and safe yield, and to assess the impacts on surface water caused by long-term groundwater production in the area. Estimates will be made of long term well yield, and the configuration and extent of the cone of depression at 1, 5, 10, and 20 years into the future for the entire well field. This analysis shall assume production at maximum safe yield, and the design discharge if different. Assumptions and analytical methods used in these calculations shall be included. This information will be presented in the final report.

f. Testing of Flowing Well:

After completion and isolation of the aquifer to be tested has been insured the well shall be developed by water jetting or other methods to remove contaminants and foreign material. The aquifer will then be allowed to recover to 98% of its original shut-in pressure before any testing begins.

1) Stepped Rate Test:

Monitoring of pressure and flow rate shall be performed during each step of the test at logarithmic time intervals. Each step should continue until a distinct change in the rate of drawdown occurs. It is suggested that Q be set at 25%, 50%, 75%, and 100% of maximum flow rate.

2) Recovery test:

Following the step test shut-in pressures shall be monitored at logarithmic time intervals until the well has recovered to 98 percent of its original shut-in pressure.

3) Constant Drawdown Test:

Following the recovery test the well shall be allowed to flow "wide open" and monitoring of flow rate and pressure with respect to time will be conducted at logarithmic time intervals for a period of seven (7) days.

Task 5. Water Quality, Water Treatment, Reclamation

For each aquifer on which a test is conducted, the following shall be performed:

a. During each test, a pH/conductance/temperature meter shall be used to monitor these parameters at the following time periods:

(1)	Beginning of test	(6)	4 hours
(2)	30 minutes	(7)	8 hours
(3)	1 hour	(8)	16 hours
(4)	2 hours	(9)	24 hours
(5)	3 hours	(10)	24 hour intervals

The above-collected data will be listed and plotted versus time in the final report.

b. During the test water quality samples shall be collected for analysis by a U.S. Environmental Protection Agency approved laboratory. Samples will be properly collected and preserved such that the appropriate constituents listed below may be analyzed for concentration level. Samples shall be received by the laboratory within the time period specified by the laboratory for the particular

analyses being performed. Water samples will be collected during the test at the following time intervals:

1) Midway through the first test.

2) End of all testing.

The following analyses shall be conducted midway through the first test:

. Bicarbonate
. Calcium
. Carbonate
. Chloride
. Conductance
. Magnesium
. Ph
. Potassium
. Sodium
. Sulfate
. Total Dissolved Solids
. Iron and Iron Related Bacteria
. Total Coliform Bacteria
. Gross Alpha
. Gross Beta
. Combined Radium 226 & 228
. Natural Uranium

The Consultant shall collect samples for analysis of all EPA regulated constituents that are applicable to this project. The following analyses shall be conducted, as appropriate for the particular source, treatment techniques, system size, and as required in the State of Wyoming, at the end of all testing:

<u>Inorganic Chemicals</u>

. Antimony
. Arsenic
. Asbestos
. Barium
. Beryllium
. Cadmium
. Chromium
. Copper
. Cyanide

. Fluoride
. Lead
. Mercury
. Nickel
. Nitrate (as N)
. Nitrite (as N)
. Total Nitrate/Nitrite
. Selenium
. Sulfate
. Thallium

Organic Chemicals
Pesticides

. Alachlor
. Aldicarb
. Aldicarb sulfoxide
. Aldicarb sulfone
. Atrazine
. Carbofuran
. Chlorodane
. Dalapon
. Dibromochloropropane (DBCP)
. Dinoseb
. Diquat
. Endothall
. Endrin
. Ethylene dibromide (EDB)
. Glyphosate
. Heptachlor
. Heptachlor epoxide
. Lindane
. Methoxychlor
. Oxamyl (Vydate)
. Pentachlorophenol
. Picloram
. Simazine
. Toxaphene
. 2,4,5-TP (Silvex)
. 2,4-D

Volatile Organic Chemicals

. Benzene

. Carbon tetrachloride
. para-Dichlorobenzene
. ortho-Dichlorobenzene
. 1,2-Dichloroethane
. 1,1-Dichloroethylene
. cis-1,2-Dichloroethylene
. trans-1,2-Dichloroethylene
. Dichloromethane
. 1,2-Dichloropropane
. Ethylbenzene
. Monochlorobenzene
. Styrene
. Tetrachloroethylene (PCE)
. Toluene
. 1,2,4-Trichlorobenzene
. 1,1,1-Trichloroethane
. 1,1,2-Trichloroethane
. Trichloroethylene (TCE)
. Vinyl chloride
. Xylenes

Synthetic Organic Chemicals

. Benzo (a) pyrene
. Di (2-ethylhexyl) adipate
. Di (2-ethylhexyl) phthalate
. Hexachlorobenzene
. Hexachlorocyclopentadiene (HEX)
. PCBs
. 2,3,7,8 Tetrachlorodibenzo-p-dioxin

Treatment Techniques

. Acrylamide
. Epichlorohydrin

Disinfection By-Products

. Total trihalomethanes (TTHMs)

Total Suspended Solids (TSS)

. Turbidity

Microbiological

. Total Coliform (Coliform bacteria, fecal coliform, streptococcal, and other bacteria)
. Giardia lamblia
. Legionella
. Viruses
. Heterotrophic Plate Count
. Iron and Iron related bacteria

Radiological Contaminants

. Gross alpha
. Gross beta
. Combined Radium 226 & 228
. Natural uranium

Secondary Standards

. Aluminum
. Bicarbonate
. Boron
. Calcium
. Carbonate
. Chloride
. Color
. Conductance
. Corrosivity
. Foaming agents
. Hardness
. Iron
. Magnesium
. Manganese
. Odor
. Ph
. Potassium
. Silica
. Silver
. Sodium
. Sulfate
. Total Acidity
. Total Alkalinity
. Total dissolved solids (hardness)
. Zinc

All analyses will be listed in the final report, as well as the reasons for deleting the analyses for any items contained in this list.

The Consultant shall determine the water treatment requirements for the groundwater supply source and include costs for this treatment in the final report.

The Consultant shall reclaim the drill site including backfilling all pits and disposing of any drilling mud in appropriate facilities, re-grading the land surface to approximately its original contour, removing all trash, and reseeding with a seed mix approved by the Office project manager.

If authorized in writing by Office project manager, the Consultant shall abandon the well according to regulations promulgated by the State Engineer's Office and the Department of Environmental Quality.

Task 6. Well Construction Subcontracts

a. The Consultant shall obtain the services of a well construction subcontractor(s) as appropriate (See Task 3) to perform the tasks described herein.

b. The Consultant shall determine the increase in premiums for their Professional Liability or Errors and Omissions Liability Insurance resulting from their well construction subcontract(s). The Consultant will provide documentation relating to the incurred increase to the Office project manager.

PHASE III - CONCEPTUAL DESIGN, COST ESTIMATES, PROJECT REPORTS

Task 1. Geotechnical Analysis

The Consultant shall perform all geological and geotechnical investigations as needed for conceptual designs and cost estimates of the proposed systems. This analysis may include both field analysis and laboratory testing and analysis.

Task 2. Identification of Alternatives

The Consultant shall identify and evaluate reasonable alternatives for supply, transmission, treatment, and distribution components, and incorporation of existing system infrastructure. The impact (e.g. hydraulic modeling) of the various alternatives on operation and management shall be considered.

Task 3. Preparation of Preliminary Cost Estimates

The Consultant shall prepare preliminary cost estimates to allow the project sponsor and the Office project manager to select those improvements that are cost effective and within the sponsor's ability to pay.

Task 4. Selection of Preferred Alternatives

The Consultant shall meet with the project sponsor and the Office project manager to assist in the selection of those project components and schedules to be recommended for advancement.

Task 5. Conceptual Designs and Cost Estimates

The Consultant shall prepare conceptual designs for the water supply components selected in Task 4, as instructed by the Office project manager. This may include well completion equipment, pumping facilities, pipelines, power transmission facilities, storage facilities, etc., and any other appurtenances necessary to make the system function in the manner intended. The Consultant shall include maps, drawings, and other items to clearly present their proposed conceptual designs.

The Consultant shall prepare conceptual level cost estimates for those project components selected in Task 4. Cost estimates should consider operation and maintenance costs, administrative costs, debt retirement, Commission "Repair and Maintenance Account" funding, and cost(s) for water. These cost estimates should be itemized so the sponsor and the Commission can understand each cost component comprising the total cost estimate. These cost estimates shall be prepared according to the outline in Attachment "B," Section C, Project Requirements, and must be of sufficient accuracy to allow alternatives to be compared one with another.

Per Wyoming Statute §41-2-115(c), the Consultant shall evaluate whether the project is in the public interest, stipulating if the proposed project functions and services can be served by any person, association or corporation engaged in private enterprise, or if private enterprise has refused to provide the functions and services identified as being required by the proposed project. This information shall be included in the draft and final reports for the project.

Task 6. Identification of Permits and ROW for Construction

The Consultant shall identify any permits, right-of-way, easements, and/or access that may be required for implementation and emplacement of the recommended alternatives.

Task 7. Water System Financing

The Consultant shall work with the Sponsor to acquire all necessary financial data required for this task to determine the current and anticipated future water system revenues and expenditures. To initiate this task, the Consultant shall determine if the Sponsor has a water enterprise fund in which existing water revenues allow the water system to be financially self-supporting or if the Sponsor must subsidize the water system from other budgets and revenues such as bonds, grants, etc. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.
- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses.
- Provide a fund that accrues sufficient reserves to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Consultant.

Next, the Consultant shall prepare two (2) funding scenarios for consideration by the Sponsor that demonstrate the adjustments in revenues that may be necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 5. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting as defined by the above criteria. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users. These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These two (2) scenarios shall be presented in the draft and final reports in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e.: the Consultant shall demonstrate the necessary adjustments in water system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.

Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan from WWDC (4%, 30-year term), and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF

Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/
Contact: Bill Tillman, SRF Principal Engineer
WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS

Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs
Contact: Lorraine Werner, Community Programs Director, USDA RUS
Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602

Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

In order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 8. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than May 1, 2020. Four (4) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

After submittal of the draft report, the Consultant shall present the draft findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for

publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Phase 1, Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

The report presentation for this Level II Study shall also serve as a public hearing, with WWDC Office personnel serving as the hearing officer. The script for the hearing will be developed by the Office project manager and shall include the question as to whether there is a private entity interested in providing the proposed project functions and services in lieu of the sponsor. The Office is responsible for publishing a legal notice of the meeting in a statewide newspaper, once each week for three (3) weeks prior to the hearing; and in the local publication up to three (3) times prior to the hearing.

Task 9. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before July 20, 2020. These final documents and deliverables shall consist of the following:

- Fifteen (15) hard copies of the final report and fifteen hard copies of the executive summary. This count is inclusive of the copies previously submitted to the Office project manager. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include cost estimates. The summary should not exceed ten (10) pages. Any final reports submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

- Five (5) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

  If any wells are drilled, chip trays or vials of all washed well drilling cuttings shall be submitted along with their documentation.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

WYOMING GROUNDWATER, LLC

Professional Services Hourly Rate

Chris Moody, P.G.: Geologist/Hydrogeologist $120.00

Reimbursable Expenses Fee

Subcontracts (Contractor: Labor and Services): Cost
Subcontracts (Professional Services): Cost
Equipment and Supply Purchases: Cost
Equipment Rental: Cost
Personal Travel Expenses: Cost
Mileage: $0.545/mile
Photocopies: $0.10/page
pH, Conductivity, Temperature Meter: $35/day
Dissolved Oxygen Meter: $40/day
Water Sample Filtering (Filter & Barrel): $25/sample
Water Level Indicator: $35/day
Data Logger and Transducer: $50/day
Disposable Bailer: $10 each

LITTLE SNAKE RIVER VALLEY MUNICIPAL WATER SUPPLY, LEVEL II STUDY CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Wenck Associates, Inc. [Consultant], 1800 Pioneer Creek Center, Maple Plain, MN 55359.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred thirty thousand dollars ($130,000).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
1. Project Meetings	$ 14,000
2. Information Review	$ 7,500
3. Inventory, Evaluation, and GIS	$ 35,500
4. Growth and Demand Projections	$ 5,000
5. Water Source	$ 9,000
6. Hydraulic Model	$ 12,000
7. Recommendations and Cost Estimates	$ 10,000
8. System Financing	$ 10,000
9. Draft Report and Presentations	$ 18,000
10. Final Report and Deliverables	$ 9,000
Total Project Cost	**$130,000**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: The project is located in southern Carbon County in the Little Snake River Valley to include the Towns of Dixon, Baggs, and the unincorporated community of Savery. The area is in the Green River Basin.

2. Purpose: To perform a Level II study for the Little Snake River Valley Municipal Water Supply.

3. History: The Towns of Dixon and Baggs have experienced increased costs for water treatment and would like to have the opportunity to provide water to surrounding area residents. It is anticipated that a regional system would provide these opportunities as well as focus costs on a single system and provide long term water security to the area.

   Previous reports in the area include:

   Town of Dixon:
   Dixon Water Supply Project, Level I
   Dixon Water Supply Project, Level II
   Dixon Water Supply II, Level II

   Town of Baggs:
   Little Snake River Basin Plan Study Volume I; Evaluation of the Baggs Water Supply, Treatment and Delivery system, Level I
   Town of Baggs, Wyoming Alluvial Well Project, Groundwater Grant
   Town of Baggs, Wyoming Water Supply Project, Level II
   Town of Baggs, Wyoming Water Master Plan, Level I
   Baggs Water & Raw Water Supply, Level II

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional

Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

For this study, the Sponsor is the Towns of Baggs and Dixon, Wyoming. The Towns of Dixon and Baggs have filed a joint application requesting a Level II Study to investigate the potential for a regional system in the Little Snake River Valley and an identification of what upgrades are necessary for their existing water treatment plants. The largest potential regional service area would encompass unincorporated Savery, the towns of Dixon, and Baggs, and potential rural users. Currently both Dixon and Baggs have separate systems that include infiltration galleries under the Little Snake River (in their respective towns), water treatment plants, and storage. The Little Snake River has issues with water quality at times as well as volume. In 2012, the river experienced extremely low flows. Additionally, the Environmental Protection Agency changes of drinking water standards forced both Towns to upgrade their plants with costly equipment. Source supply concerns, costs for maintaining the two treatment plants, and serving new and future users are the impetus for this study. In the past, regionalization was considered in WWDC studies. At that time regionalization was not a preferred alternative; however, the concerns listed above have prompted the two Towns to reconsider regionalization. This study will consider several regionalization alternatives as well as identify what upgrades to the existing water treatment plants and infiltration galleries would be necessary in the event that this is a cheaper alternative for the residents and to enable system redundancy. A new source of supply, Savery Creek, at the top of the valley, will be explored which would make water available to the Savery area; a looped system will also be considered to create some redundancy but to also include several potential new taps. Another alternative would be to upsize, and upgrade, one of the existing treatment plants and infiltration galleries to supply a smaller regional system.

Please note that this project will operate on a shortened timeline compared to past WWDC studies.

Task 1. Project Meetings

A scoping meeting shall be held as early in the project schedule as possible in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all

presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

Additional public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant should assume a minimum of three (3) public project meetings in the study area. One (1) of these meetings will be held at the discretion of the Office project manager. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study. In the interest of economy, meetings will be scheduled to coincide with fieldwork. The Consultant shall notify the WWDO project manager in advance of any meetings with the project sponsor.

The Consultant shall prepare notices of meetings in the Snake River Press, Town websites, Town Halls, and Post Offices. The Consultant shall hold an event, potentially corresponding with a local event such as the Little Snake River Lions Club Rodeo, to garner local support for a regional water supply system. The Consultant shall prepare and maintain an Action Items List, regularly updated, and made available to the Office project manager.

Task 2. Information Review

The Consultant shall gather and review all existing information related to the Sponsor's water supply and distribution systems. This includes information available through the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer's Office, Wyoming Department of Environmental Quality Water Quality Division (DEQ), and any other sources as appropriate. The Consultant will coordinate with the Sponsor and Office project manager to obtain all past relevant studies that need to be reviewed. Improvements recommended to the water systems in any of these reports should be documented. In addition, the status of those recommended improvements should be identified (i.e.: disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies and other regulations that may affect this project. The Consultant shall provide a summary of existing information in the final report.

Task 3: Inventory, Evaluation, and GIS

The Consultant shall confer with Sponsor to identify specific problem areas, potential alternatives, and concerns that should be focused on during this task. Inventory and evaluations shall primarily focus on facilitating the objectives of this project that in part

include addressing the Sponsor's areas of concern, identifying existing system deficiencies, and evaluating the identified alternatives. The Consultant shall coordinate with the Office project manager and Sponsor regarding the expectations and limitations of this effort and shall be mindful of the following intentions of this task:

a. With the Sponsor and Office project manager, define the alternatives for the successful completion of this study. It is expected that there will be multiple options for regional systems as well as water treatment plant and infiltration gallery upgrades. Please refer to the opening paragraph of this Scope of Services. The Consultant will then evaluate the options and develop the potential alternatives for the completion of this study.

b. For current and future demands developed in Task 4, assess the capacity and serviceability of existing water treatment facilities, infiltration galleries, transmission and distribution pipelines, storage tanks, pump stations, PRV stations, flow monitoring devices, and other major components of the water supply system as applicable. Evaluate the Dixon infiltration gallery capacity by conducting a Specific Capacity test over 6 hours. Identify deficiencies and make recommendations for improvements needed to address these limitations. In conjunction with the hydraulic modeling task, pipe materials and pressure classes shall be examined in terms of suitability to provide adequate service.

c. To determine a new point of diversion the Consultant will identify a minimum of three potential points of diversion; Obtain raw water samples to evaluate water quality and evaluate water treatment options at those points of diversion; Contact landowners to determine land availability and access to potential supply system facilities.

The Consultant shall evaluate the management and operation of the water systems in the study area to determine if procedural changes would be beneficial. If so, the Consultant shall detail those changes. The Consultant shall evaluate the existing water metering system to ensure water bills can be or are based on metered usage. The Consultant may offer suggestions relating to the existing billing and metering procedures.

The Consultant shall update the existing Baggs GIS to reflect the 2018 as-built drawings and create a Dixon GIS (reflective of 2018 conditions). In addition, the use of a detailed hydraulic model is essential to the study. Some hydraulic models are developed in a GIS environment. Where GIS is deemed applicable to this study, and new information is developed, the Consultant shall confer with the Sponsor to ascertain the Sponsor's existing GIS, determining where the files are housed (i.e.: with a Consultant or with the Sponsor), the extent of the mapping, and required updates. The Consultant shall then propose the scope of further mapping to be completed in this task.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from our home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

b. Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

c. Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

The Consultant shall work with the towns of Dixon and Baggs in the maintenance requirements of the GIS by providing a one-day course for the Towns' operators, clerks, and other pertinent staff.

Deliverables to the Sponsor shall include at least one set of large size hard copy printouts of the service areas and associated features for the Sponsor's use. These items are in addition to the GIS deliverables described in Task 10. The Consultant shall coordinate with the Office project manager and Sponsor on final production of all hard copy mapping media and its delivery.

Task 4. Growth and Demand Projections

The Consultant shall develop population growth projections for the Towns and surrounding area that could reasonably be served by a regional system. Planning boundaries of the existing and future service areas will be based on discussions with the Sponsor and Office project manager as to where future growth may occur as well as the limits the Consultant estimates could be served by a regional system. For example, growth may occur within the corporate limits, the existing service area, outside of both, or within a defined distance from transmission lines for a proposed regional system.

Historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) will be used as the basis of the projections. (Refer to http://eadiv.state.wy.us/.) Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I, and projections from other sources including, but not limited to those that may be available from the Sponsor, county planning agencies, and Office such as previous WWDC reports where population projections were developed. Another information source may be population projections available in environmental impact statements generated for mineral resource development in the area. The Consultant will include an additional method, plotting the annual population data (to the extent it is available) over the last 100 years to establish a 90% confidence interval identifying upper and lower growth and decline. The Consultant shall provide graphic representations of each alternate population projection.

Water demand projections will be developed based on historical water use records. Alternate demand projections may be developed that consider the effects of an increasing tiered water rate system. Demand projections should include bulk water sales to rural or independent water districts or systems, industries, and others as applicable. The potential for any future high-impact water demand scenarios shall be examined. The Consultants shall also investigate any water service regionalization opportunities that may exist to satisfy future water demands.

Task 5. Water Source

The Consultant shall gather and analyze data and information as needed to examine the Sponsor's water supply sources for its public water supply systems. Capacities, diversion rates, pumping rates, pump capacities, and water treatment plant capacities shall be investigated as applicable. The Consultant shall determine if the water supply sources

are limiting the ability to meet present and future water demands and if so, identify water supply alternatives to meet those demands. The Sponsor's existing main transmission lines shall be assessed in terms of sizing, condition, and possible redundancy use. Any future potential raw water storage projects that the Sponsor is considering shall be documented and discussed. The Consultant shall gather and analyze data and information as needed to examine a new potential diversion serving a regional system. This analysis will determine the feasibility of a new diversion/source supply providing an adequate volume of water to accommodate a regional system.

The Consultant shall review existing water quality reports to determine if water supply sources and distributed water complies with EPA drinking water standards. If the reports indicate that the standards are not being met or suggest potential water quality problems, recommendations will be presented to mitigate these problems. Where applicable, the Consultant shall collect data on the number of households using septic systems, enhanced septic systems, sewage lagoon systems, or wastewater treatment plants to handle wastewater treatment within the Sponsor's water service area. These data will be used to determine if wastewater treatment, or lack thereof, is presently impacting the water quality or could impact the water quality of the Sponsor's water supplies. The Consultant shall gather and analyze data and information as needed to examine water quality for a new potential diversion serving a regional system. This analysis will aid in the design and upgrade of water treatment facilities.

The Consultant will review the status of the Sponsor's water rights/contracts and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under each permit will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant will also review any water supply contracts held by the Sponsor and discuss their purpose and importance to the Sponsor. The Consultant will evaluate water rights and/or contracts necessary to meet the needs of a new potential diversion for a regional system. Where applicable, recommendations for changing existing water rights/contracts or applying for new water rights and/or contracts will be defined. Additionally, for the purposes of a regional system with a new diversion and the potential for the water source being High Savery Reservoir storage, the Consultant shall investigate options for the shepherding of water to the diversion from High Savery Reservoir. The investigation will include necessary conversations and the development of agreements necessary for the shepherding of water.

Task 6. Hydraulic Model

The Consultant shall utilize the Sponsor's existing hydraulic modeling to accommodate the success of this study. The Consultant shall model the current system and proposed system improvements. Acceptable software platforms include the following or an Office approved equal:

- Innovyze/MWH Soft: InfoWater (ArcGIS based); H2OMap Water (stand-alone); or H2ONet (AutoCAD based)
- Bentley/Haestad Methods: WaterGEMS (ArcGIS based); WaterCAD (AutoCAD based or stand-alone)

The model shall analyze the system using an extended period simulation and shall be properly calibrated to available data sets or known system behavior; the calibration efforts shall include fire hydrant testing. The Consultant shall evaluate the adequacy of the water transmission and distribution lines, pumping stations, and storage capacities to meet current and future pressure and flow requirements based on maximum day demands. System storage shall be modeled in terms of volume and water quality (i.e.: tank turnover, water age, etc.). System pressures shall be determined in the model and compared against the pressure classes of existing pipes to identify problem areas. The Consultant shall consider domestic, rural, commercial, municipal, and industrial demands as needed in the evaluation (i.e.: hotels, trailer park, schools, etc.) and incorporate planned development areas and all independent water systems that are supplied from the Towns' systems. All pressure zones shall be properly accounted for and simulated in the model. All pump stations shall be simulated in the model, and the Consultant should assess the adequacy of the existing pumps in terms of capacity, hydraulic head, run-time, variable frequency drive (VFD) operation, etc. as deemed necessary. The Consultant shall use the model to size new pumps, transmission and distribution lines, storage, and other facilities as needed. In terms of fire flow, coordinate with Town staff to ascertain the Sponsor's expectations in providing fire flow to its service areas and the subsequent extent of fire flow simulations required. The Consultant shall analyze chlorine contact time and water age in, at a minimum, a high demand and low demand scenario. The model shall incorporate the recommended system upgrades or modifications and shall be detailed enough to satisfy the needs of the project.

The Consultant shall construct and execute the hydraulic model to determine system capacity limits in terms of maximum growth potential. Any inactive or planned water taps within the system shall be incorporated into the model. The Consultant shall investigate whether the system has the capacity to effectively serve these taps should they eventually become active.

Within the final report, the Consultant shall fully describe all modeling efforts particularly in terms of the model extents and acquisition of model input, including but not limited to the following:

- Nodal Elevations
- Demands
- Diurnal Curve(s)
- Pump Curves
- Valve Settings

- Pipe Diameters and Material
- Pipe Friction Factors
- Tank Geometry

Task 7. Recommendations and Cost Estimates

The Consultant shall develop a listing and descriptions of recommendations for the alternatives identified during the study. The recommendations shall address needed infrastructure capital improvement projects along with non-structural improvements suggested for the funding, operation, maintenance, replacement, and expansion of the system. The Consultant will prioritize the recommendations in coordination with the Sponsor and Office project manager. If necessary, a schedule shall be developed that identifies a phased approach for the implementation of the recommendations in accordance with their priority.

The Consultant shall prepare construction cost estimates in tabular form for each of the recommended alternatives. The table will identify both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Attachment B, Section C.3. The Level III cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall then suggest an appropriate inflation factor that may be applied to the project's current year total cost and projected into the future per the schedule developed in this task.

The Consultant shall evaluate whether the project(s) are in the public interest, stipulating if the proposed project(s) functions and services can be served by any person, association or corporation engaged in private enterprise, or if private enterprise has refused to provide the functions and services identified as being required by the proposed project(s). This information shall be included in the draft and final reports for this study.

Task 8. System Financing

The Consultant shall work with the Sponsor to acquire all necessary financial data required for this task to determine the current and anticipated future water system revenues and expenditures. To initiate this task, the Consultant shall determine if the Sponsor has water enterprise funds in which existing water revenues allow the water systems to be financially self-supporting or if the Sponsor must subsidize the water system from other budgets and revenues such as bonds, grants, etc. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.

- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses.
- Provide a fund that accrues sufficient funds to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Consultant.

The Consultant shall first use the above criteria to make recommendations on the Sponsor's current water revenue structure (rates, tap fees, and other) that would support the existing water system based on a revenue structure that encourages water conservation (tiered water rates). The current water revenues shall be compared against current water expenditures based on the last five (5) years of data (if available). The Consultant shall prepare a suggested itemized annual budget for the existing water system that would result in the system becoming and staying financially self-supporting.

Next, the Consultant shall prepare two (2) funding scenarios for consideration by the Sponsor that demonstrate the adjustments in revenues that may be necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 7. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting as defined by the above criteria. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users.

These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These two (2) scenarios shall be presented in the draft and final reports in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e.: the Consultant shall demonstrate the necessary adjustments in water system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.
>
> Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan (4% interest / 30 year term) from WWDC, and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof. For more information on project funding assistance see Section C.6 of Attachment B.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency and contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant will document all of this information in the final report including conversations held.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF

Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/
Contact: Bill Tillman, SRF Principal Engineer
WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS

Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs
Contact: Lorraine Werner, Community Programs Director, USDA RUS
Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602
Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the

Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 9. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than April 1, 2019. Three (3) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

The Consultant shall address all review comments and present the draft findings of the study at a public hearing near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

The report presentation for this Level II Study shall also serve as a public hearing, with WWDC Office personnel serving as the hearing officer. The script for the hearing will be developed by the Office project manager and shall include the question as to whether there is a private entity interested in providing the proposed project functions and services

in lieu of the sponsor. The Office is responsible for publishing a legal notice of the meeting in a statewide newspaper, once each week for three (3) weeks prior to the hearing; and in the local publication up to three (3) times prior to the hearing.

The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. Following the hearing there will be a ten day public comment period. Any comments received will be included in the aforementioned appendix.

The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

Task 10. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials, to the Office on or before August 1, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages.

- Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same

version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the WWDO's "GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." This is in addition to delivery of hard copy mapping media as described in Task 3. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identifying the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

WENCK ASSOCIATES, INC.

Labor Category	Hourly Rate
Senior Principal Engineer/Scientist	$175.00
Project Manager/Principal Engineer	$165.00
Senior Engineer/Senior Scientist	$145.00
Project Engineer/Scientist	$135.00
Engineer II/Scientist II	$115.00
Senior Designer	$105.00
Construction Manager	$100.00
Engineer	$100.00
Administration	$ 90.00
Clerical	$ 85.00
CADD/Technician I	$ 75.00

Other Direct Costs	Rate
Mileage	$0.545/mile
Rental Vehicle	@ Cost
Airfare	@ Cost
Per Diem ($7-Breakfast, $9-Lunch, $18-Dinner)	$34/day
Lodging (hotel)	@ Cost
Computer/Plotter	$75/day
Black and White Copies	$0.15/ea or @ Cost
Color Copies	$0.90/ea or @ Cost
Transparent and Color Bond, Blue Lines	$3.00/ea or @ Cost
Waterproof Plots	$3.00/ea or @ Cost
Mylar's	$15.00/ea or @ Cost
Total Station and Data Recorder	$100/day
ATV (4-wheeler)	$125/day
Water Quality Meters (pH/S.C./Temp, Turbidity, TDS)	$50/day
Water Level Meter	$35/day
1000 Foot Depth Sounder	$35/day
Flow/Discharge Meter	$50/day
DH-48 Sediment Sampler	$25/day
Sampling Pumps (peristaltic, submersible)	$75/day
Field laptop/computer	$75/day
Micro R Meter	$25/day
RTK Differential GPS Surveying Unit	$500/day
Nuclear Density Testing	$150/test
Acoustic Doppler Channel Profiler	$75/day
Consumables (lath, stakes, bailers, ice, baggies, etc.)	@ Cost
Contract Services/Subcontractors	@ Cost
Outside Sourced Testing, Monitoring, and Rental Equipment	@ Cost
Outside Services*	@ Cost

Subcontracted services will be billed at cost.

***Copies, transparencies, waterproof plots, mylars: Where a determination is made that it is cost effective to send work to outside services receipts will be provided.**

LOWER LARAMIE WATERSHED, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Anderson Consulting Engineers, Inc. [Consultant], 375 E Horsetooth Rd. Bldg 5, Fort Collins, CO 80525.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred seventy-two thousand dollars ($272,000).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
1. Project Meetings and Public Participation	$17,000
2. Review of Background Information	$6,000
3. Inventory and Descriptions	$107,000
4. Streamflow Hydrology	$17,000
5. Management and Rehabilitation Plan	$74,000
6. Cost Estimates	$8,000
7. Economic Analysis	$6,000
8. Permits	$5,000
9. Draft Report	$15,000
10. Report Presentations	$5,000
12. Final Report and Deliverables	$7,000
13. Geographic Information System Deliverables	$5,000
Total Project Cost	**$272,000**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: Laramie River Basin, downstream of Wheatland Reservoir #3, in Platte, Goshen, Albany, & Laramie Counties. The watershed includes the primary stream system of the Laramie River and numerous tributaries including Bluegrass Creek, Chugwater Creek, Duck Creek, Hunton Creek, Luman Creek, Sybille Creek, Richeau Creek, and Ricker Creek. Existing water storage facilities within the watershed include Grayrocks Reservoir and Wheatland Reservoir #1.

2. Purpose: The Platte County Resource District requests a watershed study to evaluate current watershed function, irrigation diversion/conveyance systems, and upland livestock/wildlife water management and rehabilitation opportunities. Surface water storage including enlargement and/or rehabilitation of existing water storage facilities, current condition of wetlands and riparian areas within the drainage, and geomorphic classification are also of interest. This information would provide baseline information from which the District can pursue implementation of management practices that address the natural resource issues within the drainage.

3. History: The Commission has completed several Level I studies in the project area. They are as follows.

   Wheatland Irrigation District Master Plan, Level I. Anderson Consulting Engineers, 2011.

   North Platte River Groundwater Assessment Study Southeastern Wyoming. Trihydro Corporation, 2007.

   Casper Aquifer Exploration Program. Wyoming Water Development Commission, 1986.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional

Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Throughout the course of this study, the Consultant shall remain mindful of the following objective statement that pertains to all Wyoming Water Development Commission (WWDC) Watershed Studies:

The objective of a Watershed Study is to evaluate an individual watershed's existing conditions and, from collaboration with landowners, stakeholders, and public outreach, develop a Watershed Management and Rehabilitation Plan and identify projects that are eligible for funding from WWDC and other sources that may improve or maintain watershed function and systems.

Task 1. Project Meetings and Public Participation

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties, including adjacent Conservation Districts. Presentations should be given to the District Board and the public. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsor and Office project manager.

Public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant should assume a minimum of three (3) public project meetings in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices and needed materials and prepare the meeting record. Meetings should be scheduled to coincide with fieldwork whenever possible. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

The Consultant shall assist the Sponsor with public participation in terms of meetings and outreach that communicates the nature, status, and findings of this study. During the study, public outreach shall also occur as needed for information gathering and to help identify WWDC Small Water Projects and other WWDC water development opportunities. Public participation meetings and outreach are anticipated to involve local landowners, stakeholders, agencies, organizations, representatives of land management activities, and any other interested parties. Outreach may take the form of flyers, postcards, postings, newspaper advertisements, mailings, etc. If determined to be valuable for the project by the Office project manager and Sponsor, the Consultant may develop a website to facilitate information dissemination. Or, if the Sponsor is willing to do so, the Consultant may coordinate with the Sponsor to provide information on the Sponsor's website. The website may provide information postings, project updates, mailing signups, and general information exchange/request for information from interested parties.

Task 2. Review of Background Information

The Consultant shall gather and review existing background information available through any number of relevant sources, including, but not limited to: WWDC; Water Resources Data System (WRDS); Wyoming Department of Environmental Quality (WDEQ); Wyoming Game and Fish Department (WGFD); Wyoming State Engineer's Office (WSEO); Wyoming State Geological Survey (WSGS); Wyoming Oil and Gas Conservation Commission (WOGCC); University of Wyoming (UW); U.S. Geological Survey (USGS); Natural Resources Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); U.S. Army Corps of Engineers (USACE); Bureau of Land Management (BLM); local conservation districts; and other local agencies and local landowners as appropriate. Gathered and reviewed data may include published and unpublished literature, public records, research material, numeric data, spatial data, aerial photography data, topographic data, and existing river basin plans.

Deliverables under this task shall include a bibliography of existing studies and descriptions of their applicability to the watershed. Data deliverables shall include a spreadsheet that lists existing studies and links or copies of the referenced study.

Task 3. Inventory and Descriptions

This task of the Watershed Study involves an inventory, description, and in some cases, an analyses of the Physical, Biological, and Anthropogenic Systems within the watershed followed by the preparation of written descriptions, maps, charts, tables, GIS data, etc. of specific watershed topics or areas of concern. In some instances, further analyses may be needed in order to formulate conclusions on specific watershed topics. The overall intention of this task is to provide a snapshot of existing conditions within the study area. Intended deliverables for this task for each distinctive watershed topic are as specified within the outlined sections below.

Inventory: The inventory is intended as a data gathering effort on specific watershed topics. Overall, it includes the acquisition of information from any number of relevant sources either through remote gathering of various datasets or through field reconnaissance performed specific to this task or in conjunction with Task 5 efforts. Inventoried items and information are expected to be inclusive of, but not limited to historic reports, maps, and documents; interviews with the Sponsor, landowners and stakeholders; electronic files and website downloads; and any field reconnaissance investigations and surveys that are conducted. As part of the inventory, the Consultant shall assess and evaluate each watershed topic to the degree necessary to formulate conclusions and recommendations with respect to fulfilling the objectives of the watershed study. Furthermore, the Consultant should remain cognizant of any previously inventoried features and avoid duplicating work efforts.

Descriptions: Written descriptions are expected to consist of narratives contained within the final report. Although the narratives are envisioned to be brief, the Consultant may prepare each to the degree and detail necessary to accurately communicate the nature of each watershed topic. The Consultant shall generally describe the role of each topic in influencing the physical, biological and anthropogenic integrity of the watershed and draw conclusions as applicable.

Analyses: Analyses may be required on various watershed topics as agreed upon during the course of this study by the Consultant and the Office project manager. The intention of these analyses is to further refine the acquired information and formulate conclusions necessary to achieve the objectives of this study and subsequent preparation of a watershed plan and project recommendations. All analyses shall be conducted to the degree necessary to suit the nature of the topic and documented within the final report to fully support any conclusions, plans, or recommendations that are reached. Furthermore, the Consultant should remain cognizant of any previously analyzed topics and avoid duplicating work efforts.

Table 1 presents an outline of the watershed systems, categories, and watershed topics. This outline is intended as a guide to help organize the following task objectives and steer the Consultant's focus and structure of the final report. Items within the outline as well as its structure are not intended to be all-inclusive and absolute. During the course of this study, the Consultant may propose additions to, deviations from, or combinations thereof, etc. to any items contained within the outline.

Table 1: Outline of Watershed Systems, Categories, and Topics

Systems	Categories	Topics
A Physical Systems	(I) Surface Water	a. Hydrography*
		b. Water Quality
		c. Flooding and Runoff
	(II) Geomorphology	a. Stream Classification*
		b. Channel Structure and Stream Stability
		c. Sediment Transport
	(III) Groundwater	a. Aquifers and Springs
		b. Groundwater Use, Base Flow, and Recharge
	(IV) Geology	a. Topography
		b. Soils
		b. Bedrock
	(V) Climate	a. Precipitation, Temperature, Climate Zones
B. Biological Systems	(I) Fish and Wildlife	a. Fisheries
		b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal)
		c. Sage Grouse
	(II) Land Cover	a. Riparian Areas
		b. Wetlands
		c. Vegetation and Plant Communities
C. Anthropogenic Systems	(I) Agricultural Water Use	a. Irrigated Lands*
		b. Irrigation Systems*
	(II) Domestic Water Use	a. Potable Water Systems*
	(III) Water Storage	a. Reservoirs*
		b. Upland Water Storage*
	(IV) Land	a. Land Use
		b. Land Ownership
		c. Land Management and Upland Water Resources
		d. Cultural Resources

*GIS layer associated with WWDO core data schema.

A. Physical Systems

The Physical Systems within the watershed shall be cataloged as outlined below with respect to the following categories: Surface Water; Geomorphology; Groundwater; Geology; and, Climate.

(I) Surface Water

Specific watershed topics and their respective deliverables under the Surface Water category are described below. In the interest of maintaining consistency, the Consultant shall utilize the National Hydrography Dataset (NHD) as the foundation for all Surface Water inventories, descriptions, and analyses.

a. Hydrography: The Consultant shall establish a foundation for this study by utilizing existing information and sources to develop mapping of all pertinent surface water hydrology features within the watershed, including but not limited to river and stream networks, reservoirs, wetlands, ditches, etc. Inventory and briefly summarize the physical hydrology of the watershed. Utilizing existing information where available, the Consultant shall attribute and label streams accordingly as perennial, intermittent, or ephemeral. Hydrographic features within the watershed shall be identified, mapped, and described.

Deliverables under the Hydrography topic shall consist of a description contained within the final report and any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). If using existing GIS material, it shall be referenced within the final report as applicable.

b. Water Quality: Water quality for the watershed, including any relevant data associated with Clean Water Act Section 303d listed streams, will be mapped using existing data. Information available from WDEQ, conservation districts and other agencies will be used to develop this map. Wyoming Pollutant Discharge Elimination System (WyPDES) permits shall also be mapped. The latest Wyoming Surface Water Classification List available from the WDEQ-Water Quality Division should be obtained and presented.

Deliverables for Water Quality are anticipated to consist of a written description and a single map and table inserted into the final report, or sourced and referenced (SuiteWater GIS) as appropriate.

c. Flooding and Runoff: The Consultant shall inventory and describe areas and occurrences of flooding, runoff issues, and areas prone to drainage problems within the watershed. Document problem areas through discussions with landowners and other stakeholders within the watershed. As appropriate, discuss any existing Best Management Practices (BMP) that mitigate flooding, runoff, and stormwater issues and discuss their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

Deliverables concerning Flooding and Runoff shall consist of a written description. Any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be

inserted into the final report accompanied by all supporting tabular or spreadsheet data.

(II) Geomorphology

Topics and deliverables under the Geomorphology category are projected to consist of the following elements and described individually or in some combination thereof:

a. Stream Classification: The stream systems within the watershed shall be classified using a Rosgen Analysis. In addition, any stream classifications relevant to geomorphology that have been developed by WGFD or WDEQ shall be acquired and presented. The intention of morphologic classifications is to better understand channel processes based upon channel form and, for example, to help identify which diversion improvement techniques, channel stabilization measures, and stream restoration or water development projects are appropriate for a particular stream segment. Floodplain connectivity may be mapped using Federal Emergency Management Agency (FEMA) floodplain data, empirical evidence, local input, etc., and integrated into Rosgen analysis to show the floodplain area still connected to the stream.

b. Channel Structure and Stream Stability: Channel structure, morphology, and stability of stream systems will be assessed where appropriate. Channel segments of specific interest will be identified for future study and mapped. Locations of headcuts, nickzones, geologic controls, man-made grade control structures and “hard points” shall be identified and mapped. Proper Functioning Condition (PFC) and NRCS Stream Visual Assessment Protocol (SVAP) assessments may also be incorporated where applicable.

c. Sediment Transport: The Consultant shall inventory and describe occurrences of erosion and sedimentation primarily based on interviews with landowners and others or empirical evidence obtained during any in-field reconnaissance and public outreach. Opportunities for improvement shall be identified and mapped.

Deliverables for all topics under the Geomorphology category shall consist of a written description and any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

(III) Groundwater

Watershed topics and deliverables under the Groundwater category are anticipated to consist of some combination of the following elements:

a. Aquifers and Springs: In order to characterize the hydrogeology of the watershed and the groundwater utilization in the subwatersheds, aquifers will be described and mapped using existing data. Alluvial aquifers, general groundwater flow direction, bedrock aquifers, artesian conditions, spring locations, and groundwater usage shall be discussed and mapped as appropriate. More detailed analysis may be provided where geology or soils have a significant effect on watershed functions.

b. Groundwater Use, Base Flow, and Recharge: Groundwater base flow contributions and groundwater recharge rates will be summarized based on information drawn from any available past studies and research that may have involved geology, soils, precipitation, surficial aquifers, and flow measurements. Estimate systems, patterns, and rates of natural recharge, and identify natural ground water discharge (e.g., springs, gaining streamflow, etc.). Map all groundwater use and features in the watershed (wells, spring discharge, etc.). Identify any groundwater control areas designated by the WSEO. Approximate baseflow contribution to streams using local investigations and WSGS methods and data (http://sales.wsgs.wyo.gov/wyoming-state-geological-survey-statewide-groundwater-baseflow-study/).

Deliverables for all topics under the Groundwater category shall consist of written descriptions. Existing GIS materials shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

(IV) Geology

Watershed topics and their respective deliverables under the Geology category are envisioned to consist of the following:

a. Topography: The Consultant shall provide a description of the topography within the watershed. The overall terrain, landforms, contours, relief, etc. within the study area should be characterized. Hills, valleys, mountains, plains, plateaus should be described in order to provide a mental picture of the landscape. Provide information on land slope and slope stability relative to its potential effect on water development and storage projects.

Deliverables for Topography are anticipated to consist of a written description inserted into the final report.

b. Soils: Soils within the watershed will be described and mapped using existing available data obtained from sources such as the NRCS Soil Survey, SSURGO, etc. More detailed analysis may be provided where geology or soils have a significant effect on watershed characteristics. Soil descriptions may be presented to help depict what plant community composition may exist in a given area.

c. Bedrock: Bedrock within the watershed will be described and mapped using existing available data obtain from sources such as the WSGS. More detailed analysis may be provided where geology or bedrock may have a significant effect on watershed characteristics.

Deliverables for Soils and Bedrock are anticipated to consist of referenced GIS data source(s), such as SuiteWater, in the final report; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

(V) Climate

Specific topics and their deliverables under the Climate category are anticipated to involve the following:

a. Precipitation, Temperature, Climate Zones: The overall climate conditions within the watershed shall be characterized in terms of precipitation, temperature, and climate zones. The range of elevations across the watershed should be considered, and the growing season should be assessed and described along with first and last frost dates. The Consultant may make use of local weather sites and PRISM Climate Data (http://prism.oregonstate.edu) for this effort which is obtainable from the online mapping server developed by WRDS (http://www.wrds.uwyo.edu/sco/data/PRISM/PRISM.html).

Deliverables for the Climate category are anticipated to consist of a written description and any necessary maps, charts, tables, etc. contained within the final report.

B. Biological Systems

The Biological Systems within the watershed shall be inventoried as outlined below with respect to the following general categories: Fish and Wildlife; and, Land Cover.

(I) Fish and Wildlife

Watershed topics and their respective deliverables under the Fish and Wildlife category are anticipated to consist of some combination of the following topics:

a. Fisheries: Fish distribution, fish passage barriers and all other relevant information shall be described and mapped. The Consultant should refer to WGFD or other applicable agencies. In addition, stream classifications that have been developed by WGFD as related to fisheries shall be acquired and mapped. Existing state-held instream flow water rights within the watershed shall be identified, mapped, and described.

b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal): The Consultant shall describe and acquire available mapping (or provide reference to online mapping sources, e.g. NREX, SuiteWater GIS) from WGFD of seasonal ranges and migration corridors for big game species as well as critical habitat and birthing areas. Also, the Wyoming Natural Diversity Database (WYNDD) may list many non-game species of concern that may be present within the study area, including fish, birds, amphibians, mollusks, mammals, and reptiles. A review of literature should be conducted to compile information on wildlife habitat distribution, sensitive, and endangered plant and animal species. The WYNDD should be queried to generate a list of Species of Concern that have been categorized as rare, endemic, disjunct, threatened or otherwise biologically sensitive in the watershed. In addition, species from the BLM or USFS Sensitive Species list will be identified. The most current iterations of the WGFD mapped seasonal, crucial, parturition, migration corridor and migration barrier mapping may be acquired and presented.

c. Sage Grouse: The Consultant shall describe and map the Greater Sage Grouse core area as recognized by WGFD. The Greater Sage Grouse is considered a species of concern and requires additional management consideration throughout the state. Greater Sage Grouse Core Area Mapping and applicable stipulation buffers as defined by Executive Order 2015-4 will be presented.

Deliverables for the Fish and Wildlife topics are anticipated to consist of written descriptions; referenced GIS data source(s) in the final report; and any necessary maps or reference to online maps (SuiteWater GIS), charts, etc. described and inserted into the final report.

(II) Land Cover

For the Land Cover inventory, describe the influence of land cover on the hydrologic systems and its current conditions. Data may be complied from the National Land Cover Dataset (NLCD), National GAP Analysis Program (GAP),

Landscape Fire and Resource Management Planning Tools (LANDFIRE), and other sources as applicable. Overall, the Consultant shall describe the roles of riparian areas, wetlands, vegetation, and plant communities in enhancing water quality, reducing flood impact, streambank stabilization, and mitigating erosion activity and sediment transport. Topics and deliverables under the Land Cover category are envisioned to consist of the following:

a. Riparian Areas: The Consultant shall describe and map riparian zones within the watershed. Riparian plant and animal communities should be documented using any available data sources. All riparian features within the watershed should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of riparian areas in influencing the chemical, physical, and biological integrity of the watershed.

b. Wetlands: The Consultant shall map the existing wetlands within the watershed utilizing the National Wetlands Inventory (NWI) created by the USFWS and supplemented with any other available data sources. Generally describe the role of wetlands in influencing the chemical, physical, and biological integrity of the watershed.

c. Vegetation and Plant Communities: Existing vegetative cover within the study area shall be assessed and mapped using available data sources such as LANDFIRE datasets to help describe existing vegetation types, existing canopy cover, and existing vegetation height. Describe the collective plant life within the study area and discuss how regional climate affects types of plants that survive within the plant community. Vegetation features should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of vegetation and plant communities in influencing the chemical, physical, and biological integrity of the watershed.

d. Invasive Species: The consultant shall coordinate with Platte County Weed and Pest to document and discuss the areal extent of invasive species and discuss issues and efforts to manage their distribution.

Deliverables for Land Cover topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications (SuiteWater GIS) in the final report; any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

C. Anthropogenic Systems

The Anthropogenic Systems (or those systems relating or resulting from the influence of human activity) within the watershed shall be inventoried as outlined below in terms of the following categories: Agricultural Water Use; Domestic, Municipal, and Industrial Water Use; Storage; and, Land.

(I) Agricultural Water Use

Within the Agricultural Water Use category, the Consultant shall acquire any existing irrigated lands mapping and other relevant information pertaining to Agricultural Water Use available from WWDC River Basin Plans (http://waterplan.state.wy.us/) or completed WWDC irrigation district master plans (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped irrigation features and avoid duplicating work efforts. Supplemental data and information pertaining to water rights and irrigated lands may also be obtained from the WSEO. Specific topics and deliverables under the Agricultural Water Use category are anticipated to be comprise of the following:

a. Irrigated Lands: The Consultant shall gather, review, and describe available irrigated lands mapping and then further evaluate, map, and describe significant changes in irrigated lands by using aerial photos or other remotely sensed data as applicable. Irrigation methods should be identified, mapped, and described according to center pivot, flooding, or other methods. The Consultant shall identify the hydrologic conditions (dry, average, or wet year) to associate with the irrigated lands mapping generated in this task. Methods to classify the dry, average, and wet years may be as defined in WWDC River Basin Plans or proposed by the Consultant.

b. Irrigation Systems: Irrigation water systems within the watershed will be described and mapped. Mapping should include diversions (greater than 2 cfs or as directed by the Office project manager) and their main conveyance systems (ditches, pipelines, etc.) for irrigation systems. Points of diversions and scanned plat maps of ditch locations and names may be sourced from water rights data obtained from the WSEO e-Permit system and its online plat viewer. ePermit conversion tools for initial plotting of diversions may be used as a starting point for mapping irrigation systems, this tool is documented in the WWDO GIS Standards Technical Memo and available on the WWDC's website. Where applicable, the Consultant may utilize diversion records obtained from annual hydrographer records and the SEO Realtime Streamflow Data website (seoflow.wyo.gov). Reservoirs and wells that supply irrigation districts will be identified on the map. Trans-watershed diversions shall be identified, mapped, and quantified in the report.

Based upon meetings with the Sponsor, stakeholders, and landowners, the Consultant may identify existing smaller irrigation systems and conduct subsequent evaluations. The Consultant shall acquire information necessary to ascertain any rehabilitation that may relate to improving water delivery along with annual or seasonal shortages of water supply or irrigation water delivery issues. Evaluations may define existing issues with water supply, erosion, conveyance loses, seepage, etc. Features such as headgates, diversion structures, and conveyance methods should be evaluated and mapped in the field as needed. Opportunities to improve diversion methods and reduce maintenance through the installation of grade control structures, channel stabilization efforts, or other in-stream improvements may be identified.

Deliverables for Agricultural Water Use topics shall consist of written descriptions. Any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

(II) Domestic Water Use

Within the Domestic Water Use category, the Consultant shall acquire any existing information from WWDC River Basin Plans (http://waterplan.state.wy.us/) or master plans that have been prepared (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped and described features and avoid duplicating work efforts. Supplemental data and information pertaining to water rights may also be obtained from the WSEO. Specific watershed topics and deliverables under the Domestic Water Use category are envisioned to consist of the following:

a. Potable Water Systems: Municipal, rural, or regional potable water transmission and distribution systems present in the watershed will be identified with key infrastructure features described and mapped. Mapping should include source water diversions, wells, and primary conveyance and storage features. Reservoirs and groundwater sources that supply municipalities, rural, and regional systems should also be identified. Water use should be quantified for domestic, municipal, and rural water users as estimated from water right information obtained from the WSEO e-Permit system or any other available source.

Deliverables for Domestic Water Use topics are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing

GIS material sourced and referenced within the final report as applicable; and any necessary maps, charts, tables, etc. inserted into the final report.

(III) Water Storage

Topics and their respective deliverables under the Water Storage category are anticipated to involve the following:

a. Reservoirs: The Consultant shall identify and map existing reservoirs based on aerial photography and WSEO data and examine any possible needs and opportunities for new or enlarged water storage facilities. Descriptions and mapping of existing water storage facilities greater than 500-acre-feet capacity should include an aerial mapping of the reservoir, water right permits, permitted capacity, end of month average storage, water use type, general condition as it relates to holding water (viable or non-viable), and where the stored water is used. Describe and quantify the permitted total storage at a HUC 10 subwatershed level.

The Consultant shall develop and present a complete and comprehensive document review of previous storage studies done for the proposed watershed study area and provide an evaluation of the outcomes of those studies. An evaluation matrix shall be prepared which summarizes pertinent attributes of each storage opportunity. Summarize the status of any ongoing projects.

Deliverables for the Reservoirs topic shall consist of any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data. Applicable analyses and respective conclusions will be fully documented within the final report.

b. Upland Water Storage: Existing wildlife and livestock water sources and storage facilities, including but not limited to springs, stock reservoirs, tanks, ponds, and stock wells, etc. will be mapped, evaluated, and described. Such facilities will be mapped after confirmation of their existence and supplemented by a brief description of their general condition as it relates to holding water (viable or non-viable). Based on this inventory, an assessment of areas in need of additional watering facilities shall be identified, mapped, and described.

Deliverables for the Upland Water Storage topic shall consist of a written description; and any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or

tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data.

(IV) Land

Specific watershed topics and their respective deliverables under the Land category are anticipated to be inclusive of the following:

a. Land Use: All land uses within the study area shall be described and mapped, including, but not limited to agricultural, urban, commercial, industrial, transportation, power systems, utilities, easements, etc. The Consultant shall acquire Land Use data sets from existing sources or provide reference to SuiteWater GIS, or Natural Resource and Energy Explorer (https://nrex.wyo.gov/). The watershed shall be characterized according to its level of development, dominant land use type, and relative water use.

b. Land Ownership: The Consultant shall identify, describe, and map essential details about Land Ownership within the watershed. The composition of federal, state, and private lands and the orientation and locations of ownership parcels should be discussed as related to future development or management strategies and project planning. Land ownership information may be obtained from available sources including the county assessor's office.

c. Land Management and Upland Water Resources: The Consultant shall identify, describe, and map or provide reference to SuiteWater GIS, or Natural Resource and Energy Explorer (https://nrex.wyo.gov/) details about Land Management and Upland Water Resources within the study area. Ascertain where private and public grazing uses are located and identify grazing radius of influence from existing water sources or implementation of any upland water development.

Where requested by the landowner(s), evaluations should be conducted on existing upland water resources. Any potential enhancement and improved water distribution for livestock and wildlife that facilitates grazing management for range resource improvement should be documented. NRCS Ecological Site Descriptions (ESD) may be acquired and mapped as needed to help identify and describe common plant communities and other land cover characteristics of the watershed. The Consultant should identify potential benefits to the watershed through plant community invigorations, reduction of erosion, and stream channel stabilization achieved from water development projects strategically implemented within the watershed. Other issues and opportunities, such as making beneficial use of produced

water and removal of high water demand invasive species, can be examined.

As appropriate, discuss any existing BMP for livestock grazing and ascertain their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

Deliverables for the Land Use, Land Ownership, and Land Management and Upland Water Resources topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; and any necessary maps, charts, tables, etc. described and incorporated into the final report.

d. Cultural Resources: The Consultant shall identify and produce a summary map of any Cultural Resources (or evidence of past human activity) that may exist within the study area. For instance, these may include pioneer homes, buildings or old roads; structures with unique architecture; prehistoric sites; historic or prehistoric artifacts or objects; rock inscription; human burial sites; and, earthworks such as battlefield entrenchments, prehistoric canals, or mounds. The Consultant should acquire or reference information on cultural resources from the Wyoming State Historic Preservation Office as well as the Natural Resource and Energy Explorer (https://nrex.wyo.gov/), or SuiteWater GIS.

Deliverables for the Cultural Resources are anticipated to consist of references to online map applications and any necessary maps, charts, tables, etc. contained within the final report.

Task 4. Streamflow Hydrology

The Consultant shall use previously prepared hydrologic models, existing flow estimates, newly collected gage data, or alternative applicable techniques to characterize streamflow in the watershed. The Consultant should draw upon any previous hydrologic models and sources to avoid unnecessary duplication of efforts. Existing sources may include the spreadsheet models created for WWDC River Basin Plans; WWDC planning and reservoir studies where more comprehensive models may have been developed; or WWDC instream flow hydrologic feasibility reports (http://library.wrds.uwyo.edu/). Coordinate with the Office project manager on availability of past hydrologic models or water supply analyses that may be useful for this task.

Streamflow for each HUC 10 should be summarized on a monthly and annual basis for dry, average, and wet years. Methods to classify the dry, average, and wet years may

be as used in any prior analyses or proposed by the Consultant. The resulting classification of dry, average, and wet years shall be presented in the final report. Based on the extent and suitability of available past hydrologic models that contain streamflow information, the Consultant may review and summarize that information, refine and update those models, or explore or supplement past efforts with other techniques such as regression equations based on specific basin characteristics like catchment area, elevation, and stream channel geometry. Concurrent discharge measurements and temporary gaging sites may also be considered in order the further quantify streamflow estimates. The methodologies ultimately selected should be fully described in the final report with all supporting data. All modeling input data, regression analysis techniques, assessment methodologies, results, conclusions and any assumptions or limitations therein shall be described and presented. Clearly stipulate whether the resulting streamflow data should be considered gage flow, synthesized flow, virgin flow, depleted or undepleted flow, etc.

Existing stream gage coverage and periods of record shall be assessed and mapped. A map of specific stream reaches and locations shall be labeled according to annual volume for dry, average, and wet streamflow conditions. Hydrographs shall be included in the report to illustrate monthly streamflow for dry, average, and wet years. Specific stream locations within the presented and delivered GIS mapping and files shall be attributed according to a monthly and annual streamflow basis for dry, average, and wet years. This should be done at a HUC 10 subwatershed level and at all gauge locations.

In terms of water supply, this task should also describe when and where water shortages may be an issue in the watershed and who or what is most likely affected by a dry water year. The Consultant shall explain and map areas that are commonly in regulation and when they typically go into regulation based on discussions with landowners, WSEO hydrographers, and review of annual Hydrographer reports.

Temporary Gaging: Should it be necessary to verify streamflows, the Consultant shall install up to three (2) stage monitoring devices and develop a rating curve (stage-discharge relationship) for legacy flow data on Chugwater or Rock Creeks. To establish each stream gage site, the Consultant shall choose the most accessible location to the legacy gauge sites. The Consultant will be responsible for landowner clearance, permitting, equipment acquisition, protocol, installation, operation, maintenance, development of rating curves, data collection, and all appurtenances associated with the operation of the stream gages during the life of the Contract. Gaging sites selected for this study shall be clearly identified within the final report by written description and displayed on maps.

Stage recording and data logging devices may be acquired from the Office for use in this project. The Consultant shall be responsible for providing all other required equipment, including data transfer units, laptops and computers for data upload and processing, software, and all equipment required for the physical installation

of each unit. Based upon site requirements and proximities, the Consultant shall determine and install the proper number of pressure transducers to ensure proper calibration to barometric pressure at each stage recording site if needed. Any equipment provided by the Office under this Contract and all data collected shall be the sole property of the Office and returned to the Office prior to close of Contract. Note that surcharges or rental fees of any kind shall not be billable within this Contract should the Consultant chose not to install equipment available from the Office.

As applicable, the Consultant shall be responsible for seasonal removal of all equipment to prevent its damage. Depending on weather conditions and site accessibility, it is anticipated that equipment may need to be removed for winter and reinstalled in spring.

Deliverables for this task shall consist of any newly developed GIS data (delivered consistent with WWDC GIS standards referenced in Task 12). If using existing GIS material, it shall be referenced within the final report as applicable. Any necessary maps, charts, or tables shall be inserted into the final report accompanied by all supporting tabular or spreadsheet data.

Task 5. Management and Rehabilitation Plan

The Consultant shall prepare a Management and Rehabilitation Plan (Plan) that establishes specific project suggestions to improve watershed condition and function and provide benefit for wildlife, livestock, and the environment. The Plan is expected to provide an overview of specific improvements that can be implemented to address key opportunities identified within the watershed.

Projects identified in the Plan should be tailored to address any problems or opportunities identified in Tasks 3 and 4 and in collaboration with (or as requested by) landowners, stakeholders, land management agencies, and any other interested parties. The Plan shall identify improvements to land and water management practices within the watershed considering private property and water rights. Landowner and land management agency interviews will be conducted to determine past and present historical management activities and to identify watershed development, management, and rehabilitation opportunities.

The Plan shall identify and recommend watershed development, management, and rehabilitation opportunities in relation, but not limited to, the following watershed functions and facilities:

- Surface water storage: The Consultant may evaluate the potential for new or increased water storage to address seasonal or annual shortages, augment late season streamflow to benefit riparian habitat and wildlife, address flood impacts

and control, enhance recreation opportunities, or improve water quality and stream channel stability. Opportunities may be identified through discussions with the Sponsor, local stakeholders, irrigators, and landowners within the basin.

- Irrigation supply systems with emphasis on upgrades, operational improvements, and efficient management techniques including, but not limited to, issues with water quantity, erosion, conveyance loss, infrastructure, and seepage.
- Livestock/wildlife upland water development.
- Groundwater recharge. Identify areas for potential groundwater recharge projects, if appropriate.
- Stream channel condition and stability.
- Wetland development and enhancement.
- Grazing management.

The Consultant shall develop a summary table of the recommendations generated during the watershed study. The intention of the table is to provide a guide for the Sponsor in the selection and implementation of the Plan's project recommendations. The following evaluation criteria may be used by the Consultant in the development of the summary table. The Consultant may propose alternate evaluation criteria for consideration with approval by the Office project manager.

- Project type as described above in watershed functions and facilities.
- WWDC program identification: (e.g., Small Water Project Program, conventional, other).
- Supply type: Identify projects as new water supply or rehabilitation.
- Practicality of implementation: Provide a narrative that describes ownership issues, funding concerns, institutional issues, and project durability and sustainability.
- Estimated cost: Proposed project cost estimates as described in Task 6 shall be considered and included in the Plan.
- Funding or financing opportunities: Funding/financing opportunities shall be included in the Plan as described in Task 7.
- Overall benefits to the watershed: (e.g., riparian, wetland, water quality, wildlife, fish passage improvement, and other environmental and recreational purposes, etc.).
- Permitting issues: (e.g., WSEO, USACE, WDEQ, NEPA requirements, environmental reviews, etc.).
- Current public sponsor: Ascertain whether a current public sponsor exists to take the project to the next level.

The Consultant shall prepare conceptual-level designs for project recommendations identified in the Plan. Project designs should include a description of the project and its purpose. Project designs should be of sufficient detail to estimate costs (Task 6), identify fatal flaws (pipelines, transportation, energy transmission, and cultural resources), and

any socio-economic impediments to moving forward. The description should include information relevant to completing a WWDC project application.

Within the final report, the Consultant shall include a detailed description of the WWDC Small Water Project Program and the steps necessary to take a project from the application phase to final payment. This shall include a listing of the Sponsor's responsibilities for permitting, design, and project completion.

Deliverables for this task shall include a description and tabulation of the Plan's project recommendations and a supporting map that shows the location of all the identified projects. GIS file deliverables should contain the project location, a project identifier, project type, WWDC program, alternative funding sources, supply type, overall benefits, rough estimates of construction cost and potential volume to be supplied or saved through the development of the project, consistent with WWDC GIS standards referenced in Task 12.

Task 6. Cost Estimates

The Consultant shall provide cost estimates for the watershed development, management, and rehabilitation projects identified in Task 5. Cost estimates shall be included in the Plan summary table and be calculated and presented by both the total project cost and as unit costs. Costs shall be structured to allow the Sponsor to evaluate proposed project recommendations and shall identify those components that are both eligible and non-eligible for WWDC and Small Water Project Program (SWPP) funding. Estimates shall be based on the year the watershed study is completed.

Cost estimates for small scale projects, such as those eligible for WWDC SWPP Grants, shall be inclusive of the above and take into account the past and present project component average costs.

Cost estimates for large scale projects, such as those eligible for WWDC Level III Construction Grants/Loans, shall also be inclusive of the above and include operation and maintenance costs, administrative costs, and debt retirement. WWDC "Repair and Maintenance Account" funding and the cost(s) for water shall be incorporated. Cost estimates for large scale projects shall be prepared as outlined in Section C of this Scope of Services.

Task 7. Economic Analysis

Project funding and financing is a critical aspect associated with the implementation of watershed development, management, and rehabilitation projects. This task will provide the necessary information to estimate end costs of project implementation utilizing alternative sources of funding. The Consultant shall provide local, state and federal information regarding potential funding sources, application requirements, and funding

eligibility requirements with respect to funding agency criteria and conditions. In addition, the Consultant shall identify the types of Wyoming entities eligible to apply for funding from these funding sources, discuss the process of forming each eligible entity, and the benefits of becoming an eligible entity.

Task 8. Permits

The Consultant shall identify all permits, easements, and clearances necessary for implementation of the Plan and any associated proposed projects or construction activities. This task will include recognition of State of Wyoming Executive Order 2015-4, Greater Sage-Grouse Core Area Protection.

Task 9. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than **August 17, 2019**. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with three (3) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

From the above copies, the Consultant will provide the project Sponsor with three (3) hard copies and a pdf copy of the draft report.

Task 10. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines. The Consultant is responsible for publishing notice of the meeting not less than once each

week for two weeks prior to the meeting and should budget accordingly.

Task 11. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before **November 16, 2019**. These final documents and materials shall include: 1) Twelve (12) hard copies of the final report, 2) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Final reports shall be bound with spine labels clearly identifying the project, Consultant and date. From the above copies, the Consultant will provide the project Sponsor with three (3) hard copies.

Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. From the above copies, the Consultant will provide the project Sponsor with one (1) copy.

Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

Task 12. Geographic Information System Deliverables

The Consultant shall provide three (3) CD/DVD/Flash Drive/Portable Hard Drive copies of the GIS data. GIS data shall be composed and delivered according to the according to the "WWDO GIS Data Framework Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection. The Consultant may also view a prerecorded webinar that is available on the GIS Standards website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. FEATURE MAPPING. The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated into the geodatabase template or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the "GIS Standards Technical Memorandum." Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked non-spatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references

(.xml, .txt). Data shall be delivered within the Office core geodatabase template. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS (.mxd) files saved with relative path names to data sources.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

ANDERSON CONSULTING ENGINEERS, INC.

Labor Category	Hourly Rate
Senior Principal Engineer	$190.00
Principal Engineer	$180.00
Senior Project Manager	$155.00
Project Manager	$130.00
Senior Engineer/Scientist II	$118.00
Senior Engineer I	$105.00
Project Engineer II	$99.00
Project Engineer I	$92.00
Engineer II	$85.00
Engineer I	$80.00
Senior GIS/CAD Technician	$90.00
GIS/CAD Technician II	$85.00
GIS/CAD Technician I	$73.00
Senior Project Assistant	$65.00
Project Assistant	$60.00

ACE Affiliates

Donald Tranas	$80.00
Ron Vore	$80.00

Other Directs Costs

Airfare …….@ cost	In-house B&W Copies…….$ 0.10/copy
Meals/Lodging ……@ cost	In-house Color Copies…….$ 1.00/copy
Mileage ……..$0.545/mile	In-house B&W Plotter…….$ 5.00/plot
	In-house Color Plotter…….$10.00/plot

All other direct costs such as communications, equipment rental, materials, laboratory services, shipping and reproduction will be charged at cost.

MIDDLE BIG HORN RIVER WATERSHED, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Y2 Consultants, LLC [Consultant], 180 S. Willow, PO Box 2870, Jackson, WY 83001.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred eighty four thousand, four hundred forty dollars ($284,440).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
Task 1.	Meetings	$ 28,900
Task 2.	Information Review	$ 28,000
Task 3.	Inventory and Descriptions	$ 82,775
Task 4.	Streamflow Hydrology	$ 33,515
Task 5.	Development, Management, and Rehabilitation Plan	$ 27,540
Task 6.	Cost Estimates	$ 25,000
Task 7.	Project Financing	$ 15,390
Task 8.	Lower Hanover Canal Pathway Evaluation	$ 7,245
Task 9.	Draft Report and Presentations	$ 24,365
Task 10.	Final Report and Deliverables	$ 11,710
	TOTAL PROJECT COST	**$ 284,440**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

E. Withholding of Payment. If a work element has not been received by the Commission by the dates established in Attachment A, the Commission may

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. The Middle Big Horn River Watershed as spatially defined for this study is located in Big Horn, Washakie, Hot Springs, and Park Counties. The watershed includes the primary stream system of the Middle Big Horn River from south of Worland to Greybull where the Big Horn River confluences with the Greybull River. Tributaries in the study area include Elk Creek, Fifteenmile Creek, Gooseberry Creek, Nowater Creek, and the East Fork Nowater Creek. The extent of the project's study area includes the following HUC 12 basins:

100800070804	Middle Nowater Creek
100800070604	Upper Buffalo Creek
100800070608	Hillberry Reservoir-Gooseberry Creek
100800071005	Schuster Draw-Fifteenmile Creek
100800071201	Tenmile Creek
100800071207	Alamo Creek-Bighorn River
100800071205	South Fork Elk Creek
100800070603	Mormon Creek-Gooseberry Creek
100800070802	Mud Creek
100800070702	Upper East Fork Nowater Creek
100800070905	Timber Creek-Fifteenmile Creek
100800070904	Dry Cottonwood Creek
100800071202	Slick Creek-Bighorn River
100800071204	Sixmile Creek-Bighorn River
100800071208	Antelope Creek-Bighorn River
100800071104	Little Gooseberry Creek
100800070602	Middle Creek
100800070606	Enos Creek-Gooseberry Creek
100800071004	North Fork Fifteenmile Creek
100800070607	Gillies Draw-Gooseberry Creek
100800070903	Big Draw-Fifteenmile Creek
100800070601	Deer Creek-Gooseberry Creek
100800070609	Blake-Denton Number 1 Reservoir-Gooseberry Creek

100800071002	Lower Middle Fork Fifteenmile Creek
100800071106	Horse Gulch-Bighorn River
100800070701	Joe Henry Fork
100800070704	Lower East Fork Nowater Creek
100800070703	Denver Jake Draw
100800070901	Enright Reservoir-Fifteenmile Creek
100800070902	Badger Creek-Fifteenmile Creek
100800070605	Lower Buffalo Creek
100800070801	Headwaters Nowater Creek
100800070803	Upper Nowater Creek
100800071003	Reservoir Creek-Fifteenmile Creek
100800070805	Lower Nowater Creek
100800071001	Upper Middle Fork Fifteenmile Creek
100800071203	Fivemile Creek
100800071206	Elk Creek

2. Purpose. To perform a Level I study for the Middle Big Horn River Watershed.

3. History. The South Big Horn Conservation District and the Washakie County Conservation District requested a watershed study to evaluate current watershed function, irrigation diversion/conveyance systems, and upland livestock/wildlife water management and rehabilitation opportunities. Surface water storage including enlargement and/or rehabilitation of existing water storage facilities, current condition of wetlands and riparian areas within the drainage, and geomorphic classification are also of interest. This information would provide baseline information from which the districts can pursue implementation of management practices that address the natural resource issues within the drainage. The service area for the South Big Horn Conservation District includes the lower portions of Middle Big Horn River Watershed that reside in Big Horn County. The service area for the Washakie County Conservation District includes the upper portions of the Middle Big Horn River Watershed that primarily reside in Washakie County, although some portions extend into Park and Hot Springs Counties. Existing reports that are relevant to this study include the following:

   - RESPEC. E. Coli Total Maximum Daily Loads for the Big Horn River Watershed. Prepared for Wyoming Department of Environmental Quality. October, 2013.
   - Western Heritage Consulting & Engineering. Hanover Irrigation District Master Plan, Level I Study. Prepared for Wyoming Water Development Commission. August, 2017.
   - U.S. Bureau of Land Management, Wind River/Bighorn Basin District. Environmental Impact Statement for the Westside Land Conveyance Project. January, 2011.

- WWC Engineering. Final Report, Westside Irrigation Project Business Plan. EDA Project Number: 05-86-04732. Prepared for U.S. Department of Commerce. February, 2010.
- Westside Irrigation Project. Various studies from the 1980s. Refer to WWDC's Project Reports website: http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all

plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Throughout the course of this study, the Consultant shall remain mindful of the following objective statement that pertains to all Wyoming Water Development Commission (WWDC) Watershed Studies:

The objective of a Watershed Study is to evaluate an individual watershed's existing conditions and, from collaboration with landowners, stakeholders, and public outreach, develop a Watershed Management and Rehabilitation Plan and identify projects that are eligible for funding from WWDC and other sources that may improve or maintain watershed function and systems.

Task 1. Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsors with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsors and Office project manager. The scoping meeting shall be held jointly with both Sponsors in attendance.

Public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsors and all affected parties informed of progress. The Consultant should assume a minimum of two (2) public project meetings in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsors. All public project meetings shall be held jointly with both Sponsors in attendance. The Consultant shall prepare all notices and needed materials and prepare the meeting record. In addition to the public project meetings, several informal meetings with the Sponsors or Office project manager may be necessary during the course of the study. All meetings should be scheduled to coincide with fieldwork whenever possible.

The Consultant shall assist the Sponsors with public participation in terms of meetings and outreach that communicates the nature, status, and findings of this study. During the study, public outreach shall also occur as needed for information gathering and to help identify WWDC Small Water Program Projects (SWPP) and other WWDC water development opportunities. Public participation meetings and outreach are anticipated to involve local landowners, stakeholders, agencies, organizations, representatives of land management activities, and any other interested parties. Outreach may take the form of flyers, postcards, postings, newspaper advertisements, mailings, etc. If determined to be valuable for the project by the Office project manager and Sponsors, the Consultant may utilize an existing website to facilitate information dissemination. If the Sponsors are willing to do so, the Consultant may coordinate with the Sponsors to provide information on the Sponsors' website. The website may provide information postings, project updates, mailing signups, and general information exchange/request for information from interested parties.

Task 2. Information Review

The Consultant shall gather and review existing background information available through any number of relevant sources, including, but not limited to: WWDC; Water Resources Data System (WRDS); Wyoming Department of Environmental Quality (WDEQ); Wyoming Game and Fish Department (WGFD); Wyoming State Engineer's Office (WSEO); Wyoming State Geological Survey (WSGS); Wyoming Oil and Gas Conservation Commission (WOGCC); University of Wyoming (UW); U.S. Geological Survey (USGS); Natural Resources Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); U.S. Army Corps of Engineers (USACE); Bureau of Land Management (BLM); local conservation districts; and other local agencies and local landowners as appropriate. Gathered and reviewed data may include published and unpublished literature, public records, research material, numeric data, spatial data, aerial photography data, topographic data, and existing river basin plans.

» Deliverables under this task shall include a bibliography or table of existing studies and descriptions of their applicability to the watershed. A map showing the general location of completed WWDC planning and construction projects and studies shall be provided.

Task 3. Inventory and Descriptions

This task of the Watershed Study involves an inventory, description, and in some cases, an analyses of the Physical, Biological, and Anthropogenic Systems within the watershed followed by the preparation of written descriptions, maps, charts, tables, GIS data, etc. of specific watershed topics or areas of concern. In some instances, further analyses may be needed in order to formulate conclusions on specific watershed topics. The overall intention of this task is to provide a snapshot of existing conditions within the study area. Intended deliverables for this task for each distinctive watershed topic are as specified within the outlined sections below.

Inventory: The inventory is intended as a data gathering effort on specific watershed topics. Overall, it includes the acquisition of information from any number of relevant sources either through remote gathering of various datasets or through field reconnaissance performed specific to this task or in conjunction with Task 5 efforts. Inventoried items and information are expected to be inclusive of, but not limited to historic reports, maps, and documents; interviews with the Sponsors, landowners and stakeholders; electronic files and website downloads; and any field reconnaissance investigations and surveys that are conducted. As part of the inventory, the Consultant shall assess and evaluate each watershed topic to the degree necessary to formulate conclusions and recommendations with respect to fulfilling the objectives of the watershed study. Furthermore, the Consultant should remain cognizant of any previously inventoried features and avoid duplicating work efforts.

Descriptions: Written descriptions are expected to consist of narratives contained within the final report based upon the findings from the inventory. Although the narratives are envisioned to be brief, the Consultant may prepare each to the degree and detail necessary to accurately communicate the nature of each watershed topic. The Consultant shall generally describe the role of each topic in influencing the physical, biological and anthropogenic integrity of the watershed and draw conclusions as applicable.

Analyses: Analyses may be required on various watershed topics as agreed upon during the course of this study by the Consultant and the Office project manager. The intention of these analyses is to further refine the acquired information and formulate conclusions necessary to achieve the objectives of this study and subsequent preparation of a watershed plan and project recommendations. All analyses shall be conducted to the degree necessary to suit the nature of the topic and documented within the final report to fully support any conclusions, plans, or recommendations that are reached. Furthermore, the Consultant should remain cognizant of any previously analyzed topics and avoid duplicating work efforts.

Due to the nature and inherit complexity of topics contained within a watershed study, while conducting this task, the Consultant shall remain responsive to the likelihood of overlap in many of the categories, watershed topics, and issues in terms of inventorying, data collection efforts, written descriptions, and analyses. In addition, the Consultant should maintain a dynamic approach during the course of the study, recognizing limitations of what can be accomplished from a timing and budgetary standpoint, balancing efforts accordingly, and regularly coordinating with the Office project manager and Sponsors.

Table 1 presents an outline of the watershed systems, categories, and watershed topics. This outline is intended as a guide to help organize the following task objectives and steer the Consultant's focus and structure of the final report. Items within the outline as well as its structure are not intended to be all-inclusive and absolute. During the course of this study, the Consultant may propose additions to, deviations from, or combinations thereof, etc. to any items contained within the outline.

The Consultant is encouraged to become acquainted with the Wyoming Association of Conservation Districts (WACD) and review its mission statement (http://www.conservewy.com/index.html). In its capacity, the WACD has developed "Suite Water," an internet-based, online mapping and dataset tool for information dissemination (http://suitewater.wygisc.org). Suite Water can be described as a "free-GIS" with preloaded GIS data for use by Conservation Districts, landowners, and any other interested parties. Consultants are invited to explore this tool to possibly augment efforts in Task 3.

Table 1: Outline of Watershed Systems, Categories, and Topics

Systems	Categories	Topics
A Physical Systems	**(I) Surface Water**	a. Hydrography
		b. Water Quality
		c. Flooding
		d. Runoff
	(II) Geomorphology	a. Stream Classification
		b. Channel Structure and Stream Stability
		c. Sediment Transport
	(III) Groundwater	a. Aquifers and Springs
	(IV) Geology	a. Topography
		b. Soils
		c. Bedrock
	(V) Climate	a. Climate Science
B. Biological Systems	**(I) Fish and Wildlife**	a. Fisheries
		b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal)
		c. Sage Grouse
	(II) Land Cover	a. Riparian Areas
		b. Vegetation and Plant Communities
C. Anthropogenic Systems	**(I) Agricultural Water Use**	a. Irrigated Lands
		b. Irrigation Systems
	(II) Domestic, Municipal, and Industrial Water Use	a. Potable Water Systems
		b. Industrial and Mining
		c. Produced Water
	(III) Water Storage	a. Reservoirs
		b. Upland Water Storage
	(IV) Land	a. Land Use
		b. Land Ownership
		c. Land Management and Upland Water Resources
		d. Cultural Resources

A. Physical Systems

The Physical Systems within the watershed shall be cataloged as outlined below with respect to the following categories: Surface Water; Geomorphology; Groundwater; and, Geology.

(I) Surface Water

Specific watershed topics and their respective deliverables under the Surface Water category are described below. In the interest of maintaining consistency, the Consultant shall utilize the National Hydrography Dataset (NHD) as the foundation for all Surface Water inventories, descriptions, and analyses.

a. Hydrography: The Consultant shall establish a foundation for this study by utilizing existing information and sources to develop mapping of all pertinent surface water hydrology features within the watershed, including but not limited to river and stream networks, reservoirs, wetlands, ditches, etc. Inventory and briefly summarize the physical hydrology of the watershed. Utilizing existing information where available, the Consultant shall attribute and label streams accordingly as perennial, intermittent, or ephemeral. Coordinate with the Sponsors regarding mapping needs for wetlands and other hydrography features.

» Deliverables under the Hydrography topic are anticipated to consist of a narrative or description contained within the final report; referenced GIS data source(s) in the final report; and any necessary maps, charts, tables, etc. inserted into the final report.

b. Water Quality: Water quality for the watershed, including any relevant data associated with Clean Water Act Section 303d listed streams, will be mapped using existing data. Information available from WDEQ, conservation districts and other agencies will be used to develop this map. Wyoming Pollutant Discharge Elimination System (WyPDES) permits shall also be mapped. The latest Wyoming Surface Water Classification List available from the WDEQ-Water Quality Division should be obtained and presented.

» Deliverables for Water Quality are anticipated to consist of a written description and a single map and table inserted into the final report.

c. Flooding: The Consultant shall inventory and describe areas and occurrences of flooding within the watershed based on Sponsor input, in-field reconnaissance, or from discussions with landowners and other stakeholders. As appropriate, document any in-place Best Management Practices (BMP) that mitigate flooding and appraise their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological

enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability. Document occurrences and effects of historic flooding on the main stem river that resulted from upstream reservoir releases. Suggest ways to mitigate such flooding problems as part of the Plan as discussed in Task 5.

d. Runoff: The Consultant shall inventory and describe areas with runoff or drainage problems within the watershed based on Sponsor input, in-field reconnaissance, or through discussions with drainage districts, landowners and other stakeholders within the watershed. Investigate areas with drainage issues, including areas that are washing out, problems with ponding, etc. As appropriate, document any in-place BMP that mitigate runoff, drainage, and stormwater issues and appraise their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability. Document any runoff or drainage problem areas and effects and suggest ways to mitigate them within the Plan as discussed in Task 5.

» Deliverables for both Flooding and Runoff are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; and any necessary maps, charts, etc. inserted into the final report.

(II) Geomorphology

Topics and deliverables under the Geomorphology category are projected to consist of the following elements and described individually or in some combination thereof:

a. Stream Classification: The stream systems within the watershed shall be classified using a Rosgen Analysis. In addition, any stream classifications relevant to geomorphology that have been developed by WGFD or WDEQ shall be acquired and presented. The intention of morphologic classifications is to better understand channel processes based upon channel form and, for example, to help identify which diversion improvement techniques, channel stabilization measures, and stream restoration or water development projects are appropriate for a particular stream segment. Floodplain connectivity may be mapped using Federal Emergency Management Agency (FEMA) floodplain data, empirical evidence, local input, etc., and integrated into Rosgen analysis to show the floodplain area still connected to the stream.

b. Channel Structure and Stream Stability: Channel structure, morphology, and stability of stream systems will be assessed where appropriate. Channel segments of specific interest will be identified for future study and

mapped. Locations of headcuts, nickzones, geologic controls, man-made grade control structures and "hard points" shall be identified and mapped. Proper Functioning Condition (PFC) and NRCS Stream Visual Assessment Protocol (SVAP) assessments may also be incorporated where applicable.

c. Sediment Transport: The Consultant shall inventory and describe occurrences of erosion and sedimentation primarily based on interviews with landowners and others or empirical evidence obtained during any in-field reconnaissance and public outreach. Opportunities for improvement shall be identified and mapped.

» Deliverables for all topics under the Geomorphology category are anticipated to consist of any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any applicable analyses and respective conclusions fully documented within the final report.

(III) Groundwater

The watershed topic and deliverables under the Groundwater category are anticipated to consist of the following:

a. Aquifers and Springs: In order to characterize the hydrogeology of the watershed and the groundwater utilization in the subwatersheds, aquifers will be described and mapped using existing data. Alluvial aquifers, general groundwater flow direction, bedrock aquifers, artesian conditions, spring locations, and groundwater usage shall be discussed and mapped as appropriate. Identify depth to groundwater, particularly in potential water development areas for drilling of wells for irrigation or stockwater. Assess the impact of groundwater quality within the watershed. More detailed analysis may be provided where geology or soils have a significant effect on watershed functions.

» Deliverables for Aquifers and Springs are anticipated to consist of written descriptions; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report; and any necessary analyses and respective conclusions fully documented within the final report.

(IV) Geology

Watershed topics and their respective deliverables under the Geology category are envisioned to consist of the following:

a. Topography: The Consultant shall provide a description of the topography within the watershed. The overall terrain, landforms, contours, relief, etc. within the study area should be characterized. Hills, valleys, mountains, plains, plateaus should be described in order to provide a mental picture of the landscape. Provide information on land slope and slope stability relative to its potential effect on water development and storage projects.

» Deliverables for Topography are anticipated to consist of a written description inserted into the final report along with any necessary maps, charts, tables, etc.

b. Soils: Soils within the watershed will be described and mapped using existing available data obtained from sources such as the NRCS Soil Survey, SSURGO, etc. More detailed analysis may be provided where geology or soils have a significant effect on watershed characteristics. Soil descriptions may be presented to help depict what plant community composition may exist in a given area.

c. Bedrock: Bedrock within the watershed will be described and mapped using existing available data obtain from sources such as the WSGS. More detailed analysis may be provided where geology or bedrock may have a significant effect on watershed characteristics.

» Deliverables for Soils and Bedrock are anticipated to consist of referenced GIS data source(s) in the final report; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

(V) Climate

This watershed topic and its deliverables under the Climate category are expected to consist of the following:

a. Climate Science: In effort to provide information to the conservation districts' future water use and management efforts, the Consultant shall provide a section in the final report that summarizes current climate science. The intention is not to debate whether climate change is real, perceived, or human caused. Rather, the Consultant will present a state-of-the-art science summary so that the Sponsors can use the information for planning purposes, allowing for better planning and preparation for climate variability and associated extreme weather events. The summary should focus on information available at the Wyoming State Climate Office which is part of the University of Wyoming Water Resources Data System (WRDS) and Wester Water Assessment, which is a collaboration of a diverse group of stakeholders, researchers, and other climate service providers in the

Intermountain West, which includes Wyoming. (https://cpo.noaa.gov/Portals/0/Docs/RISA/RISATeams/WWA/RISA-2-pager_WWA_0413-final.pdf?ver=2017-12-28-131349-003&ver=2017-12-28-131349-003).

» Deliverables for Climate Science are anticipated to consist of a written description inserted into the final report along with any necessary supporting maps, charts, tables, etc.

B. Biological Systems

The Biological Systems within the watershed shall be inventoried as outlined below with respect to the following general categories: Fish and Wildlife; and, Land Cover.

(I) Fish and Wildlife

Watershed topics and their respective deliverables under the Fish and Wildlife category are anticipated to consist of some combination of the following topics:

a. Fisheries: Fish distribution, fish passage barriers and all other relevant information shall be described and mapped. The Consultant should refer to WGFD or other applicable agencies. In addition, stream classifications that have been developed by WGFD as related to fisheries shall be acquired and mapped. Existing state-held instream flow water rights within the watershed shall be identified, mapped, and described.

b. Wildlife Habitat, Game, and Sensitive Species (Plant and Animal): Based on good science and the latest available mapping from WGFD (or other mapping sources) the Consultant shall summarize seasonal ranges and migration corridors for big game species as well as critical habitat and birthing areas. The Wyoming Natural Diversity Database (WYNDD) may list many non-game species of concern that may be present within the study area, including fish, birds, amphibians, mollusks, mammals, and reptiles. Using the latest available scientific information, a review should be conducted to compile and summarize information on wildlife habitat distribution, sensitive, and endangered plant and animal species. The WYNDD should be queried to generate a list of Species of Concern based on good science that have been categorized as rare, endemic, disjunct, threatened or otherwise biologically sensitive in the watershed. In addition, species from the BLM or USFS Sensitive Species list will be identified. The most current iterations of the WGFD mapped seasonal, crucial, parturition, migration corridor and migration barrier mapping may be acquired and presented. Briefly describe these topics and provide maps as needed.

c. Sage Grouse: The Consultant shall describe and map the Greater Sage Grouse core area as recognized by WGFD. The Greater Sage Grouse is considered a species of concern and requires additional management consideration throughout the state. Greater Sage Grouse Core Area

Mapping and applicable stipulation buffers as defined by Executive Order 2015-4 will be presented.

» Deliverables for the Fish and Wildlife topics are anticipated to consist of written descriptions; referenced GIS data source(s) in the final report; and any necessary maps or reference to online maps, charts, etc. described and inserted into the final report.

(II) Land Cover

For the Land Cover inventory, describe the influence of land cover on the hydrologic systems and its current conditions. Data may be complied from the National Land Cover Dataset (NLCD), National GAP Analysis Program (GAP), Landscape Fire and Resource Management Planning Tools (LANDFIRE), and other sources as applicable. Overall, the Consultant shall describe the roles of riparian areas, wetlands, vegetation, and plant communities in enhancing water quality, reducing flood impact, streambank stabilization, and mitigating erosion activity and sediment transport. Topics and deliverables under the Land Cover category are envisioned to consist of the following:

a. Riparian Areas: The Consultant shall describe and map riparian zones within the watershed. Riparian plant and animal communities should be documented using any available data sources. All riparian features within the watershed should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of riparian areas in influencing the chemical, physical, and biological integrity of the watershed.

b. Vegetation and Plant Communities: Existing vegetative cover within the study area shall be assessed and mapped using available data sources such as LANDFIRE datasets to help describe existing vegetation types, existing canopy cover, and existing vegetation height. Describe the collective plant life within the study area. Vegetation features should be characterized according to their existing conditions and relative abundance within the watershed. Generally describe the role of vegetation and plant communities in influencing the chemical, physical, and biological integrity of the watershed.

» Deliverables for Land Cover topics are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

C. Anthropogenic Systems

The Anthropogenic Systems (or those systems relating or resulting from the influence of human activity) within the watershed shall be inventoried as outlined below in terms of

the following categories: Agricultural Water Use; Domestic, Municipal, and Industrial Water Use; Storage; and, Land.

(l) Agricultural Water Use

Within the Agricultural Water Use category, the Consultant shall acquire any existing irrigated lands mapping and other relevant information pertaining to Agricultural Water Use available from WWDC River Basin Plans (http://waterplan.state.wy.us/) or completed WWDC irrigation district master plans (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped irrigation features and avoid duplicating work efforts. Supplemental data and any needed information pertaining to water rights and irrigated lands may also be obtained from the WSEO. Specific topics and deliverables under the Agricultural Water Use category are anticipated to be comprise of the following:

a. Irrigated Lands: The Consultant shall gather, review, and describe available irrigated lands mapping and then further evaluate, map, and describe significant changes in irrigated lands by using aerial photos or other remotely sensed data as applicable. Irrigation methods should be identified, mapped, and described according to center pivot, flooding, or other methods. The Consultant shall associate all irrigated lands mapping generated in this task with either a dry, average, or wet year in terms of streamflow hydrology. Methods to classify the dry, average, and wet years may be as defined in WWDC River Basin Plans or proposed by the Consultant.

b. Irrigation Systems: Irrigation water systems within the watershed will be described and mapped. Mapping should include diversions (greater than 2 cfs or as directed by the Office project manager) and their main conveyance systems (ditches, pipelines, etc.) for irrigation systems. Points of diversions and scanned plat maps of ditch locations and names may be sourced from water rights data obtained from the WSEO e-Permit system and its online plat viewer. Where applicable, the Consultant may utilize diversion records obtained from annual hydrographer records and the SEO Realtime Streamflow Data website (seoflow.wyo.gov). Reservoirs and wells that supply irrigation districts will be identified on the map. Trans-watershed diversions shall be identified, mapped, and quantified.

Based upon meetings with the Sponsors, stakeholders, and landowners, the Consultant may identify existing smaller irrigation systems and conduct subsequent evaluations. The Consultant shall acquire information necessary to ascertain any rehabilitation that may relate to improving water delivery along with annual or seasonal shortages of water supply or irrigation water delivery issues. Evaluations may define existing issues with water supply, erosion, conveyance losses, seepage, etc. Features such as headgates, diversion structures, and conveyance methods should be

evaluated and mapped in the field as needed. Opportunities to improve diversion methods and reduce maintenance through the installation of grade control structures, channel stabilization efforts, or other in-stream improvements may be identified. Specific irrigation projects or systems that should be examined as part of this topic include the following:

Westside Irrigation Project. The Consultant shall review and summarize historic information regarding development of this potential irrigation project and provide a status report. Determine the standings of past studies and needs for additional studies that have been identified. Verify the existence of interest by local stakeholders and provide recommendations as warranted for project advancement into the Plan as discussed in Task 5. Identify potential issues with permits, land purchases, NEPA requirements, clearances, etc. that may or have been postponing or preventing further development of this project.

Lower Hanover Canal. Based on previous reports, Sponsor input, in-field reconnaissance, or discussions with the Hanover Irrigation District, assess the Lower Hanover Canal in terms of its existing infrastructure condition, age, and operation. Summarize existing problems with the canal including maintenance issues, problems with erosion, and canal leakage. The Consultant should document the extent and degree of seepage and may estimate quantities. Identify and document potential solutions that have been proposed, and provide recommendations as warranted for advancement of canal rehabilitation options into the Plan (Task 5).

» Deliverables for Agricultural Water Use topics are anticipated to consist of written descriptions; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. described and inserted into the final report; and any applicable analyses and respective conclusions fully documented within the final report.

(II) Domestic, Municipal, and Industrial (DMI) Water Use

Within the DMI Water Use category, the Consultant shall acquire any existing information from WWDC River Basin Plans (http://waterplan.state.wy.us/) or master plans that have been prepared (http://library.wrds.uwyo.edu/wwdcrept/wwdcrept.html). The Consultant should remain cognizant of previously mapped and described features and avoid duplicating work efforts. Supplemental data and any needed information pertaining to water rights may also be obtained from the WSEO. Specific watershed topics and deliverables under the DMI Water Use category are envisioned to consist of the following:

a. Potable Water Systems: Municipal, rural, or regional potable water transmission and distribution systems present in the watershed will be identified with key infrastructure features described and mapped. Mapping should include source water diversions, wells, and primary conveyance and storage features. Reservoirs and groundwater sources that supply municipalities, rural, and regional systems should also be identified.

b. Industrial and Mining: The Consultant shall identify, describe, and map industrial water users or mining activities within the watershed. Water use should be quantified as estimated from water right information obtained from the WSEO e-Permit system or other available sources. Briefly describe any water quality or environmental concerns that have been identified as the result of mining or other industrial activities. Information on active or abandoned oil and gas wells within the watershed should be presented as obtained from the WOGCC.

c. Produced Water: The Consultant shall identify, describe, and map the existence of any produced water sources from underground formations that are brought to the surface as a byproduct of oil and gas production. The volume of produced water from these wells over time should be estimated from available sources. If available from WDEQ or other state agencies, the chemical and physical properties shall be described.

» Deliverables for DMI Water Use topics are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; and any necessary maps, charts, tables, etc. inserted into the final report.

(III) Water Storage

Topics and their respective deliverables under the Water Storage category are anticipated to involve the following:

a. Reservoirs: The Consultant shall identify and map existing reservoirs based on aerial photography and WSEO data and examine any possible needs and opportunities for new or enlarged water storage facilities. Descriptions and mapping of existing water storage facilities greater than 500-acre-feet capacity should include an aerial mapping of the reservoir, water right permits, permitted capacity, end of month average storage, water use type, general condition as it relates to holding water (viable or non-viable), and where the stored water is used. Describe and quantify the permitted total storage at a HUC 10 subwatershed level.

The Consultant shall develop and present a complete and comprehensive document review of previous storage studies done for the proposed watershed study area and provide an evaluation of the outcomes of those studies. An evaluation matrix shall be prepared which summarizes

pertinent attributes of each storage opportunity. Summarize the status of any ongoing projects.

» Deliverables for the Reservoirs topic are anticipated to consist of any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any applicable analyses and respective conclusions fully documented within the final report.

b. Upland Water Storage: Existing wildlife and livestock water sources and storage facilities, including but not limited to springs, stock reservoirs, tanks, ponds, and stock wells, etc. will be mapped, evaluated, and described. Such facilities will be mapped after confirmation of their existence and supplemented by a brief description of their general condition as it relates to holding water (viable or non-viable). Based on this inventory, an assessment of areas in need of additional watering facilities shall be identified, mapped, and described.

» Deliverables for the Upland Water Storage topic are anticipated to consist of a written description; any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; and any necessary analyses and respective conclusions fully documented within the final report.

(IV) Land

Specific watershed topics and their respective deliverables under the Land category are anticipated to be inclusive of the following:

a. Land Use: All land uses within the study area shall be described and mapped, including, but not limited to agricultural, urban, commercial, industrial, transportation, power systems, utilities, easements, etc. The Consultant shall acquire Land Use data sets from existing sources or provide reference to Natural Resource and Energy Explorer (https://nrex.wyo.gov/). The watershed shall be characterized according to its level of development, dominant land use type, and relative water use.

b. Land Ownership: The Consultant shall briefly describe and map Land Ownership within the watershed. The composition of federal, state, and private lands and the orientation and locations of ownership parcels should be discussed as related to future development or management strategies and project planning. Land ownership information may be obtained from available sources including the county assessor's office.

c. Land Management and Upland Water Resources: The Consultant shall identify, describe, and map or provide reference to Natural Resource and Energy Explorer (https://nrex.wyo.gov/) details about Land Management and Upland Water Resources within the study area. Ascertain where private and public grazing uses are located and identify grazing radius of influence from existing water sources or implementation of any upland water development.

Where requested by the landowner(s), evaluations should be conducted on existing upland water resources. Any potential enhancement and improved water distribution for livestock and wildlife that facilitates grazing management for range resource improvement should be documented. NRCS Ecological Site Descriptions (ESD) may be acquired and mapped as needed to help identify and describe common plant communities and other land cover characteristics of the watershed. The Consultant should identify potential benefits to the watershed through plant community invigorations, reduction of erosion, and stream channel stabilization achieved from water development projects strategically implemented within the watershed. Other issues and opportunities, such as making beneficial use of produced water and removal of high water demand invasive species, can be examined.

As appropriate, discuss any existing BMP for livestock grazing and ascertain their effectiveness. Provide a discussion of qualitative benefits resulting from the implementation of existing or newly proposed BMP as related to ecological enhancement, water quantity, water quality, economic stability, stream corridor or riverine stability.

» Deliverables for the Land category are anticipated to consist of written descriptions; referenced GIS data source(s) or references to online map applications in the final report; and any necessary maps, charts, tables, etc. described and incorporated into the final report.

d. Cultural Resources: The Consultant shall identify and produce a summary map of any Cultural Resources (or evidence of past human activity) that may exist within the study area. For instance, these may include pioneer homes, buildings or old roads; structures with unique architecture; prehistoric sites; historic or prehistoric artifacts or objects; rock inscription; human burial sites; and, earthworks such as battlefield entrenchments, prehistoric canals, or mounds. The Consultant should acquire or reference information on cultural resources from the Wyoming State Historic Preservation Office as well as the Natural Resource and Energy Explorer (https://nrex.wyo.gov/)

» Deliverables for the Cultural Resources are anticipated to consist of references to online map applications and any necessary maps, charts, tables, etc. contained within the final report.

Task 4. Streamflow Hydrology

The Consultant shall use previously prepared hydrologic models, existing flow estimates, newly collected gage data, or alternative applicable techniques to characterize streamflow in the watershed. The Consultant should draw upon any previous hydrologic models and sources to avoid unnecessary duplication of efforts. Existing sources may include the spreadsheet models created for WWDC River Basin Plans; WWDC planning and reservoir studies where more comprehensive models may have been developed; or WWDC instream flow hydrologic feasibility reports (http://library.wrds.uwyo.edu/). Coordinate with the Office project manager on availability of past hydrologic models or water supply analyses that may be useful for this task.

Streamflow for each HUC 10 should be summarized on a monthly and annual basis for dry, average, and wet years. Methods to classify the dry, average, and wet years may be as used in any prior analyses or proposed by the Consultant. The resulting classification of dry, average, and wet years shall be presented in the final report. Based on the extent and suitability of available past hydrologic models that contain streamflow information, the Consultant may review and summarize that information, refine and update those models, or explore or supplement past efforts with other techniques such as regression equations based on specific basin characteristics like catchment area, elevation, and stream channel geometry. Concurrent discharge measurements and temporary gaging sites may also be considered in order the further quantify streamflow estimates. The methodologies ultimately selected should be fully described in the final report with all supporting data. All modeling input data, regression analysis techniques, assessment methodologies, results, conclusions and any assumptions or limitations therein shall be described and presented. Clearly stipulate whether the resulting streamflow data should be considered gage flow, synthesized flow, virgin flow, depleted or undepleted flow, etc.

Existing stream gage coverage and periods of record shall be assessed and mapped. A map of specific stream reaches and locations shall be labeled according to annual volume for dry, average, and wet streamflow conditions. Hydrographs shall be included in the report to illustrate monthly streamflow for dry, average, and wet years. Specific stream locations within the presented and delivered GIS mapping and files shall be attributed according to a monthly and annual streamflow basis for dry, average, and wet years. This should be done at a HUC 10 subwatershed level and at all gauge locations.

In terms of water supply, this task should also describe when and where water shortages may be an issue in the watershed and who or what is most likely affected by a dry water year. The Consultant shall explain and map areas that are commonly in regulation and when they typically go into regulation based on discussions with landowners, WSEO hydrographers, and review of annual Hydrographer reports.

Temporary Gaging: Should it be necessary to verify streamflows, the Consultant shall acquire and install stage monitoring equipment and develop a rating curve (stage-discharge relationship) for applicable streams. To establish each stream gage site, the Consultant shall choose the most suitable location possible. The Consultant will be responsible for landowner clearance, permitting, equipment acquisition, protocol, installation, operation, maintenance, development of rating curves, data collection, and all appurtenances associated with the operation of the stream gages during the life of the Contract. Gaging sites selected for this study shall be clearly identified within the final report by written description and displayed on maps.

Stage recording and data logging devices may be acquired from the Office for use in this project. The Consultant shall be responsible for providing all other required equipment, including data transfer units, laptops and computers for data upload and processing, software, and all equipment required for the physical installation of each unit. Based upon site requirements and proximities, the Consultant shall determine and install the proper number of pressure transducers to ensure proper calibration to barometric pressure at each stage recording site. Any equipment provided by the Office under this Contract and all data collected shall be the sole property of the Office and returned to the Office prior to close of Contract. Note that surcharges or rental fees of any kind shall not be billable within this Contract should the Consultant chose not to install equipment available from the Office.

As applicable, the Consultant shall be responsible for seasonal removal of all equipment to prevent its damage. Depending on weather conditions and site accessibility, it is anticipated that equipment may need to be removed for winter and reinstalled in spring.

» Deliverables for this task are anticipated to consist of any newly developed GIS data (packaged and delivered) or existing GIS material sourced and referenced within the final report as applicable; any necessary maps, charts, tables, etc. inserted into the final report accompanied by written descriptions; any tabular or spreadsheet data (packaged and delivered); and any necessary analyses and respective conclusions fully documented within the final report.

Task 5. Development, Management, and Rehabilitation Plan

The Consultant shall prepare a Development, Management, and Rehabilitation Plan (Plan) that identifies specific project recommendations, opportunities, or suggestions to improve watershed condition and function and provide benefit for the public, wildlife, livestock, and the environment. Projects within the Plan may be prioritized and may be tailored to address any problems or opportunities identified in Tasks 3 and 4 and in collaboration with (or as requested by) landowners, stakeholders, land management agencies, and other interested parties. Interviews may be conducted to determine past and present management activities and to identify watershed development, management,

and rehabilitation opportunities for inclusion into the Plan. The Plan may recommend improvements to land and water management practices with respect to private property and water rights.

The Plan shall recommend watershed development, management, and rehabilitation opportunities in relation, but not limited to, the following watershed functions and facilities:

- Surface water storage: The Consultant may evaluate the potential for new or increased water storage to address seasonal or annual shortages, augment late season streamflow to benefit riparian habitat and wildlife, address flood impacts and control, enhance recreation opportunities, or improve water quality and stream channel stability. Storage opportunities may be identified through discussions with the Sponsors, local stakeholders, irrigators, and landowners within the basin.
- Irrigation supply systems with emphasis on upgrades, operational improvements, and efficient management techniques including, but not limited to, issues with water quantity, erosion, conveyance loss, infrastructure, and seepage.
- Livestock/wildlife upland water such as development of stock ponds.
- Groundwater recharge: Where appropriate, identify areas for potential groundwater recharge projects.
- Stream channel condition and stability.
- Wetland development and enhancement.
- Grazing management.

The Consultant shall develop a summary table of projects identified within the Plan to serve as a guide for Sponsors in the selection and implementation of the Plan's project recommendations. For each item and as relevant, the Consultant should identify a Sponsor with respect to each Sponsors' interest, service areas, and ability to provide public benefit. Associated landowners, other entities of public benefit, agencies, etc., may also be listed. The following criteria may be used in the development of the summary table and any prioritization of projects within. The Consultant may propose alternate evaluation criteria for consideration.

- Project type as described above in watershed functions and facilities.
- WWDC program identification: (e.g., Small Water Project Program, conventional, other).
- Supply type: Identify projects as new water supply or rehabilitation.
- Practicality of implementation: Consider ownership issues, funding concerns, institutional issues, and project durability and sustainability.
- Estimated cost: Project cost estimates as described in Task 6 shall be considered and included in the Plan.
- Funding or financing opportunities: Funding/financing opportunities as identified in Task 7 shall be included in the Plan.
- Overall benefits to the watershed: (e.g.: riparian, wetland, water quality, wildlife, fish passage improvement, and other environmental and recreational purposes, etc.).

- Current public Sponsor: Ascertain whether a current public Sponsor exists to take the project to the next level.
- Anticipated permitting requirements: (e.g.: WSEO, USACE, WDEQ, NEPA, environmental reviews, etc.).

The Consultant shall identify all permits, easements, and clearances necessary for implementation of items within the Plan and any associated proposed projects or construction activities. This includes recognition of State of Wyoming Executive Order 2015-4, Greater Sage-Grouse Core Area Protection. The Consultant shall identify any potential issues with permits, easements, and clearances that may postpone or prevent implementation of a project.

For project recommendations in the Plan, the Consultant shall prepare conceptual-level designs as deemed necessary to provide further clarity or support funding applications. Designs should include a description of the project and its purpose and be of sufficient detail to estimate costs (Task 6) and identify fatal flaws, pipelines, transportation, energy transmission, and any cultural resources or socio-economic impediments to moving forward. The description should include information relevant to completing a WWDC project application.

Within the final report and as part of the Plan, the Consultant shall include a description of the SWPP and the steps necessary to take a project from the application phase to final payment. This shall include a listing of the Sponsors' responsibilities for permitting, design, and project completion. The Consultant may refer to and summarize the information provided on WWDC's SWPP webpage (http://wwdc.state.wy.us/small_water_projects/small_water_project.html).

» Deliverables for this task shall include the necessary narratives to describe the Plan and items within, the aforementioned summary table of projects identified within the Plan, and a supporting map that shows the location of each project. In addition, a user-friendly, stand-alone document shall be prepared so Sponsors, landowners, or other stakeholders can quickly identify and gain a synopsis of each specific project within in the Plan. These "project summary sheets" are further intended to aid funding applicants (either from SWPP or other relevant agencies) and serve as a quick reference for any interested parties. One project summary sheet shall be prepared for each item within the Plan, incorporating such things as a brief description, key information, permitting requirements, cost estimates (Task 6) and financing opportunities (Task 7). The Consultant shall coordinate with the Sponsors and Office project manager on the format, contents, template development, etc. of this product. GIS deliverables should contain information from the Plan such as the location of each project, a project identifier, project type, associated WWDC funding program, alternative funding sources, water supply type, overall benefits, and cost estimates (Task 6).

Task 6. Cost Estimates

The Consultant shall develop cost estimates for watershed development, management, and rehabilitation opportunities identified within the Plan (Task 5). Costs shall be calculated and presented by both the total project cost and as unit costs. Costs shall be structured to allow the Sponsors to evaluate proposed project recommendations and shall identify those components that are both eligible and non-eligible for WWDC or SWPP funding. The estimates should be based on the year this study is completed. The Consultant shall then apply an appropriate inflation factor to the current year's total cost and project any costs into the future with respect to any temporal prioritizations within the Plan. Total project costs shall be incorporated in the Plan summary table and the project summary sheets as discussed in Task 5.

Cost estimates for small scale projects, such as those eligible for SWPP grants, shall be inclusive of the above and take into account the project component average costs.

Cost estimates for large scale projects, such as those eligible for WWDC Level III construction grants/loans, shall also be inclusive of the above and may include operation and maintenance costs, administrative costs, debt retirement, repair and maintenance account funding, and the cost(s) for water. Cost estimates for each large scale project shall be prepared as outlined in Attachment B, Section C.3.

Task 7. Project Financing

Project funding and financing are critical aspects associated with the implementation of watershed development, management, and rehabilitation projects identified within the Plan (Task 5). For each project identified in the Plan, it is the primary intention of this task for the Consultant to provide local, state, and federal information on potential funding sources as well as application and eligibility requirements with respect to funding agency criteria and conditions. As required, the Consultant shall further identify the types of Wyoming entities eligible to apply for funding from these sources and discuss the process of forming each eligible entity along with the benefits of becoming an eligible entity.

The Consultant may need to generate funding and financing recommendations based on annual financial commitments of potential project Sponsors needed to cover construction costs and meet operation and maintenance obligations. For projects requiring extensive engineering and design and for the relevant Sponsor associated with a particular project, the Consultant may need to provide an ability to pay analysis that may include the following:

- A financing plan.
- An annual operation cost estimate.
- Identification of sinking fund requirements.
- A determination of the eligibility requirements and level of assistance available for implementation.

Under these situations, it may be useful for the Consultant to perform a more detailed economic analysis to help demonstrate economic benefits to Sponsors, the public, or the State of Wyoming. Depending on the nature of individual projects, the Consultant may propose the extent of economic analyses to be performed in coordination with the relevant project Sponsor and Office project manager.

Project financing information shall be incorporated in the Plan summary table and the project summary sheets as discussed in Task 5. The availability or likelihood of financing options may be used to help prioritize projects within the Plan. The Consultant should work with the Sponsors to possibly combine individual projects to optimize funding applications to WWDC or other funding sources.

Task 8. Lower Hanover Canal Pathway Evaluation

The Consultant shall evaluate a pathway project along a portion of the Lower Hanover Canal that runs through Worland, following in line with discussions that have been taking place in the past about converting the canal to a buried pipe and then using that opportunity to create a walking or biking path as an amenity to the town. The Consultant shall include the Lower Hanover Canal Pathway evaluation in the public outreach and meetings to gather community feedback on desired outcomes. The Consultant shall tabulate the community input and provide two sketch plans that reflect the community's preferred alternatives. In addition, the Consultant will provide cost estimates for both alternatives and identify potential funding sources. The sketch plans and cost estimates will be suitable for inclusion with grant application for project funding.

Task 9. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of the draft report and five (5) hard copies of the stand-alone project summary sheets as described in Task 5 no later than August 16, 2019. Four (4) CD, DVD, or USB drive copies containing the draft report and project summary sheets in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). Each pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

After submittal of the draft package, the Consultant shall present the draft findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or

handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a possible meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 10. Final Report and Deliverables

After incorporation of the Office's and the Sponsors' review comments on the draft package, the Consultant shall submit one (1) final report, one (1) executive summary, and one (1) stand-alone document of the project summary sheets in hard copy along with one (1) CD or DVD or USB drive containing the final report, executive summary, and project summary sheets in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. At the Office project manager's discretion, a draft of the executive summary in hard copy or electronic format shall be submitted to and reviewed by the Office project manager prior to final delivery. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include cost estimates. The summary should not exceed ten (10) pages. Any final reports submitted in three-ring notebook format shall have spine labels that clearly identifying the project, Consultant, and date. Each pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by the Office project manager between the hard copies and electronic copies during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager WRDS will assign an URL for the online posting of the final report, and the Consultant shall submit all final documents and materials to the Office on or before November 15, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary and twelve (12) hard copies of the stand-alone project summary sheets (Task 5). This count is inclusive of the copies previously submitted to the Office project manager.

- Four (4) CD, DVD, or USB drive copies containing the final report, executive summary, and project summary sheets in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. Each pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of any hydraulic model project files and all associated files shall be provided if applicable. In addition to the above, one (1) electronic copy of any hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a future webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is **not** expected to apply these standards to the Sponsors' **existing** GIS data but rather, ensure that any **newly collected or developed datasets** adhere to these standards as well as the following:

Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for

project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

Y2 CONSULTANTS, LLC

HOURLY BILLING RATES FOR PROFESSIONAL SERVICES:

Principal Engineer	$ 225/hr
Senior Planner	$ 200/hr
Professional Geologist	$ 145/hr
Senior Engineer	$ 145/hr
Senior Ecologist	$ 135/hr
Engineer	$ 130/hr
Landscape Architect	$ 130/hr
Hydrologist	$ 120/hr
Planner	$ 125/hr
Licensed Surveyor	$ 125/hr
GIS/CAD/Mapping Specialist	$ 90/hr
Jr. Project Manager	$ 90/hr
Engineer-In-Training	$ 85/hr
Wetland Specialist	$ 90/hr
Surveying Technician	$ 85/hr
Natural Resource Technician	$ 75/hr
Administrative/Clerical	$ 65/hr

REIMBURSABLE COSTS, EXPENSES & FEES:

Lodging	At Cost	Print, large format (B&W)	$ 4.00 ea
Flat Rate Meals	$ 51.00 day	Spikes	$ 1.75 ea
Map, 24x36 (color)	$ 25.00 ea	Mag nail	$ 2.00 ea
Map, 24x36 (color glossy/satin)	$ 60.00 ea	PLS washer	$ 4.00 ea
Map, 36x72 (color)	$ 75.00 ea	Steel fence post	$ 15.00 ea
Map, 24x36 (B&W)	$ 12.00 ea	Rebar	$ 3.00 ea
Mylar, 24x36	$ 40.00 ea	Rebar & plastic cap	$ 6.00 ea
Mileage	$ 0.545/mile	Rebar & SK	$ 12.00 ea
ATV/RZR	$ 85.00/day	Aluminum pipe mon	$ 65.00 ea
Trimble GPS	$ 75.00/hr	Brass pipe mon	$ 90.00 ea
Trimble Pathfinder	$ 75.00/hr	PVC Pipe	$ 6.00/ft
Trimble Robotic TS	$ 75.00/hr	Flagging	$ 4.00/roll
Trimble SX10 – Scanner	$100.00/hr	Marking paint	$ 8.00/can
Trimble SX10 – TS	$ 75.00/hr	Aerial Target	$ 2.00/ft
UAV - Quad	$150.00/hr	All other Reimbursables	At Cost

OSAGE WATER MASTER PLAN, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Jorgensen Associates, P.C. [Consultant], P.O. Box 1519, 58 S. Tyler Avenue, Pinedale, WY 82941.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred eighty thousand, four hundred sixty dollars ($180,460).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
1. Project Meetings	$	9,983
2. Information Review	$	7,220
3. Inventory, Evaluation, and GIS	$	66,075
4. Hydraulic Model	$	11,355
5. Water Source	$	17,891
6. Growth and Demand Projections	$	6,300
7. Recommendations and Cost Estimates	$	16,032
8. Water System Financing	$	7,460
9. Draft Report and Presentations	$	17,304
10. Final Report and Deliverables	$	20,840
Total Project Cost	**$**	**180,460**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: The Osage Water District project area is located in the unincorporated town of Osage and the adjacent area of Weston County, Wyoming. Osage is located approximately 15 miles northwest of the Town of Newcastle. The project area is located within the Cheyenne River Basin. A population of 208 people is served through 125 taps in the District and there are 20 taps outside of the District. The District is supplied with Madison Limestone groundwater from Well #4 (2,700 feet deep). The well yields 250 gpm under artesian pressure, is chlorinated at the well head, and the treated water is transmitted through a 12-inch diameter PVC pipeline to the 250,000-gallon, steel, above-ground tank.

2. Purpose: To perform an Osage Water Master Plan, Level I Study. The Osage Water District requested a Level I water master plan to identify the components of the existing water system that are deficient and to provide a schedule for improvements. The plan will help the District in evaluating the current condition of their system and to provide the tools and guidance necessary to assist in the planning, rehabilitation, upgrading, and managing of their system. The master plan would serve as a framework for the District to establish project priorities and to perform financial planning necessary to meet those priorities. The plan would also provide reconnaissance level information regarding costs and scheduling.

3. History: The Osage Water District formed in 1994 and inherited a pre-existing, public water system from Black Hills Power and Light Company (BHP&L). A WWDC Level I water master plan study has not previously been conducted for the Osage Water District. Previously, the WWDC has funded Level II studies and a Level III construction project from 1993 to 2002.

   Previous relevant reports:

   Banner Associates, Inc. Final Report, Osage Water Supply Project, Level II, January, 1994.

Banner Associates, Inc. Final Report, Executive Summary, Osage Water Supply Project, Level II, January, 1994.
Banner Associates, Inc. Executive Summary, Osage Water Supply Project, Level II Extension, April, 1996.
Banner Associates. Final Report, Osage Water Supply Project, Level II Extension, April, 1996.

Additional information may be found at the Water Resources Data System (WRDS), located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Project Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

Additional public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant should assume a minimum of one (1) public project meeting in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

Task 2. Information Review

The Consultant will gather and review all existing information related to the Sponsor's water supply and distribution system. This includes information available through the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer's Office, Wyoming Department of Environmental Quality Water Quality Division (DEQ), and any other sources as appropriate. Coordinate with the Sponsor to obtain all past relevant studies that need to be reviewed. Improvements recommended to the water system in any of these reports should be documented. In addition, the status of those recommended improvements should be identified (i.e., disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies and other regulations that may affect this project. The Consultant shall provide a summary of existing information in the final report.

Task 3. Inventory, Evaluation, and GIS

The Consultant shall confer with the Sponsor to identify specific problem areas and concerns that should be focused on during this task. The Consultant shall then propose the extent of inventory and evaluation to be performed in this task. Inventory and evaluations shall primarily focus on facilitating the objectives of this project that in part include addressing the Sponsor's areas of concern, identifying system deficiencies, and formulating improved GIS mapping. The Consultant shall coordinate with the Office project manager and the Sponsor regarding the expectations and limitations of this effort and shall be mindful of the following intentions of this task:

a. Inventory and evaluate the existing infrastructure to determine its ability to meet current water demands and future demands developed in Task 6.

    i. Identify those components that presently require repair or replacement.

    ii. Identify those components that will require repair or replacement within the next twenty (20) years and provide a schedule for the needed improvements as described in Task 7.

b. Assess the capacity and serviceability of existing water treatment facilities, transmission and distribution pipelines, storage tanks, pump stations, PRV stations, flow monitoring devices, and other major components of the water supply system as applicable. Identify deficiencies and make recommendations for improvements needed to address these limitations. In conjunction with the hydraulic modeling task, pipe materials and pressure classes shall be examined in terms of suitability to provide adequate service.

c. Evaluate the system for water losses, including leaks and other non-revenue water. Results of the hydraulic model can serve as an indicator for potential leakage locations along with observations and discussions with system operators. Identify locations that may warrant a future leak detection study.

The Consultant shall evaluate the management and operation of the public water system in the study area to determine if procedural changes would be beneficial. If so, the Consultant shall detail those changes. Results of the hydraulic model simulations can serve as a basis for this task along with observations and discussions with system operators. The Consultant shall evaluate the existing water metering system to ensure water bills can be or are based on metered usage. The Consultant may offer suggestions relating to the existing billing and metering procedures.

The Consultant shall confer with the Sponsor to ascertain the Sponsor's existing GIS, determining where the files are housed (i.e., with a Consultant or with the Sponsor), the extent of the mapping, and required updates. The Consultant shall then propose the scope of further mapping to be completed in this task. Updates to the Sponsor's existing GIS are expected to include verification of the accuracy of the water system mapping in terms of piping connectivity, looping, location of system components, etc. Coordinate with the Sponsor during field work so the Sponsor may perform any required pot-holing to help verify and true-up the Sponsor's existing data.

All mapping and corresponding data sets, existing and updated, shall be consolidated into a comprehensive GIS. Mapping shall be extended as needed to facilitate objectives of this project that include the hydraulic model, addressing the Sponsor's areas of concern, identification of system deficiencies, and development of a modern and efficient GIS. Coordination shall take place with the Sponsor and Office project manager on field survey limitations and any mapping logistics.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC's home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS

data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

b. Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

c. Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

Deliverables to the Sponsor shall include at least one set of large size hard copy printouts of the service areas and associated features for the Sponsor's use. These items are in addition to the GIS deliverables described in Task 10. The Consultant shall coordinate with the Office project manager and the Sponsor on final production of all hard copy mapping media and its delivery.

The Consultant's Scope Alteration to conduct hydro-vac of water system valves for this project shall be conducted as part of Task 3. The $5,000.00 cost for hydro-vac of valves is included within the Task 3 budget amount.

Task 4. Hydraulic Model

In conjunction with the updated GIS and water system information obtained in Task 3, the Consultant shall update the Sponsor's existing hydraulic model of its water system, if one is available. The Consultant shall model the current system and proposed system improvements. Acceptable software platforms include the following or an Office approved equal:

- Innovyze/MWH Soft: InfoWater (ArcGIS based); H2OMap Water (stand-alone); or H2ONet (AutoCAD based)

- Bentley/Haestad Methods: WaterGEMS (ArcGIS based); WaterCAD (AutoCAD based or stand-alone)

The model shall analyze the system using an extended period simulation and shall be properly calibrated to available data sets or known system behavior. The Consultant shall evaluate the adequacy of the water transmission and distribution lines, pumping stations, and storage capacities to meet current and future pressure and flow requirements based on maximum day demands. System storage shall be modeled in terms of volume and water quality (i.e., tank turnover, water age, etc.). System pressures shall be determined in the model and compared against the pressure classes of existing pipes to identify problem areas.

The Consultant shall consider domestic, rural, commercial, municipal, and industrial demands as needed in the evaluation (i.e., hospitals, colleges, golf courses, hotels, trailer park, schools, etc.) and incorporate planned development areas and all independent water systems that are supplied from the Sponsor's system. All pressure zones shall be properly accounted for and simulated in the model. All pump stations shall be simulated in the model, and the Consultant should assess the adequacy of the existing pumps in terms of capacity, hydraulic head, run-time, variable frequency drive (VFD) operation, etc. as deemed necessary.

The Consultant shall use the model to size new pumps, transmission and distribution lines, storage, and other facilities as needed. In terms of fire flow, coordinate with the Sponsor to ascertain the Sponsor's expectations in providing fire flow to its service areas and the subsequent extent of fire flow simulations required. The model shall incorporate the recommended system upgrades or modifications and shall be detailed enough to satisfy the needs of the project.

The Consultant shall construct and execute the hydraulic model to determine system capacity limits in terms of maximum growth potential. Any inactive or planned water taps within the system shall be incorporated into the model. The Consultant shall investigate whether the system has the capacity to effectively serve these taps should they eventually become active.

Within the final report, the Consultant shall fully describe all modeling efforts particularly in terms of the model extents and acquisition of model input, including but not limited to the following:

- Nodal Elevations
- Demands
- Diurnal Curve(s)
- Pump Curves
- Valve Settings
- Pipe Diameters and Material

- Pipe Friction Factors
- Tank Geometry

Task 5. Water Source

The Consultant shall gather and analyze data and information as needed to examine the Sponsor's water supply source(s) for their public water supply system. Capacities, diversion rates, pumping rates, pump capacities, and water treatment plant capacities shall be investigated as applicable. The Consultant shall determine if the water supply source(s) are limiting the ability to meet present and future water demands and if so, identify water supply alternatives to meet those demands. The Sponsor's existing main transmission lines shall be assessed in terms of sizing, condition, and possible redundancy use. Any future potential raw water storage projects that the Sponsor is considering shall be documented and discussed.

The Consultant shall review existing water quality reports to determine if water supply sources and distributed water complies with EPA drinking water standards. If the reports indicate that the standards are not being met or suggest potential water quality problems, recommendations will be presented to mitigate these problems. Where applicable, the Consultant shall collect data on the number of households using septic systems, enhanced septic systems, sewage lagoon systems, or wastewater treatment plants to handle wastewater treatment within the Sponsor's water service area. These data will be used to determine if wastewater treatment, or lack thereof, is presently impacting the water quality or could impact the water quality of the Sponsor's water supply.

The Consultant will review the status of the Sponsor's water rights and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under each permit will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant will also review any water supply contracts held by the Sponsor and discuss their purpose and importance to the Sponsor.

Task 6. Growth and Demand Projections

The Consultant shall develop population growth projections for the Sponsor's water service area. Planning boundaries of the service area will be based on discussions with the Sponsor as to where future growth may occur. For example, the growth may occur within the corporate limits, the existing service area, or outside of both. This may result in the consideration of an expanded water service area that could reasonably be served by the Sponsor considering the investments in infrastructure.

Historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) will be used as the basis of

the projections. (Refer to http://eadiv.state.wy.us/.) Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I, and projections from other sources including, but not limited to those that may be available from the Sponsor and county planning agencies. Another information source may be population projections available in environmental impact statements generated for mineral resource development in the area. The Consultant shall provide graphic representations of each alternate population projection.

Water demand projections will be developed based on historical water use records. Alternate demand projections may be developed that consider the effects of an increasing tiered water rate system. Demand projections should include bulk water sales to rural or independent water districts or systems, industries, and others as applicable. The potential for any future high-impact water demand scenarios shall be examined. The Consultants shall also investigate any water service regionalization opportunities that may exist to satisfy future water demands.

Task 7. Recommendations and Cost Estimates

The Consultant shall develop a listing and descriptions of recommendations for system improvements identified during the study. The recommendations shall address needed infrastructure capital improvement projects along with non-structural improvements suggested for the funding, operation, maintenance, and replacement of the system. The Consultant will prioritize the recommendations in coordination with the Sponsor. A schedule shall be developed that identifies a phased approach for the implementation of the recommendations in accordance with their priority.

The Consultant shall prepare construction cost estimates in tabular form for each of the recommended system improvements. The table will identify both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Attachment B, Section C.3. The Level III cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall then suggest an appropriate inflation factor that may be applied to the project's current year total cost and projected into the future per the schedule developed in this task.

Task 8. Water System Financing

The Consultant shall work with the Sponsor to acquire all necessary financial data required for this task to determine the current and anticipated future water system revenues and expenditures. To initiate this task, the Consultant shall determine if the Sponsor has a water enterprise fund in which existing water revenues allow the water system to be financially self-supporting or if the Sponsor must subsidize the water system

from other budgets and revenues such as bonds, grants, etc. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.
- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses.
- Provide a fund that accrues sufficient reserves to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Consultant.

The Consultant shall first use the above criteria to make recommendations on the Sponsor's current water revenue structure (rates, tap fees, and other) that would support the existing water system based on a revenue structure that encourages water conservation (tiered water rates). The current water revenues shall be compared against current water expenditures based on the last five (5) years of data (if available). The Consultant shall prepare a suggested itemized annual budget for the existing water system that would result in the system becoming and staying financially self-supporting.

As an alternative, the Consultant shall consider the Wyoming RATES Program under the direction of the Wyoming Association of Rural Water Systems (WARWS) to perform the rate study (https://gettinggreatrates.com/consulting/WyRATES.pdf).

Next, the Consultant shall prepare two (2) funding scenarios for consideration by the Sponsor that demonstrate the adjustments in revenues that may be necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 7. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting as defined by the above criteria. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users.

These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These two (2) scenarios shall be presented in the draft and final reports in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following two (2) scenarios:

> Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e., the Consultant shall demonstrate the necessary adjustments in water

system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.

Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan (4% interest / 30-year term) from WWDC, and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF
Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/
Contact: Bill Tillman, SRF Principal Engineer
WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS
Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs
Contact: Lorraine Werner, Community Programs Director, USDA RUS

Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602
Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies.

Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 9. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than April 1, 2019. Four (4) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device. The project Sponsor shall be provided a copy of this draft report for their review.

After submittal of the draft report, the Consultant shall present the draft findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for publishing notice of the

meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report.

The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 10. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office project manager 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before July 1, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary. This count is inclusive of the copies previously submitted to the Office project manager. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project and shall include cost estimates. The summary should not exceed ten (10) pages.

- Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same

version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." This is in addition to delivery of hard copy mapping media as described in Task 3. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device.

- Any final reports or project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES*
PRICE SCHEDULE 2018

Jorgensen Associates, P.C.

Engineering Services	
Principal Engineer	$200.00/hour
Senior Project Manager	$175.00/hour
Project Engineer	$150.00/hour
Design Engineer	$120.00/hour
Geotechnical Services	
Senior Geotech Project Manager	$175.00/hour
Geologist	$125.00/hour
Geotechnical Engineer	$120.00/hour
Surveying Services	
Principal Surveyor	$175.00/hour
Senior Survey Project Manager	$175.00/hour
Project Surveyor	$120.00/hour
Survey Party Chief	$95.00/hour
Survey Field Technician	$80.00/hour
Planning Services	
Senior Land Use Project Manager	$175.00/hour
Land Use Technical Assistant	$100.00/hour
Support Services	
Senior Design/CADD Technician	$120.00/hour
Mapping & Survey Technical Assistant	$95.00/hour
CADD Technician	$90.00/hour
Engineering Technician	$95.00/hour
Clerical/Administrative Support	$80.00/hour
Expert Witness/Preparation and Court	$300.00/hour
Equipment	
CADD System	no charge
Copies/Prints/Plots/Field Supplies	no charge
GPS System/Total Station	$ 50.00/hour
Nuclear Density Gauge	$ 18.00/shot
Concrete Test Cylinders	$ 15.00/ea broken
Concrete Test Cylinders	$ 5.00/ea cured only
Survey and Equipment Vehicles	$ 0.545/mile
Reimbursable Expenses	
Per Diem (Meals)	$30/day
Lodging	At Cost
All other reimbursable expenses	At Cost
Subconsultants	At Cost

Charges for travel to out-of-office meetings, site visits and court appearances begin on departure from office and end.
*Hourly rates billed may be less than the maximum rates listed above.

POPO AGIE WATERSHED, PHASE II, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Olsson Associates, Inc., 601 P Street, Suite 200, Lincoln, NE 68508.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred thirty thousand, one hundred dollars ($230,100).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
Task 1.	Project Meetings and Public Participation	$ 12,100
Task 2.	Review of Background Information	$ 10,100
Task 3.	Water Budget Investigation and Irrigation Infrastructure Assessment	$ 42,400
Task 4.	Micro-storage Facilities Investigation	$ 35,200
Task 5.	Aquifer Storage and Retrieval (ASR)	$ 43,900
Task 6.	Permits	$ 4,300
Task 7.	Geographic Information System Deliverables	$ 12,100
Task 8.	Draft Report	$ 44,000
Task 9.	Report Presentations	$ 5,300
Task 10.	Final Report and GIS Deliverables	$ 20,700
	TOTAL PROJECT COST	**$ 230,100**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: Popo Agie Watershed, Fremont County. The extent of the study area includes the following two HUC 10 basins: Popo Agie River (1008000302) and Little Popo Agie River (1008000301).

2. Purpose. To perform a Level I study, Phase II for the Popo Agie Watershed.

3. History. The Popo Agie Conservation District (PACD) requests a more focused Level I study to complement the 2003 Popo Agie River Watershed Study. This study will address the following three topics: (1) the potential to construct micro-storage facilities in strategic locations off the main river channel that will enable irrigators to hold water in the system for use later into the irrigation season; (2) an examination of potential irrigation infrastructure improvements that will deliver the greatest increases in conveyance efficiency; (3) exploration of the feasibility of capturing surface water at certain times of the year to store underground, recharge groundwater resources, and enhance late-season water availability.

   The Popo Agie watershed, located in Fremont County, covers approximately 514,174 acres. The watershed includes the primary stream system of the Middle Fork Popo Agie River, North Fork of the Popo Agie River, and the Little Popo Agie River and numerous tributaries. Water storage facilities include Worthen Meadows Reservoir (municipal storage for Lander), Frye Lake (irrigation), Christina Lake (irrigation), Shoshone Lake (irrigation), Louis Lake (irrigation), and Carr Reservoir (irrigation). There are approximately 192,039 acres cropped and 100,419 acres irrigated by open ditch, flood, gated pipe, side roll and center pivot. The primary crops grown in the watershed are grass hay, alfalfa, and oats. In the watershed, 60% of the acres are range, 10% are pasture and 30% are forest.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional

Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Project Meetings and Public Participation

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsor and Office project manager.

Public meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor and all affected parties informed of progress. The Consultant should assume a minimum of five (5) public meetings in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. Some of these meetings may be held in conjunction with the Healthy River Initiative (HRI) work group meetings. If the meetings are not to be held in conjunction with the HRI work group meetings, the Consultant shall prepare all notices. For all meetings, the Consultant shall prepare needed materials and prepare the meeting record. Meetings should be scheduled to coincide with fieldwork whenever possible. In addition to the public meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

The Consultant shall assist the Sponsor with public participation in terms of meetings and outreach that communicates the nature, status, and findings of this study. During the study, public outreach shall also occur as needed for information gathering and to help identify projects. Public participation meetings and outreach are anticipated to involve local landowners, stakeholders, agencies, organizations, representatives of land management activities, and any other interested parties. Outreach may take the form of flyers, postcards, postings, newspaper advertisements, mailings, etc. If determined to be valuable for the project by the Office project manager and Sponsor and the Sponsor is willing to do so, the Consultant may coordinate with the Sponsor to provide information on the Sponsor's website. The website may provide information postings, project

updates, mailing signups, and general information exchange/request for information from interested parties.

Task 2. Review of Background Information

The Consultant shall gather and review existing background information available through any number of relevant sources, including, but not limited to: Wyoming Water Development Office (WWDO); Water Resources Data System (WRDS); Wyoming Department of Environmental Quality (WDEQ); Wyoming Game and Fish Department (WGFD); Wyoming State Engineer's Office (WSEO); Wyoming State Geological Survey (WSGS); Wyoming Oil and Gas Conservation Commission (WOGCC); University of Wyoming (UW); U.S. Geological Survey (USGS); Natural Resources Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); U.S. Forest Service (USFS); U.S. Army Corps of Engineers (USACE); Bureau of Land Management (BLM); local conservation districts; and other local agencies and local landowners as appropriate. Gathered and reviewed data may include published and unpublished literature, public records, research material, numeric data, spatial data, aerial photography data, topographic data, and existing river basin plans.

The Consultant should utilize the WWDC 2003 Popo Agie Watershed Study (2003 Study) as a reference. A copy of the GIS data that accompanied the 2003 Study may be obtained from the Office project manager. Duplication of work performed under the 2003 study should be avoided.

Task 3. Water Budget Investigation and Irrigation Infrastructure Assessment

Task 3a. Water Budget

In 2003, as part of the initial Popo Agie River Level I Watershed Study, Anderson Consultants developed a spreadsheet water budget model for the entire watershed using data from 1971 to 2000. The model represents the watershed as sixteen reaches; each sub-divided by identifying a series of individual nodes representing locations where diversions occur, basin imports are added, tributaries converge, or other significant water resources features are located. At each node, a water budget computation is completed to determine the amount of water that flows into and out of the node.

To provide a foundation for the Popo Agie Watershed, Phase II, Level I study, the Consultant shall update the 2003 model to develop a water budget representative of current conditions using readily available data and information that have been collected since 2000. The objective is to provide a planning tool to the Popo Agie Conservation District and the State of Wyoming for use in prioritizing river reaches and/or irrigation features for further study. The tool may also be used for preliminary watershed-scale assessments of future proposed water projects.

The Consultant shall also identify water budget data gaps and suggested methods for determining inflow, outflow, and seepage; suggestions for ditch systems to be investigated; the location and number of gaging sites needed to specifically define the reaches experiencing significant seepage loss; and suggested methods of measurement along with suggestions on the frequency with which those measurements should be conducted during the irrigation season.

Task 3b. Irrigation Infrastructure Assessment

Utilizing information from the 2003 Study and working in close coordination with the Office Project manager and the Sponsor, the Consultant shall map and assess potential irrigation infrastructure improvements and alternatives that will deliver the greatest increases in conveyance efficiency. This would include, but not be limited to, potential alternatives to convert entire individual ditch systems to pipeline and consolidation of systems that would reduce per acre costs. The updated map would provide information on the irrigation diversions, infrastructure, as well as identify the irrigated lands by irrigation practice that can be determined from imagery and/or site observation.

The study should examine the comparative benefits of the alternatives, including: reduced system water losses; reduced maintenance and associated down time; potential for gravity powered sprinkler application to reduce energy costs, ditch erosion, and damages associated with ditch seepage (structural and soil salinization); potential for associated on-farm improvements (irrigation system and crop yield); and potential for improved diversion screening for trash or fish. Examination of the management of differing water rights within consolidated ditch systems shall also be performed.

In addition, adverse effects of alternatives should also be examined including the loss of irrigation induced wetland habitat and loss of or diminished return flows relied on by others. The study should attempt to provide answers to the questions of are there any delayed return flow benefits to the stream system from ditch system seepage and on-farm irrigation deep percolation inefficiencies.

Based on the above examination and assessment, the Consultant shall make recommendations for each of the improvements and alternatives. The Consultant shall then provide a prioritized list of these recommended improvements and alternatives with their accompanying cost estimates.

Based upon the prioritized list and in consultation with the Sponsor and landowners, the Consultant shall prepare conceptual designs for up to five selected infrastructure improvements and alternatives.

Task 4. Micro-storage Facilities Investigation

The Consultant shall examine the potential to construct micro-storage facilities in strategic locations off the main river channels that will enable irrigators to hold water in the system for use later into the irrigation season.

Working in close coordination with the Sponsor and landowners, the Consultant shall identify potential locations for micro-storage facilities. Upon identification of these facilities, consultation with landowners will occur to determine their interest in the project. If interest is gained, investigations will be performed to determine the feasibility including obstacles to permitting and environmental risk assessment of the project(s). This may include preliminary geologic and geotechnical investigations.

The Consultant shall prepare conceptual-level designs and cost estimates for the facilities found to have storage potential and landowner interest. Project designs should include a description of the project and its purpose and should be of sufficient detail to estimate costs. The description should include information relevant to completing a WWDC project application through the small water project program or through the traditional WWDC funding program.

Task 5. Aquifer Storage and Retrieval (ASR)

This task involves an assessment of the potential for capturing surface water at certain times of the year to store underground, recharge groundwater resources, and enhance late-season water availability. It is believed the geology of the Popo Agie system lends itself to effective underground storage as well as the potential for artificial groundwater recharge, but the concept needs further study to assess feasibility and likelihood of a successful outcome.

In close coordination with the Office project manager and the Sponsor, the Consultant shall perform a reconnaissance level investigation of appropriate aquifers in the Popo Agie River Basin to determine if hydrogeologic conditions are favorable for an ASR program. This will include, among other things, analyses of the potential recharge mechanisms and the overall efficiency of the process. Where available, ground water level monitoring data shall be obtained for analysis. Available pump test data shall be analyzed for optimal parameters (effective aquifer thickness, hydraulic conductivity, transmissivity, storage coefficients) in target aquifers. In addition, the Consultant will assess the option of passive ground water recharge and retiming. The Consultant shall utilize existing information to the extent possible.

In close coordination with the Office project manager and the Sponsor and from the information collected, the Consultant shall prioritize the aquifers based on projections of technical, institutional, and economic feasibility. The Consultant shall meet with the Office project manager, the Sponsor, and the State Engineer's Office to understand Wyoming's

water law and rules and regulations pertaining to acquisition, permitting, and regulation of a ground water supply source, dispensation of that water supply to underground storage, and subsequent retrieval of the stored water for ultimate beneficial use. In addition, the Consultant shall meet with the Department of Environmental Quality–Water Quality Division to determine applicable restraints on ASR techniques and permitting procedures, if any, for commingling imported raw and/or treated water with ambient ground waters in the basin.

The Consultant shall review local land use planning to determine the compatibility of the proposed facility with all existing plans, zoning ordinances and regulations relating to land use in the study area.

After consultation with the Office project manager and the Sponsor, the Consultant will prepare reconnaissance level designs and cost estimates of the proposed ASR facilities or a pilot program to test feasibility. This effort will include consideration of the environmental, cultural, technical, and economic feasibility issues developed herein.

Task 6. Permits

The Consultant shall identify all permits, easements, and clearances necessary for implementation of the projects described in Tasks 3, 4 and 5 and any associated proposed projects or construction activities. This task will include recognition of State of Wyoming Executive Order 2015-4, Greater Sage-Grouse Core Area Protection.

Task 7. Geographic Information System Deliverables

The Consultant shall provide six (6) CD/DVD/Flash Drive/Portable Hard Drive copies of the GIS data. GIS data shall be composed and delivered according to the according to the "WWDO GIS Data Framework Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection. The Consultant may also view a prerecorded webinar that is available on the GIS Standards website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. FEATURE MAPPING. The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated into the geodatabase template

or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the "GIS Standards Technical Memorandum." Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked non-spatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase template. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS (.mxd) files saved with relative path names to data sources.

Task 8. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study, no later than August 17, 2019. Six (6) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with three (3) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

The project Sponsor shall be provided a copy of this draft report for their review.

Task 9. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; any materials presented or handed out at the meeting; a

record of attendance; any written comments, statements, or exhibits received; a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly.

Task 10. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1-2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before November 16, 2019. These final documents and materials shall include: 1) Twelve (12) hard copies of the final report, and 2) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

Six (6) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Six (6) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Six (6) CD, DVD, USB drive or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. See Task 7 for further details.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

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ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

OLSSON ASSOCIATES, INC.

Classification	Hourly Billing Rate
Administrative Area Leader	$147
Administrative Assistant	$65
Administrative Coordinator	$76
Administrative Manager	$123
Administrative Specialist	$95
Assistant Construction Manager	$80
Assistant Engineer	$90
Assistant Landscape Architect	$74
Assistant Manager CA	$86
Assistant Manager CMT	$76
Assistant Manager NDT	$102
Assistant Planner	$73
Assistant Scientist	$73
Assistant Surveyor	$58
Assistant Technician	$61
Assistant Technician CA	$55
Assistant Technician CMT	$49
Assistant Technician NDT	$67
Associate Computer Programmer	$82
Associate Construction Manager	$96
Associate Engineer	$107
Associate Landscape Architect	$92
Associate Planner	$89
Associate Scientist	$89
Associate Surveyor	$70
Associate Technician	$71
Associate Technician CA	$65
Associate Technician CMT	$58
Associate Technician NDT	$80
BIM Manager	$116
Business Development Leader	$156
CAD Manager	$116
Civil 3D Trainer	$116

Classification	Hourly Billing Rate
Client Relations Manager	$211
Computer Programmer	$99
Computer Systems Coordinator	$74
Computer Systems Technician	$62
Database Manager	$142
Design Associate	$101
Design Manager	$125
Design Technical Manager	$125
Director of Business Development	$242
Drilling Crew	$190
Economic Development Coordinator	$82
Economic Development Specialist	$98
Executive Vice President	$298
Industry Expert	$211
Lab Manager CMT	$89
Lab Manager NDT	$114
Local Business Development Leader	$156
Manager CA	$117
Manager CMT	$110
Manager NDT	$138
Market Business Development Leader	$193
Market Sector Leader	$245
Network Systems Administrator	$95
Office Assistant	$49
Office Leader	$211
Practice Leader	$245
President	$389
Program Leader	$193
Project Construction Manager	$114
Project Engineer	$145
Project Landscape Architect	$111
Project Management Specialist	$145
Project Planner	$108
Project Scientist	$108
Regional Business Development Leader	$193
Regional Leader	$245
Secretarial	$49
Senior Administrative Coordinator	$95
Senior Computer Programmer	$120
Senior Computer Systems Coordinator	$95

Classification	Hourly Billing Rate
Senior Construction Manager	$144
Senior Engineer	$179
Senior Landscape Architect	$142
Senior Network Systems Administrator	$116
Senior Planner	$139
Senior Project Construction Manager	$129
Senior Project Engineer	$141
Senior Project Landscape Architect	$127
Senior Project Manager	$211
Senior Project Planner	$124
Senior Project Scientist	$125
Senior Scientist	$139
Senior Surveyor	$111
Senior Systems Specialist	$142
Senior Technician	$85
Senior Technician CA	$79
Senior Technician CMT	$68
Senior Technician NDT	$95
Student Intern - Level 1	$52
Student Intern - Level 2	$61
Student Intern - Level 3	$71
Survey Technical Manager	$111
Surveyor	$86
Team Leader	$215
Technical Leader	$173
Technical Manager CA	$99
Technical Manager CMT	$89

Reimbursement Expense Classification	Cost	Unit of Measure
Compact Vehicles	0.545	per mile
Miscellaneous supplies	Actual Cost	
Telephone Conference Call/Fax	Actual Cost	
Subconsultants	Actual Cost	
Laboratory	Actual Cost	
Airplane – Citation Excel	2350.00	per hour
Airplane - Conquest	1350.00	per hour
Black and White Copies - All sizes	0.15	per copy
Copies Color 8.5 x 11	0.50	per copy

Reimbursement Expense Classification	Cost	Unit of Measure
Copies Color 8.5 x 14	0.50	per copy
Copies Color 11 x 17	1.00	per copy
Travel (commercial airfare)	Actual Cost	
Rental car	Actual Cost	
Meals	Actual Cost	
Lodging	Actual Cost	
Other travel expenses incurred	Actual Cost	

RIVER BASIN PLANNING - GIS DATA MODEL IMPLEMENTATION, LEVEL I STUDY CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Confluence Consulting, Inc. [Consultant], 1115 N 7th Ave, Bozeman, MT 59715.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred and seven thousand, two hundred twenty-five dollars ($107,225).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
1.	Scoping and Project Coordination meetings	$ 5,610
2.	Data Development: Water Structures	$ 15,880
3.	Data Development: Water Conveyances	$ 28,080
4.	Data Development: Reservoirs	$ 11,040
5.	Data Verification and Cross Checking	$ 31,499
6.	Draft Report	$ 5,800
7.	Report Presentation	$ 3,386
8.	Final Report and Deliverables	$ 2,330
9.	Geographic Information System Deliverables	$ 3,600
	Total Project Cost	**$ 107, 225**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. The extent of this project is the entire State of Wyoming.

3. Purpose. To perform a Level I study for River Basin Planning - GIS Data Model Implementation.

4. History. GIS data have been collected for the last 15 years through WWDC planning studies. Inconsistencies and lack of metadata limit the ongoing utility of the GIS data. In 2016 the Commission funded the Bear River Data Model Pilot Study in order to produce GIS standards for future projects. The resulting WWDO GIS Data Framework Plan recommends that "Statewide base data should be developed to improve consistency and reduce redundancy. A common level of data development across the state will inform the design of water projects, document the use of Wyoming's water, and facilitate permitting. These core datasets that apply to all WWDC planning projects and contribute to interagency coordination should be developed statewide. Based on the data gaps analysis, the core datasets that should be developed statewide could be characterized as infrastructure, water availability, and project development." This project is focused on developing statewide water infrastructure data. By developing water infrastructure data statewide, the Office can ensure its consistency and accuracy, create cost savings on future Level I projects, and modernize the program to be on par with other state agencies and other states.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study

status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media

as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Scoping and Project Coordination Meetings

One (1) scoping meeting shall be held early in the project schedule to discuss the scope of the project as well as obtain input from affected parties. WWDO staff will provide the consultant with existing data and describe what it is and how it can help support this effort. The Consultant should review all GIS standards related to Bear River Data Model Pilot Study (http://water.geospatialhub.org/pages/wwdc-gis-standards) and understand the potential applications of the ePermit GIS Conversion Tools to this project. The Consultant will prepare a presentation and other visual aids as necessary to explain the project approach.

The Consultant will budget for a minimum of two (2) additional project coordination meetings to be held in Cheyenne and two (2) meetings to be held remotely. The meetings will be scheduled at the discretion of the Wyoming Water Development Office (WWDO) project manager depending on developments during the study. If set up by Office project manager, the Consultant shall be prepared to utilize the State's cloud based platform for improved collaboration, document editing, and data sharing.

Deliverables include: materials presented at meetings and meeting summaries.

Task 2. Data Development: Water Structures

The objective of this task is to bring together data in a geospatial database related to the diversion or withdrawal of water for out-of-stream use.

Water Structure Mapping – Diversion structures and wells will be mapped statewide. Data should be developed consistent with the Depth I water system mapping described in the GIS Technical Memorandum developed through the Bear River Data Model Pilot Study 2018. Data shall be delivered as both a single point and multi-point dataset, with appropriate relationships developed to water right documents. Development of a structures dataset will begin with the State Engineer's Office ePermit database. Significant cleanup of ePermit data will be needed. Only include active records, remove duplicate permits that have been adjudicated, and adjust units to allow for accurate accounting. Existing datasets should be used where appropriate to minimize overall effort and improve the locational information available through ePermit. Stream gauges are part of the water structures dataset. The Consultant shall include streamflow gauging locations from USGS, SEO, and WWDO.

- Mapping Threshold: Surface water diversions greater than 2 cfs permitted capacity, documented springs (non-stock use), and groundwater wells greater than 500 GPM.
- Accuracy: Surface Water diversions snapped to the permitted water source nearest the documented section quarter.
- Attributes: water source, use(s), water right number, status, priority date, supply type, Node ID from WWDC River Basin Plan spreadsheet models.
- Data sources: ePermit, State Engineer's Office (SEO) stream source names, National Hydrography Dataset, River Basin Plan and reservoir models, Green River WYWRAG Mapping, Bear River Pilot Study data.

Task 3. Data Development: Water Conveyances

Conveyance – Water transmission including ditches, canals, pipelines. Active conveyance features should be mapped using aerial photos and supplemented by existing data sources. Linework should be developed with flow direction in mind, and integrated with the stream network topology to provide the greatest possible utility for future analyses. Pipelines mapping is limited to what is available through existing sources.

- Threshold: all conveyance features included in SEO hydrographer's spot or continuous records data with greater than 2 cfs diversion amounts
- Accuracy: 1:24,000 scale
- Attributes: conveyance name, permitted name, capacity, and primary water source
- Data sources: National Hydrography Dataset, Watershed Studies, Master Plans, Reservoir plans, digital linen plats (http://seo.wyo.gov/documents-data/linenplats) SEO field offices, SEO hydrographer reports, digitized spot and continuous flow records (Water Resources Data System).

Task 4. Data Development: Reservoirs

Reservoirs – raw water reservoirs will be mapped and attributed. Place of use for reservoirs with irrigation, industrial, and municipal uses shall be mapped to the quarter-quarter.

- Mapping Threshold: Greater than 100 ac-ft permitted capacity (non-stock use)
- Attributes: use(s), active capacity, permit number(s), monthly contents under wet, normal, dry conditions (where available)
- Data sources: National Hydrography Dataset, SEO hydrographer reports, SEO Flow, River Basin Plans and reservoir models, and digital linen plats (http://seo.wyo.gov/documents-data/linenplats).

Task 5. Data Verification and Cross Checking

Following completion of Tasks 2 through 4, the GIS data should be reviewed for consistency with existing information. Existing points of diversion mapping from previous efforts should be utilized to cross check the newly developed information. Consultant should plan on six (6) visits to the SEO Board of Control field offices to verify mapping with paper maps and field office data. Mapping should be adjusted based on this effort.

The Consultant shall develop a brief report documenting the work performed, data limitations, procedures used, and a statistical report on the final data. The report should include descriptions of any links or relationships in the data, describe field values, and sources used to locate and attribute features. Confidence in the data should be described in terms of the amount of permitted water that is captured in the mapping, and the accuracy of features mapped. Report should document miles of conveyance in each basin and steps taken to verify the map data.

Task 6. Draft Report

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study, no later than September 1, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

Task 7. Report Presentation

The Consultant shall budget for a meeting in Casper or Cheyenne to present the results of this study to the Commission. This presentation is independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentation to ensure adherence to Office established policies and guidelines.

Task 8. Final Report and Deliverables

After incorporation of the Office’s and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies.

Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before November 1, 2019. These final documents and materials shall include: 1) Twelve (12) [MIN] hard copies of the final report.

Four (4) [MIN] CD, DVD, or USB drive copies containing the final report in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Two (2) [MIN] CD, DVD, or USB drive copies containing the final report, in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

Task 9. Geographic Information System Deliverables

The Consultant shall provide three (3) CD/DVD/Flash Drive/Portable Hard Drive copies of the GIS data. GIS data shall be composed and delivered according to the according to the “WWDO GIS Data Framework Plan” and the accompanying “GIS Standards Technical Memorandum.” A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under “Agency Products.” Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection. The Consultant may also view a prerecorded webinar that is available on the GIS Standards website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. FEATURE MAPPING. The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated into the geodatabase template or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the "GIS Standards Technical Memorandum." Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked non-spatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase template. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS (.mxd) files saved with relative path names to data sources.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

CONFLUENCE CONSULTING, INC.

Principal - $145/hr.
Project Manager/SR GIS Analyst - $105/hr
Water Resources Engineer - $100/hr
GIS/Engineering Technician I - $85/hr
GIS Technician II - $75/hr
GIS Intern - $55/hr

Mileage - $0.545/mile
Lodging & Airfare – At cost.
MI&E – Flat Per Diem Rate of $55/day
Postage – At cost.
Rental Vehicles and Equipment – At cost.
All other reimbursables – At cost.

INTERAGENCY AGREEMENT BETWEEN
THE WYOMNG WATER DEVELOPMENT COMMISSION
AND
THE UNIVERSITY OF WYOMING

1. **Parties.** The parties to this Interagency Agreement (Agreement) are the Wyoming Water Development Commission (WWDC), whose address is: 6920 Yellowtail Road, Cheyenne, WY 82002, and the University of Wyoming (University) acting by and through the Office of Research and Economic Development, whose address is: Dept. 3355, 1000 E. University Avenue, Laramie, WY 82071.

2. **Purpose of Agreement.** The purpose of this Agreement is to provide funding for the Wyoming Geographic Information Science Center (WyGISC) to work with the U.S. Geological Survey National Hydrography Dataset Steward and the U.S. Geological Survey (USGS) Wyoming-Montana Water Science Center to improve and update the National Hydrography Dataset (NHD) for use in creating StreamStats for the State of Wyoming.

3. **Term of Agreement.** This Agreement is effective when all parties have executed it (Effective Date). The term of this Agreement is from the Effective Date, through December 31, 2019. All services shall be completed during this term. There is no right or expectation of extension and any extension will be determined at the discretion of the WWDC.

4. **Payment.**

A. The WWDC (Funding Agency) agrees to pay the University (Receiving Agency) for the services described in Section 5 below. The WWDC agrees to pay the University within forty-five (45) days after receipt and approval of the University's invoice.

B. In no event shall the total amount paid to the University by the WWDC under this Agreement exceed one hundred and fifty thousand dollars ($150,000.00). No payment shall be made for services performed prior to the Effective Date.

5. **Responsibilities of University.** The University of Wyoming agrees to:

A. Perform the services described in Attachment A, which is attached to this Agreement and incorporated herein by this reference.

B. Coordinate with WWDC and USGS personnel for review and editing of the National Hydrography Dataset (NHD) for connectivity issues for use in creating StreamStats in the State of Wyoming.

C. Oversee the work of Research Assistants.

D. Render all services in a completely impartial and professional manner.

E. Submit to WWDC a monthly itemized invoice for contractual services described in Attachment A.

6. **Responsibilities of WWDC.** The Wyoming Water Development Commission agrees to:

A. Pay the University in accordance with Section 4 above.

B. Assign the Director of the Office or his designee to act as the Commission's representative with respect to the University's obligation to be performed under this Contract. The Director of the Office or his designee shall have complete authority to transmit instructions, receive information, and interpret and define the Commission's policies and decisions with respect to services covered by this Contract.

C. Furnish all information, data, reports, and maps as are available to the Commission and necessary for the carrying out of the Scope of Services set forth herein to the University without charge and the Office shall cooperate with the University in every way possible in the carrying out of the project.

D. Review all studies, reports, opinions, and other documents presented by the University to the Commission and shall promptly render in writing the Commission's decisions pertaining thereto within the time periods specified in Attachment A.

E. Provide all criteria and full information regarding its requirements for the project.

7. **General Provisions.**

A. **Amendments.** Any changes, modifications, revisions or amendments to this Agreement which are mutually agreed upon by the parties to this Agreement shall be incorporated by written instrument, executed by all parties to this Agreement.

B. **Applicable Law, Rules of Construction, and Venue.** The construction, interpretation and enforcement of this Agreement shall be governed by the laws of the State of Wyoming, without regard to conflicts of law principles. The terms "hereof," "hereunder," "herein," and words of similar import, are intended to refer to this Agreement as a whole and not to any particular provision or part. The Courts of the State of Wyoming shall have jurisdiction over this Agreement and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

C. **Availability of Funds.** Each payment obligation under this Agreement is conditioned upon the availability of government funds which are appropriated or

allocated for the payment of this obligation and which may be limited for any reason including, but not limited to, congressional, legislative, gubernatorial, or administrative action. If funds are not allocated and available for payment, this Agreement may be terminated by the Funding Agency at the end of the period for which funds are available. The Funding Agency shall notify the Receiving Agency at the earliest possible time if this Agreement will or may be affected by a shortage of funds. No liability shall accrue to the Funding Agency in the event this provision is exercised, and the Funding Agency shall not be obligated or liable for any future payments as a result of termination under this section.

D. **Entirety of Agreement.** This Agreement, consisting of five (5) pages and Attachment A, consisting of two (2) pages, represents the entire and integrated Agreement between the parties and supersedes all prior negotiations, representations, and agreements, whether and the language of any attachment or document incorporated by reference, the language of this Agreement shall control.

E. **Force Majeure.** Neither party shall be liable for failure to perform under this Agreement if such failure to perform arises out of causes beyond the control and without the fault or negligence of the nonperforming party. Such causes may include, but are not limited to, acts of God or the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, and unusually severe weather. This provision shall become effective only if the party failing to perform immediately notifies the other party of the extent and nature of the problem, limits delay in performance to that required by the event, and takes all reasonable steps to minimize delays.

F. **Indemnification.** Each party to this Agreement shall assume the risk of any liability arising from its own conduct. Neither party agrees to insure, defend, or indemnify the other.

G. **Notices.** All notices arising out of, or from the provisions of this Agreement shall be in writing and given to the parties at the addresses provided under this Agreement, either by regular mail or delivery in person.

H. **Prior Approval.** This Agreement shall not be binding upon either party, no services shall be performed, and the Wyoming State Auditor shall not draw warrants for payment, until this Agreement has been fully executed, approved as to form by the Office of the Attorney General, filed with and approved by the Department of Administration and Information's Procurement Office and approved by the Governor of the State of Wyoming or his designee if required by Wyo. Stat. § 9-2-1016(b)(iv).

I. **Severability.** Should any portion of this Agreement be judicially determined to be illegal or unenforceable, the remainder of the Agreement shall continue in full force and effect, and the parties may renegotiate the terms affected by the severance.

J. **Sovereign Immunity.** Pursuant to Wyo. Stat. § 1-39-104(a), the State of Wyoming, the WWDC and the University expressly reserve sovereign or governmental immunity by entering into this Agreement and specifically retain immunity and all defenses available to them. Designations of venue, choice of law, enforcement actions, and similar provisions shall not be construed as a waiver of sovereign immunity. The parties agree that any ambiguity in this Agreement shall not be strictly construed, either against or for either party, except that any ambiguity as to immunity shall be construed in favor of immunity.

K. **Termination of Agreement.** This Agreement may be terminated, without cause, by either party upon thirty (30) days written notice. This Agreement may be terminated immediately for cause if either party fails to perform in accordance with the terms of this Agreement.

L. **Third-Party Beneficiary Rights.** The parties do not intend to create in any other individual or entity the status of third-party beneficiary, and this Agreement shall not be construed so as to create such status. The rights, duties and obligations contained in this Agreement shall operate only between the parties to this Agreement, and shall inure solely to the benefit of the parties to this Agreement. The provisions of this Agreement are intended only to assist the parties in determining and performing their obligations under this Agreement.

M. **Time is of the Essence.** Time is of the essence in all provisions of the Agreement.

N. **Titles Not Controlling.** Titles of paragraphs are for reference only, and shall not be used to construe the language in this Agreement.

O. **Waiver.** The waiver of any breach of any term or condition in this Agreement shall not be deemed a waiver of any prior or subsequent breach. Failure to object to a breach shall not constitute a waiver.

P. **Counterparts.** This Agreement may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Agreement.

THE REMAINDER OF THIS PAGE WAS INTENTIONALLY LEFT BLANK.

8. **Signatures.** By signing this Agreement, the parties certify that they have read and understood it, that they agree to be bound by the terms of the Agreement, and that they have the authority to sign it.

The Effective Date of this Agreement is the date of the signature last affixed to this page.

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____

David Evans, Chair Date

_____ _____

Kellen Lancaster, Secretary Date

UNIVERSITY OF WYOMING

_____ _____

Diana G. Hulme Date
Associate Vice President, Research and Economic Development

ATTORNEY GENERAL'S OFFICE: APPROVAL AS TO FORM

_____ _____

Tyler M. Renner, Assistant Attorney General Date

ATTACHMENT A
SCOPE OF SERVICES

The WyGISC will:

- Work cooperatively with the USGS National Steward, the USGS Wyoming-Montana Water Science Center, and other state and federal partners to review and edit the National Hydrography Dataset (NHD) for connectivity issues for use in creating StreamStats in the State of Wyoming.
- Obtain training provided by the USGS NHD support team to use the NHD edit toolset and submit changes to the dataset into the NHD data repository.
- Work to review and edit the NHD dataset for connectivity issues in the 41 Hydrologic Unit Code (HUC) 8 sub basins that lie completely within the State of Wyoming (more specifically described below).
- For the remaining 42 HUC 8 sub basins that are shared with the surrounding states of Montana, North Dakota, South Dakota, Nebraska, Colorado, Utah, and Idaho, WyGISC will work the WWDC and the USGS to determine to what detail those sub basins will be edited. In some cases, this may require moving to HUC 10 or HUC 12 sub basin delineations for efficiency purposes. WyGISC will actively collaborate with the surrounding states to complete the editing process.
- Consider stakeholder and user community change requests via the new USGS web-based markup tool and decide authoritatively to accept and make edits to the NHD or reject requests relevant to the scope of work of this project.
- Attempt to utilize any relevant spatial data available while addressing NHD connectivity.
- Perform quality assurance checks on the NHD data to ensure that any errors in the core content (features, attributes and relationships) are identified and addressed prior to upload to the USGS NHD repository server.
- Rework updates returned for correction and resubmit to the USGS in a timely manner.

The WyGISC review and editing work will include the following:

1. Begin NHD Edit Training and investigate best practices to seek out and address NHD flowline connectivity errors.

2. Navigate and compare NHD and NHDPlus High Resolution (HR) beta flowline, river, and streams using trace tools for each HUC 8 sub basin, then:

   a. Scan for illegitimate breaks and misdirected flowlines and correct as identified.

   b. Scan for sinks and correct as needed.

   c. Review braided streams and multiple outlets to check that primary channel is properly identified and connected.

d. Review connector lines and artificial paths for validity and accuracy issues.

3. Review, validate, and incorporate the community web-based markups to correct connectivity issues.

4. For sub basins that intersect adjacent states:

a. Make contact with state NHD steward in advance and discuss how the work might proceed across state lines. Options may vary depending on the resources available to adjacent states but could include:

i. If state has a supported stewardship program, determine if they would be interested and willing to complete the needed work in given period of time.

ii. If state doesn't have resources to do the work, WyGISC will review and compile the connectivity errors (perhaps using the Web-based markup tool) and offer to fix them.

iii. If state chooses not to cooperate, request support from NHD point of contact.

5. Re-review, validate, and incorporate the community web-based markups to correct connectivity issues.

6. Review Wyoming NHD dam events created by WyGISC and compare with NHD dams and new dams in State Engineer's Office (SEO) database and:

a. Update NHD with missing dams

b. Update flowline features as needed

7. Review existing canal and diversions in NHD and validate flow direction (Note: all canals and diversions in the NHD are what was mapped on the older 7.5' USGS topographic maps and as discussed newer canals / diversions could be addressed in future work).

8. Review 12-digit pour point events created some years ago and compare NHD/Watershed Boundary Dataset (WBD) vertical alignment issues and adjust geometry as needed.

9. Re-review, validate, and incorporate the community web-based markups to correct connectivity issues.

RIVER BASIN PLANNING – WATER SUPPLY INDEX, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Western EcoSystems Technology, Inc. (WEST) [Consultant], 415 W. 17th St., Suite 200, Cheyenne, WY 82001.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred sixty-six thousand, eight hundred and forty dollars ($166,840).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost
Task 1.	Scoping and Project Coordination Meetings	$ 10,173
Task 2.	Review of Background Information	$ 9,055
Task 3.	Supplemental Supply Analysis	$ 46,065
Task 4.	Development of a Water Use Index	$ 33,440
Task 5.	Development of Hydrology and Climate Record	$ 9,130
Task 6.	Water Reporting	$ 11,775
Task 7.	Draft Report	$ 14,535
Task 8.	Report Presentation	$ 5,010
Task 9.	Final Report and Deliverables	$ 21,912
Task 10.	Geographic Information System Deliverables	$ 5,745
TOTAL PROJECT COST		**$166,840**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: The extent of this project is the State of Wyoming.

2. Purpose: To perform a Level I study to inform the WWDC what areas of the state are most in need of additional supply, and document how water use and availability change over time. The Water Supply Index will provide current, credible information to assess water supply trends and minimize the costs of the River Basin Planning Program. Once the index is developed, biennial reporting can be provided to the Commission and public on water supplies.

3. History: As the River Basin Planning Program wraps up its second round of updates, improvement in the State's ability to plan for the management of water will come from more accurate data. This index is based on new mapping products and existing River Basin Plan information. Using the information gained in this effort, the River Basin Planning section can focus its public outreach efforts where projects are needed. This targeted approach will save time and money, yet continue to provide the WWDO with an active understanding of water supplies and highlight areas of change within Wyoming.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as

the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

This statewide analysis will lay the groundwork for an affordable method to assess water use and availability trends now and into the future. The results will provide a consistent, credible method to assess needs for supplemental water supplies.

Task 1. Scoping and Project Coordination Meetings

One (1) scoping meeting shall be held early in the project schedule to discuss the scope of the project as well as obtain input from Office staff. A review of the data described in Task 2 shall be conducted prior to the meeting. The Consultant will prepare a presentation and other visual aids as necessary to explain the project approach. The Consultant will budget for a minimum of two (2) additional project coordination meetings to be held in Cheyenne and two (2) to be held remotely. The meetings will be scheduled at the discretion of the Wyoming Water Development Office (WWDO) project manager depending on developments during the study. If set up by Office project manager, the Consultant shall be prepared to utilize the State's cloud based platform for improved collaboration, document editing, and data sharing.

Deliverables include: materials presented at meetings and meeting summaries.

Task 2. Review of Background Information

The Consultant shall gather and review existing background information available through any number of relevant sources, including, but not limited to: Wyoming Water Development Commission (WWDC); Water Resources Data System (WRDS); Wyoming State Engineer's Office (SEO); Wyoming State Geological Survey (WSGS); U.S. Geological Survey (USGS). The WWDO project manager will help provide the consultant with existing data and describe what it is and how it can help support this effort. The following data and studies shall be reviewed:

- River Basin Plan water use data (WWDC)
- River Basin Plan water availability data (WWDC)
- Water System Survey Database (WRDS)
- EPA Water System reporting
- Hydrographer reports (SEO)
- Irrigated Lands (WWDC & SEO), NDVI remote sensing Google EarthEngine, and ESRI's Living Atlas
- Well Reporting data (SEO, SEOFLOW)
- NASS, CropScape
- Water Use Data Research Report, 2016 (SEO)
- Basin Plan Groundwater Determination Technical Memoranda, 2007 – 2018 (WSGS)

Task 3. Supplemental Supply Analysis

The intent of this task is to understand the areas of the state most affected during dry hydrologic conditions. This will include two datasets. The mapping of permitted place of use (POU) to the quarter-quarter and irrigated lands.

The place of use mapping shall include areas of the state served by a single direct surface water flow, and those lands with supplemental, secondary, and groundwater sources. POU mapping will be based on WSEO data available through ePermit. Methods, data structure, and tools for automating much of this work should be completed consistent with the GIS Standards Technical Memo 2018. Initial plotting of place of use ePermit GIS conversion tool should adjusted and supplemented by River Basin Plan irrigated lands mapping, Green River WyWRAG mapping, Irrigation master plans, reservoir studies, and digital linen plats (http://SEO.wyo.gov/documents-data/linenplats). The ePermit Arc GIS tool does not map parcels divided by lots. Data from areas of the state where more detailed water right analysis and mapping has occurred will be used to supplement the ePermit ArcGIS Tool. Efforts to map POU in areas of the state where the ePermit ArcGIS Tool is not applicable and existing data is lacking will be limited to 80 hours and will be done manually using ePermit, plat maps, certificates of record, and the tab books. The POU mapping will then be analyzed to identify parcels with 1) senior and junior water right priorities and 2) additional water supply sources (e.g. supplemental, secondary, and groundwater supplies).

Irrigated lands based on NDVI, or similar classified remotely sensed data should be used for the development of irrigated areas. Existing polygons of irrigated areas from River Basin Plans, and place of use mapping should be used to calibrate NDVI classified data into irrigated lands. A minimum of ten samples from the Landsat or Sentinel – 2 records shall be developed, with a minimum of two samples from wet and dry years, as defined by streamflow records in each River Basin Plan.

Deliverables:

1. Map showing resiliency to drought, based on access to stored water, groundwater, supplemental supplies, and priority date.
2. A map showing areas of irrigation during dry, normal, and wet hydrologic conditions.
3. A dataset masking areas of natural vegetation growth used in NDVI detection of irrigated lands.
4. A raster dataset showing number of incidences out of the record (a minimum of 10 samples) that a location is irrigated.
5. Any software code developed to derive the vegetation index from the remotely sensed data shall be adequately referenced, documented, and delivered.

Task 4. Development of a Water Use Index

Index: "a number derived from a series of observations and used as an indicator or measure;" - Merriam-Webster

The intent of this task is to correlate data points (observations) to overall water use in the state. The index is not necessarily an absolute quantity of water but a relative measure above or below a normal water year. Over twenty years of water use and availability data has been compiled in existing River Basin Plans. By relating key data points back to those basin-wide estimates, this index should provide a simplified approach that can be replicated more frequently than possible with existing methods. The data points that form the index should be available on a regular basis, every 2-3 years, and contain a history that can be correlated back to water use information contained in existing River Basin Plans. Datasets that form the index will have a documented correlation coefficient for wet, normal, and dry hydrologic conditions. A separate index will likely be needed for each basin, and should represent all water sectors. The methods used should be repeatable into the future.

Industrial, Municipal, and Domestic Water Use Sector

Based on the sources described below, the Consultant shall propose data points that are representative of water use from municipal and industrial users in 2017. These data points will form the basis for the municipal, domestic, industrial, and oil/mining portion of the water index.

The index sites must have historical data that can be used for correlation, and the data points should be accessible to the WWDO on a regular basis into the future. Index sites should be distributed across the state and include multiple sites in each river basin. Industrial and municipal water use will vary less based on hydrologic conditions and more closely with economic, population, and technology trends. This may require coupling of existing water reporting with ancillary datasets like active drilling rigs, new permits, water conservation programs, etc.

The Consultant shall compare index sites with basin-wide industrial, municipal, and domestic water use from sources described in Task 2. The Consultant shall then regress observations from index sites to overall water use estimates and provide a correlation coefficient for wet, normal, and dry hydrologic conditions. The Consultant shall estimate the portion of industrial, municipal, and domestic water use from groundwater based on POU mapping in Task 3 and well reporting data.

Potential sources for index data points include:

- WRDS Bi-annual Water System Surveys
- SEO Decree and Compact reporting
- SEO Hydrographer Annual Reports

- SEO Well use reporting data

Agricultural Water Use Sector

Based on the sources described below, the Consultant shall propose datasets that are representative of water use from irrigation and livestock in 2017. These data will form the basis for the agricultural portion of the water index.

Irrigated lands mapping from remote sensing will provide the index for irrigation water use. Data shall be distributed across the state and in each river basin. River Basin Plan water use numbers associated with irrigated area can be used to correlate NDVI data to water use. Ancillary data sources should be considered to improve the reliability of the index, e.g., NASS crop reporting, irrigation system surveys, diversion records, etc. Procedures for coupling irrigated lands and ancillary sources to derive a water use number is required.

The Consultant shall evaluate observed data with basin-wide agricultural water use from sources described in Task 2. The Consultant shall then regress observations from index data to overall water use estimates and provide a correlation coefficient for wet, normal, and dry hydrologic conditions. The Consultant shall estimate the portion of agricultural water use from groundwater based on POU mapping in Task 3 and well reporting data.

Potential sources for index data points include:

- Landsat NDVI data from ESRI's Living Atlas or Google EarthEngine
- NAIP NDVI data from ESRI's Living Atlas
- NASS data, CropScape
- National Land Cover Dataset
- SEO decree and compact reporting

Deliverables for Task 4:

1. Memo describing the methods used to derive the index. Description of data and sources that make up the index and the reasoning for including the data, reliability, and potential problems. Include the correlation coefficient used for the index by basin and by water use sector.
2. Software code and/or tool and procedural manual that can be used to derive the index and replicate the results.
3. Data utilized to create index, including spatial and non-spatial datasets, and metadata.

Task 5. Development of Hydrology and Climate Record

In concert with WRDS, the Consultant shall compile data for 2017 from existing sources including NRCS, PRISM, and NOAA. Figures and data that relate back to physically available water should be compiled, including: precipitation, temperature, drought

conditions, and snowpack. Hydrology information should include runoff at key sites as a percentage of normal and end of year reservoir contents. The Consultant shall coordinate with WSGS to estimate recharge for the major aquifers of the state in 2017.

Task 6. Water Reporting

The Consultant shall provide a graphical format to report current status of water use and availability for 2017. This should include statistics by basin across the state. This should take the form of a printable booklet or circular as well as a web based infographic utilizing Piktochart™, Adobe InDesign™, ArcGIS Online and other appropriate design software. Potential reporting parameters will evolve based on availability of data and audience, but may include:

- Annual Water use index for each of the seven Wyoming basins, and a state-wide index.
- Water use should be plotted against hydrologic, and precipitation data in Task 5.
- Ground to surface water use ratio
- Acreage of irrigated lands should be estimated, and reported as deviation from normal.
- Hydrologic and climate observations of the reporting year should be included.
- The value of WWDC Funded projects in 2017 by level and type.
- Areas of the state most susceptible to drought.

Deliverables for Task 6:

1. Short flyer or circular describing water use and supplies for 2017.
2. Web enabled version of the flyer describing water use and supplies for 2017.

Task 7. Draft Report

The Consultant shall submit to the Office four (4) hard copies of draft memos and flyer describing the results of all work completed in this study no later than August 1, 2019. Five (5) CD, DVD, or USB drive copies containing the drafts in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

Task 8. Report Presentation

The Consultant shall budget for a meeting in Casper or Cheyenne to present the results to the Commission. This presentation is independent of the meetings included under

Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 9. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before October 15, 2019. These final documents and materials shall include: 1) Twelve (12) hard copies of the final report, 2) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose and findings of the project. The summary should not exceed ten (10) pages.

Four (4) CD, DVD, or USB drive copies containing the final report, and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project

notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

Task 10. Geographic Information System Deliverables

The Consultant shall provide three (3) CD/DVD/Flash Drive/Portable Hard Drive copies of the GIS data. GIS data shall be composed and delivered according to the according to the "WWDO GIS Data Framework Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection. The Consultant may also view a prerecorded webinar that is available on the GIS Standards website referenced above. Newly collected or developed datasets shall follow these standards:

a. FEATURE MAPPING. The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated into the geodatabase template or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the "GIS Standards Technical Memorandum." Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked non-spatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase template. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS (.mxd) files saved with relative path names to data sources.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

WESTERN ECOSYSTEMS TECHNOLOGY, INC. (WEST)

CLASSIFICATION	HOURLY RATE
200 Professional	200
195 Professional	195
190 Professional	190
185 Professional	185
180 Professional	180
175 Professional	175
170 Professional	170
165 Professional	165
160 Professional	160
155 Professional	155
150 Professional	150
145 Professional	145
140 Professional	140
135 Professional	135
130 Professional	130
125 Professional	125
120 Professional	120
115 Professional	115
110 Professional	110
105 Professional	105
100 Professional	100
95 Professional	95
90 Professional	90
85 Professional	85
80 Professional	80
75 Professional	75
70 Technician	70
65 Technician	65
60 Technician	60
55 Technician	55
50 Technician	50
45 Technician	45
40 Technician	40
35 Technician	35
30 Technician	30
70 Administrative	70
65 Administrative	65
60 Administrative	60
55 Administrative	55
50 Administrative	50

Professional Classification includes: Biometrician, Ecologist, Biologist, Botanist, GIS, Data Analysis/Reports Manager, Database Administrator, Report Writer/Technical Editor, Legal, IT Manager,

Marketing Manager, and Accounting Principal.

Technician Classification includes: Technical Biologist, Technical Statistician, Quality Control Techs, Data Technician, Field Technician, IT Specialist, and Data Entry.

Administrative Classification includes: Accounting, Marketing Coordinator, Health and Safety Coordinator, and Clerical

Court Testimony, depositions and representation of clients before agencies, boards and commission bill at 1.35x bill rate listed.

REIMBURSABLE COSTS

CLASSIFICATION	RATE
Mileage - Sedan	$0.545/mile
Lodging	at Cost
Per Diem	at Cost
Commercial Travel	at Cost
Reproduction Black & White	.10/page or cost
Reproduction Color	.50/page or cost
Reproduction-Plotter	$40/printout
Other Direct Costs including Telephone, Postage, Binding, Film Processing, Materials, Supplies and Maps - at cost	

EQUIPMENT RATES

CLASSIFICATION	RATE
4-Wheeler ATV	$100.00/day or cost
UTV	$150/day or cost
Snowmobile	$150/day or cost
Sub-meter GPS	$75.00/ day or cost
Marine Radar Equipment	$150.00/day
Acoustical Monitoring Accessories	cost
Acoustical Monitoring Equip.	$1200 YR, $300 MTH, $150 WK, $45 Day

* An additional one-time fee of $120 will be charged on all Monitoring Equipment purchased for clients to cover four years of WEST storage and disposal costs.

* A $120 fee for the recurring use of existing acoustic monitoring equipment. This fee is applied to a new project where the monitoring equipment has already been purchased by the client on a previous project and is assessed to cover repair/ maintenance of unit.

Night-vision Goggles	$50.00/day
Remote Sensing Wildlife Camera	$15.00/day or cost
Thermal Camera	$55 per camera/day
SLR Camera	$50/day
Mist Net Rental	$25/net night or at cost
Radio-Telemetry Equipment	$100.00/day or $400.00 week
Spotting Scope	$20/day or cost
Data Information System (per device)	$1500 Yearly, $165 Monthly, $45 Weekly, $10 Daily
Data Information System with Arcpad (per device)	$3000 Yearly, $350 Monthly, $100 Weekly, $25 Daily
All other Equipment	at cost

SARATOGA WATER MASTER PLAN, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Forsgren Associates, Inc. [Consultant], 849 Front Street #201, Evanston, Wyoming 82930.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred sixty-seven thousand, sixty dollars ($167,060).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
Task 1. Project Meetings	$ 9,310
Task 2. Information Review	$ 11,950
Task 3. Inventory, Evaluation, GIS	$ 25,915
Task 4. Hydraulic Model	$ 16,000
Task 5. Water Source	$ 33,515
Task 6. Growth and Demand Projections	$ 11,340
Task 7. Recommendations, Cost Estimates	$ 8,440
Task 8. Water System Financing	$ 8,720
Task 9. Discretionary Task	$ 8,000
Task 10. Draft Report and Presentations	$ 21,000
Task 11. Final Report and Deliverables	$ 12,870
Total Project Cost	**$167,060**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. (41°27'17" N., 106°48'27" W., Approx.)
   The Town of Saratoga (Pop. 1,677) is located in south-central Carbon County in the North Platte River Valley between the Medicine Bow and Sierra Madre mountain ranges. Access is via State HWY 130-230.

2. Purpose. To perform a Level I study for the Town of Saratoga, WY.

3. History.
   "The last formal comprehensive evaluation of the Town of Saratoga's water supply and facilities was the "Saratoga Master Plan Update and Level 1 Study" (SMPLU1) completed in 2003 for the Wyoming Water Development Commission. The main goal of the 2003 master plan was to update the 1978 Water and Sewer Study. A key recommendation of the SMPLU1 was to test the concept of developing a well field to replace the Town's intake from the North Platte River as a primary water source. The "Saratoga Test Well Study, Level II" (STWSL2) (2007) completed for the WWDC, confirmed the feasibility and cost effectiveness of abandoning the river intake and treatment system with five new water production wells. The new ground water supply and delivery system was constructed and put into service in 2009. The Town is looking to upgrade its Water Master Plan for their water supply and distribution system. Along with the general information documentation in a Master Plan upgrade, there would be a number of items the Town would like to evaluate that present near-term opportunities to improve and maintain the system." (From project application received August 10, 2017.)

   Previous WWDC Planning Studies:
   http://library.wrds.uwyo.edu/wwdcrept/Saratoga/Saratoga-Master_Plan_Update_Level_I-Final_Report-2003.html

http://library.wrds.uwyo.edu/wwdcrept/Saratoga/Saratoga-Test_Well_Level_II-Final_Report-2007.html

http://waterplan.state.wy.us/plan/platte/platte-plan.html

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover

of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

D. SCOPE OF SERVICES

Task 1. Project Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

Additional project meetings shall be conducted to facilitate project activity coordination and to keep the Town staff and all affected parties informed of progress. The Consultant should assume a minimum of one (1) public, or Town council, project meeting in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

Task 2. Information Review

The Consultant will gather and review all existing information related to the Sponsor’s water supply and distribution system. This includes information available through the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer’s Office, Wyoming Department of Environmental Quality Water Quality Division (DEQ), USDI Bureau of Land Management, U.S. EPA Region 8, Carbon County, and any other sources as appropriate. The Consultant shall coordinate with Town staff to obtain all past relevant studies that need to be reviewed. Improvements recommended to the water system in any of these reports should be documented. In addition, the status of those recommended improvements should be identified (i.e.: disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies and other regulations that may affect this project. The Consultant shall provide a summary of existing information in the final report.

Task 3. Inventory, Evaluation, and GIS

The Consultant shall confer with Town staff to identify specific problem areas and concerns that should be focused on during this task. The Consultant shall then propose the extent of inventory and evaluation to be performed in this task. Inventory and evaluations shall primarily focus on facilitating the objectives of this project that in part include addressing the Sponsor's areas of concern, identifying system deficiencies, and formulating improved GIS mapping. The Consultant shall coordinate with the Office project manager and Town staff regarding the expectations and limitations of this effort and shall be mindful of the following intentions of this task:

a. Inventory and evaluate the existing infrastructure to determine its ability to meet current water demands and future demands developed in Task 6.

   i. Identify those components that presently require repair or replacement.

   ii. Identify those components that will require repair or replacement within the next twenty (20) years and provide a schedule for the needed improvements as described in Task 7.

b. Assess the capacity and serviceability of existing water treatment facilities, transmission and distribution pipelines, storage tanks, pump stations, PRV stations, flow monitoring devices, and other major components of the water supply system as applicable. Identify deficiencies and make recommendations for improvements needed to address these limitations. In conjunction with the hydraulic modeling task, pipe materials and pressure classes shall be examined in terms of suitability to provide adequate service.

c. Evaluate the system for water losses, including leaks and other non-revenue water. Results of the hydraulic model can serve as an indicator for potential leakage locations along with observations and discussions with system operators. Identify locations that may warrant a leak detection study. Acquisition of a leak detection contractor services may be considered for Task 9.

The Consultant shall evaluate the management and operation of the public water system in the study area to determine if procedural changes would be beneficial. If so, the Consultant shall detail those changes. Results of the hydraulic model simulations can serve as a basis for this task along with observations and discussions with system operators. The Consultant shall evaluate the existing

water metering system to ensure water bills can be or are based on metered usage. The Consultant may offer suggestions relating to the existing billing and metering procedures.

The Consultant shall confer with the Sponsor to ascertain the Town's existing GIS, determining where the files are housed (i.e.: with a Consultant or with the Sponsor), the extent of the mapping, and required updates. The Consultant shall then propose the scope of further mapping to be completed in this task. Updates to the Town's existing GIS are expected to include verification of the accuracy of the water system mapping in terms of piping connectivity, looping, location of system components, etc. Coordinate with the Sponsor during field work so Town staff may perform any required pot-holing to help verify and true-up the Town's existing data.

All mapping and corresponding data sets, existing and updated, shall be consolidated into a comprehensive GIS. Mapping shall be extended as needed to facilitate objectives of this project that include the hydraulic model, addressing the Sponsor's areas of concern, identification of system deficiencies, and development of a modern and efficient GIS. Coordination shall take place with the Sponsor and Office project manager on field survey limitations and any mapping logistics.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from our home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

b. Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

c. Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

Deliverables to the Sponsor shall include at least one set of large size hard copy printouts of the service areas and associated features for the Sponsor's use. These items are in addition to the GIS deliverables described in Task 11. The Consultant shall coordinate with the Office project manager and Sponsor on final production of all hard copy mapping media and its delivery.

Task 4. Hydraulic Model

In conjunction with the updated GIS and water system information obtained in Task 3, the Consultant shall update the Town's existing hydraulic model of its water system. The Consultant shall model the current system and proposed system improvements. Acceptable software platforms include the following or an Office approved equal:

- Innovyze/MWH Soft: InfoWater (ArcGIS based); H2OMap Water (stand-alone); or H2ONet (AutoCAD based)
- Bentley/Haestad Methods: WaterGEMS (ArcGIS based); WaterCAD (AutoCAD based or stand-alone)

The model shall analyze the system using an extended period simulation and shall be properly calibrated to available data sets or known system behavior. The Consultant shall evaluate the adequacy of the water transmission and distribution lines, pumping stations, and storage capacities to meet current and future pressure and flow requirements based on maximum day demands. System storage shall be modeled in terms of volume and water quality (i.e.: tank turnover, water age,

etc.). System pressures shall be determined in the model and compared against the pressure classes of existing pipes to identify problem areas. The Consultant shall consider domestic, rural, commercial, municipal, and industrial demands as needed in the evaluation (i.e.: hospitals, colleges, golf courses, hotels, trailer park, schools, etc.) and incorporate planned development areas and all independent water systems that are supplied from the Town's system. All pressure zones shall be properly accounted for and simulated in the model. All pump stations shall be simulated in the model, and the Consultant should assess the adequacy of the existing pumps in terms of capacity, hydraulic head, run-time, variable frequency drive (VFD) operation, etc. as deemed necessary. The Consultant shall use the model to size new pumps, transmission and distribution lines, storage, and other facilities as needed. In terms of fire flow, the Consultant shall coordinate with Town staff to ascertain the Sponsor's expectations in providing fire flow to its service areas and the subsequent extent of fire flow simulations required. The model shall incorporate the recommended system upgrades or modifications and shall be detailed enough to satisfy the needs of the project.

The Consultant shall construct and execute the hydraulic model to determine system capacity limits in terms of maximum growth potential. Any inactive or planned water taps within the system shall be incorporated into the model. The Consultant shall investigate whether the system has the capacity to effectively serve these taps should they eventually become active.

Within the final report, the Consultant shall fully describe all modeling efforts particularly in terms of the model extents and acquisition of model input, including but not limited to the following:

- Nodal Elevations
- Demands
- Diurnal Curve(s)
- Pump Curves
- Valve Settings
- Pipe Diameters and Material
- Pipe Friction Factors
- Tank Geometry

Task 5. Water Source

The Consultant shall gather and analyze data and information as needed to examine the Town's water supply sources for its public water supply system. Capacities, diversion rates, pumping rates, pump capacities, and water treatment plant capacities shall be investigated as applicable. The Consultant shall determine if the water supply sources are limiting the ability to meet present and future water demands and if so, identify water supply alternatives to meet those

demands. The Town's existing main transmission lines shall be assessed in terms of sizing, condition, and possible redundancy use. Any future potential raw water storage projects that the Town is considering shall be documented and discussed.

The Consultant shall review existing water quality reports to determine if water supply sources and distributed water complies with EPA drinking water standards. If the reports indicate that the standards are not being met or suggest potential water quality problems, recommendations will be presented to mitigate these problems. Where applicable, the Consultant shall collect data on the number of households using septic systems, enhanced septic systems, sewage lagoon systems, or wastewater treatment plants to handle wastewater treatment within the Sponsor's water service area. These data will be used to determine if wastewater treatment, or lack thereof, is presently impacting the water quality or could impact the water quality of the Town's water supply.

The Consultant will review the status of the Sponsor's water rights and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under each permit will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant will also review any water supply contracts held by the Sponsor and discuss their purpose and importance to the Sponsor.

Task 6. Growth and Demand Projections

The Consultant shall develop population growth projections for the Town's water service area. Planning boundaries of the service area will be based on discussions with Town staff as to where future growth may occur. For example, the growth may occur within the corporate limits, the existing service area, or outside of both. This may result in the consideration of an expanded water service area that could reasonably be served by the Sponsor considering the investments in infrastructure.

Historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) will be used as the basis of the projections. (Refer to http://eadiv.state.wy.us/.) Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I, and projections from other sources including, but not limited to those that may be available from the Town and county planning agencies. Another information source may be population projections available in environmental impact statements generated for mineral resource development in the area. The Consultant shall provide graphic representations of each alternate population projection.

Water demand projections will be developed based on historical water use records.

Alternate demand projections may be developed that consider the effects of an increasing tiered water rate system. Demand projections should include bulk water sales to rural or independent water districts or systems, industries, and others as applicable. The potential for any future high-impact water demand scenarios shall be examined. The Consultants shall also investigate any water service regionalization opportunities that may exist to satisfy future water demands.

Task 7. Recommendations and Cost Estimates

The Consultant shall develop a listing and descriptions of recommendations for system improvements identified during the study. The recommendations shall address needed infrastructure capital improvement projects along with non-structural improvements suggested for the funding, operation, maintenance, and replacement of the system. The Consultant will prioritize the recommendations in coordination with the Sponsor. A schedule shall be developed that identifies a phased approach for the implementation of the recommendations in accordance with their priority.

The Consultant shall prepare construction cost estimates in tabular form for each of the recommended system improvements. The table will identify both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Attachment B, Section C.3. The Level III cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall then suggest an appropriate inflation factor that may be applied to the project's current year total cost and projected into the future per the schedule developed in this task.

Task 8. Water System Financing

The Consultant shall work with the Sponsor to acquire all necessary financial data required for this task to determine the current and anticipated future water system revenues and expenditures. To initiate this task, the Consultant shall determine if the Sponsor has a water enterprise fund in which existing water revenues allow the water system to be financially self-supporting or if the Sponsor must subsidize the water system from other budgets and revenues such as bonds, grants, etc. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.

- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses.
- Provide a fund that accrues sufficient reserves to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Consultant.

The Consultant shall first use the above criteria to make recommendations on the Sponsor's current water revenue structure (rates, tap fees, and other) that would support the existing water system based on a revenue structure that encourages water conservation (tiered water rates). The current water revenues shall be compared against current water expenditures based on the last five (5) years of data (if available). The Consultant shall prepare a suggested itemized annual budget for the existing water system that would result in the system becoming and staying financially self-supporting. As an alternative, the Consultant shall consider the Wyoming RATES Program under the direction of the Wyoming Association of Rural Water Systems to perform the rate study (https://gettinggreatrates.com/consulting/WyRATES.pdf).

Next, the Consultant shall prepare two (2) funding scenarios for consideration by the Sponsor that demonstrate the adjustments in revenues that may be necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 7. The Consultant shall present these amended water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting as defined by the above criteria. Within these adjustment scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users. These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. These two (2) scenarios shall be presented in the draft and final reports in a tabular or other clear and concise format. The adjustment in revenues will be presented based on the following two (2) scenarios:

Scenario 1: Assume there will be no state, federal, or outside funding assistance utilized, i.e.: the Consultant shall demonstrate the necessary adjustments in water system revenues under the assumption that the Sponsor independently finances the prioritized recommendations.

Scenario 2: Assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan from WWDC (4%, 30-year term), and funding for WWDC **non-eligible** components will only be in

the form of Sponsor contribution from current or proposed water system revenues.

The Consultant shall then identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component (Scenario 2 above) and to fund WWDC **non-eligible** components that are necessary for the completion of a Level III construction project. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources shall be considered for loans, grants, and combinations thereof.

The Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency.

The Consultant shall also research and define the federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF

Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/
Contact: Bill Tillman, SRF Principal Engineer
WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS

Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs
Contact: Lorraine Werner, Community Programs Director, USDA RUS
Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602
Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

Lastly, in order to demonstrate whether the water system has the technical,

financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 9. Discretionary Task

The Consultant shall place $8,000 of the proposed project budget in this discretionary task. The task is to allow changes in the scope as the project develops or as new issues are discovered. The Consultant, Office project manager, and the Town will agree on any work to be accomplished under this task and the cost of the work. No work will be initiated, or funds spent for this task, without direct approval from the Office project manager.

Task 10. Draft Report and Presentations

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than May 1, 2019. Four (4) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or

within each device.

After submittal of the draft report, the Consultant shall present the draft findings of the study at a public meeting or Town Council meeting. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for Town Council agenda notification to the Town Clerk or publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1. The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 11. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Consultant shall submit one (1) final draft report and one (1) draft executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office at least 2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials to the Office on or before July 20, 2019. These final documents and deliverables shall consist of the following:

- Fifteen (15) hard copies of the final report and fifteen (15) hard copies of the executive summary. This count is inclusive of the copies previously submitted to the Office project manager. The executive summary shall outline the purpose, findings, recommendations, and configuration of the

project and shall include cost estimates. The summary should not exceed ten (10) pages. Any final reports submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

- Five (5) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." This is in addition to delivery of hard copy mapping media as described in Task 3. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

FORSGREN ASSOCIATES, INC.

TITLE CODE	TITLE	HOURLY RATE
Engineer/Scientist VI	Principal/Service Leader	225
Engineer/Scientist V	Division Manager	185
Engineer/Scientist V	Managing Engineer/Scientist	170
Engineer/Scientist IV	Senior Engineer/Scientist	155
Engineer/Scientist III	Project Manager	135
Engineer/Scientist II	Project Engineer/Scientist	100
Engineer/Scientist I	Engineer/Scientist	90
Survey V	Chief of Survey	120
Survey IV	Survey Party Chief	105
Survey III	Senior Surveyor	80
Survey II	Surveyor-In-Training	75
Survey I	Survey Technician	65
Drafter IV	Senior Designer	100
Drafter III	Designer	90
Drafter II	Senior Designer	85
Drafter I	Designer	75
Inspector VI	Senior Construction Manager	130
Inspector V	Construct. Mgr/Supervising Inspect.	115
Inspector IV	Senior Inspector	105
Inspector III	Project Inspector	85
Inspector II	Project Inspector	75
Inspector I	Assistant Inspector	60
Building Inspector	Certified Building Inspector	80
Technician V	Technician Manager	125
Technician IV	Supervising Technician	95
Technician III	Senior Technician	85
Technician II	Technician	75

Technician I	Assistant Technician	65
Clerical IV	Senior Project Assistant	90
Clerical III	Project Assistant III	75
Clerical II	Project Assistant II	60
Clerical I	Project Assistant I	50

Expert Witness Testimony, Preparation and all court time will be charged at a rate of $500.00 per hour
Reimbursables are charged at cost
Subconsultants are charged at cost
Mileage will be charged at $0.545/mile

SHERIDAN MUNICIPAL WATERSHED WILDFIRE HAZARD MITIGATION ASSESSMENT, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Anchor Point Group, LLC, 2131 Upland Ave., Boulder, CO 80304.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through December 31, 2019. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed one hundred sixty-one thousand, four hundred dollars ($161,400).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		Estimated Cost	
Task 1.	Scoping Meeting and Project Meetings	$	26,600
Task 2.	Review of Background Information	$	3,500
Task 3.	Hazard Analysis	$	49,700
Task 4.	Identification of Ongoing/Planned Projects	$	5,400
Task 5.	Preemptive Watershed Wildfire Mitigation Plan	$	31,300
Task 6.	Permitting/Project Implementation	$	6,400
Task 7.	Funding	$	2,800
Task 8.	Coordination/Collaboration	$	11,300
Task 9.	Geographic Information System Deliverables	$	7,800
Task 10.	Draft Report	$	10,300
Task 11.	Report Presentations	$	1,800
Task 12.	Final Report and Deliverables	$	4,500
	TOTAL PROJECT COST	**$**	**161,400**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. Goose Creek Watershed, Johnson and Sheridan Counties.

2. Purpose. To perform a Sheridan Municipal Watershed Wildfire Hazard Mitigation Assessment (Sheridan Municipal WWHMA) Level I Study.

3. History. In 2013, Wyoming Governor Matt Mead created the Task Force on Forests to study the benefits that Wyoming forests provide while considering new response strategies and recommendations for both active and passive management. The January, 2015 Final Report, Governor's Task Force on Forests (Report) highlights 12 recommendations brought forward by a steering committee for the Governor's consideration to aid in decision making and policy implementation.

   Recommendation 3 states that "The State of Wyoming should proactively reduce the threat and occurrence of destructive wildfires by managing vegetation and fuels; protecting homes, communities, and other values at risk; and effectively and efficiently responding to wildfire." Specific to this particular project, the Report recommends that, in order to protect homes, communities, and other values at risk, the State consider the "development of cross-jurisdictional watershed protection plans for municipal water supply drainages that focus on proactive management to preserve and enhance water quality and to avoid catastrophic effects large-scale fires have on municipal watersheds."

   This project will, in close coordination with the Wyoming Water Development Office (Office), the Wyoming State Forestry Division (WSFD), the City of Sheridan (City), the Sheridan Area Water Supply Joint Powers Board (SAWS-JPB), and the United States Forest Service (USFS), identify specific, strategically located, forest health treatment opportunities in the forested watersheds that contribute to the City of Sheridan's municipal

water supply in order to mitigate, pre-fire, the risk associated with the effects of catastrophic fire in the watersheds. The project will build on previous work completed with a focus on identifying, location specific, preemptive management efforts designed to limit hazardous effects of fire to the municipal water supply.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission’s accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

The Consultant will complete the following set of tasks for the Sheridan Municipal Watershed Wildfire Hazard Mitigation Assessment, Level I Study.

Task 1. Scoping Meeting and Project Meetings

A scoping meeting shall be conducted early in the project schedule. The purpose is to familiarize interested parties with the scope of the project and to obtain input from affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting should be held after the Consultant has thoroughly reviewed all background information as described in Task 2. The meeting location and time shall be coordinated with the Sponsor and Office project manager.

Project meetings will be conducted as necessary for the coordination of project activities and to keep the Sponsor and all affected parties informed of project progress. Informal meetings with the Office project manager, the Consultant and the Sponsor will be necessary during the course of the study. The Consultant should assume three (3) informal project meetings.

Joint formal meetings with the Office project manager, the Consultant, the Sponsor, all affected parties, local stakeholders, and state and federal agencies will be necessary during the course of the study. The Consultant should assume three (3) joint formal meetings. Formal joint meetings shall be advertised in advance and open to the public.

The Consultant will be responsible for setting and conducting the informal and formal joint meetings in coordination with the Office project manager. No meeting shall be conducted without approval in advance by the Office project manager. In the interest of economy, meetings shall be scheduled to coincide with fieldwork whenever possible.

Task 2. Review of Background Information

The Consultant shall gather and review any existing background information related to wildfire hazard assessment and associated impacts to the City of Sheridan municipal water supply. Of particular importance is the review of the following literature: (1) Task 7 Technical Memo for the Powder/Tongue and Northeast River Basin Plan Update Level 1 Study, July 2015 (available through the Office); (2) Final Report, Governor's Task Force on Forests, Jan. 2015; (3) Protecting Critical Watersheds in Colorado from Wildfire: A Technical Approach to Watershed Assessment and Prioritization, by JW Associates, Dec. 2008; (4) Bighorn National Forest Revised Land and Resource Management Plan, 2005; (5) Decision Notice and Environmental Assessment Forest-wide Wildland-Urban Fuels Reduction and Watershed Improvement Project, Bighorn National Forest, Feb. 2013; (6) Environmental Assessment for the Babione Vegetation Management Project, May 2009; (7) Sheridan County, Wyoming Wildland Fire Mitigation Plan, 2009; (8) 2014-2019, Sheridan County, Wyoming Multi-Hazard Mitigation Plan; (9) Bighorn National Forest Fire Management Plan (including appendices), Feb. 2017; (10) U.S. Forest Service Roadless Area Conservation Rule (RACR), Jan. 2001; (11) Soil Survey of Bighorn National Forest, Wyoming, April 1986; (12) Wyoming Probable Maximum Precipitation Study, Dec. 2014; (13) Cucharas River Watershed Small Watershed Targeting – Small-scale Watershed Protection Priorities, Feb. 2015; (14) Sheridan Supplemental Supply Study, Level II, Phase I, DOWL HKM, May 2011; (15) Sheridan Supplemental Storage Study, Level II, Phase II, Entech, Dec. 2013; (16) Goose Creek Watershed Level I Study, Entech, Sept. 2017 (available through the Office); (17) Wyoming Statewide Forest Resource Assessment; Describing Conditions, Trends, Threats, and Priorities, Wyoming State Forestry Division, Sept. 2009; (18) Wyoming Statewide Forest Resource Strategy; Providing Long-Term Strategies to Manage Priority Landscapes, Wyoming State Forestry Division, April 2010; (19) Buffalo Municipal Watershed Wildfire Hazard Mitigation Assessment, Anchor Point Group and RESPEC, Jan. 2017; (20) National Insect and Disease Risk ratings, found at: https://www.fs.fed.us/foresthealth/technology/pdfs/2012_RiskMap_Report_web.pdf

Task 3. Hazard Analysis

Without duplicating previous efforts and existing information, the Consultant shall describe and map the City's municipal water supply system. The Consultant shall delineate watershed boundaries associated with the system (i.e. – watersheds upstream of the City's reservoirs, collection points, and any other pertinent water conveyance/storage infrastructure). At a minimum, HUC-14s will be delineated and subsequently analyzed as described below. To improve the strategic location of treatments, the Consultant shall also consider the benefits and costs of delineating and analyzing hazards at another appropriate scale with the spatial accuracies necessary for identification of preemptive treatments and planning projects in Task 5. The Consultant shall coordinate with the Office project manager, the City, the USFS, and WSFD to determine the appropriate level of analysis used for this project. The task budget should assume HUC-14 delineation and analysis.

The Consultant will extend the fire behavior modeling to the South Piney Creek and Fool Creek HUC-10 watersheds.

Utilizing existing information where applicable, and in close coordination with the Office, the City, and SAWS-JPB, the Consultant shall identify and prioritize municipal water supply components within the boundaries of each HUC watershed. Prioritization criteria should be developed in coordination with the City, SAWS-JPB, and the Office.

Hazardous watershed conditions shall be analyzed for all HUC watersheds to develop hazard rankings. The hazard ranking criteria will, at a minimum, consist of City municipal water supply component prioritization, wildfire hazard, utilizing canopy fuels characteristics (i.e. canopy bulk density and canopy base height) and fire behavior indicators (i.e. torching index, crowning index, flame length, fire line intensity, and crown fire type), flooding/debris flow hazard, soil erodibility hazard, insect and disease risk, and precipitation intensity and duration hazard. A resulting composite hazard ranking shall be developed for each HUC watershed to aid in identifying preemptive treatments and planning projects during the completion of Task 5.

The Consultant shall, utilizing geomorphic indicators, evaluate where, and to what extent, instream sedimentation would occur after a wildfire. Areas of sediment transport and deposition shall be identified such that the data can be applied to support prioritizing Task 5 project implementation.

The Consultant shall also consider fuels reduction efforts that allow authorities the opportunity to strategically fight catastrophic forest fires in adjacent watersheds as well. Fire hazard criteria shall include, but not be limited to terrain, tree densities, tree species, prevailing winds, etc. The criteria will be utilized to ascertain specific locations where fuels reduction efforts would be located with the ultimate goal of stopping or reducing a catastrophic wildfire prior to entering the municipal watersheds. The resulting information shall be further developed in Task 5 to identify preemptive treatments and planning projects in adjacent watersheds.

The Consultant will create a GIS using certain specified data collected during this study. At a minimum, this data will include location of system components, information related to those components, hazard ranking data sets, and other pertinent information. The details of the GIS will be developed in consultation with the Office project manager. Mapped features will be labeled with appropriate nomenclature and appropriate symbols. Relevant background information (hazard ranking criteria) shall be hot-linked as appropriate.

Task 4. Identification of Ongoing/Planned Projects

The Consultant shall, in close coordination with the Office project manager, the City, SAWS-JPB, USFS, WSFD, BLM, and other applicable private or public entities, summarize any and all ongoing and/or planned related management activities in the priority watersheds such that efforts are not duplicated.

Task 5. Preemptive Watershed Wildfire Mitigation Plan

Utilizing the results of Tasks 3 and 4, the Consultant shall identify preemptive treatments and planning projects associated with reducing impacts of catastrophic fire on the watershed and municipal water supply to create a Preemptive Watershed Wildfire Mitigation Plan.

The plan shall identify wildfire management, fuels reduction, pre-permitting of sediment control structures, any communication/agreements necessary to facilitate wildfire management, and any other pertinent priority tasks within, and adjacent to, the municipal watersheds.

Treatments and planning projects shall consider and identify the interrelationships between the reduction of impact from catastrophic fire and the overall health of the watershed. The opportunities shall be evaluated and summarized in a matrix format to facilitate prioritization and to provide a road map that will guide in the selection and implementation of projects. Evaluation criteria shall include, but not be limited to, compatibility with the Bighorn National Forest Plan, Federal laws, regulations, and policies, wildfire impact reduction, watershed health benefits,

probability of success in implementation, relative cost, synergistic opportunities with other resource benefits, net hydrologic effects, sustainability, ease of permitting, and public acceptability, among others.

The direct and indirect benefits of each treatment or activity shall be summarized and will support the prioritization, the purpose, and the need of the activity.

Cost and time estimates will be provided for the priority activities. This approach should account for past and present project component average costs and shall be coordinated with, and approved by, the Office project manager and project proponents. Cost and time estimates shall also include a maintenance schedule. In order to ascertain the information mentioned above, and utilizing information gained in Tasks 3 and 4, landowner and land management agency interviews and site visits shall be conducted as needed.

Task 6. Permitting/Project Implementation

The Consultant shall identify all permits, easements, and clearances necessary for implementation of the Preemptive Watershed Wildfire Mitigation Plan and any specifically proposed priority management activities and improvement projects. This shall include possible exemptions to the Roadless Area Conservation Rule's (RACR) restrictions on "tree cutting" and other activities within RACR designated areas.

Particular attention should be paid where permitting has been done (ie. NEPA) and how can/does that weigh into project implementation. The Consultant shall coordinate and communicate with the U.S. Forest Service to facilitate the National Environmental Policy Act (NEPA) process.

Special consideration shall be directed toward the "Good Neighbor Authority" and its viability to be applied to Task 5 management activities.

Task 7. Funding

The Consultant shall provide information on potential funding sources for implementation of specific priority management activities and improvement projects. The Consultant shall also identify application requirements for local, state, and federal agencies including timelines, trigger dates, agency criteria, conditions and funding requirements, as well as conditions and requirements for legal entities recognized by the State of Wyoming that are of interest to the project proponents.

Task 8. Coordination/Collaboration

Coordination with stakeholders throughout the project will be paramount to the successful implementation of the plan identified in Task 5. A multidisciplinary group including, but not limited to, the Office, the City, SAWS-JPB, USFS, and WSFD personnel, will be assembled and collaborated with on a routine basis throughout the development of this project. The Consultant shall budget for a minimum of three (3) multidisciplinary group meetings to corroborate analysis and any assumptions as the project develops. The Consultant will prepare all needed materials for the meetings, and the Consultant shall prepare meeting minutes for all meetings. No meeting shall be conducted without approval in advance by the Office project manager. In the interest of economy, meetings shall be scheduled to coincide with fieldwork whenever possible.

Task 9. Geographic Information System Deliverables

The Consultant shall provide three (3) CD/DVD/Flash Drive/Portable Hard Drive copies of the GIS data. GIS data shall be composed and delivered according to the "WWDO GIS Data Framework Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a webinar on GIS project standards hosted by the Office and Water Resources Data System (WRDS). This webinar will follow consultant selection. The Consultant may also view a prerecorded webinar that is available on the GIS Standards website referenced above.

The Consultant is not expected to apply these standards to the Sponsor's existing GIS data but rather, ensure that any newly collected or developed datasets follow these standards:

a. FEATURE MAPPING. The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated into the geodatabase template or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. Simplified metadata shall be completed in accordance with standards described in the "GIS Standards Technical Memorandum." Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983," as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked non-spatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase template. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS (.mxd) files saved with relative path names to data sources.

Task 10. Draft Report

The Consultant shall submit to the Office four (4) hard copies of a draft report describing the results of all work completed in this study no later than January 18, 2019. Five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

Task 11. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly.

Task 12. Final Report and Deliverables

After incorporation of the Office's, the Sponsor's and the multidisciplinary group's review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1-2 weeks prior to the final deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Consultant shall submit all final documents and materials, to the Office on or before March 1, 2019. These final documents and materials, shall include: 1) Twelve (12) hard copies of the final report, and 2) Twelve (12) hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) CD, DVD, or USB drive copies of any modeling files and all associated files shall be provided, if applicable. The files shall create a working model that is

fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) CD, DVD, USB drive or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. See Task 9 for further details.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

ANCHOR POINT GROUP, LLC

Labor Category	Level	Hourly Rate
Forester	Senior	$179.88
Forester	Mid	$134.52
Fire Management Specialist	Senior	$150.16
UWI Fire Management Specialist	Master	$211.16
Fire Behavior Analyst	Master	$211.16
Structure Protection Specialist	Master	$211.16
Software Programmer	Mid	$101.67
Field Technician	Mid	$118.88
Fire Fighter I	Mid	$134.52
Fire Fighter II	Entry	$86.03
Project Manager	Senior	$150.16
Project Manager	Mid	$118.87
Communications Specialist	Mid	$106.35
Communications Specialist	Senior	$134.52
Cost Estimators, Planners, Schedulers	Senior	$150.16
Trainer	Senior	$150.16
Trainer	Master	$211.16
Survey and Mapping Tech	Entry	$106.35
GIS Fire Modeler	Senior	$150.17

Other Direct Costs			
Airfare	At cost	In-house B&W Copies	$0.10/copy
Mileage (2WD)	$0.545/mile	In-house Color Copies	$1.00/copy
Meals/Lodging	At cost	In-house B&W Plotter	$5.00/plot
Other travel expenses incurred	At cost	In-house Color Plotter	$10.00/plot

All other direct costs such as communications, equipment rental, materials, laboratory services, shipping, and reproduction will be charged at cost.

SHERIDAN WATER MASTER PLAN, LEVEL I STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and DOWL, LLC [Consultant], 16 W. 8th Street, Sheridan, Wyoming 82801.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through June 30, 2020. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred forty seven thousand, five hundred dollars ($247,500).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task		**Estimated Cost**
Task 1.	Meetings	$ 15,000
Task 2.	Information Review	$ 19,000
Task 3.	Inventory, Evaluation, and GIS	$ 58,000
Task 4.	Hydraulic Model	$ 27,000
Task 5.	Water Source	$ 9,000
Task 6.	Growth and Demand Projections	$ 8,000
Task 7.	Recommendations and Cost Estimates	$ 22,000
Task 8.	Water System Financing	$ 17,500
Task 9.	Discretionary Task	$ 10,000
Task 10.	Draft Report and Presentations	$ 34,500
Task 11.	Final Report and Deliverables	$ 27,500
	TOTAL PROJECT COST	**$ 247,500**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location. The City of Sheridan resides in Sheridan County within the Powder/Tongue River Basin, east of the Big Horn Mountains in north-central Wyoming.

3. Purpose. To perform a Level I study in the form of a water system master plan.

4. History. The water supply for the Sheridan Area Water System (SAWS) system consists of direct flow from Big Goose Creek and stored water in reservoirs in the Big Horn Mountains. Raw water is diverted, pretreated, and then delivered to one of two water treatment plants. This project is to develop an overall water master plan of the entire water system that covers both the City of Sheridan's system and the Sheridan Area Water Supply Joint Powers Board (SAWSJPB) system. This is one water system that is operated by the same O&M crew and is under one Public Water System number. The system is substantial and complex with many features, including multiple pressure zones, tanks, pumps stations, pressure reducing and other control valve stations, and a network of transmission mains. This study will fully analyze the system and the adequacy and condition of its components, examine the system's capability to serve into the future, and identify recommendations for needed capital improvements with cost estimates and funding plans. For the purpose of this water master plan, the study boundary shall consist of a single service area that encompasses both the City of Sheridan and the SAWSJPB systems. An operating agreement and ownership agreement are already in place between these two entities. Additionally, a memorandum of understanding has been prepared that essentially unites these two entities for the purpose of this study and for achieving the objectives of this water master plan. Within the master plan, all the Sponsor's past water resources studies and construction projects would be tied together, documented, and summarized into a single report.

Existing and Prior Legislation:

Note: Only relevant WWDC planning studies and construction projects from approximately the last 12 years are listed below.

Project	Level	Year	Appropriation
Sheridan/Veterans Affairs Medical Center Water Ctr Supply	II	2005	$75,000
Buffalo, Sheridan Area Water Supply System and Lake DeSmet Regional Master Plan	I	2006	$600,000
Sheridan Supplemental Supply Study (Phase I and II)	II	2009/12	$600,000
Sheridan/Big Goose Slip Lining	III	2007	$427,020
Sheridan NW/Big Goose Tanks	III	2007	$5,260,840
Sheridan North Loop Transmission Line	III	2013/14	$1,714,460
Sheridan Leopard Street Pipeline	III	2015	$2,211,000
Sheridan 4MG WTP Tank	III	2015	$2,144.000

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to

operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

General

The Sponsor represents the City of Sheridan and the Sheridan Area Water Supply Joint Powers Board (SAWSJPB) who collectively own and operate a regional water system known as the Sheridan Area Water System (SAWS). The SAWS system is operated and maintained by the City of Sheridan under one PWS #. Each entity governs over its respective part of the system and operates as two, separate water utilities. The tasks outlined within this scope of work will evaluate the SAWS system as a whole and, in doing so, also distinguish the individual systems and needs of both the City of Sheridan and SAWSJPB. The Consultant can assume the term “Sponsor” used within this scope of work to mean both the City of Sheridan and SAWSJPB.

Task 1. Meetings

A scoping meeting shall be held early in the project schedule in the project area to familiarize the Sponsor with the scope of the project as well as obtain and provide input and information to and from all affected parties. The Consultant shall prepare all presentation material, including maps and other visual aids as necessary, to explain the project. The scoping meeting location and time shall be coordinated with the Sponsor and Office project manager and should be held after the Consultant has reviewed all background information as described in Task 2.

Additional public project meetings shall be conducted to facilitate project activity coordination and to keep the Sponsor's staff and all affected parties informed of progress. The Consultant should assume a minimum of one (1) public project meeting in the study area. The Consultant shall be responsible for setting and conducting these meetings in coordination with the Office project manager and the Sponsor. The Consultant shall prepare all notices, needed materials, and the meeting record. In addition to the public project meetings, several informal meetings with the Sponsor or Office project manager may be necessary during the course of the study.

Task 2. Information Review

The Consultant will gather and review all existing information related to the Sponsor's water supply and distribution system. This includes information available through the Sponsor, WWDO, Water Resources Data System (WRDS), Wyoming State Engineer's Office, Wyoming Department of Environmental Quality Water Quality Division (DEQ), and any other sources as appropriate. Coordinate with city staff to obtain all past relevant studies that need to be reviewed. Improvements recommended to the water system in any of these reports should be documented. In addition, the status of those recommended improvements should be identified (i.e.: disregarded, completed, in progress, pending, etc.). The Consultant shall also review and summarize all local area development plans, zoning ordinances, annexation policies and other regulations that may affect this project. The Consultant shall provide a summary of existing information in the final report.

Task 3. Inventory, Evaluation, and GIS

The Consultant shall confer with the Sponsor to ascertain the Sponsor's existing GIS, determine where the files are housed (i.e.: with a Consultant or with the Sponsor), the extent of the existing mapping, and needed GIS updates. Updates are expected to include verification of the accuracy of the water system mapping in terms of piping connectivity, looping, location of system components, etc. The Consultant shall coordinate with the Sponsor during field work for performing any pot-holing necessary to verify and true-up the Sponsor's existing data.

Inventory and evaluations shall primarily focus on facilitating the objectives of this project that in part include addressing the Sponsor's areas of concern, identifying system deficiencies, formulating improved, modern and efficient GIS mapping, and updating the Sponsor's existing hydraulic model. The Consultant shall assess the system's existing treated water storage tank volumes in terms adequacy or unnecessary capacities that may be affecting water quality. The Sponsor's existing water model shall be subsequently updated with accurate information on system infrastructure, alignments, materials, sizes, capacities, etc. The Consultant shall coordinate with the Office project manager and city staff regarding the expectations and limitations of this effort and in addition to the above, shall be mindful of the following intentions of this task:

a. Inventory and evaluate the existing infrastructure to determine its ability to meet current water demands and future demands developed in Task 6. Identify those components that presently require repair or replacement, and identify those components that will require repair or replacement within the next twenty (20) years. Provide a schedule for the needed improvements as described in Task 7.

b. Assess the capacity and serviceability of existing water treatment facilities, transmission and distribution pipelines, storage tanks, pump stations, PRV stations, flow monitoring devices, and other major components of the water supply system as applicable. Identify deficiencies and make recommendations for improvements needed to address these limitations. In conjunction with the hydraulic modeling task, pipe materials and pressure classes shall be examined in terms of suitability to provide adequate service.

c. Evaluate the system for water losses, including leaks and other non-revenue water, and calculate water losses that are occurring. Results of the hydraulic model can serve as an indicator for potential leakage locations along with observations and discussions with system operators. Identify locations that may warrant a future leak detection study.

The Consultant shall evaluate the management and operation of the public water system in the study area to determine if procedural changes would be beneficial. If so, the Consultant shall detail those changes. Results of the hydraulic model simulations can serve as a basis for this task along with observations and discussions with system operators. The Consultant shall evaluate the existing water metering system to ensure water bills can be or are based on metered usage. The Consultant may offer suggestions relating to the existing billing and metering procedures.

All mapping and corresponding data sets, existing and updated, shall be consolidated into a comprehensive GIS. Mapping shall be extended as needed to facilitate objectives of this project. Coordination shall take place with the Sponsor and Office project manager on field survey limitations and any mapping logistics.

The Consultant shall review the city's existing CAD/GIS standards and provide recommendations for changes to these standards to assist with the upkeep of the GIS and hydraulic model in the future.

GIS data shall be composed and delivered according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." A link to these two documents is available from the WWDC home page (http://wwdc.state.wy.us/index.html) under "Agency Products." Consultants are strongly recommended to attend a future webinar on GIS project standards hosted by WWDO and WRDS. This webinar will follow Consultant selection. The Consultant may also view a prerecorded webinar on GIS standards that is available on the website referenced above.

The Consultant is **not** expected to apply these standards to the Sponsor's **existing** GIS data but rather, ensure that **any newly collected or developed data**sets follow these standards:

a. Feature Mapping: The Consultant shall obtain a core geodatabase template for feature mapping prior to any GIS mapping. Available at the GIS Standards website, these templates define the organization and naming of "core" GIS data. In conjunction with the Sponsor's needs, any auxiliary GIS data layers can be integrated to the geodatabase templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the GIS Standards Technical Memorandum. All features modified or created shall include field attributes that indicate contract number, Consultant, date modified, and accuracy.

b. Formats and Standards: Simplified metadata shall be completed in accordance with standards described in the GIS Standards Technical Memorandum. Attribute codes not included as part of the "core" data templates shall be defined in the metadata. GIS data shall be saved in a decimal degree coordinate system with a NAD83 datum, specifically "GCS_North_American_1983" as indicated in the GIS Standards Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office core geodatabase templates. Auxiliary GIS data layers can be provided as .shp files.

c. Maps: Project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

The Consultant shall provide the City of Sheridan, SAWSJPB, and WWDO with GIS products in a published online map format (in addition to the required formats) which will allow operators to view the GIS data in the field on phones or other mobile devices.

Deliverables to the Sponsor shall include at least one set of large size hard copy printouts of the service areas and associated features for the Sponsor's use. These items are in addition to the GIS deliverables described in Task 11. The Consultant shall coordinate with the Office project manager and Sponsor on final production of all hard copy mapping media and its delivery.

Task 4. Hydraulic Model

In conjunction with the updated GIS and water system information obtained in Task 3, the Consultant shall update the Sponsor's existing hydraulic model of its water system. The

Consultant shall model the current system and proposed system improvements. Acceptable software platforms include the following or an Office approved equal:

- Innovyze/MWH Soft: InfoWater (ArcGIS based); H2OMap Water (stand-alone); or H2ONet (AutoCAD based)
- Bentley/Haestad Methods: WaterGEMS (ArcGIS based); WaterCAD (AutoCAD based or stand-alone)

The model shall analyze the system using an extended period simulation and shall be properly calibrated to available data sets or known system behavior. The Consultant shall evaluate the adequacy of the water transmission and distribution lines, pumping stations, and storage capacities to meet current and future pressure and flow requirements based on maximum day demands. System storage shall be modeled in terms of volume and water quality (i.e.: tank turnover, water age, etc.). System pressures shall be determined in the model and compared against the pressure classes of existing pipes to identify problem areas. The Consultant shall consider domestic, rural, commercial, municipal, and industrial demands as needed in the evaluation (i.e.: hospitals, colleges, golf courses, hotels, trailer park, schools, etc.) and incorporate planned development areas and all independent water systems that are supplied from the Sponsor's system. All pressure zones shall be properly accounted for and simulated in the model. All pump stations shall be simulated in the model, and the Consultant should assess the adequacy of the existing pumps in terms of capacity, hydraulic head, run-time, variable frequency drive (VFD) operation, etc. as deemed necessary. The Consultant shall use the model to size new pumps, transmission and distribution lines, storage, and other facilities as needed. In terms of fire flow, coordinate with city staff to ascertain the Sponsor's expectations in providing fire flow to its service areas and the subsequent extent of fire flow simulations required. The model shall incorporate the recommended system upgrades or modifications and shall be detailed enough to satisfy the needs of the project

The Consultant shall construct and execute the hydraulic model to determine system capacity limits in terms of maximum growth potential. Any inactive or planned water taps within the system shall be incorporated into the model. The Consultant shall investigate whether the system has the capacity to effectively serve these taps should they eventually become active.

Within the final report, the Consultant shall fully describe all modeling efforts particularly in terms of the model extents and acquisition of model input, including but not limited to the following:

- Nodal Elevations
- Demands
- Diurnal Curve(s)
- Pump Curves
- Valve Settings
- Pipe Diameters and Material
- Pipe Friction Factors
- Tank Geometry

The Consultant shall work with the system operators and perform select flow testing of transmission mains and hydrants and use this and other data as necessary to calibrate the hydraulic model.

The Consultant shall perform a water hammer analysis on each of the pump stations and the Big Goose hydropower generator. This work shall include assigning wave speeds to the pipes in the system, rotational inertia to the pumps, and other properties to the hydropower generator. A power failure at each pump station shall be modeled to determine the magnitude of surge pressures caused by this event. "Freewheeling" of the hydropower generator shall also be modeled to determine the magnitude of surge pressures caused by this event. Existing pressure relief valves and air/vacuum valves will be added to the hydraulic model as appropriate. Critical air/vacuum valves and pressure relief valves needed to prevent damage to the system shall be identified and noted in the operational recommendations as appurtenances that should be given a high priority for maintenance.

Task 5. Water Source

The Consultant shall gather and analyze data and information as needed to examine the Sponsor's water supply sources for its public water supply system. Capacities, diversion rates, pumping rates, pump capacities, and water treatment plant capacities shall be investigated as applicable. The Consultant shall determine if the water supply sources are limiting the ability to meet present and future water demands and if so, identify water supply alternatives to meet those demands. The Consultant shall express the Sponsor's available water supply in terms of EDU's served per acre foot for both the Sheridan and SAWSJPB's water supplies. The Sponsor's existing main transmission lines shall be assessed in terms of sizing, condition, and possible redundancy use. Any future potential raw water storage projects that the city is considering shall be documented and discussed.

The Consultant shall review existing water quality reports to determine if water supply sources and distributed water complies with EPA drinking water standards. If the reports indicate that the standards are not being met or suggest potential water quality problems, recommendations will be presented to mitigate these problems. Where applicable, the Consultant shall collect data on the number of households using septic systems, enhanced septic systems, sewage lagoon systems, or wastewater treatment plants to handle wastewater treatment within the Sponsor's water service area. These data will be used to determine if wastewater treatment, or lack thereof, is presently impacting the water quality or could impact the water quality of the Sponsor's water supply.

The Consultant will review the status of the Sponsor's water rights and produce a tabular inventory of these rights. The inventory shall include priority dates, quantities, permitted uses, permit conditions, and other pertinent data. Historic use of water under each permit will be estimated to determine if the water rights must be expanded or altered to accommodate the recommendations in this project. The Consultant will also review any

water supply contracts held by the Sponsor and discuss their purpose and importance to the Sponsor.

Task 6. Growth and Demand Projections

The Consultant shall develop population growth projections for the Sponsor's water service area. Planning boundaries of the service area will be based on discussions with the City's and SAWSJPB's/County's staff as to where future growth may occur along with projected zoning and land use patterns. For example, the growth may occur within the corporate limits, the existing service area, or outside of both. This may result in the consideration of an expanded water service area that could reasonably be served by the Sponsor considering the investments in infrastructure.

Historic population data obtained from the Economic Analysis Division of the Wyoming Department of Administration and Information (EAD/DA&I) will be used as the basis of the projections. (Refer to http://eadiv.state.wy.us/.) Alternate population projections will be developed considering recent growth trends, projections developed by the EAD/DA&I, and projections from other sources including, but not limited to those that may be available from the city and county planning agencies. Considerations toward hydraulic parameters, topography, and other constraints to growth that may be unique to the Sponsor's system and planned service area shall be considered when developing population projections. Another information source may be population projections available in environmental impact statements generated for mineral resource development in the area. The Consultant shall provide graphic representations of each alternate population projection.

Water demand projections will be developed based on historical water use records. Alternate demand projections may be developed that consider the effects of an increasing tiered water rate system. Demand projections should include bulk water sales to rural or independent water districts or systems, industries, and others as applicable. The potential for any future high-impact water demand scenarios shall be examined. The Consultants shall also investigate any water service regionalization opportunities that may exist to satisfy future water demands.

Task 7. Recommendations and Cost Estimates

The Consultant shall develop a listing and descriptions of recommendations for system improvements identified during the study. The recommendations shall address needed infrastructure capital improvement projects along with non-structural improvements suggested for the funding, operation, maintenance, and replacement of the system. The Consultant will prioritize the recommendations in coordination with the Sponsor. A schedule shall be developed that identifies a phased approach for the implementation of the recommendations in accordance with their priority.

The Consultant shall prepare construction cost estimates in tabular form for each of the recommended system improvements. The table will identify both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be

prepared as outlined in Attachment B, Section C.3. The Level III cost estimates will include costs of design, permitting, land acquisition, construction engineering, materials and equipment, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall then suggest an appropriate inflation factor that may be applied to the project's current year total cost and projected into the future per the schedule developed in this task.

Task 8. Water System Financing

The City of Sheridan and SAWSJPB are currently concluding water system rate studies and financial plan model (model) updates (expected completion: April, 2018). These models for each system are being developed separately yet cohesively in order to reflect effective, reliable financial plans for each. These financial plans will be adopted for use and utilized to run "what-if" scenarios, tracking of its enterprise funds, financial health, and reporting. The models will project rates and other revenues and their ability to meet annual expenditures while meeting debt service coverage and reserve targets. The Consultant shall confer with the Sponsor to initiate this task and become familiar with the format, platform, and functionality of these models in order to further update it as part of this task with respect to the capital improvement projects identified within this master plan and defining means to fund those.

The Consultant shall acquire all the needed financial data and integrate with the Sponsor's financial plan models to perform all necessary analyses, documentation, and study of the Sponsor's utility rates and recommend a 10-year rate schedule for their water systems. With respect to the Sponsor's models and as required, the Consultant may perform an evaluation of the Sponsor's plant investment fees (PIF) and make recommendations toward any needed changes in fee structure and charges. The Consultant shall work with the Sponsor's staff to utilize the models in terms of its input scenarios, output, and presentation of results into the final report.

In conjunction with updating the Sponsor's financial models, the Consultant shall prepare and present as-needed funding scenarios that demonstrate the adjustments in revenues necessary to accommodate the prioritized recommendations, schedules, and cost estimates developed in Task 7. The Consultant shall present these water revenue structures that would support the identified system improvements while maintaining the system as financially self-supporting. In order for the water system to be self-supporting, revenues should be sufficient to accomplish the following:

- Retire existing water related debt (principal and interest).
- Pay the costs for employees.
- Pay the costs of materials, supplies, utilities, and outside services necessary to operate and maintain the water system and provide normal improvements and replacement requirements for the system.
- Pay for administrative and overhead expenses.
- Provide an emergency fund that annually accrues at least an amount equal to 1.5% – 2.5% of the operating expenses.

- Provide a fund that accrues sufficient reserves to pay for major repairs and replacement that will be required during the life of any associated project.
- Pay other costs as may be identified by the Sponsor or Consultant.

Within these scenarios, the Consultant shall demonstrate the effects on the average monthly bill for residential water users. These estimated average monthly bills will be compared against American Water Works Association (AWWA) standard of 2.5% of the annual median household income divided by 12 months. The adjustment in revenues (i.e.: changes to water rates, tap fees, PIFs, etc. as applicable) will be presented in tabular or other clear and concise format.

One scenario shall assume that funding for WWDC **eligible** components will be in the form of a 67% grant from WWDC and a 33% loan from WWDC (4%, 30-year term), and funding for WWDC **non-eligible** components will only be in the form of Sponsor contribution from current or proposed water system revenues.

Within each scenario, the Consultant shall identify additional funding sources outside of WWDC that the Sponsor can pursue to obtain the 33% loan component and to fund WWDC **non-eligible** components which most likely will consist of adjustments to the Sponsor's water system rates, tap fees, or PIFs such that the city can fund the 33% independently. The Wyoming Drinking Water State Revolving Fund Program (DWSRF), the USDA Rural Utilities Service (RUS), the State Lands and Investments Board, the Wyoming Business Council, the DEQ Abandoned Mine Lands Program, and other eligible funding sources may be considered for loans, grants, and combinations thereof.

As applicable, the Consultant shall research and fully consider all eligibility requirements, application nuances, deadlines, and all logistical and timing challenges that may occur, report the amount of grant or loan funds that may be available through each agency, and analyze the probability of the Sponsor securing a grant or loan for the project(s) in question. The Consultant shall contact these agencies early in the study should the possibility exist that the Sponsor may seek funding from them. The Consultant shall obtain and review the latest versions of relevant guidance documents, forms, bulletins, supplements, information, etc. from each agency. The Consultant shall also research and define any federal National Environmental Policy Act (NEPA) requirements for securing such loans in terms of the environmental review (ER) efforts specifically required for each agency. Throughout this task, the Consultant shall carefully distinguish and be mindful of the differences between DWSRF and RUS in terms of available funding packages and ER requirements. DWSRF and RUS guidance and contact information is as follows:

For DWSRF

Forms and Guidance: http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/
Contact: Bill Tillman, SRF Principal Engineer
WDEQ/WQD, 200 W. 17th Street, Cheyenne, WY 82002
Tel 307-777-6941. Email: william.tillman@wyo.gov

For RUS

Forms and Guidance: http://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs

Contact: Lorraine Werner, Community Programs Director, USDA RUS
Wyoming State Office, 100 East B Street, Rm 1005, Casper, WY 82602
Tel 307-233-6710. Email: lorraine.werner@wy.usda.gov

Lastly, in order to demonstrate whether the water system has the technical, financial, and managerial capabilities to ensure current and ongoing successful operations, the Consultant shall complete the most recent Capacity Assessment and Financial Worksheets as provided by Wyoming DEQ. Water systems must meet these capacity development requirements before a construction permit can be issued, and it is also part of eligibility for Drinking Water State Revolving Fund (DWSRF) loans. These worksheets shall be completed by the Consultant whether the Sponsor is anticipating DWSRF funding or not. Completed worksheets shall be submitted as an appendix within the final report to this project. Worksheets are available at http://deq.wyoming.gov/wqd/state-revolving-loan-fund/resources/1-srf-forms-and-guidance/ or by contacting DEQ directly.

It should be noted that the Sponsor's ability to pay for the project in a timely manner is a key consideration in the WWDC's funding decisions. The annual requests for WWDC funding typically exceed the funding available. There are often uncertainties and delays in acquiring loans and, particularly, grants from other funding agencies. Therefore, the WWDC may give priority in its Level III funding deliberations to the projects in which the Sponsor has been advancing on a specific financing plan and there is documented evidence that the financing will be in place within the calendar year in which the Level III project funding is approved by the Legislature. If the WWDC finds it necessary to delay Level III funding requests due to the schedule for the financing plan, the WWDC may provide assurance to the Sponsor that it will recommend Level III funding the following year if the project financing is completed. This assurance can be used to assist the Sponsors in securing financing from other entities.

Task 9. Discretionary Task

The Consultant may elect to set aside available study funds not in excess of $10,000 for discretionary purposes as this task may be included to accommodate changes in the scope of work as the project develops or as new issues are discovered. All other tasks should be considered before determining whether or not to include funds for this task. Should the Consultant set aside funds for discretionary purposes, no work will be initiated or funds spent for this task without authorization from the Office project manager.

Task 10. Draft Report and Presentations

The Consultant shall submit five (5) hard copies of a draft report describing the results of all work completed in this study no later than April 1, 2019. Four (4) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format

will also be provided along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

After submittal of the draft report, the Consultant shall present the draft findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after coordination with the Office project manager. The Consultant is responsible for publishing notice of the meeting not less than once each week for two weeks prior to the meeting and should budget accordingly. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include the following: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a possible meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

Task 11. Final Report and Deliverables

After incorporation of the Office's and the Sponsor's review comments from both the draft report and presentation, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the final deadline for final comparison purposes. At the Office project manager's discretion, a draft of the executive summary in hard copy or electronic format shall be submitted to and reviewed by the Office project manager prior to final delivery. The executive summary shall outline the purpose, findings, recommendations, and configuration of the project, shall include cost estimates, and should not exceed ten (10) pages. Any final reports submitted in three-ring notebook format shall have spine labels that clearly identifying the project, Consultant, and date. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison shall be the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report, and the Consultant

shall submit all final documents and materials to the Office on or before July 1, 2019. These final documents and deliverables shall consist of the following:

- Twelve (12) hard copies of the final report and twelve (12) hard copies of the executive summary. This count is inclusive of the copies previously submitted to the Office project manager.

- Four (4) CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format. This count is inclusive of the copy previously submitted to the Office project manager. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Two (2) CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- Three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the "WWDO GIS Framework Data Plan" and the accompanying "GIS Standards Technical Memorandum." This is in addition to delivery of hard copy mapping media as described in Task 3. Each electronic delivery device shall be clearly labeled with a table of contents included with or within each device.

- One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, delivered on a CD, DVD, or USB drive, clearly labeled with a table of contents included with or within each device. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

DOWL, LLC

Personnel Billing Rates

Personnel are identified on our invoices by name and/or labor category.

Description	Rate	Description	Rate
Administrative Assistant	$55	GIS Specialist	$85
Engineer I	$85	GIS Technician	$75
Engineer II	$95	Graphics Designer	$100
Engineer III	$105	One-Person Survey Crew	$120
Engineer IV	$130	One-Person Survey Crew GPS/Robotics	$130
Engineer IX	$210	Professional Land Surveyor II	$100
Engineer V	$150	Professional Land Surveyor III	$110
Engineer VI	$160	Professional Land Surveyor IV	$120
Engineer VII	$175	Project Manager I	$115
Engineer VIII	$185	Project Manager II	$120
Engineering Technician I	$65	Project Manager III	$130
Engineering Technician II	$75	Project Manager IV	$165
Engineering Technician III	$85	Project Manager V	$170
Engineering Technician IV	$110	Project Manager VI	$190
Engineering Technician V	$115	Senior Manager I	$195
GIS Coordinator	$120	Senior Manager II	$210

Survey Crews

One-Person Survey Crew	=	$120/hour
One-Person Survey Crew GPS Robotics	=	$130/hour
Two-Person Survey Crew w/o GPS Robotics	=	$160/hour
Two-Person Survey Crew	=	$180/hour
Two-Person Survey Crew GPS Robotics	=	$190/hour

Equipment, Materials, & Supplies

ATVs/Trailer	=	$150.00/day
	DAY	WEEK
2 GPS Receivers (Survey Quality)	$425.00	$1,600.00
Single/Each Additional Receiver	$250.00	$900.00

Travel, Mileage, & Miscellaneous

Per diem will be billed when travel is more than 50 miles from the office during a meal allowance period of three or more consecutive hours or involves an overnight stay. The three meal allowance periods are breakfast (midnight to 10 am), lunch (10 am – 3 pm) and dinner (3 pm to midnight).

Per diem (per person, per day)	=	$51.00/day
Lodging	=	cost per night
Airfare	=	cost
Vehicle Usage – Automobiles	=	0.545/mile
Vehicle Usage – Pickups, Suburban	=	0.545/mile
Printing/Supplies/Phone/Fax/Postage	=	Note 1
Specialized Software/Hardware	=	Note 2
Subcontractors	=	Cost
Laboratory Analysis	=	Cost
Other/Miscellaneous	=	Cost

Notes

1. Costs included in overhead rates for reasonable requests. Requests beyond those considered reasonable by the project manager billed at Cost.
2. Specialized computer software or hardware necessary for a unique application for will be billed at a negotiated rate or unit cost.

SILVER LAKE DAM REHABILITATION, LEVEL II STUDY
CONSULTANT CONTRACT FOR SERVICES NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002 and Rio Verde Engineering [Consultant], 804 Hoback St, Pinedale, WY 82941.

2. Purpose of Contract. The purpose of this Contract is for the Commission to retain the services of the Consultant to render certain technical or professional services hereinafter described in connection with an undertaking to be financed by the Commission, and administered by the Wyoming Water Development Office [Office] through its Director or his designee.

3. Term of Contract and Required Approvals. This Contract is effective when all parties have executed it (Effective Date). The term of the Contract is from the Effective Date through March 31, 2021. All services shall be completed during this term.

If the Consultant has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Consultant may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Consultant an amount based on the approved hourly rate and reimbursable expenses price schedules depicted in Attachment B, attached to this Contract and incorporated by reference as part of this Contract, for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed two hundred fifty thousand dollars ($250,000).

B. Project Budget. The project budget for each task included in Attachment A is as follows:

Task	Estimated Cost
1. Scoping and Project Meetings	$ 19,500
2. Background Information Collection and Review	$ 600
3. PMP and Hydrologic Modeling	$ 35,450
4. Geotechnical Investigation	$ 74,500
5. Rehabilitation Plan	$ 25,500
6. Environmental Analysis and Permitting	$ 6,600
7. Preliminary Designs and Cost Estimates	$ 42,700
8. Economic Analysis and Project Financing	$ 6,000
9. Discretionary Task	$ 21,750
10. Draft Report	$ 5,300
11. Report Presentations	$ 8,600
12. Final Report and Deliverables	$ 3,500
Total Project Cost	**$ 250,000**

The amounts for each task are estimates only, but are not to be exceeded unless authorized in writing by the Commission. The Contract total amount is controlling. Payment shall be made directly to the Consultant. The Consultant shall maintain hourly records of time worked by its personnel to support any audits the state or the Commission may require. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

C. Billing Procedures. The Commission shall pay the Consultant upon receipt of billing reports as the services are performed for the various tasks outlined in Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

D. Money Withheld. When the Commission has reasonable grounds to believe that the Consultant will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Consultant reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8Z. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION

The Wyoming Legislature has authorized the Commission to conduct the study described herein. The Consultant will complete the tasks and requirements outlined in D. Scope of Services. The Commission, at its sole discretion and through duly authorized contract amendments, may request the Consultant to complete additional work phases beyond the following scope of services.

B. PROJECT DESCRIPTION

1. Location: The project is located in the Bridger Wilderness Area above Boulder, WY in the Bridger-Teton National Forest, within the New Fork River Drainage Basin; Sublette County, Wyoming.

2. Purpose: To perform a Level II study to investigate rehabilitation options and permitting requirements for Silver Lake Dam.

3. History: The outlet works for the Silver Lake Dam are no longer operable and the outlet control structure has collapsed in on the corroded CMP outlet pipe, allowing water to seep through the walls of the pipe. Also, preliminary dam safety analyses indicate the existing low hazard classification of the dam may be out of date and potential loss of life could occur if the structure were to fail. Rehabilitation would address the damaged infrastructure and safety concerns of the facility, and restore the Sponsors ability to utilize their water storage rights.

Additional information may be found at the Water Resources Data System, located at the University of Wyoming.

C. PROJECT REQUIREMENTS

1. Monthly Progress Reports and Billing Statements

The Consultant shall submit a brief monthly progress report outlining the study status, progress, and results to date, regardless of whether or not a billing statement is submitted, on or before the last working day of the month.

Each billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

2. Computer Models, Statement of Assumptions, Project Work File

a. If the Consultant writes or uses a computer program or spreadsheet as a part of this project, the Consultant shall submit to the Commission for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to the Commission in written and digital forms with the final report. Digital media shall be labeled by the Consultant to provide sufficient detail to access the information on the media. User manuals shall be submitted by the Consultant to the Commission providing complete documentation of computer programs developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the program(s). The computer programs and spreadsheets (written and digital forms) are due on the same date as the final report, which contains the information generated by the programs.

b. To facilitate the Commission's accurate evaluation of the Consultant's work product, computations, conclusions and recommendations, the Consultant shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Consultant in generating the data and conclusions contained in that chapter.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Consultant to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach conclusions, described in the draft final report. The project notebook shall be submitted with the draft final report.

3. Cost Estimates

The Consultant shall use the following guidelines in calculating Level III cost estimates.

Preparation of Final Designs and Specifications	$_____	
Permitting and Mitigation	$_____	
Legal Fees (Title of Opinion Only)	$_____	
Acquisition of Access and Rights of Way	$_____	
Pre-Construction Costs (Subtotal # 1)		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Total Component Cost (Subtotal #2)	$_____	
Construction Engineering Cost (Subtotal #2 x 10%)	$_____	
Components and Engineering Costs (Subtotal #3)	$_____	
Contingency (Subtotal #3 x 15%)	$_____	
Construction Cost Total (Subtotal #4)		$_____
Total Project Cost (Subtotal #1 + Subtotal #4)		$_____

Note: Any inflation costs, as determined by the consultant and Office project manager, will be applied to the Total Project Cost.

4. Final Report

The Consultant shall use the Contract Scope of Services as the outline for draft and final reports so that Consultant compliance with Contract provisions can be verified. If the final report contains information of an engineering nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Engineer licensed in the State of Wyoming. If the final report contains information of a geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by a Professional Geologist licensed in the State of Wyoming. If the final report contains information of both an engineering and geologic nature, the cover of the final report, all plates, and the executive summary must be stamped and signed by both a Professional Engineer and a Professional Geologist licensed in the State of Wyoming.

5. Final Report - Digital Format

In addition to the paper submittal described in Section C.4 above, the Consultant shall also provide the final documents and related materials in a digital format. This digital report shall be contained on CD/DVD(s), USB drive(s), or other media as approved by the Office project manager, and shall be in Searchable Image Adobe Acrobat format.

6. Anticipated Project Funding Assistance

The Consultant shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Consultant shall verify project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Consultant shall assume that projects will be funded with a 67% grant. The remaining 33% shall be acquired from external sources (for municipal projects); or from external sources and/or a loan from the WWDC (for agricultural projects). The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the USDA Rural Utilities Service (RUS), the Consultant shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

If required in the Contract Scope of Services, the Consultant shall provide the information necessary to complete applications to RUS, the Office of State Lands and Investments, and any other identified funding sources.

7. Project Access

The Consultant shall be responsible for obtaining access as required for project tasks.

8. Stand-By Time

The Commission will not reimburse the Consultant for stand-by time charges for the Consultant's supervisory personnel.

9. Well Permitting

All wells developed under this program shall list the State of Wyoming, Water Development Office as the permittee. The Consultant shall be responsible for obtaining the permit.

10. Verification Log

After all casing has been installed in the well, the Office may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

D. SCOPE OF SERVICES

Task 1. Scoping and Project Meetings

One meeting shall be conducted early in the project schedule. The purpose is to familiarize interested parties with the scope of the project and to obtain input from affected parties. The Consultant shall prepare a presentation including maps and other visual aids to explain the project. In addition, formal project meetings will be conducted as necessary for the coordination of project activities and for keeping the Silver Lake Irrigation District (Sponsor) informed of project progress. The Consultant shall also assume two formal meetings with the Office and Sponsor. These formal meetings shall be open to the public. Informal meetings with the Office and Sponsor will also be necessary during the course of the study. The Consultant shall assume two informal project meetings. In addition, monthly project update meetings will be conducted via teleconference with the Office and Sponsor. The Consultant will be responsible for setting and conducting all meetings in coordination with the Office project manager. Formal meetings shall be advertised in advance. In the interest of economy, meetings shall be scheduled to coincide with fieldwork whenever possible.

In addition, the Consultant shall budget for a minimum of five (5) total meetings (combined or separate) with the Office, Sponsor, Forest Service, the Wyoming Game and Fish Department (WGFD), the U.S. Army Corps of Engineers (USACE), Wyoming State Engineer's Office (SEO) and others as necessary to corroborate analysis, assumptions, and permits as the project develops with respect to wilderness area, water rights, safety of dams, and permitting concerns/considerations.

No meeting shall be conducted without approval in advance by the Office project manager. The Consultant will prepare all notices and needed materials for the meetings, and the Consultant shall prepare meeting minutes for all meetings.

Task 2. Background Information Collection and Review

The Consultant will gather, review, update, and assemble all background information and references available from any previous work through the Sponsor and agencies such as the Office, Water Resources Data System, Forest Service, U.S. Geological Survey (USGS), Natural Resources Conservation Service, Wyoming SEO, U.S. Fish and Wildlife Service, WGFD, USACE, University of Wyoming, State Historic Preservation Office, and other agencies as appropriate including the preliminary reconnaissance work done as part of the New Fork River Watershed Study completed in 2018.

The Consultant shall develop and present a "digital library" of documents reviewed that will be summarized and referenced in the draft and final reports. This shall include a detailed history of maintenance done to the facility since the 1955 construction.

Task 3. PMP and Hydrologic Modeling

The Consultant shall refine the inflow design flood (IDF) analysis, flood routing and spillway sizing. This may require updating topographic survey information and a more refined assessment of the drainage basin in accordance with current Wyoming Dam Safety Guidelines. This effort shall consist of the following subtasks:

- Review and refine the dam breach analysis presented in the Silver Lake Memo from the New Fork River Watershed Study to confirm an appropriate, updated hazard classification of the dam. The Consultant shall coordinate with the Office project manager, Wyoming SEO Safety of Dams personnel, and Forest Service to provide the analysis and information necessary for them to update the hazard classification of Silver Lake Dam. This shall be done early in the project schedule as subsequent rehabilitation concepts may vary depending on the hazard classification.
- Evaluate basin characteristics, delineate the drainage basin, and develop hydrologic modeling parameters for the basin.
- Obtain any additional topographic data needed and review hydrologic and other site information required to develop the Inflow Design Flood (IDF).
- Develop the reservoir elevation-area-capacity curve.
- Develop precipitation depths for the long-duration (general) and short-duration (thunderstorm) Probable Maximum Precipitation (PMP) using the Applied Weather Associates (AWA) Probable Maximum Precipitation Study for Wyoming or other as required by the appropriate permitting entity.
- Develop a HEC-HMS hydrologic model to perform rainfall-runoff analyses and reservoir and spillway routing for the long-duration and short-duration PMP rainfall events.

The data and models produced in the New Fork River Watershed study for this project shall be used wherever possible to prevent duplication of effort. The Consultant shall prepare a hydrologic analysis memorandum suitable for inclusion as an appendix in the final report. The memorandum shall summarize the findings from this task and all models and accompanying data shall be packaged and delivered with the final report.

Task 4. Geotechnical Investigation

The Consultant shall conduct a geotechnical engineering investigation of the site to evaluate subsurface conditions. The Consultant shall review site geology and map site features to characterize the geologic units and any geologic hazards that may be present. The Consultant shall drill soil borings, excavate test pits, and complete laboratory testing as necessary to characterize the in-situ conditions and suitability for future construction efforts. Potential borrow areas shall be identified, mapped, and investigated. The

Consultant shall be responsible for obtaining any permits and completing a Minimum Requirements Analysis (MRA) necessary to carry out the geotechnical investigation as may be required by the Forest Service.

The primary objectives of the investigations are to: 1) supplement existing archival information to support layout and preliminary analyses of the proposed dam improvements; and 2) identify any potential fatal flaw or challenging geologic or geotechnical conditions that may significantly impact the technical feasibility and/or construction cost of the proposed dam improvements.

Field boring logs and samples from borings should be checked and reviewed to confirm material types and geologic structures in the samples. Representative samples shall be selected for testing to evaluate the material type and grain size, in-situ moisture content, hydraulic conductivity, and estimate compaction properties. Final boring logs shall be prepared based on the field logs, office review of samples, and results of laboratory testing.

The Consultant shall conduct a seismic evaluation of the site which includes an estimate of the peak ground accelerations at the site. Seismic deformation analysis shall be performed to estimate the permanent embankment crest deformation that would result from the design peak ground accelerations. Static slope stability analysis should be performed for the maximum embankment section to confirm adequate stability is provided. Embankment freeboard and slopes shall be refined as necessary based on these analysis. The data produced by previous Commission studies and published USGS information shall be used wherever possible to prevent duplication of effort.

The Consultant shall prepare a geotechnical data memorandum suitable for inclusion as an appendix in the final report. The memorandum shall present the data and summarize the findings from this task.

Task 5. Rehabilitation Plan

The Consultant shall prepare a rehabilitation plan for the Silver Lake Dam based on the findings and results of the previous tasks described herein and prepare a Minimum Requirements Analysis (MRA) as may be required by the Forest Service. An MRA is a statutory obligation derived from Section 4(c) of the Wilderness Act of 1964 which states "…except as necessary to meet the minimum requirements for the administration of the area for the purpose of this Act…" Typically an MRA will make a determination whether a prohibited action is necessary and explore alternative methods to compare and consider the potential effects to the wilderness resource and character. The recommendations should be designed within the needs of the Sponsor, Forest Service, Bridger Wilderness Area policies and guidelines, existing deficiencies, geotechnical parameters, hydrologic and hydraulic analysis, dam safety standards, and remote location. The data and

analysis produced in the New Fork River Watershed Study shall be used wherever possible to prevent duplication of effort.

The Consultant shall prepare an overall description of the plan that provides permittable and constructible solutions to restore use of the facility, meet current dam safety, and permitting requirements. At a minimum the plan is expected to provide an overview of dismissed alternatives, the preferred alternative, and a breach and reclamation alternative. Other alternatives revealed in the MRA shall also be overviewed.

To meet the requirements of the MRA the Consultant shall coordinate with the Forest Service to complete a Minimum Requirement Decision Guide (MRDG) workbook in excel format and include the workbook as well as a description of the results in the report. MRDG instructions and guideline pdf's may be found at www.wilderness.net.

Due to the nature and inherit complexity of topics contained within this study, while conducting this task, the Consultant shall remain responsive to the likelihood of some overlap in the tasks and issues in terms of communication and coordination with the Forest Service, site access, data collection efforts, written descriptions, and analyses. In addition, the Consultant should maintain a dynamic approach during the course of the study, recognizing limitations of what can be accomplished from a timing and budgetary standpoint, balancing efforts accordingly, and regularly coordinating with the Office project manager and Sponsor.

The Consultant shall evaluate whether the project is in the public interest stipulating if the proposed project functions and services can be served by any person, association, or corporation engaged in private enterprise or if private enterprise has refused to provide the functions and services identified as being required by the proposed project. This information shall be included in the draft and final reports for the project.

Task 6. Environmental Analysis and Permitting

The Consultant shall identify all permits, easements, and clearances necessary for implementation of the preferred rehabilitation alternative and associated construction activities. Permits and clearances shall include, but not be limited to, those that fall within the jurisdiction of the Clean Water Act, Endangered Species Act, Historic Preservation Act, 1964 Wilderness Act, the Fish and Wildlife Coordination Act, the Wyoming SEO, the Wyoming Department of Environmental Quality, the Forest Service, and the USACE or any other agency with jurisdiction that may affect the construction of a project. Work shall include providing timelines and levels of effort.

If determined to be necessary after consultation with the appropriate agencies, the Consultant will conduct cultural site investigations to determine any impacts and required mitigation for the proposed project.

The Consultant shall provide an overview of the next steps required sufficient to support a legislative request for Level III construction funding in the WWDC program. This shall include the anticipated level of NEPA, all permits, and requirements of the Forest Service, Wyoming SEO, USACE, and any other relevant agencies to construct the preferred rehabilitation concept. The Consultant will discuss said issues with the Forest Service, USACE, and others as needed to corroborate analysis and assumptions, and accurately ascertain the information.

Task 7. Preliminary Designs and Cost Estimates

The Consultant shall prepare preliminary design drawings and cost estimates for the preferred rehabilitation alternative. The cost estimates shall be prepared according to the outline in Section C, Project Requirements, and must be of sufficient accuracy to support a legislative request for Level III Construction funding.

The preliminary design drawings shall include details of all anticipated project components including, but not limited to existing site conditions, a plan view, section and details for the main dam embankment, spillway, wetland mitigation plans (if needed), as well as construction details (e.g. – access, limits of construction, staging areas, equipment needed, etc.). Additional design drawings may include details related to foundation treatment or modifications to the outlet works.

A draft set of preliminary design drawings will be provided to the Office project manager, Sponsor, and Forest Service for review and comment prior to inclusion in the draft report. A final set of preliminary design drawings will be delivered with the final report.

The Consultant shall develop a draft of the construction sequencing, and activities necessary to complete the preferred reservoir alternative (Gantt Chart) for the Office project manager, Sponsor, and Forest Service to review which will later be refined and delivered with the final report and become part of the overall rehabilitation plan described in Task 5.

The Consultant shall revise construction cost estimates prepared in the New Fork River Watershed study for this project and develop life cycle cost analyses based on the preliminary design drawings for the preferred alternative. This task will involve calculating material quantities and estimating equipment, material, and labor costs for the proposed construction and preparing an engineer's Opinion of Probable Project Costs (OPPC) estimate based on local material supplier price data, data from R.S. Means' Heavy Construction Cost Data, other industry standard sources, and price data developed by the Consultant for previous final design/construction projects.

The cost estimate shall include an itemized project budget that includes costs for, but not limited to design engineering, permitting, mitigation, legal, access, right of ways, construction, construction engineering, contingencies, operation, maintenance and

replacement. The estimate will include unit and lump sum prices of the required construction items.

The OPCC shall be prepared in tabular form. The table will be broken down into both Commission eligible and non-eligible costs. The OPPC should be based on the year when this work is performed. The Consultant will work with the Office project manager to select an appropriate inflation factor that will be applied to the project's current year total cost and projected into the future per the schedule of activities and time lines developed herein.

Task 8. Economic Analysis and Project Financing

The Consultant will provide information on potential funding sources for implementation of the identified rehabilitation plan. Potential sources to be evaluated should include the Commission, Natural Resource Conservation Service, and other potential state and federal funding sources.

The Consultant will provide an ability to pay analysis which shall, based on a financial planning model, determine conditions and the level of funding necessary for implementation. The Consultant will generate recommendations based on annual financial commitments of the Sponsor needed to cover construction costs and meet operation and maintenance obligations. This analysis will provide information necessary to determine end costs of project implementation under funding scenarios involving local, state, and Federal assistance. The Consultant shall clearly differentiate between project components eligible for Commission funding and non-eligible components.

Task 9. Discretionary Task

The Consultant will place $21,750 of the proposed project budget in this discretionary task. The task is to allow changes in the scope as the project develops or as new issues are discovered.

No work will be initiated or funds spent for this task without prior written authorization from the Office project manager.

Task 10. Draft Report

The Consultant shall submit to the Office and Sponsor up to five (5) hard copies of a draft report describing the results of all work completed in this study, no later than June 1, 2019. Up to five (5) CD, DVD, or USB drive copies containing the draft report in a text-recognized Adobe Acrobat (pdf) format will also be provided, along with two (2) CD, DVD, USB drive, or portable hard drive copies of the draft ArcGIS coverages (if applicable). The PDF version will be completely assembled into one standalone file, and shall be

exactly the same version as the hard copy. Each CD, DVD, USB drive, or portable hard drive shall have a hard copy table of contents attached.

Task 11. Report Presentations

Upon completion of the draft report, the Consultant shall present the findings of the study at a public meeting near the project area. Information and materials to be presented at the public meeting shall be developed by the Consultant after consultation with the Office project manager. The Consultant shall be responsible for developing a record of the meeting which shall become an appendix in the final report. The record will include: any formal and/or informal notices; an affidavit of publication from the legal notice (public hearings only) as obtained from the Office; any materials presented or handed out at the meeting; a record of attendance; any written comments, statements, or exhibits received; recorded testimony, or a memorandum summarizing the views and comments presented at the meeting; and other pertinent data. The Consultant will also budget for a meeting in Casper or Cheyenne to present the results to the Commission. These presentations are independent of the meetings included under Task 1.

The Consultant shall coordinate with the Office project manager in planning for the presentations to ensure adherence to Office established policies and guidelines.

The report presentation for this Level II Study shall also serve as a public hearing with Office personnel serving as the hearing officer. The script for the hearing will be developed by the Office project manager and shall include the question as to whether there is a private entity interested in providing the proposed project functions and services in lieu of the Sponsor. The Office is responsible for publishing a legal notice of the meeting in a statewide newspaper once each week for three (3) weeks prior to the hearing and in the local publication up to three (3) times prior to the hearing.

Task 12. Final Report and Deliverables

After incorporation of the Office, Sponsor, and Forest Service review comments on the draft report, the Consultant shall submit one (1) final report and one (1) executive summary in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office 1 to 2 weeks prior to the deadline for final comparison purposes. The pdf version shall be completely assembled into one stand-alone file and shall be exactly the same version as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Consultant to correct.

Upon completion of the final quality assurance process by the Office project manager, the Consultant shall submit all final documents and materials to the Office on or before August 1, 2019. These final documents and materials shall include: 1) Twelve (12) [MIN] hard

copies of the final report and 2) Twelve (12) [MIN] hard copies of the executive summary. The executive summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages. Any final reports which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date. Lettered or enumerated chapter and appendix tabs shall also be included with hard copy reports.

Four (4) [MIN] CD, DVD, or USB drive copies containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format will be provided. The pdf version will be completely assembled into one stand-alone file and shall be exactly the same version as the hard copy. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Two (2) [MIN] CD, DVD, or USB drive copies containing the final report and executive summary in original formats (Word, Excel, etc.) and in a text-recognized Adobe Acrobat (pdf) format. The pdf version will be completely assembled into one stand-alone file. All electronic files shall be exactly the same version as the hard copies. Each CD, DVD, or USB drive shall have a hard copy table of contents attached.

Three (3) [MIN] CD, DVD, or USB drive copies of the hydraulic model project file and all associated files shall be provided if applicable. The files shall create a working model that is fully functional and can be modified. Each CD, DVD, or USB drive shall have a hard copy table of contents attached. In addition to the above, one (1) electronic copy of the hydraulic model project file and all associated files will be included in the project notebook.

As applicable, the Consultant shall provide three (3) CD, DVD, USB drive, or portable hard drive copies of the GIS data according to the WWDC GIS Framework Plan and Technical Memorandum. Links to these documents are available at http://wwdc.state.wy.us/index.html. Consultants are strongly recommended to attend a webinar on GIS project standards hosted by WWDC and WRDS. This webinar will follow consultant selection.

a. FEATURE MAPPING. As, applicable, the Consultant will request a data template for feature mapping from the Office project manager prior to any GIS work. These templates define the organization and naming of “core” GIS data. Auxiliary GIS data layers, as needed for the project and described in the final contract, can be linked to the templates or managed separately as needed for project completion. Mapped features will be attributed according to the GIS data schema described in the Technical Memorandum of WWDC GIS Framework Plan. All features modified or created shall include field attributes that indicate contract number, consultant, date modified, and accuracy.

b. FORMATS and STANDARDS. As, applicable, simplified metadata shall be completed in accordance with standards described in the Technical Memorandum of the WWDC GIS Framework Plan. Attribute codes not included as part of the “core” data templates shall be defined in the metadata. GIS data shall be saved in a Decimal Degree Coordinate system with a NAD83 datum, specifically “GCS_North_American_1983,” as indicated in the Technical Memorandum. Project GIS deliverables may also include linked nonspatial data/databases (.accdb, .xlsx), rasters (various formats), photographs (.jpg), maps (.pdf), and file integrated metadata references (.xml, .txt). Data shall be delivered within the Office geodatabase template provided by the Office project manager. Auxiliary GIS data layers can be provided as .shp files.

c. MAPS. As, applicable, project GIS deliverables shall be organized in such a way as to allow easy replication of the maps found in the final project report. The GIS project files should be provided as ESRI ArcGIS mxd files saved with relative path names to data sources.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report. The preferred format for the project notebook is digital, provided on a CD, DVD, or USB drive. Any project notebooks which have been submitted in three-ring notebook format shall have spine labels clearly identifying the project, Consultant and date.

ATTACHMENT B
HOURLY RATE AND REIMBURSABLE EXPENSES
PRICE SCHEDULE 2018

RIO VERDE ENGINEEING

ENGINEERING - SURVEYING	Hourly Rates
Consulting Principal (P.E. or L.S.)	$105
Professional Engineer	$95
Party Chief/Surveyor	$90
Engineering Technician	$75
Clerical	$60

OTHER EQUIPMENT		
GPS Surveying Equipment	$60	per hour
Field Vehicle	$0.545	per mile
All-Terrain Vehicles	$75	per day
Ranger	$200	per day

RELATED EXPENSES		
Lodging		at cost
Shipping		at cost
M&IE*		at cost
4 Foot Lath	$30	per bundle
1 x 2 Stakes	$25	per bundle
Steel Post	$10	each
24" x 36" Copy	$5	per sheet
24" x 36" Plot	$20	per sheet
Copies	Black $0.15 - $0.30	per page
	Color $0.50 - $1.00	per page

**M&IE can be billed when travel is more than 50 miles from the office for a period of three or more consecutive hours and/or involves an overnight stay.*

All third party billing will be invoiced at cost. This includes outside services such as, laboratory testing, subcontractors, equipment/stock rental, materials not listed, installed equipment, etc.

2018 WATER DEVELOPMENT PROGRAM RECOMMENDATION

GROUND WATER EXPLORATION GRANTS PROGRAM

Project Name: Guernsey Golf Course Complex PWS Well

Program: New Development – Ground Water Exploration Grant

Project Type: Municipal Water System

Sponsor: Town of Guernsey, Wyoming

WWDO Recommendation: Ground Water Exploration Grant

Proposed Budget: $ 75,375 (75% Grant)

Project Manager: Kevin J. Boyce, P.G.

I. PROJECT DESCRIPTION

New Municipal Public Water Supply Well

1. Describe existing status in the program and previous appropriations (table):

Project	Level	Chapter	Session	Account	Appropriation	Reversion Year
Guernsey #2 Well Replacement	GWG	N/A	N/A	I	$ 93,750	2015
Guernsey Master Plan	I	57	2012	I	$ 125,000	2015
Guernsey Water Supply	III	59	1996	I	$ 550,000	1999

2. Describe the location of the project: (42°15'25" N, 104°44'31" W, Approx.)
The Town of Guernsey is located in eastern Platte County on the banks of the North Platte River. Access to the Town is via US HWY 26, State HWY 270, State HWY 317, and the BNSF Railroad.

3. Summarize the request: The grant funds requested herein are for the drilling, completion and testing of a new public water supply well to replace the well that presently provides drinking water for the Guernsey Golf Course Complex**,** *Guernsey RV Park Well, Permit No. U.W. 137456.*

"*The Golf Course Complex System currently supplies water to 14 campsites with 7 water taps, the shower house, and the Pro Shop. On average, the Complex will host 500 RV's per summer that will use the water system. In addition to the campers, the Complex hosts multiple tournaments, weddings, community functions, and water for livestock. The Town of Guernsey is in the process of completing a community master plan to address housing needs within the town, One of the areas that will be addressed is the property that borders the Complex [approximately 120 acres] and will need water supplied to it. The new well would address the issues of supplying water to the bordering property, which currently does not have any potable run to it [as it is separated from the town system by the North Platte River channel]. Drilling a new well would offer better quality and provide opportunity to expand development next to the Golf Course Complex"* (From funding application rec'd March 29, 2018)

4. Summarize the reasons for the request: The source well (*Trail Ruts No. 1 Well, Permit No. U.W.* 86235) that provides irrigation water for the nine-hole Guernsey municipal-owned golf course (Trail Ruts Municipal Golf Course) is high in manganese (Mn) and iron (Fe) resulting in clogged sprinkler heads and degrading turf quality. With a new well the Town will abandon the Trail Ruts No. 1 Well and transfer the water right to the Guernsey RV Park Well which has much better water quality and was pump-tested in 2017 at a flow rate to meet irrigation requirements to replace the Trail Ruts No. 1. The new well will therefore become the potable supply for the golf course complex and be constructed to meet DEQ minimum public water supply (PWS) well construction standards.

II. WWDC ELIGIBILITY CONSIDERATIONS

1. Is the Sponsor a public entity? Yes

2. Project Priority According to WWDO Criteria: 3. Irrigation and Municipal Water Supply Projects

3. Will the project serve at least 15 water taps? No

   A. Number of Taps: The Town of Guernsey serves 615 taps plus 9 taps on a separate system at the Golf Course Complex.

4. Is the sponsor eligible for funding from other state or federal programs? Yes

   A. If so, what are they (RUS, SRF, other)? RUS, SRF, etc

5. Is the Sponsor under any federal (EPA) mandates to improve its system? No

6. Is the Sponsor currently served by a regionalized water supply system (specify)? No

7. What is monthly water bill for 5,000 gallons? Municipal - $30.00

   A. 20,000 Gallons? Municipal - $32.50

8. Theoretical Monthly Water Bill (Median Household Income X 2.5%/12):

   $41,750 (Guernsey MHI 2016) X 2.5%/12 = $86.98

9. Can the project be delayed or staged? No reason for delay.

10. Basis for the Funding Recommendation: The Town of Guernsey is an eligible applicant for the Ground Water Exploration Grant Program.

III. PERTINENT INFORMATION

1. Existing Water Supply System

A. EPA Public Water System (PWS) Identification Number: WY5601376

B. Groundwater

(1) Number of Wells: 2

(2) Primary Supply Aquifer(s) or Formation(s): North Platte Quaternary-age Alluvium

(3) Total Average Production Yield of All Wells (GPM): 325

C. Surface Water

(1) Source Name(s): N/A

(2) Type of Diversion(s) (Headgate, Infiltration Gallery, Pumps, Etc.): N/A

(3) Total Average Diversion Yield (CFS of GPM): N/A

D. Springs

(1) Name of Spring(s): N/A

(2) Total Average Production Yield of All Springs (CFS or GPM): N/A

E. Water Rights

(1) For the water source supply (or supplies) described above, does the Sponsor possess valid and/or adjudicated water rights?

Trail Ruts No. 1 Well, Permit No U.W. 86235, Miscellaneous Use, Irrigation of 34.33 acre golf course, 300 gpm, Priority 4/22/1991, Unadjudicated

Guernsey RV Park Well, Permit No. U.W. 137456, Miscellaneous Use, Potable supply, 25 gpm, Priority 1/31/2001, Adjudicated

F. Transmission Pipeline

(1) Maximum Capacity of the Transmission Pipeline(s) (Gallons per Day): 50,000 gpd

(2) Increased Capacity Needed (If Known) (Gallons per Day): N/A

(3) Approximate Distance from Source(s) to Distribution System: 600'

(4) Transmission Pipe Diameter(s): 2"

(5) Type of Transmission Pipe Material(s): PVC

(6) Age of Transmission Pipeline(s): ≈14 years

(7) Condition of Transmission Pipeline(s): Good

G. Water Storage

(1) Raw (Volume and Tank Description): N/A

(2) Treated (Volume and Tank Description): N/A

H. Treatment

(1) Specify Water Treatment (None, Chlorination, Filtration, Etc.): Well Chlorination

2. Existing Water Distribution System

A. Is the water use metered? No, unmetered municipal use

B. Are billings based on meter readings? N/A

C. Identify unmetered usage: This is presently an un-metered use

D. Average Day Demand Water Usage (Gallons per Day): 36,000

E. Maximum Day Demand Water Usage (Gallons per Day): 50,000

F. Peak Hourly Demand Water Usage (Gallons per Hour): N/A

G. Distribution Pipe Diameter(s): 2"

H. Type of Distribution Pipe Material(s): PVC

I. Age of Distribution Pipeline(s): ≈14 years

J. Condition of Distribution Pipeline(s): Good

K. Estimated System Water Losses (Percentage): Unknown, except for occasional line breaks

L. Describe any fire flow protection that the system provides: None

M. What water conservation measures are employed? N/A

N. Is there an independent raw water irrigation system?

(1) Source: Trail Ruts No. 1 Well

(2) Raw Water System Capacity (Gallons per Day): 198,000

(3) Average Annual Raw Water Usage (Gallons per Year): 41,580,000

3. Demographic Information and Existing Water Service Area

A. Population Estimate: 1,157

C. Does the applicant have a comprehensive planning boundary? Pending FY 19

(1) If so, what is the estimated additional population that may be served in the future? Unknown

D. How many taps are served within the service area? 615

E. How many taps are served outside the service area? 10

F. Identify names of other water system served: Individual taps

G. Identify any existing planning reports (municipal or county) that address growth management in the project area. Provide titles and how copies of the reports could be obtained:

Guernsey Water Supply Master Plan, WWDC, 2013, AVI P.C.
http://library.wrds.uwyo.edu/wwdcrept/Guernsey/Guernsey_Master_Plan_Level_I-Final_Project_Report-2013.html

FY19 Guernsey Community Development Master Plan – in progress

4. Financial Information

A. Rates

(1) Tap Fee(s) – Residential/Irrigation: None, Municipal Use facility

(2) Tap Fee(s) – Commercial: N/A

(3) Average Residential Monthly Water Bill and Corresponding Gallons Used: $30 – up to 15,00 gal/mo.

(4) Water Rates –Municipal Potable: $30/mo. up to 15,000 gallons; $0.50/1000 gallons thereafter

Golf Course Complex RV space charges (seasonal use only) - $20/night

5) Identify any local conditions that affect water rates (e.g., flow-through for frost prevention, etc.): N/A

B. Financial Statement (of Water Utility)

(1) Revenues

a. Annual Revenues Generated from Water Sales:	$	25,088
b. Annual Revenues from Tap Fees:	$	0
c. Annual Revenues from Other Sources:	$	0
d. Total Annual Revenues:	$	25,088

(2) Expenditures

a. Annual Budget for Operation and Maintenance Expenses:	$	43,155
b. Annual Payments for Debt Retirement:	$	0
c. Annual Payments to a Repair and Replacement Fund:	$	0
d. Annual Payments to an Emergency Fund:	$	0
e. Annual Payments for Other Purposes:	$	0
d. Total Annual Payments:	$	43,155

(3) Other

a. Balance in Repair and Replacement Fund:	$	0
b. Balance in Emergency Fund:	$	0
c. Annual Cost of Water Quality Testing:	$	0

(4) Is the operation of the water system self-supporting in terms of revenues offsetting costs for operation, maintenance, debt retirement, replacement funds, emergency funds, etc.? No

a. If not, how is the difference subsidized? General Fund from the Town of Guernsey

C. Ability of applicant entity to provide match funding and completion: Countywide Consensus Funds or Fiscal Budget Expenditure

5. Cost Estimate

1. Design & Specifications	$ 1,000	
2. Permitting	2,300	
3. Contractor Procurement	2,100	
Pre-Construction Cost		$ 5,400

4. Well Construction [1]	$ 70,150	
5. Test Pump/Test Pumping	15,525	
Subtotal	$ 85,675	
Construction Engineering	3,900	
Total Construction Cost		$89,375
Water Quality Analysis	$ 2,750	
Reports	$ 2,700	
Total Project Cost	$100,425	
Rounded	**$100,500**	
WWDC (75% Grant Cost Share)	**$ 75,375**	
Sponsor (25%)	**$ 25,125**	

[1] Including, but not limited to: Mobilization, Bonds & Insurance, Drill-Furnish-Install Casing/Screen, Furnish-Install Filter Pack/Seal, Rig Time, Standby Time, Geophysical/Video Log, Development, Disinfection, Plugging and Abandonment, De-Mobilization, Reclamation. Any inflation costs, as determined by the WWDC, will be applied to the Total Project Cost.

PROJECT AREA MAP

TRACT B 1978
WEST ACRES
JULY 1977
TRACT A 1978
GOLF COURSE
FISH PONDS
JUNE 1993
ORIGINAL TOWN
MARCH 1902
INDUSTRIAL
PARK 1992
CEMETERY
PROJECT LOCATION
TOWN OF GUERNSEY
WATER SERVICE AREA

RESOLUTION

RESOLUTION FOR GROUNDWATER EXPLORATION GRANT

RESOLUTION NO. 2018-007

A Resolution authorizing the submittal of a Wyoming Water Development Commission Groundwater Exploration Grant for the purpose of designing and constructing a well for public drinking water at the Golf Course Complex. This grant will provide for a clean source of water as well as the opportunity for future expansion of the Golf Course Complex.

WHEREAS, the Town of Guernsey desires to apply for a Wyoming Water Development Groundwater Exploration Grant and;

WHEREAS, the Town of Guernsey wishes to finance the project with funding from a Wyoming Water Development Groundwater Exploration Grant and local match funds;

NOW, THEREFORE, BE IT RESOLVED BY the Town of Guernsey, that a Wyoming Water Development Groundwater Exploration grant application in the amount of $100,425 will be submitted to the Wyoming Water Development Commission with a match of $25,106.25 being provided by the Town of Guernsey. The total request from the Wyoming Water Development Commission program will be $75,318.75.

BE IT FURTHER RESOLVED that the Mayor of the Town of Guernsey as the Chief Elected Official hereby designates Kate Farmer, the Town Clerk/Treasurer, to act as the authorized representative on matters relating to this grant application.

Dated this 3rd day of April 2018

Signatures/Seal

Edward Delgado – Mayor

Date 4/3/18

Kate Farmer – Clerk Treasurer

Date 4/3/18

ADDITIONAL DOCUMENTATION

Kevin,

Lisa asked if I would review the exploratory grant application for the Golf Course Complex owned by the Town of Guernsey. I am happy to do so.

In September 2017, with the assistance of Town of Guernsey Staff and Russ Dahlgren, I inspected the Trail Ruts #1 under Permit No. U.W. 86235 for the purpose of adjudication. The water right should go before the Board of Control at future meeting.

During the same visit, I was shown the Guernsey RV Park Well under Permit No. U.W. 137456.

It was mentioned that the Trail Ruts #1 has high Fe and Mn levels. The current well has sufficient ability to produce it's permitted rate of 300 gpm and has had recent beneficial use. I was able to take proof on this well and the associated water right. The Trail Ruts#1 well shows mill slot interval of 40-80 ft and has gravel pack installed.

We also discussed the water quality issue and the possibility of relocating the well for better water quality based on data from the Guernsey RV Park Well.

The two wells have different total depths (Trail Ruts #1 TD of 80 ft and Guernsey RV Park Well a td of 161), but it appears that both are completed in the North Platte River Alluvial Sequence. The Guernsey RV Park Well completion document says the screened interval is 139.5-159.5. The well has gravel pack installed but no details for placement. The limited test pump data on the completion document indicates the well was tested at 150 gpm for 6.5 hours resulting in a draw down of 0.5 feet. It is not known from our records if the well is capable of higher instantaneous rate.

I have attached water right documents for both wells.

From my standpoint these wells are likely from the same source, i.e. the North Platte River Alluvium.

There are a couple of options for changing the location of the well (s) and/or water right(s).

First, a test well permit can be used to explore for a suitable well bore meeting quantity and quality. Once a suitable well is located then a petition to change the location can be filed with the Board of Control.

A second option is to apply for a temporary relocate from the Division I Superintendent for the RV Park Well. This option would give the opportunity to relocate and use the new well for one water year while simultaneously working on the formal petition to relocate to the new well bore.

While working on the petition to relocate the Guernsey RV Park Well the petition to change the location of the Trail Ruts #1 well to the old Guernsey RV Park Well can be pursued.

Both methods for relocating will require Platte County Control Area Advisory Board review and recommendation.

I bring up the potential processes in order that the well relocate can be timed so water supply requirements can be met while properly addressing water right needs.

I spoke with Brian Puglsey, Superintendent Water Division I, and he is aware of the project to relocate wells and water rights. He is also expecting to receive temporary relocate and/or petitions.

Jeremy Manley

Wyoming State Engineer's Office
Ground Water Division
122 West 25th Street
1st Floor West
Cheyenne, Wyoming 82002
307-777-7730
jeremy.manley@wyo.gov

CONTRACT
BETWEEN THE WYOMING WATER DEVELOPMENT COMMISSION AND
THE TOWN OF GUERNSEY, WYOMING
GROUNDWATER EXPLORATION GRANT
CONTRACT NO. _____

1. Parties. The parties to this Contract are the Wyoming Water Development Commission [Commission], 6920 Yellowtail Road, Cheyenne, Wyoming 82002; and the Town of Guernsey [Sponsor], P.O. Box 667, Guernsey, Wyoming 82214.

2. Purpose of Contract. The purpose of this Contract is for the Commission to fund the Sponsor with Ground Water Exploration Grant program monies, as provided by Wyo. Stat. § 41-2-119, in order to acquire certain technical, professional, or contract services as required to construct a new public water system well for the Town of Guernsey Golf Course Complex and to delegate to the Wyoming Water Development Office [Office], through its Director or his designee, the authority to administer this contract.

3. Term of Contract. This Contract is effective when all parties have executed it (Effective Date). The term of this Contract is from the Effective Date through June 30, 2020. The services to be performed under this Contract will commence upon receipt of authorization to proceed. All services shall be completed during this term.

If the Sponsor has been delayed and as a result will be unable, in the opinion of the Commission, to complete performance fully and satisfactorily within this Contract period, the Sponsor may be granted an extension of time, upon submission of evidence of the causes of delay satisfactory to the Commission.

4. Payment.

A. Reimbursement of Expenses. The Commission agrees to pay the Sponsor an amount equal to seventy-five (75%) maximum of total original invoices provided for the services described in Attachment A, attached to this Contract and incorporated by reference as part of this Contract. Total payment under this Contract shall not exceed seventy-five thousand, three hundred seventy-five dollars ($75,375.00).

The Contract total amount is controlling. Payment shall be made directly to the Sponsor. The Sponsor shall maintain hourly records of time worked by its personnel. Billing reports shall be submitted no more often than monthly for activities and costs accrued since the last billing report and shall be made on forms provided by the Office. The Sponsor may use alternate billing forms if approved in advance by the Office project manager. A brief project progress report summarizing project activities in the billing period must be submitted with each billing.

B. Billing Procedures. The Commission shall pay the Sponsor upon receipt of billing reports as the services are performed for the various tasks outlined in

Attachment A. The Director of the Office will initiate the payment process promptly upon the receipt of a verified statement of services, and payment shall be made within forty-five (45) days following receipt by the Commission.

C. Money Withheld. When the Commission has reasonable grounds for believing that the Sponsor will be unable to perform this Contract fully and satisfactorily within the time fixed for performance, then the Commission may withhold payment of such portion of any amount otherwise due and payable to the Sponsor reasonably deemed appropriate to protect the Commission against such loss. These amounts may be withheld until the cause for the withholding is cured to the Commission's satisfaction or this Contract is terminated pursuant to Section 8.W. Any amount so withheld may be retained by the Commission for such period as it may deem advisable to protect the Commission against any loss. This provision is intended solely for the benefit of the Commission and no person shall have any right against the Commission by reason of the Commission's failure or refusal to withhold monies. No interest shall be payable by the Commission on any amounts withheld under this provision. This provision is not intended to limit or in any way prejudice any other right of the Commission.

D. Withholding of Payment. If a work element has not been received by the Commission by the dates established in Attachment A, the Commission may withhold all payments beginning with the month following that date until such deficiency has been corrected.

E. Final Payment. The final payment shall be made upon acceptance of the final report and receipt of the final billing.

5. <u>Responsibilities of Sponsor</u>.

A. Scope of Services. The Sponsor shall perform the specific services required under this Contract in a satisfactory and proper manner as outlined in Attachment A. If there is any conflict between this Contract and the provisions of the specific requirements of Attachment A, the terms of this Contract shall prevail.

B. Personnel. All of the services required hereunder will be performed by the Sponsor or under its supervision, and all personnel engaged by consultants or contractors in the work shall be fully qualified and shall be authorized, licensed, or permitted under state law to perform such services, if state law requires such authorization, license, or permit.

C. Permits, Access, Environmental Clearances, Reclamation. Permits, access or right-of-way agreements, and environmental clearances as needed prior to construction and testing activities described in Attachment A shall be acquired by the Sponsor only, and the Sponsor shall not enter the WWDC as a co-applicant, nor party, nor co-signer in necessary filings. Following construction and testing activities, the Sponsor shall be responsible for construction site reclamation as required by landowner agreement(s).

D. Contracts

(i) Approval Required for Contracts. The Sponsor shall submit a list of the proposed consultants, contractors, and subcontractors; the scope and extent of each subcontract; and the dollar amount of each subcontract subsequent to Contract execution to the Office for approval. During the performance of the Contract, substitutions in or additions to such contracts, associates, or subcontracts will be subject to the prior approval of the Office. Approval of subcontractors will not relieve the Sponsor from any responsibilities outlined in this Contract. The Sponsor shall be responsible for the actions of the consultants, contractors, and subcontractors.

(ii) Billings for Contractors. Billings for consultants, contractors, or subcontract services will not include any mark up. The subcontract costs will be billed to the Commission at the actual costs as billed to the Sponsor. Subcontract costs will be documented by attaching subcontractor billings to the Sponsor's billing submittals. Contractors will utilize billing forms provided by the Office, or alternate forms if approved in advance by the Office project manager.

(iii) Copies of Contracts. The Sponsor shall provide to the Commission copies of each consultant or contractor contract immediately following execution with the contractor. All contracts between the Sponsor and a consultant or contractor shall refer to and conform to the terms of this Contract. However, nothing in this Contract shall be construed as making the Commission a party of any contract entered between the Sponsor and a consultant or contractor.

E. Requests from the Commission. The Sponsor shall be responsible and responsive to the Commission and the Office in their requests and requirements related to the scope of this Contract.

F. Presentation of Data. The Sponsor shall select and analyze all data in a systematic and meaningful manner so as to contribute directly in meeting the objectives of the Project, and shall present this information clearly and concisely, in a professional and workmanlike manner.

G. Draft of Final Report. The Sponsor shall provide to the Commission in Cheyenne, Wyoming, a draft of the final report covering all work elements of the Project including maps, charts, conclusions and recommendations prior to the publication of any final report and no later than the date specified in Attachment A. The Commission will respond with written comments to the Sponsor as soon as practicable. The Sponsor will address the comments of the Commission in the final report.

H. Project Completion Report. A final project completion report in the form described in Attachment A shall be submitted to the Commission by the date specified in Attachment A.

I. Reports, Maps, Plans, Models and Documents. One (1) copy of maps, plans, worksheets, logs, field notes or other documents prepared under this Contract, and one (1) copy of each unpublished report prepared under this Contract shall be submitted to the Commission. If the Sponsor writes or uses a computer program or spreadsheet as a part of this project, the Sponsor shall submit to the Office for approval all proposed program names and data formats prior to beginning work on that task. All data shall be submitted to Commission in written and digital forms with the final report. Digital media shall be labeled by the Sponsor to provide sufficient detail to access the information on the media. All user manuals shall be submitted by the Sponsor to the Commission providing complete documentation of computer programs developed under this Contract. The user manual shall also specify the source code language and the type of computer equipment necessary to operate the program(s). Any programs or computer software generated as a part of this Contract shall be the sole property of the Commission.

6. Responsibilities of the Commission.

A. Designated Representative. The Director of the Office shall act as the Commission's representative with respect to the Sponsor's obligation to be performed under this Contract and shall have complete authority to transmit instructions, receive information, and interpret and define the Commission's policies and decisions with respect to services covered by this Contract.

B. Data to be Furnished to the Sponsor. All information, data, reports, and maps as are available to the Commission and necessary for the carrying out of the Scope of Services set forth herein shall be furnished to the Sponsor without charge and the Office shall cooperate with the Sponsor in every way possible in the carrying out of the project.

C. Review Reports. The Office shall examine all studies, reports, sketches, opinions of the construction costs, and other documents presented by the Sponsor to the Commission and shall promptly render in writing the Commission's decisions pertaining thereto within the time periods specified in Attachment A.

D. Provide Criteria. The Office shall provide all criteria and full information regarding its requirements for the project.

7. Special Provisions.

A. No Finder's Fees. No finder's fee, employment agency fee, or other such fee related to the procurement of this Contract shall be paid by either party.

B. Publicity. Any publicity given to the projects, programs or services provided herein, including, but not limited to, notices, information, pamphlets, press releases, research, reports, signs, and similar public notices in whatever form, prepared by or for the Sponsor, shall identify the Commission as the sponsoring agency and shall not be released without prior written approval from the Commission.

C. Monitor Activities. The Commission shall have the right to monitor all activities related to this Contract that are performed by the Sponsor or its subcontractors. This shall include, but not be limited to, the right to make site inspections at any time and with reasonable notice; to bring experts and consultants on site to examine or evaluate completed work or work in progress; to examine the books, ledgers, documents, papers, and records pertinent to this Contract; and to observe all Sponsor consultants and contractors in every phase of performance of Contract related work.

D. Kickbacks. The Sponsor certifies and warrants that no gratuities, kickbacks, or contingency fees were paid in connection with this Contract, nor were any fees, commissions, gifts, or other considerations made contingent upon the award of this Contract. If the Sponsor breaches or violates this warranty, the Commission may, at its discretion, terminate this Contract without liability to the Commission, or deduct from the Contract price or consideration, or otherwise recover, the full amount of any commission, percentage, brokerage, or contingency fee.

8. <u>General Provisions</u>.

A. Amendments. Any changes, modifications, revisions or amendments to this Contract which are mutually agreed upon by the parties to this Contract shall be incorporated by written instrument, executed by all parties to this Contract.

B. Applicable Law, Rules of Construction, and Venue. The construction, interpretation, and enforcement of this Contract shall be governed by the laws of the State of Wyoming, without regard to conflicts of law principals. The terms "hereof," "hereunder," "herein," and words of similar import, are intended to refer to this Contract as a whole and not to any particular provision or part. The Courts of the State of Wyoming shall have jurisdiction over this Contract and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

C. Assignment Prohibited and Contract Shall Not be Used as Collateral. Neither party shall assign or otherwise transfer any of the rights or delegate any of the duties set out in this Contract without the prior written consent of the other party. The Sponsor shall not use this Contract, or any portion thereof, for collateral for any financial obligation, without the prior written permission of the Commission.

D. Audit and Access to Records. The Commission and its representatives shall have access to any books, documents, papers, electronic data, and records of the Sponsor which are pertinent to this Contract.

E. Availability of Funds. Each payment obligation of the Commission is conditioned upon the availability of government funds which are appropriated or allocated for the payment of this obligation and which may be limited for any reason including, but not limited to, congressional, legislative, gubernatorial, or administrative

action. If funds are not allocated and available for continued performance of the Contract, the Contract may be terminated by the Commission at the end of the period for which the funds are available. The Commission shall notify the Sponsor at the earliest possible time of the services which will or may be affected by a shortage of funds. No penalty shall accrue to the Commission in the event this provision is exercised, and the Commission shall not be obligated or liable for any future payments due or for any damages as a result of termination under this section.

F. Award of Related Contracts. The Commission may award supplemental or successor contracts for work related to this Contract. The Sponsor shall cooperate fully with other contractors and the Commission in all such cases.

G. Compliance with Laws. The Sponsor shall keep informed of and comply with all applicable federal, state, and local laws and regulations in the performance of this Contract.

H. Confidentiality of Information. Except when disclosure is required by the Wyoming Public Records Act or court order, all documents, data compilations, reports, computer programs, photographs, data, and any other work provided to or produced by the Sponsor in the performance of this Contract shall be kept confidential by the Sponsor unless written permission is granted by the Commission for its release. If and when the Sponsor receives a request for information subject to this Contract, the Sponsor shall notify the Commission within ten (10) days of such request and shall not release such information to a third party unless directed to do so by Commission.

I. Conflicts of Interest

(i) Sponsor's consultant(s) or contractor(s) shall not engage in providing consultation or representation of clients, agencies or firms which may constitute a conflict of interest which results in a disadvantage to the Commission or a disclosure which would adversely affect the interests of the Commission. Sponsor shall notify the Commission of any potential or actual conflicts of interest arising during the course of the Sponsor's performance under this Contract. This Contract may be terminated in the event a conflict of interest arises. Termination of the Contract will be subject to a mutual settlement of accounts. In the event the contract is terminated under this provision, the Sponsor shall take steps to insure that the file, evidence, evaluation and data are provided to the Commission or its designee. This does not prohibit or affect the Sponsor's ability to engage in consultations, evaluations or representation under agreement with other agencies, firms, facilities, or attorneys so long as no conflict exists.

(ii) A conflict of interest warranting termination of this Contract may include, but is not necessarily limited to, acting on behalf of a client in an adversarial proceeding against the State of Wyoming, its agencies, boards, commissions, or the University of Wyoming, or initiating suits in equity including injunctions, declaratory judgments, writs of prohibition or quo warranto.

J. Entirety of Contract. This Contract, consisting of twelve (12) pages, and Attachment A, consisting of fourteen (14) pages, represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements, whether written or oral. In the event of a conflict or inconsistency between the language of this Contract and the language of any attachment or document incorporated by reference, the language of this Contract shall control.

K. Ethics. Sponsor shall keep informed of and comply with the Wyoming Ethics and Disclosure Act (Wyo. Stat. § 9-13-101, *et seq.*), and any and all ethical standards governing Sponsor's actions.

L. Force Majeure. Neither party shall be liable for failure to perform under this Contract if such failure to perform arises out of causes beyond the control and without the fault or negligence of the nonperforming party. Such causes may include, but are not limited to, acts of God or the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, and unusually severe weather. This provision shall become effective only if the party failing to perform immediately notifies the other party of the extent and nature of the problem, limits delay in performance to that required by the event, and takes all reasonable steps to minimize delays.

M. Indemnification. Each party to this Contract shall assume the risk of any liability arising from its own conduct. Neither party agrees to insure, defend, or indemnify the other.

N. Independent Contractor. The Sponsor shall function as an independent contractor for the purposes of this Contract and shall not be considered an employee of the State of Wyoming for any purpose. Consistent with the express terms of this Contract, the Sponsor shall be free from control or direction over the details of the performance of services under this Contract. The Sponsor shall assume sole responsibility for any debts or liabilities that may be incurred by the Sponsor in fulfilling the terms of this Contract and shall be solely responsible for the payment of all federal, state, and local taxes which may accrue because of this Contract. Nothing in this Contract shall be interpreted as authorizing the Sponsor or its agents or employees to act as an agent or representative for or on behalf of the State of Wyoming or the Commission or to incur any obligation of any kind on the behalf of the State of Wyoming or the Commission. The Sponsor agrees that no health or hospitalization benefits, workers' compensation, unemployment insurance, or similar benefits available to State of Wyoming employees will inure to the benefit of the Sponsor or the Sponsor's agents or employees as a result of this Contract.

O. Notices. All notices arising out of, or from, the provisions of this Contract shall be in writing either by regular mail, email, or delivery in person at the addresses provided under this Contract.

P. Ownership and Destruction of Documents and Information. The Commission owns all documents, data compilations, reports, computer programs,

photographs, data, and other work provided to or produced by the Sponsor in the performance of this Contract. Upon termination of services, for any reason, the Sponsor agrees to return all such original and derivative information and documents to the Commission in a useable format. In the case of electronic transmission, such transmission shall be secured. The return of information by any other means shall be by a parcel service that utilizes tracking numbers. Upon Commission's verified receipt of such information, the Sponsor agrees to physically and electronically destroy any residual Commission-owned data, regardless of format, and any other storage media or areas containing such information. The Sponsor agrees to provide written notice to the Commission confirming the destruction of any such residual Commission-owned data.

Q. Patent or Copyright Protection. The Sponsor recognizes that certain proprietary matters or techniques may be subject to patent, trademark, copyright, license, or other similar restrictions, and warrants that no work performed by the Sponsor or its subcontractors will violate any such restriction. The Sponsor shall defend and indemnify the Commission for any violation or alleged violation of such patent, trademark, copyright, license, or other restrictions.

R. Prior Approval. This Contract shall not be binding upon either party, no services shall be performed, and the Wyoming State Auditor shall not draw warrants for payment, until this Contract has been fully executed, approved as to form by the Office of the Attorney General, filed with and approved by A&I Procurement, and approved by the Governor of the State of Wyoming, or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

S. Insurance Requirements.

(i) During the term of this Contract, the Sponsor's Consultant shall obtain and maintain, and ensure that each subcontractor obtains and maintains, each type of insurance coverage specified in Insurance Coverage, below.

(ii) All policies shall be primary over any insurance or self-insurance program carried by the Sponsor or the State of Wyoming. All policies shall include clauses stating that each insurance carrier shall waive all rights of recovery under subrogation or otherwise against the Sponsor's Consultant or the State, its agencies, institutions, organizations, officers, agents, employees, and volunteers.

(iii) The Sponsor's Consultant shall provide Certificates of Insurance to the Commission verifying each type of coverage required herein. If the policy is a "claims made" policy instead of an "occurrence" policy, the information provided shall include, but is not limited to, retroactive dates and extended reporting periods or tails.

(iv) All policies shall be endorsed to provide at least thirty (30) days advance written notice of cancellation to the Commission. A copy of the policy endorsement shall be provided with the Certificate of Insurance.

(v) In case of a breach of any provision relating to Insurance Requirements or Insurance Coverage, the Commission may, at the Commission's option, obtain and maintain, at the expense of the Sponsor's Consultant, such insurance in the name of the Sponsor's Consultant or subcontractor, as the Commission may deem proper and may deduct the cost of obtaining and maintaining such insurance from any sums which may be due or become due to the Sponsor under this Contract.

(vi) All policies required by this Contract shall be issued by an insurance company with an A.M. Best rating of A- VIII or better.

(vii) The Commission reserves the right to reject any policy issued by an insurance company that does not meet these requirements.

T. Insurance Coverage. The Sponsor's Consultant shall not commence work under this Contract until it has obtained all the insurance required by the Commission and the State. The Sponsor's Consultant shall obtain and maintain the following insurance in accordance with the Insurance Requirements set forth above:

(i) Commercial General Liability Insurance. Commercial general liability insurance (CGL) coverage, occurrence form, covering liability claims for bodily injury and property damage arising out of premises, operations, products and completed operations, and personal and advertising injury, with minimum limits as follows:

(a) $1,000,000.00 each occurrence;
(b) $1,000,000.00 personal injury and advertising injury;
(c) $2,000,000.00 general aggregate; and
(d) $2,000,000.00 products and completed operations.

The CGL policy shall include coverage for Explosion, Collapse and Underground property damage. This coverage may not be excluded by endorsement.

(ii) Workers' Compensation and Employer's Liability Insurance. Employees hired in Wyoming to perform work under this Contract shall be covered by workers' compensation coverage obtained through the Wyoming Department of Workforce Services' workers' compensation program, if statutorily required. Employees brought into Wyoming from the Sponsor's Consultant's home state to perform work under this Contract shall be covered by workers' compensation coverage obtained through the Wyoming Department of Workforce Services' workers' compensation program or other state or private workers' compensation insurance approved by the Wyoming Department of Workforce Services, if statutorily required.

The Sponsor's Consultant shall provide the Commission with a Certificate of Good Standing or other proof of workers' compensation coverage for all of its employees who are to perform work under this Contract, if such coverage is required by law. If workers' compensation coverage is obtained by the Sponsor's Consultant through the Wyoming Department of Workforce Services' workers' compensation program, The

Sponsor's Consultant shall also obtain Employer's Liability "Stop Gap" coverage through an endorsement to the CGL policy required by this Contract, with minimum limits as follows:

(a) Bodily Injury by Accident: $1,000,000.00 each accident;
(b) Bodily Injury by Disease: $1,000,000.00 each employee; and
(c) Bodily Injury by Disease: $1,000,000.00 policy limit.

(iii) Unemployment Insurance. The Sponsor's Consultant shall be duly registered with the Department of Workforce Services and obtain such unemployment insurance coverage as required. The Sponsor's Consultant shall supply Commission with a Certificate of Good Standing or other proof of unemployment insurance coverage.

(iv) Automobile Liability Insurance. Automobile liability insurance covering any auto (including owned, hired, and non-owned) with minimum limits of $1,000,000.00 each accident combined single limit.

(v) Professional Liability or Errors and Omissions Liability Insurance. Professional liability insurance or errors and omissions liability insurance protecting against any and all claims arising from the Sponsor's Consultant's alleged or real professional errors, omissions, or mistakes in the performance of professional duties under this Contract, with minimum limits as follows:

(a) $1,000,000.00 each occurrence; and
(b) $1,000,000.00 general aggregate.

The policy shall have an extended reporting period of two (2) years.

U. Sovereign Immunity and Limitations. Pursuant to Wyo. Stat. § 1-39-104(a), the State of Wyoming and Commission expressly reserve sovereign immunity by entering into this Contract and the Sponsor expressly reserves governmental immunity. Each of them specifically retains all immunities and defenses available to them as sovereign or governmental entities pursuant to Wyo. Stat. § 1-39-101, et seq., and all other applicable law. The parties acknowledge that the State of Wyoming has sovereign immunity and only the Wyoming Legislature has the power to waive sovereign immunity. Designations of venue, choice of law, enforcement actions, and similar provisions shall not be construed as a waiver of sovereign immunity. The parties agree that any ambiguity in this Contract shall not be strictly construed, either against or for either party, except that any ambiguity as to immunity shall be construed in favor of immunity.

V. Taxes. The Sponsor's Consultant's and contractors shall pay all taxes and other such amounts required by federal, state and local law, including but not limited to federal and social security taxes, workers' compensation, unemployment insurance, and sales taxes.

W. Termination of Contract. This Contract may be terminated, without cause, by the Commission upon thirty (30) days written notice. This Contract may be terminated immediately for cause if the Sponsor fails to perform in accordance with the terms of this Contract.

X. Third-Party Beneficiary Rights. The parties do not intend to create in any other individual or entity the status of third-party beneficiary, and this Contract shall not be construed so as to create such status. The rights, duties and obligations contained in this Contract shall operate only between the parties to this Contract. The provisions of this Contract are intended only to assist the parties in determining and performing their obligations under this Contract.

Y. Time is of the Essence. Time is of the essence in all provisions of the Contract.

Z. Titles Not Controlling. Titles of sections and subsections are for reference only and shall not be used to construe the language in this Contract.

AA. Waiver. The waiver of any breach of any term or condition in this Contract shall not be deemed a waiver of any prior or subsequent breach. Failure to object to a breach shall not constitute a waiver.

BB. Counterparts. This Contract may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Contract. Delivery by the Sponsor of an originally signed counterpart of this Contract by PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

9. Signatures. The parties to this Contract, either personally or through their duly authorized representatives, have executed this Contract on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Contract.

The Effective Date of this Contract is the date of the signature last affixed to this page.

WYOMING WATER DEVELOPMENT COMMISSION

David Evans, Chairman _____ Date

Kellen Lancaster, Secretary _____ Date

TOWN OF GUERNSEY, WYOMING

Edward Delgado, Mayor _____ Date
Employer ID #836000067

ATTORNEY GENERAL'S OFFICE: APPROVAL AS TO FORM

Tyler M. Renner _____ Date
Assistant Attorney General

WYOMING WATER DEVELOPMENT COMMISSION
GROUNDWATER EXPLORATION PROGRAM

ATTACHMENT A
SCOPE OF SERVICES

A. AUTHORIZATION:

The Wyoming Legislature has authorized the Water Development Commission to Contract with Sponsors (cities, towns, water & sewer districts, and improvement & service districts) in Wyoming for exploration for and feasibility studies of the use of underground water for municipal and domestic purposes, not to exceed four hundred thousand dollars ($400,000) per project. Any Sponsor participating in the program must provide at least twenty-five percent (25%) of the cost of the project from its own funds.

B. PROJECT REQUIREMENTS

1. Selection of a consultant or contract services by the Sponsor:

   The Commission advises that municipalities and Sponsors contract with one firm to be responsible for all phases of the project. The firm selected by the Sponsor, and all proposed Consultants and Contractors for drilling, logging, pump testing, water quality analysis and other supportive services, must be submitted to WWDC for review and approval prior to subcontract execution. Work performed under this Contract must be supervised by A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF WYOMING OR A PROFESSIONAL GEOLOGIST REGISTERED BY THE STATE OF WYOMING.

   The Sponsor shall promote and ensure that responsible Wyoming contractors and residents receive employment on public works projects as set forth under Wyoming preference laws, W.S. §16-6-102, W.S. §16-6-203, W.S. §16-6-1001.

   The Sponsor is responsible for insuring that all appropriate work items and conditions contained in this Contract and its exhibits and attachments are contained in the technical specifications used by the Sponsor in the selection of a drilling contractor. The Sponsor must also insure that such items and conditions are contained in the performance Contract between the Sponsor and its contractor. Work performed under said contract must be conducted by A WATER WELL DRILLING CONTRACTOR LICENSED IN THE STATE OF WYOMING. The Commission requires utilization of a competitive public bidding process to select the well construction contract services.

2. Monthly Progress Reports and Billing Statements

The Sponsor shall submit a brief monthly progress report outlining the study status, progress and results to date. The progress report shall be submitted on or before the last working day of the month.

The billing statement must include a task-by-task report justifying the cost items contained in the billing statement. The monthly progress report may be used as the justification for the billing statement as long as all cost items covered in the billing statement are addressed in the progress report.

3. Computer Models, Statement of Assumptions, Project Work File

a. If the Sponsor (or its Consultant) writes or uses a computer model or spreadsheet as a part of this project, the Sponsor shall submit to the WWDC for approval all proposed model names and data formats prior to beginning work on that task. All data shall be submitted to WWDC in written and magnetic forms with the final report. Magnetic disks shall be labeled by the Sponsor to provide sufficient detail to access the information on the disks. User manuals shall be submitted by the Sponsor to WWDC providing complete documentation of computer models developed under this project. The user manuals shall also contain the source code language and the type of computer equipment necessary to operate the model(s). The computer models and spreadsheets (written and magnetic forms) are due on the same date as the final report which contains the information generated by the model.

b. To facilitate the Commission's accurate evaluation of the Sponsor's work product, computations, conclusions and recommendations, the Sponsor shall:

(i) Include in the final report a section describing the assumptions and methodology used by the Sponsor in generating the data and conclusions contained in the report.

(ii) Maintain a project work file containing the materials used in project analysis. This file will be available for review by the Commission and should be organized in such a way as to allow replication of the steps and procedures used by the Sponsor to reach the conclusions described in the study.

(iii) Prepare a project notebook containing a description of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Sponsor to reach

conclusions, described in the draft final report. The project notebook shall be submitted with the final report.

4. Cost Estimates

The Sponsor shall provide, as a part of project cost estimates, an estimate of:

a. The cost to prepare final plans and specifications.
b. The cost to acquire permits and to mitigate project impacts.
c. The cost of project legal expenses.
d. The cost of acquiring access and rights-of-way.

5. Calculation of Engineering Costs and Contingencies

The Sponsor shall use the following guidelines in calculating final cost estimates.

Final Cost Estimates

Preparation of Final Designs and Specifications		$_____
Permitting and Mitigation		$_____
Legal Fees (Title of Opinion only)		$_____
Acquisition of Access and Rights of Way		$_____
Cost of Project Components	$_____	
	$_____	
	$_____	
Construction Cost Subtotal #1	$_____	
Engineering Costs = CCS#1 x 10%	$_____	
Construction Cost Subtotal #2	$_____	
Contingency = CCS#2 x 15%	$_____	
Construction Cost Total		$_____
Project Cost Total		$_____

6. Stand-By Time

The WWDC will not reimburse the Sponsor for stand-by time charges for either their own or their consultants or supervisory personnel.

7. Well Permitting

An approved permit to appropriate groundwater shall be obtained from the State Engineer prior to commencing construction on any well. The Sponsor shall be responsible for obtaining the permit. The Sponsor shall consult with the Groundwater Division of the Wyoming State Engineer's Office (SEO) prior to the initiation of well siting studies, and shall abide by SEO rules and regulations concerning well siting and construction.

The Sponsor shall comply with all provisions of the Wyoming Department of Environmental Quality – Water Quality Division Rules and Regulations regarding a permit to construct for construction of source wells supplying public water supply systems.

For pump testing purposes that may be required herein, The Sponsor shall obtain from WDEQ-WQD a National Pollution Discharge Elimination System (NPDES) permit as required under the federal Clean Water Act (CWA) for pump tests of water wells.

8. Verification Log

After all casing has been installed in the well, the WWDC may require that a geophysical log be performed on the well to verify casing placement. A copy of this log shall be included in the final report.

9. Final Report

The Sponsor shall use the Contract Scope of Services as the outline for draft and final reports so that compliance with Contract provisions can be verified. IF THE FINAL REPORT CONTAINS INFORMATION OF AN ENGINEERING NATURE THE COVER OF THE FINAL REPORT, ALL PLATES, AND MAPS MUST BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF WYOMING. IF THE FINAL REPORT CONTAINS INFORMATION OF A GEOLOGIC NATURE, THE COVER OF THE FINAL REPORT, ALL PLATES, AND MAPS, MUST BE STAMPED AND SIGNED BY A PROFESSIONAL GEOLOGIST LICENSED IN THE STATE OF WYOMING.

10. Final Report - Digital Format

In addition to the paper submittal described in Section B.9. above, the Sponsor shall also provide the final documents and related materials in a digital format. This digital format shall contain the final documents in their entirety, including all text, tables, plates, figures, etc. The deliverables under this section shall be contained on standard CD ROM(S) or DVD ROM(s). The document shall be in Word 2010 and Adobe Acrobat V.7 format. Any plates, figures, etc. not suitable for Word 2010 shall be in AutoCAD Map 2000, ArcGIS 8.x, Adobe Acrobat, or compatible format. Other formats may be used if approved in advance by the WWDC project manager. The final documents will also be provided fully assembled into one file, in a complete “internet ready” digital format to facilitate their distribution via the WWDC website.

11. Anticipated Project Funding Assistance

The Sponsor shall clearly identify project components eligible for Commission funding, both in cost estimates and in project mapping. The Sponsor shall verify

project component funding eligibility with the Office project manager prior to commencing any economic analysis. Unless otherwise directed by the Office project manager, the Sponsor shall assume that projects will be funded with a sixty-seven percent (67%) grant and a thirty-three percent (33%) loan. The Commission loan will be financed at an interest rate of four percent (4%) with a term to be specified by the Office project manager. If funding is anticipated from another agency, such as the Office of State Lands and Investments or the Rural Utilities Service (RUS), the Sponsor shall prepare cost estimates for system components not eligible for Commission assistance in a format and level of detail acceptable to the potential funding agency.

C. SCOPE OF SERVICES

1. Project Meetings

A meeting shall be held early in the project schedule to assure the affected parties (Sponsor, WWDC Project Manager, Sponsor's Consultant, Contractors, etc.) have a common understanding of the scope of the project. One additional meeting may be scheduled at the discretion of the WWDC project manager depending on developments during the Project. One meeting may be held at the conclusion of the Project to present the results to the Sponsor Council. In the interest of economy, meetings shall be scheduled to coincide with fieldwork if possible. The Sponsor shall notify the WWDC project manager in advance of any meetings regarding conduct of the project.

2. Production Well Siting, ROW Acquisition, Permitting, Drilling, Completion and Testing

a. The Sponsor shall prepare a plan for determining the feasibility of using the selected groundwater source as a public water supply. This plan shall include a siting study for emplacement of a new public water supply (PWS) source well that includes well location alternatives and a preferred alternative site selection. The Sponsor shall acquire access permits and execute access/ROW/easement agreements and environmental clearances as needed to allow for drilling and completion of a public water supply well.

b. The Sponsor shall acquire all permits necessary from oversight agencies (e.g. Wyoming State Engineer's Office, Wyoming Department of Environmental Quality – Water Quality Division) to drill and test a new PWS well for the Sponsor.

c. The Sponsor shall conduct a public bidding process, in accordance with State of Wyoming statutes, for selection from interested contractors to perform the well construction services required herein. The Sponsor shall

analyze the bids received and select a contractor, after coordination with the WWDC project manager.

d. Consultant Services during Well Construction, Aquifer Testing

(i). The Consultant shall serve as the Sponsor's representative at the construction site during the construction process. The Consultant shall insure the project is constructed in accordance with the bid documents. The Consultant shall provide full time supervision during well construction by a Professional Geologist licensed in the State of Wyoming.

(ii). The Consultant shall generate a drilling log containing the following information:

1) Depth, thickness, type, general characteristics, and drilling characteristics of each material encountered.

2) Time required to drill each foot of depth, along with the speed of rotation.

3) Depth at which bit diameters change.

4) Detailed "as built" well completion specifications, including hole and casing diameters, depths at which these diameters change, casing thickness and material, manufacturer, depths, diameters, and opening size of well screen or perforated casing, gravel packed intervals and gravel size installed, casing centralizer types and their spacing, cemented intervals, cement type, etc.

(iii). The Consultant shall generate a geologic log containing the following information:

1) Reference point for all depth measurements.

2) Depth at which each change of formation occurs.

3) Thickness of each formation.

4) Depth at which each stratum is encountered.

5) Thickness of each stratum.

6) Description of the material composing each stratum.

7) Depth at which water is first encountered.

8) Depth to the static water level (SWL) and changes in with increasing well depth.

9) Total depth of completed well.

10) Any and all other pertinent information for a complete and accurate log.

(iv). Formation samples shall be collected and described in detail at each change in stratum, not to exceed 10-foot intervals, or more frequently to accurately depict lithologic changes encountered during construction. Washed samples shall be labeled (well name, sample number, depth interval, and date) and stored in sample vials or chip trays. Formation samples shall be delivered to the WWDC project manager upon completion of the project.

(v). Pump testing of well:

After completion and isolation of the aquifer to be tested has been insured the well shall be developed by water jetting or other approved methods to remove contaminants and foreign material. The aquifer will then be allowed to recover to ninety-eight percent (98%) of its original SWL before any aquifer testing begins. All aquifer testing activities shall be supervised by a Professional Geologist licensed in the State of Wyoming.

1) Step test:

Monitoring of water level shall be done during each step of the test at logarithmic time intervals. Each step should continue until a distinct change in the rate of drawdown occurs. It is suggested that Q be set at twenty-five percent (25%), fifty percent (50%), seventy-five percent (75%), one-hundred percent (100%), and one-hundred fifty percent (150%) of the estimated design discharge. The Consultant shall refer also to DEQ-WQD PWS source development testing requirements in WQD Rules and Regulations, Chapter 12, Section 9(b)(ii).

2) Recovery test:

Following the step test water level shall be monitored at logarithmic time intervals until the well has recovered to 98 percent of its original SWL.

3) Constant discharge test:

Following the recovery test pumping at a constant discharge (rate determined by the Consultant based on the step test) will be maintained for seven (7) days or until a stable drawdown is attained. Water levels and pumping rate shall be monitored at logarithmic time intervals during the test. The WWDC project manager must approve in advance if the test is to be terminated prior to the seven (7) days specified.

4) Recovery test:

Following the constant discharge test well, recovery shall be monitored until the well has recovered to ninety-eight percent (98%) of its original SWL, with water levels measured at logarithmic time intervals. Analysis of all aquifer testing, recovery, and surface water monitoring data will be performed to determine aquifer characteristics including transmissivity, storativity, specific capacity, and safe yield, and to assess the impacts on surface water caused by long-term groundwater production in the area. Estimates will be made of long term well yield, and the configuration and extent of the cone of depression at one (1), five (5), ten (10), and twenty (20) years into the future for the entire well field. This analysis shall assume production at maximum safe yield, and the design discharge if different. Assumptions and analytical methods used in these calculations shall be included. This information will be presented in the final report.

(vi). Testing of Flowing Well:

After completion and isolation of the aquifer to be tested has been insured the well shall be developed by water jetting or other methods to remove contaminants and foreign material. The aquifer will then be allowed to recover to ninety-eight percent (98%) of its original shut-in pressure before any testing begins.

(1) Stepped Rate Test:

Monitoring of pressure and flow rate shall be performed during each step of the test at logarithmic time intervals. Each step should continue until a distinct change in the rate of drawdown occurs. It is suggested that Q be set at twenty-five percent (25%), fifty percent (50%), seventy-five percent (75%), and one-hundred (100%) of maximum flow rate.

(2) Recovery test:
Following the step test shut-in pressures shall be monitored at logarithmic time intervals until the well has recovered to ninety eight percent (98%) of its original shut-in pressure.

(3) Constant Drawdown Test:
Following the recovery test the well shall be allowed to flow "wide open" and monitoring of flow rate and pressure with respect to time will be conducted at logarithmic time intervals for a period of seven (7) days.

3. Water Quality, Water Treatment,

For each aquifer on which a test is conducted, the following shall be performed by the Consultant:

a. During each test, a pH/conductance/temperature meter shall be used to monitor these parameters at the following time periods:

(1)	Beginning of test	(6)	4 hours
(2)	30 minutes	(7)	8 hours
(3)	1 hour	(8)	16 hours
(4)	2 hours	(9)	24 hours
(5)	3 hours	(10)	24 hour intervals

The above-collected data will be listed and plotted versus time in the final report.

b. During the test water quality samples shall be collected for analysis by a U.S. Environmental Protection Agency approved laboratory. Samples will be properly collected and preserved such that the appropriate constituents listed below may be analyzed for concentration level. Samples shall be received by the laboratory within the time period specified by the laboratory for the particular analyses being performed. Water samples will be collected during the test at the following time intervals:

i. Midway through the first test.

ii. End of all testing.

The following analyses shall be conducted midway through the first test:

. Bicarbonate
. Calcium
. Carbonate
. Chloride

. Conductance
. Magnesium
. pH
. Potassium
. Sodium
. Sulfate
. Total Dissolved Solids
. Iron and Iron Related Bacteria
. Total Coliform Bacteria
. Gross Alpha
. Gross Beta
. Combined Radium 226 & 228
. Natural Uranium

The Consultant shall collect samples for analysis of all EPA regulated constituents that are applicable to this project. The following analyses shall be conducted, as appropriate for the particular source, treatment techniques, system size, and as required in the State of Wyoming, at the end of all testing:

Inorganic Chemicals

. Antimony
. Arsenic
. Asbestos
. Barium
. Beryllium
. Cadmium
. Chromium
. Copper
. Cyanide
. Fluoride
. Lead
. Mercury
. Nickel
. Nitrate (as N)
. Nitrite (as N)
. Total Nitrate/Nitrite
. Selenium
. Sulfate
. Thallium

Organic Chemicals
Pesticides

. Alachlor
. Aldicarb

- Aldicarb sulfoxide
- Aldicarb sulfone
- Atrazine
- Carbofuran
- Chlorodane
- Dalapon
- Dibromochloropropane (DBCP)
- Dinoseb
- Diquat
- Endothall
- Endrin
- Ethylene dibromide (EDB)
- Glyphosate
- Heptachlor
- Heptachlor epoxide
- Lindane
- Methoxychlor
- Oxamyl (Vydate)
- Pentachlorophenol
- Picloram
- Simazine
- Toxaphene
- 2,4,5-TP (Silvex)
- 2,4-D

Volatile Organic Chemicals

- Benzene
- Carbon tetrachloride
- para-Dichlorobenzene
- ortho-Dichlorobenzene
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- cis-1,2-Dichloroethylene
- trans-1,2-Dichloroethylene
- Dichloromethane
- 1,2-Dichloropropane
- Ethylbenzene
- Monochlorobenzene
- Styrene
- Tetrachloroethylene (PCE)
- Toluene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethylene (TCE)

. Vinyl chloride
. Xylenes

Synthetic Organic Chemicals

. Benzo (a) pyrene
. Di (2-ethylhexyl) adipate
. Di (2-ethylhexyl) phthalate
. Hexachlorobenzene
. Hexachlorocyclopentadiene (HEX)
. PCBs
. 2,3,7,8 Tetrachlorodibenzo-p-dioxin

Treatment Techniques

. Acrylamide
. Epichlorohydrin

Disinfection By-Products

. Total trihalomethanes (TTHMs)
. Haloacetic acids (HAA5)
. Total Organic Carbon (TOC)
. Chloromines

Total Suspended Solids (TSS)

Turbidity

. Turbidity

Microbiological

Total Coliform (Coliform bacteria, fecal coliform, streptococcal, and other bacteria)

. Giardia lamblia
. Legionella
. Viruses
. Heterotrophic Plate Count
. Iron and Iron related bacteria

Radiological Contaminants

. Gross alpha
. Gross beta
. Combined Radium 226 & 228

. Natural uranium

Secondary Standards

. Aluminum
. Bicarbonate
. Boron
. Calcium
. Carbonate
. Chloride
. Color
. Conductance
. Corrosivity
. Foaming agents
. Hardness
. Iron
. Magnesium
. Manganese
. Odor
. Ph
. Potassium
. Silica
. Silver
. Sodium
. Sulfate
. Total Acidity
. Total Alkalinity
. Total dissolved solids (hardness)
. Zinc

All analyses will be listed in the final report, as well as the reasons for deleting the analyses for any items contained in this list.

The Consultant shall determine the water treatment requirements for the groundwater supply source and include costs for this treatment in the final report.

4. Final Products

The Sponsor shall submit to the Office two (2) hard copies of a draft report describing the results of all work completed in this study no later than February 17, 2020. Two (2) CD/DVD copies containing the draft report in a Searchable Image Adobe Acrobat (pdf) format will also be provided, and two (2) CD/DVD copies of the draft ArcGIS coverages (if applicable). The digital report will be completely assembled into one standalone Acrobat file,

and will be the same version as the hard copy. Each CD/DVD shall have a hard copy table of contents attached.

After incorporation of the Office's and the Sponsor's review comments on the draft report, the Sponsor shall submit one (1) final draft report in hard copy along with one (1) CD or DVD or USB drive containing the final report and executive summary in a text-recognized Adobe Acrobat (pdf) format to the Office at least 2 weeks prior to the final deadline for final comparison purposes. The .pdf version shall be completely assembled into one stand-alone file and shall be exactly the same as the hard copies. Any discrepancies discovered by the Office project manager between the hard copy and electronic copy during this final comparison are the responsibility of the Sponsor to correct. Upon completion of the final quality assurance process by the Office project manager, WRDS will assign an URL for the online posting of the final report and the Sponsor shall submit all final documents and materials.

The Sponsor shall submit all final documents and materials to the Office on or before April 17, 2020. These final documents and materials shall include: 1) Fifteen (15) hard copies of the final report.

Six (6) CD/DVD copies containing the final report in a Searchable Image Adobe Acrobat (pdf) format will be provided. The digital report will be completely assembled into one standalone Acrobat file for each report, and will be the same version as the hard copy. Each CD/DVD shall have a hard copy table of contents attached.

Additionally, two (2) CD/DVD copies containing the final report in both Microsoft Word and Searchable Image Adobe Acrobat (pdf) formats will be provided. The digital reports will be completely assembled, contained in one Word file and one Acrobat file for each report, and will be the same version as the hard copies. The CD/DVDs shall also contain the project digital files in their original format (Word, Cad, Excel). Each CD/DVD shall have a hard copy table of contents attached.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Sponsor to reach the conclusions described in the final report. Any project notebooks submitted in three-ring notebook format shall have spine labels that clearly identify the project, Consultant, and date.

If any wells are drilled, chip trays or vials of all washed well drilling cuttings shall be submitted along with their documentation.

IDLE STATE-OWNED WWDC WELLS *

	LEGAL LOCATION/COUNTY	PERMIT(S) & STATUS	STATUS/USE	YEAR DRILLED	WELL CONSTRUCTION SUBCONTRACT COST
Casper/True	SESW 6-23N-75W Albany	UW 62075 (CAN) & UW 62074 (CAN)	UNK (2 wells - Test and Monitor)	1982	†
Casper/Cross	NENW 36-32N-73W Converse	UW 65126 (CAN)	UNK	1983	†
Little Goose	NWNE 12-53N-85W Sheridan	UW 70444 (MON)	Sheridan County, Permit No. UW 199097 MISC Use	1985	†
Big Goose	SWNE 35-55N-86W Sheridan	UW 70179 (CAN)	SAWS, TT Ranch DOM Use (unpermitted)	1985	†
Natural Bridge	SESW 16-32N-73W Converse	UW 73137 (MON)	SEO/USGS Coop Observation Well	1986	†
Edgerton-Midwest	NWSE 25-40N-84W Natrona	UW 75299 (CAN); refiled UW 78587 (STOCK)	UNK ?? (1988 - Trihydro reports 'capped & locked) Stock use under Willow Creek Ranch Company	1987	†
Ryan Park	SESW 28-16N-81W Carbon	UW 90595 (INCOMPLETE)	Brinkman Well TBD	1993	†
Pine Butte	SWNW 25-52N-73W Campbell	UW 91809 (CAN)	SEO Fort Union Fm. Observation Well	1993	†
Aladdin	NESW 28-54N-61W Crook	UW 99756 (CAN); UW 131196 (UNADJ)	Water Service Agreement w/Aladdin Water Dist.	1995	$ 85,641
Buffalo Creek No. 2	SWSW 21-42N-94W Hot Springs	UW 149511 (CAN); UW 183562 (MON)	Capped	2004	$ 371,900
Gillette ASR Test	SESW 36-49N-73W Campbell	UW 153945 (EXP)	Capped	2004	$ 295,092
2005 Split Rock Wells					
SR-1	NESE 9-27N-86W Carbon	UW 162107 (TEST, CAN)	Capped (refiled under TF 39-5-471W 'pending review')	2005	$ 2,664,068
SR-MW-1A	NESE 9-27N-86W Carbon	UW 162108 (MON)	Capped	2005	
SR-MW-1B	NESE 9-27N-86W Carbon	UW 162109 (MON)	Capped	2005	
SR-MW-1C	NESE 9-27N-86W Carbon	UW 162110 (MON)	Capped	2005	
Belvoir Ranch Wells					
Belvoir No. 5	NWNE 21-13N-68W Laramie	UW 169934 (CAN); UW 189075 (INCOMPLETE)	Capped	2005	$ 209,500
Belvoir No. 6	SENW 23-13N-68W Laramie	UW 177408 (CAN); UW 189077 (INCOMPLETE)	Capped	2006	$ 124,055
Duck Creek 3-1	SWNE 31-13N-69W Laramie	UW 191981 (TEST)	Capped	2010-12	$ 1,415,107
Goose Creek 2-2	SESE 30-13N-69W Laramie	UW 191983 (TEST)	Capped	2010-12	
Lone Tree Fault 1-2	NENW 30-13N-96W Laramie	UW 191987 (TEST)	Capped	2010-12	
Lone Tree Fault 1-5	SWSW 20-13N-96W Laramie	UW 193944 (TEST)	Capped	2010-12	
Ethete Wind River	SWNE 19-1N-2E Fremont	UW 188694 (EXP)	Capped	2008	$ 284,250
Lance Creek Well					
State No. 1 Test Well #1	SWNW 1-34N-65W Niobrara	UW196241 (TEST) high arsenic	Capped, State Land TUP #2183, Inyan Kara Group	2011	$ 172,410
State No. 2 Test Well	NWNW 1-34N-65W Niobrara	UW196242 (TEST) good quality	Capped, State Land TUP #2183, Inyan Kara Group (Lakota)	2012	
Manville Well, Manville Test Hole #1	NWNE 12 32N-65W Niobrara	UW198186 (TEST)	Capped, TD 690 feet, Hartville Formation	2013	$ 214,596
Clearmont Test Well					
Clearmont No. 3 Test	NENW 21 54N-79W Sheridan	UW204885 (TEST)	Capped, to be connected to Town, 2019 Level III.	2016	$ 344,287
Alluvial Test Well	NENW 21-54N-79W Sheridan	UW206590 (TEST)	Capped, Sheridan County land & County may acquire.	2017	

* "Level II" Production-size, not including test boreholes, small diameter monitor/observation wells, piezometers, etc.

† requires archive research

CAN - Cancelled Permit

EXP - Expired Permit

MON - Permitted as a monitoring, ground water level observation well

INCOMPLETE - UW 6 and UW 8 (beneficial use) pending

UNADJ - Unadjudicated water right

TEST - Test Well permit only

UNK - Present status unknown

WYOMING WATER DEVELOPMENT OFFICE

6920 Yellowtail Road
Cheyenne, WY 82002

Phone: (307) 777-7626
wwdc.state.wy.us

Matthew H. Mead
Governor

Commissioners

Nick Bettas — Kellen K. Lancaster
Karen Budd-Falen — Sheridan Little
David Evans — Jeanette Sekan
Gerald E. Geis — Larry Suchor
Clinton W. Glick — Rodney Wagner

Harry C. LaBonde, Jr., P.E.
Director

Memorandum

June 5, 2018

To: Wyoming Water Development Commission

From: Harry LaBonde

Subject: Aladdin Water Service Agreement

At the May 18, 2018 meeting, a new Aladdin water service agreement was presented to the WWDC for approval. After some discussion, a motion to table the agreement to the June 15, 2018 WWDC meeting was approved. This memo is intended to provide additional information to the WWDC as it continues to consider the proposed water service agreement.

Project History

Aladdin is an unincorporated community located in Crook County approximately 23 miles northeast of Sundance, Wyoming. In 1993 the Aladdin Water District (District) was formed and encompassed some 4,850 acres. In that same year the WWDC authorized a Level I study to determine the technical and economic feasibility of developing a water supply system for the Aladdin and Beulah areas. Residents in the area were using shallow wells with poor water quality or were hauling water from the Town of Sundance. The report developed a plan for two independent water systems for the Aladdin and Beulah areas. For the Aladdin system, the plan recommended the drilling of a Level II groundwater well to be followed by a Level III construction project that would include storage, transmission and distribution pipelines. The total estimated cost for the combined Level II and Level III projects was $707,672.

In 1995 the WWDC initiated a Level II groundwater exploratory well project in which the target was the Madison Formation which produces good quality water in the Aladdin area. The well was completed on August 24, 1995 to a depth of 2,035 feet. Seven inch (7") production casing was installed to a depth of 1,915 feet with open hole construction for the remainder of the well. Water quality testing of the groundwater showed it to be suitable for potable water and pump testing of the well estimated production to be 250 gpm. Total cost for well construction was $85,641.

Costs expended to date by the WWDC:

- Level I Study: $ 24,912.00
- Level II Study: $140,708.58

Once the Level II well and study were completed, the project plan was to proceed to a Level III construction project. Based on agency records and institutional memory, the project did not progress to Level III for a number of reasons. They include:

- A number of landowners did not want to participate in the project and petitioned to be removed from the District.
- The number of anticipated taps in the District was reduced to 14 which was well below the Operating Criteria minimum of 25 taps.
- Concerns about the high anticipated monthly costs to service system debt and operate the system as a result of the reduced number of active taps. Those costs were estimated to be as high as $85 per month.
- Opposition to the project from a local legislator.

Current Conditions

Once the Level III project failed to progress, the WWDC received a request from the District to utilize the new well by installing a pump in the well and connecting it to the existing community water distribution system. The request was approved by the WWDC and Legislature in 1999 and resulted in the first water service agreement between the WWDC and District. The water service agreements have subsequently been renewed by the District with the last contract expiring on April 1, 2017. The request before the WWDC is to approve a new water service agreement with a 5 year term and a water charge of $2.00 per 1000 gallons.

Since 1999 the District has been paying the WWDC a range of $195 – $482 per year for water consumed. This equates to a water production range of 97,500 – 241,000 gallons per year

At the May 18, 2018 WWDC meeting, a question was asked what other communities charge for the various components involved in operating a water system. Most smaller communities do not run accounting systems where the various water system components are operated as separate cost centers. As such, two larger communities were contacted and provided the following information:

- Gillette
    - The City uses two separate cost centers in developing rates for residential users:
        - Wholesale which includes water production from wells, most storage facilities and transmission lines. That water charge is $3.01 per 1000 gallons.
        - Distribution which includes the cost to operate water distribution lines in and around the community. The distribution charge is $0.94 per 1000 gallons.
        - Total residential charge is equal to $3.95 per 1000 gallons.
- Cheyenne
    - The City uses nine separate cost centers in operating the municipal water system
        - Source of Supply with a 6.8% allocation of costs. This equates to a $0.43 per 1000 gallons charge.
        - Water Treatment with a 9.2% allocation of costs. This equates to a $0.58 per 1000 gallons charge.
        - Transmission and Distribution with a 10.3% allocation of costs. This equates to a $0.64 per 1000 gallons charge.

- Engineering & Water Resources with a 4.5% allocation of costs. This equates to a $0.28 per 1000 gallons charge.
- Administration & General with an 18.8% allocation of costs. This equates to a $1.18 per 1000 gallons charge.
- IT & Customer Service with a 4.3% allocation of costs. This equates to a $0.27 per 1000 gallons charge.
- Property, Plant & Equipment with a 29.0% allocation of costs. This equates to a $1.82 per 1000 gallons charge.
- Bond/Loan Debt (Principle) with a 13.6% allocation of costs. This equates to a $0.85 per 1000 gallons charge.
- Bond/Loan Debt (Interest) with a 3.5% allocation of costs. This equates to a $0.22 per 1000 gallons charge.
- Total average charge for water 2017 was $6.26 per 1000 gallons.

Options

When considering options, it is important to note the WWDC currently does not incur any costs for producing water from the Aladdin well. All costs for pump maintenance and operations are borne by the District. Options for the WWDC to consider include:

1. Take no action and discontinue providing water to the District.
2. Approve the water service agreement as presented with a water sales price of $2.00 per 1000 gallons. If this action selected, the District should be required to have the master water meter tested and serviced as meters tend to lose accuracy over time and this meter has been in service since 1999.
3. Approve the water service agreement with a modification to the water sales price. If this action selected, the District should be required to have the master water meter tested and serviced as meters tend to lose accuracy over time and this meter has been in service since 1999.
4. Approve the water service agreement and direct staff to start negotiations with the District to purchase the well at the standard sale price of one-third (1/3) actual well construction cost. This equates to a purchase price of $28,261.53. In order to formalize this request, the District will need to submit a Level III application before the September 1st application deadline. The WWDC has financed these types of purchases in the past and the District should anticipate a $2,080.00 per year loan payment to finance $28,261.53 at a 4.0% interest rate with a 20 year term.

Director's Recommendation

The Director's recommendation is for the WWDC to proceed with Option 4 above.

WATER SERVICE CONTRACT RENEWAL
BETWEEN THE WYOMING WATER DEVELOPMENT COMMISSION
AND THE ALADDIN WATER DISTRICT

1. Parties. This Water Service Contract (Contract) is made and entered into by and between the Wyoming Water Development Commission (Commission), whose address is 6920 Yellowtail Road, Cheyenne, Wyoming 82002, and the Aladdin Water District (District), whose address is 3983 State HWY 24, Aladdin, Wyoming 82710.

2. Purpose. The purpose of this Contract is for the Commission to sell water from the AWD-1 Well (Permit No. U,W. 131196), constructed from Water Development Program funds, to the District as authorized by Chapter 16, Session Laws of Wyoming, 1999. The original water service contract and first renewal between the parties (executed October 22, 1999 and April 3, 2012 respectively) have expired, and the Commission and the District wish to continue the agreement.

3. Term of Contract. This Contract shall commence June 1, 2018, and shall remain in effect for five (5) years with an option to negotiate a five (5) year renewal of this Contract. Upon the expiration of this Contract, the District shall have the option of renewing and renegotiating a subsequent water service contract. The Commission reserves the right to increase or decrease the rate charged per one thousand (1,000) gallons at each renewal or renegotiation of the Contract.

4. Payment. The District shall be assessed a fee of two dollars ($2.00) per one thousand (1,000) gallons and shall annually remit payment for water used to the Commission by March 1st of each year. This fee represents the first rate increase since execution of the original Contract (original rate - $1.20/1,000 gallons).

5. Responsibilities of the District

A. Installation and Construction. The District shall be responsible for installation and operation of the well pump, well house, metering components and appurtenances necessary for the District to convey water to its customers and for the Wyoming Department of Transportation to access the well for state or federally funded highway projects. Prior to installation, any components proposed for installation and the method of construction shall be submitted to the Commission for approval. No construction shall commence until the Commission has approved the components proposed for installation and the method of construction.

B. Expenditures. All expenditures necessary to pump, meter and deliver water to its customers shall be borne by the District.

C. Meters. The District shall meter all water use and shall maintain water use records, documenting water used by the District and water used by the Wyoming Department of Transportation.

6. General Provisions

A. Amendments. Any changes, modifications, revisions or amendments to this Contract which are mutually agreed upon by the parties to this Contract shall be incorporated by written instrument, executed by all parties to this Contract.

B. Applicable Law, Rules of Construction, and Venue. The construction, interpretation and enforcement of this Contract shall be governed by the laws of the State of Wyoming, without regard to conflicts of law principles. The terms "hereof," "hereunder," "herein," and words of similar import, are intended to refer to this Contract as a whole and not any particular provision or part. The Courts of the State of Wyoming shall have jurisdiction over this Contract and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

C. Audit and Access to Records. The Commission and its representative shall have access to any books, documents, papers, electronic data, and records of the District which are pertinent to this Contract. The District shall immediately, upon receiving written instruction from the Commission, provide to any independent auditor or accountant all books, documents, papers, electronic data, and records of the District which are pertinent to this Contract. The District shall cooperate fully with any such independent auditor or accountant during the entire course of any audit authorized by the Commission.

D. Compliance with Laws. The District shall keep informed of and comply with all applicable federal, state and local laws and regulations in the performance of this Contract.

E. Entirety of Contract. This Contract, consisting of five (5) pages, represents the entire and integrated Contract between the parties and supersedes all prior negotiations, representations and agreements whether written or oral. In the event of a conflict or inconsistency between the language of this Contract and the language of any attachment or document incorporated by reference, the language of this Contract shall control.

F. Indemnification. Each party to this Contract shall assume the risk of any liability arising from its own conduct. Neither party agrees to insure, defend, or indemnify the other.

G. Nondiscrimination. The District shall comply with the Civil Rights Act of 1964, the Wyoming Fair Employment Practices Act (Wyo. Stat. § 27-9-105, *et seq*.), the Americans with Disabilities Act (ADA), 42 U.S.C. § 12101, *et seq*., and the Age Discrimination Act of 1975 and any properly promulgated rules and regulations thereto and shall not discriminate against any individual on the grounds of age, sex, color, race, religion, national origin, or disability in connection with this Contract.

H. Prior Approval. This Contract shall not be binding upon either party until the Contract has been fully executed and approved by the Office of the Attorney General.

I. Severability. Should any portion of this Contract be judicially determined to be illegal or unenforceable, the remainder of the Contract shall continue in full force and effect, and the parties may renegotiate the terms affected by the severance.

J. Sovereign Immunity. Pursuant to Wyo. Stat. § 1-39-104(a), the State of Wyoming and the Commission expressly reserve sovereign immunity by entering into this Contract and the District expressly reserves governmental immunity. Each of them specifically retains all immunities and defenses available to them as sovereign or governmental entities pursuant to Wyo. Stat. § 1-39-101, *et seq.*, and all other applicable law. The parties acknowledge that the State of Wyoming has sovereign immunity and only the Wyoming Legislature has the power to waive sovereign immunity. Designations of venue, choice of law, enforcement actions, and similar provisions shall not be construed as a waiver of sovereign immunity. The parties agree that any ambiguity in this Contract shall not be strictly construed, either against or for either party, except that any ambiguity as to immunity shall be construed in favor of immunity.

K. Third-Party Beneficiary Rights. The parties do not intend to create in any other individual or entity the status of third-party beneficiary, and this Contract shall not be construed so as to create such status. The rights, duties, and obligations contained in this Contract shall operate only between the parties to this Contract and shall inure solely to the benefit of the parties to this Contract. The provisions of this Contract are intended only to assist the parties in determining and performing their obligations under this Contract.

L. Time is of the Essence. Time is of the essence in all provisions of this Contract.

M. Titles Not Controlling. Titles of sections and subsections are for reference only and shall not be used to construe the language in this Contract.

N. Waiver. The waiver of any breach of any term or condition in this Contract shall not be deemed a waiver of any prior or subsequent breach. Failure to object to a breach shall not constitute a waiver.

O. Counterparts. This Contract may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Contract. Delivery by the District of an originally signed counterpart of this Contract by PDF shall be followed up immediately by delivery of the originally signed counterpart to the Commission.

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7. Signatures. In witness whereof, the parties to this Contract through their duly authorized representatives, have executed this Contract on the days and dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Contract.

The EFFECTIVE DATE of this Contract is the date of the signature last affixed to this page.

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____
Chairman Date

_____ _____
Secretary Date

ALADDIN WATER DISTRICT

_____ _____
Tim Knapp, President Date

ATTORNEY GENERAL'S OFFICE APPROVAL AS TO FORM

_____ _____
Tyler M. Renner, Assistant Attorney General Date

REQUEST FOR PROPOSALS
University of Wyoming Office of Water Programs
Water Research Program
FY2019

The Office of Water Programs/Water Research Program welcomes proposals covering a wide range of topics involved in Wyoming's water resources. Each proposal shall include a "Non-technical Statement of Relevance" explaining how the study could be used by governmental agencies in the management of Wyoming's water resources, will meet the research needs of State and Federal agencies regarding Wyoming's water resources, and support water related training and education.

Dam Operation and Sediment Management and Transport

The accumulation of sediment behind dams presents challenges to their effective operation to meet water user needs while still protecting downstream uses (e.g., fisheries, aquatic life). In the fall of 2016, over 90,000 cubic yards of sediment were released from behind Willwood Dam. The majority of this sediment was deposited on the downstream Shoshone River channel bed, affecting fish populations and aquatic life. This release event has prompted local, state, and federal agencies and organizations to work together to address impacts of the 2016 release and develop tools to prevent such events from occurring in the future. For example, in response to the 2016 Willwood Dam event, the University of Wyoming completed a study to help determine the potential to use "flushing flows" to hydraulically remove the deposited sediment in the Shoshone River below the dam. Additional research is needed to help understand how to prevent such releases and to effectively respond when they occur. Areas of research include, but are not limited to:

- Additional studies that describe the fate and transport of sediments in Wyoming's erosive watersheds and what measures can assist with reducing sediment inputs.
- Further studies on using "flushing flows" to address downstream sediment deposition following releases.
- Studies on economically feasible ways to remove sediment accumulated behind dams.
- Information on ways to most effectively manage sediment at dams and reservoirs to protect and maintain downstream surface waters.

Proposals may be specific to a particular dam, such as the Willwood Dam. However, studies that have broader applicability to dams statewide will be more competitive.

Water as a Driver for Economic Diversity in Wyoming

In February 2017 the Wyoming legislature voted to fund the Economically Needed Diversity Options for Wyoming (ENDOW) initiative. It is an effort to develop a 20-year comprehensive and coordinated economic diversification strategy to bolster the state's economy and provide a cushion against the inevitable ebbs and flows of the energy markets. Significant efforts put forth by the Wyoming Water Development Office have focused on opportunities to develop water to meet existing and projected needs within the state. Knowledge could be gleaned to evaluate additional opportunities where Wyoming's water can contribute to the State's economic growth under today's legal and regulatory framework (i.e. Wyoming water law, interstate compacts and court decrees, etc.). Research under this topic should:

- Evaluate the role of Wyoming's water in community development, including the expansion of economic sectors with a current presence in the State, as well as the attraction/retention of new sectors to our economy.
- Develop methods to enhance clean and reliable water that stimulates direct, indirect and induced economic impacts, as well as the valuation of water's contribution to sustained growth of gross regional product, job creation, per capita income and labor force participation.

Water Supply Forecasting

The Wyoming Water Strategy identified the need to better understand atmospheric and climate variables and their effects on water supply, as well as the need to update, improve and/or develop water supply forecasts in river basins of Wyoming.

Areas of research that would assist in this initiative include:

- Construction or evaluation of existing flow forecasting tools that analyze the response of various combinations of climate, water demand and land use on streamflow as well as general watershed hydrology.
    - Particular emphasis should be placed on the calibration of forecasting tools in hybrid plains/mountain streams with highly variable climates during low flow years. This could include an evaluation of temperature predictions in relation to water demand factors as well as research aimed at enhancing understanding of transitional zones (i.e.- foothills that typically receive intermittent to seasonal snowpack) and lower-elevation (i.e.- high plains) contributions to streamflow. Two examples of basins of interest in Wyoming that have large datasets that can contribute to the initiation of research are the Tongue River and Upper North Platte River Basins.
- Development of localized crop coefficients appropriate for use with a Penman-Monteith based consumptive use methodology. Research in support of using remote sensed data in the evaluation of the extent of snowpack and snow water equivalent, and resulting streamflow would also support this initiative.
- Identification of areas of Wyoming where additional snow and/or climate instrumentation would benefit water supply forecasting.
- Identification of areas of consistently larger seasonal runoffs for potential siting for future water developments.

Groundwater Analysis/Aquifer Potential Characterization

This topic seeks research that attempts to address the challenges of measuring and allocating groundwater in areas of growing population and declining groundwater resources.

Research regarding the integration of recognized modeling techniques with existing hydrogeologic and geophysical measurements to understand aquifer reservoir properties and dynamics is needed. Priority is given to the application of digital/numeric/statistical tools to explore localities or existing well fields to increase knowledge of key aquifer systems and recharge areas of the State.

Protecting Public Health

Wyoming citizens and out-of-state visitors enjoy fishing, boating, swimming, floating, and other recreational opportunities provided by Wyoming's lakes, reservoirs, rivers and streams. However, recreational activities, particularly those that result in full-body immersion, can pose a risk to public health if individuals are exposed to pollutants in the water that cause adverse health effects.

- **Water borne pathogens** (as typically measured by the indicator *E. coli*) cause the majority of Wyoming's surface water quality impairments. Research addressing pathogens is of significant importance to the State of Wyoming. Additional tools are needed to better allow state and local water managers, regulators, conservation groups, and others to minimize public health risk by 1) better assessing and prioritizing public health risk, 2) identifying sources of pathogens, and 3) identifying effective management measures to reduce pathogens and mitigate public health risk. In particular, the following topics are identified as priority research areas:
    - Studies related to the fate and transport of pathogens (particularly *E. coli* as an indicator) in the environment.
    - Studies related to the ability of pathogens (particularly *E.coli* as an indicator) to survive and persist in streambed sediment and how this relates to assessing public health risk.
    - Epidemiological studies relating *E. coli* levels to incidence of water borne pathogen exposure and illness in Wyoming streams and rivers.
    - Studies related to evaluating the ability of indicators other than *E. coli* (e.g., enterococci, coliphage) to accurately assess public health risk from water borne pathogens in Wyoming waterbodies.
    - Studies using Microbial Source Tracking (MST) to determine various sources contributing pathogens to surface waters.
    - Studies that evaluate the effectiveness of conservation practices in reducing pathogen (*E. coli*) loading to surface waters.
- **Nutrients** (nitrogen and phosphorus), in appropriate amounts, are essential to healthy aquatic ecosystems. However, excessive nutrients, or nutrient pollution, can lead to harmful algal blooms (HABs) in lakes or reservoirs. HABs are dense concentrations of cyanobacteria or blue-green algae that pose a risk to human, pet, and livestock health. HABs can produce poisons called cyanotoxins and may be associated with other irritants that can cause adverse health effects such as rashes, itching, numbness, nausea, fatigue, disorientation, abdominal pain, vomiting, and diarrhea. In extreme cases, cyanotoxins may lead to pet or livestock death. HABs can also cause fish kills and interfere with drinking water supplies. Two recreational use health advisories were issued on Wyoming reservoirs in 2017 due to HABs. Research on nutrient pollution and HABs would help state and local entities better identify, assess, and respond to HABs in order to reduce public health risk from exposure to cyanotoxins and other cyanobacteria-related irritants. In particular, the following topics are identified as priority research areas:
    - Studies on the types and levels of toxins in cyanobacteria blooms in Wyoming surface waters (i.e., relating densities of cyanobacteria blooms to toxin levels).
    - Studies evaluating the public health risks associated with cyanobacteria blooms with and without toxins.
    - Studies related to the fate and transport of cyanotoxins and other compounds associated with cyanobacteria blooms.
    - Studies related to the presence of benthic cyanobacteria blooms and potential toxin production in streams and rivers.
    - Studies evaluating the use of remote sensing techniques to identify and quantify cyanobacteria blooms.

- Studies evaluating health effects of cyanotoxin and cyanobacteria in pets, livestock, and wildlife.
- Studies evaluating the health effects of consuming fish that have been exposed to cyanobacteria blooms and/or cyanotoxins.
- Studies that evaluate the effectiveness of conservation practices or advanced treatment septic systems in reducing nutrient loading to surface waters.

Conveyance Losses

Conveyance efficiency is of considerable interest to irrigators and water resource managers since it can significantly affect the amount of water delivered to the point of use (crop) from the diversion. To better develop hydrologic models meant to determine volume, location, and timing of irrigation shortages and available water for development, water developers desire to have a better understanding of conveyance efficiencies in various settings. The study objective would be to evaluate conveyance efficiencies of a variety of river/stream systems and/or ditch/canal sizes in a variety of soil conditions, geographic locations, and settings during various times of the year in an attempt to develop general efficiency information that could be applied to hydrologic models developed throughout the State when specific ditch information is unavailable.

OFFICE OF WATER PROGRAMS – WATER RESEARCH PROGRAM

Water administration, management, and development issues are becoming more complex and information required for proper decision making involves technical questions which can often be addressed through research. Understanding this, the State of Wyoming is a participant in the National Institutes for Water Resources (NIWR).

In late 1999, the Wyoming Water Research Program (WRP) was initiated to oversee the coordination of Wyoming's participation in the NIWR program. The primary purposes of the WRP are:

- Support and coordinate research relative to important water resource problems of the State.
- Support the training of scientists in relevant water resource fields.
- Promote the dissemination and application of the results of water-related research.

State support for the WRP includes direct funding through the Wyoming Water Development Commission and active State participation in identifying research needs and project selection. A key element of the WRP is its focus on State needs. Benefits of the WRP to the State of Wyoming include:

- Support of water related research, both short term and long term.
- Addressing water issues important to the State.
- Support of water related training and education.
- Availability of personnel with water expertise to assist in addressing technical questions.

The Office of Water Programs (OWP)/WRP Priority and Selection Committee (P&S Committee) consists of representatives from State and Federal Agencies involved in water related activities. This Committee solicits and identifies research needs, reviews and ranks proposals, and monitors progress of awarded projects.

Members of the P&S Committee:
Greg Kerr, Director, OWP
Tom Annear, Wyoming Game and Fish
Beth Callaway, Wyoming State Engineer's Office
Justin Caudill, Wyoming Department of Agriculture
Jill Frankforter, United States Geological Survey, Wyoming-Montana Water Science Center
Jodee Pring, Wyoming Water Development Office
Cathy Rosenthal, Wyoming Association of Conservation Districts
Jim Stafford, Wyoming State Geological Survey
Jennifer Zygmunt, Wyoming Department of Environmental Quality, Water Quality Division

Each year, the Director of the OWP, solicits technical reviews for each proposal received. Agencies that have participated in the review of proposals are:

Wyoming State Engineer's Office
Wyoming Water Development Office
Wyoming State Geological Survey
Wyoming Game and Fish
United States Geological Survey
National Center for Atmospheric Research
Wyoming Department of Environmental Quality
Wyoming Association of Conservation Districts
Private Industry
University of Wyoming
Wyoming Department of Agriculture
Other State's University Faculty
Desert Research Institute

MEMORANDUM OF UNDERSTANDING BETWEEN THE WYOMING WATER DEVELOPMENT COMMISSION AND THE UNIVERSITY OF WYOMING for the Office of Water Programs

1. Parties. The parties to this Memorandum of Understanding (MOU) are the Wyoming Water Development Commission (WWDC), whose address is 6920 Yellowtail Road, Cheyenne, Wyoming 82002, and the University of Wyoming (University), acting by and through the University Office of Research, whose address is Dept. 3355, 1000 E. University Avenue, Laramie, Wyoming 82071.

2. Purpose. The purpose of this MOU is to further the water resources objectives of the University, the WWDC and other agencies by providing WWDC support for funding of the Office of Water Programs within the Office of Research at the University of Wyoming.

3. Term of MOU. This MOU is effective when all parties have executed it and all required approvals have been granted. The term of the MOU is from July 1, 2018, and shall remain in full force and effect until June 30, 2020.

4. Payment.

A. The total payment provided by the WWDC to the University shall not exceed one hundred seventy-five thousand dollars ($175,000.00). Payments shall be made to the University of Wyoming Office of Sponsored Programs in the form of two annual payments (fiscal years 2019 and 2020) of eighty-seven thousand five hundred dollars ($87,500.00) to commence July 1, 2018. Payment shall be made from Water Development Account I.

B. By May 1, 2020, an accounting estimate of funds not anticipated to be used shall be provided to the WWDC.

5. Responsibilities of University. The Office of Water Programs shall:

A. Work with the Director of the Wyoming Water Development Office to identify research needs of state and federal agencies regarding Wyoming's water resources, including available funding under the National Institutes of Water Resources (NIWR);

B. Serve as a point of coordination for and to encourage research activities by the University of Wyoming to address the research needs identified in subsection A of this section; and

C. In conjunction with the Wyoming Water Development Office, submit a report annually prior to each legislative session to the Select Water Committee and the WWDC on the activities of the office.

6. General Provisions.

A. Amendments. Either party may request changes in this MOU. Any changes, modifications, revisions, or amendments to this MOU which are mutually agreed upon by the parties to this MOU shall be incorporated by written instrument, executed and signed by all parties to this MOU.

B. Applicable Law. The construction, interpretation, and enforcement of this MOU shall be governed by the laws of the State of Wyoming. The Courts of the State of Wyoming shall have jurisdiction over any action arising out of this MOU and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

C. Audit/Access to Records. The WWDC and any of its representatives shall have access to any books, documents, papers, and records of the University which are pertinent to this MOU.

D. Availability of Funds. Each payment obligation of either party is conditioned upon the availability of government funds which are appropriated or allocated for the payment of this obligation. If funds are not allocated and available for the continuance of the services performed by either party, the MOU may be terminated by either party at the end of the period for which the funds are available. Each party shall notify the other party at the earliest possible time of the services which will or may be affected by a shortage of funds. No penalty shall accrue to either party in the event this provision is exercised, and neither party shall be obligated or liable for any future payments due or for any damages as a result of termination under this section. This provision shall not be construed to permit either party to terminate this MOU to acquire similar services from another party.

E. Entirety of Agreement. This MOU, consisting of four (4) pages, represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations, and agreements, whether written or oral.

F. Prior Approval. This MOU shall not be binding upon either party unless this MOU has been reduced to writing before performance begins as described under the terms of this MOU, and unless this MOU is approved as to form by the Attorney General or his representative.

G. Severability. Should any portion of this MOU be judicially determined to be illegal or unenforceable, the remainder of the MOU shall continue in full force and effect, and the parties may renegotiate the terms affected by the severance.

H. Sovereign Immunity. The State of Wyoming, the WWDC and University do not waive sovereign or governmental immunity by entering into this MOU, and each fully retains all immunities and defenses provided by law with respect to any action based on or occurring as a result of this MOU.

I. Third Party Beneficiary Rights. The parties do not intend to create in any other individual or entity the status of third party beneficiary, and this MOU shall not be construed so as to create such status. The rights, duties and obligations contained in the MOU shall operate only between the parties to this MOU, and shall inure solely to the benefit of the parties to this MOU. The provisions of this MOU are intended only to assist the parties in determining and performing their obligations under this MOU.

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7. Signatures. The parties to this MOU, through their duly authorized representatives, have executed this MOU on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this MOU as set forth herein.

The effective date of this MOU is the date of the signature last affixed to this page.

WYOMING WATER DEVELOPMENT COMMISSION

_____ _____
David Evans, Chairman Date

_____ _____
Kellen Lancaster, Secretary Date

Attest:

_____

UNIVERSITY OF WYOMING

_____ _____
Edmund Synakowski Date
Vice President for Research & Economic Development

Attest:

_____

ATTORNEY GENERAL'S OFFICE APPROVAL AS TO FORM

_____ _____
Tyler M. Renner, Assistant Attorney General Date

PROJECT MEMO
FOR LEVEL III CONSTRUCTION PROJECTS
WYOMING WATER DEVELOPMENT OFFICE
CONSTRUCTION DIVISION

The Middle Piney Reservoir Level III construction project was publically bid on May 31, 2018. This memo serves to summarize the bid opening results and to provide award and additional funding recommendations to the Wyoming Water Development Commission and the Select Water Committee.

PROJECT: **Middle Piney Reservoir**
LEVEL: III
SPONSOR: State of Wyoming
LOCATION: Big Piney, Wyoming
PROGRAM: Dams and Reservoirs
PROJECT MGR: Chris Schabron

AUTHORIZING LEGISLATION (Level III Construction):

Purpose	Chapter	Session	Account	Appropriation	Due Date
Level III	75	2017	III	$12,168,000	2022

PROJECT DESCRIPTION:

This project is located in Sublette County, approximately 25 miles west of Big Piney, Wyoming. The project is to reconstruct the Middle Piney reservoir and bring the dam up to Dam Safety standards. The project includes excavation of a cut-off trench, installation of a grout curtain, abandonment, relocation, and modernization of the outlet works, widening of the auxiliary spillway to meet Dam Safety standards and stabilization of the downstream channel and access road.

PROJECT BID RESULTS:

The project bid opening was held on May 31, 2018 at 2:00 p.m. at the Department of Administration & Information (A&I) offices in Cheyenne. A&I received four bids on the project, a summary of the contractor's bids are presented below.

Middle Piney Reservoir Bid Results

	Schedule 1	Schedule 2	Total
NW Construction, Inc.	$ 10,090,425.00	$ 1,129,740.00	$ 11,220,165.00
Big Sky Civil/Montana Civil	$ 10,919,850.00	$ 994,150.00	$ 11,914,000.00
American Civil Constructors, LLC	$ 14,440,650.00	$ 1,452,375.00	$ 15,893,025.00
ASI Construction, LLC	$ 15,466,708.00	$ 2,118,100.00	$ 17,584,808.00

Schedule 1 includes constructing the cut-off trench, grout curtain, and downstream control section to address seepage; abandonment, relocation, and modernization of the outlet works, and widening of the auxiliary spillway to meet Dam Safety standards.

Schedule 2 includes stabilization of the access road, articulated concrete mats to stabilize the slope along the downstream channel and reclamation.

WENCK Associates (WENCK), project engineer, has reviewed the bids and provided an award recommendation letter to the WWDO recommending awarding the project to NW Construction for the bid amount of eleven million, two hundred twenty thousand, one hundred sixty-five dollars ($11,220,165.00). A copy of WENCK's recommendation letter is attached.

PROJECT BUDGET

A summary of the Middle Piney Reservoir Level III project budget is presented below.

Existing Middle Piney Reservoir Budget Summary		
2017 Appropriation	$ 12,168,000.00	
WENCK Assoc.	$ 824,500.00	Construction Management Services
Construction Contract	$ 11,220,165.00	NW Construction (Low Bid)
Subtotal	$ 12,044,665.00	
Available Contingency	$ 123,335.00	
Available Contingency (%)	1.10%	

WWDO RECOMMENDATION:

Recommendation No. 1: The WWDO recommendation to the Wyoming Water Development Commission and Select Water Committee is to award the Middle Piney Reservoir project (Schedules 1 and 2) to NW Construction, Inc. for their bid amount of eleven million, two hundred-twenty thousand, one hundred sixty-five dollars ($11,220,165.00).

Recommendation No. 2: The available contingencies (1.1%) are significantly below what the WWDO would like to see entering a Level III construction project. WWDO prefers to see a minimum of ten percent (10%) contingencies for a Level III construction project. Because of the uncertainties about the final grout curtain, borrow material and rip-rap quantities, WENCK is recommending 15% contingencies for the project, see WENCK's attached letter. Based on WENCK's recommendation, the WWDO recommends requesting an additional one million, five hundred sixty thousand dollars ($1,560,000.00) in project funding from the 2019 Wyoming Legislature to cover the fifteen percent (15%) contingencies. A summary of the Recommended Middle Piney Reservoir Level III project budget with fifteen percent (15%) contingencies is presented below.

Recommended Middle Piney Reservoir Budget Summary		
2017 Appropriation	$ 12,168,000.00	
WENCK Assoc.	$ 824,500.00	Construction Management Services
Construction Contract	$ 11,220,165.00	NW Construction (Low Bid)
Subtotal	$ 12,044,665.00	
Available Contingency	$ 123,335.00	
Additional Contingency	$ 1,560,000.00	Recommended 2019 Legislative Reques
Total Contingency	$ 1,683,335.00	
Available Contingency (%)	15.00%	
Revised Project Budget	$ 13,728,000.00	

WENCK
ASSOCIATES

Responsive partner.
Exceptional outcomes.

June 1, 2018

Mr. Bryan Clerkin
Construction Division Deputy Director
Wyoming Water Development Office
6920 Yellowtail Road
Cheyenne, WY 82009

RE: Recommendation to Award the Middle Piney Dam Reconstruction and Road Stabilization Project (Bid 0338-C) to NW Construction, Inc.

Dear Mr. Clerkin:

We have reviewed the Bids for the Middle Piney Dam Reconstruction and Road Stabilization Project (Bid 0338-C) and confirmed the following:

- NW Construction, Inc. is the low bidder with a Total Bid of $11,220,165.00;
  - Schedule 1 Dam Reconstruction: $10,090,425.00;
  - Schedule 2 Road Stabilization: $1,129,740.00;
- Run-outs of bid items submitted by NW Construction, Inc. are correct;
- All required fields are completed and executed on the Bid Form submitted by NW Construction, Inc.;
- NW Construction, Inc. submitted the following per the Instructions to Bidders:
  - Evidence of the Bidders qualification to do business in Wyoming;
  - A detailed list of non-prequalified subcontractors, materialmen, and suppliers;
  - An executed copy of the Non-Collusion Affidavit;
  - A Bid Bond in the amount of 10% of the Bid;

NW Construction, Inc's low bid appears to be responsive. We therefore recommend award of the Middle Piney Dam Reconstruction and Road Stabilization Project to NW Construction, Inc. of Bozeman, MT for $11,220,165.00.

According to our records, the current budget available for construction is $11,343,500.00, leaving only $123,335.00 available for contingency. We recommend 15%, or approximately $1,680,000.00, be available for contingency due to uncertainties inherent to the work including ultimate availability of local borrow and riprap materials and final grout curtain quantities.

As always, please feel free to contact me, day or night, with any questions or concerns.

Sincerely,

Wenck Associates, Inc.

Marcus J. Krall, PE
Project Manager

CONTRACT BETWEEN THE STATE OF WYOMING
WYOMING WATER DEVELOPMENT COMMISSION,
AND NW Construction, Inc.

1. **Parties.** The parties to this Agreement are the STATE OF WYOMING, acting by and through the WYOMING WATER DEVELOPMENT COMMISSION and WATER DEVELOPMENT OFFICE [collectively, the Agency] and NW Construction, Inc. (Contractor).

2. **Purpose of Contract.** The purpose of this Contract is to set forth the terms and conditions by which the Contractor will accomplish the Work described in the Contract Documents to provide the Middle Piney Dam Reconstruction and Road Stabilization Project at the end of Forest Service Road 10024 in the SE ¼ SW ¼, SE ¼ Sec 7, T30N, R115W, and S ½ NW ¼, SW ¼ Section 8, T30N, R115W 6th Principal Meridian, Sublette County, Wyoming. "Contract Documents" are listed in Section 6, below and are incorporated into this Contract by this reference. Work will include reconstruction of Middle Piney Dam and stabilization of US Forest Service Road 10024 which is further detailed in Attachment A, which is attached to and incorporated into this Contract by this reference.

3. **Term of Contract.** This Contract shall become effective on the date the last signature is affixed hereto (Effective Date). All services shall be completed during the term specified below.

   A. **Time of Commencement and Substantial Completion.** The Work under this Contract will be substantially complete within 300 Working Days after the date when the Contract Time commences to run, as provided in paragraph 2.03 of the General Conditions, and will be completed and ready for final payment in accordance with paragraph 4.G of this Contract within 330 Working Days after the date when the Contact Time commences to run. Schedule I of the project shall be completed before initiating work on Schedule II.

      (i) Performance under this Contract shall not begin prior to the Effective Date of this Contract or the date of the Contractor's receipt of a notice to proceed, whichever occurs later.

      (ii) Permitting the Contractor to continue and finish the Work or any part of it after the time fixed for its completion, or after the use of additional Contract time, will in no way operate as a waiver on the part of the Agency of any of its rights under the Contract.

   B. **Extensions.** Nothing in this Contract shall be interpreted or deemed to create a right or expectation that this Contract will be extended beyond the term described herein. Any extension of this Contract shall be initiated by the Agency, and shall be effective only after it is reduced to writing and executed by all parties to the Contract. Any

agreement to extend this Contract shall include, but not necessarily be limited to: an unambiguous identification of the Contract being extended; the term of the extension; the amount of any payment to be made during the extension, or a statement that no payment will be made during the extension; a statement that all terms and conditions of the original Contract shall, unless explicitly delineated in the exception, remain as they were in the original Contract; and, if the duties of either party will be different during the extension than they were under the original Contract, a detailed description of those duties.

4. Payment. Agency agrees to pay Contractor for the services described herein. The total payment under this Contract shall not exceed $11,220,165.00 "Eleven million two hundred twenty thousand one hundred sixty-five" dollars. No payment shall be made for services performed before the Effective Date of this Contract.

A. Schedule of Values. Before the first Application for Payment, the Contractor shall submit to the Engineer and the Agency a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Engineer and the Agency may require. This schedule, unless objected to by the Engineer and Agency, shall be used as a basis for reviewing the Contractor's invoices for payment.

B. Applications for Payment. On the last day of each month, the Contractor shall submit to the Engineer an itemized Application for Payment for work completed since the last Application for Payment in accordance with the Unit Price Work. Such Application for Payment shall be notarized and supported by such data substantiating the Contractor's right to payment, such as invoices, copies of requisitions from Subcontractors and material supplies, and reflecting retainage. The Contractor shall submit with the Application for Payment, a detailed schedule of the Work completed in the previous month.

(i) The Engineer shall review the Application for Payment and resolve any errors or discrepancies with the Contractor within fourteen (14) days. By the fourteenth day of each month, the Engineer shall submit the Application for Payment, with recommended revisions, if any, to the Agency for payment.

(ii) On this Application for Payment, the Engineer shall certify the amount the Engineer determines is properly due. This certification will constitute a representation by the Engineer to the Agency, based on the Engineer's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and

inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Engineer and Agency.

(iii) If the Engineer recommends reducing the payment, it shall notify the Contractor and Agency in writing of the reasons for the reduction.

(iv) The Agency shall pay the amount properly due unless a good faith dispute exists as to the obligation to pay all or a portion of that amount.

(v) The Agency's payment will not be a representation that the Engineer or Agency has: (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences or procedures; (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Agency to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

(vi) Unless otherwise provided in the Contract Documents, payments shall be made for materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. The Contractor shall submit invoices with each Application for Payment for all stored materials. If approved in advance by the Agency, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Agency to establish the Agency's title to such materials and equipment or otherwise protect the Agency's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

(vii) The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Agency no later than the submission of the Application for Payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which payments have been received from the Agency shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. Contractor shall submit with each Application for Payment a Contractor's Affidavit pursuant to Wyo. Stat. § 16-6-1001.

C. Reduction of Payment. The Engineer and Agency may reduce the amount of a payment in whole or in part, to the extent reasonably necessary to protect the Agency If the Engineer and Agency are unable to certify payment in the amount of the Application, the Engineer and Agency will notify the Contractor. The Agency may also withhold payment in whole or in part, to such extent as may be necessary in the Engineer's or Agency's opinion to protect the Agency from loss for which the Contractor is responsible, including loss resulting from acts and omissions because of:

(i) Defective Work not remedied;

(ii) Third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Agency is provided by the Contractor;

(iii) Failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

(iv) Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

(v) Damage to the Agency or another contractor;

(vi) Failure to provide a weekly schedule of the progress of the Work;

(vii) Failure to clean-up the worksite;

(viii) Overpayment to the contractor;

(ix) Reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

(x) Persistent failure to carry out the Work in accordance with the Contract Documents. When the above reasons for withholding payment are removed payment will be made for amounts previously withheld.

D. Progress Payments. The Agency shall make payment in the manner and within the time provided in the Contract Documents. The amount of the Progress Payment must be in conjunction with Wyo. Stat. § 16-6-702. A retainage of ten percent (10%) of the entire Contract sum will be withheld until final payment is made to the Contractor. If it becomes necessary for the Agency to take over the completion of the Contract, all amounts owed the Contractor, including the withheld percentage, shall first be applied toward the cost of completion of the Contract, as provided in Wyo. Stat. § 16-6-703.

(i) The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Agency, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

(ii) The Engineer and Agency will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Engineer and Agency on account of portions of the Work done by such Subcontractor.

(iii) The Agency and Engineer shall not have an obligation to pay nor to see to the payment of money to a Subcontractor except as may otherwise be required by law.

(iv) Payment to material suppliers shall be treated in a manner similar to that provided in subparagraphs 4(D)(i), 4(D)(ii) and 4(D)(iii).

(v) A progress payment, or partial or entire use or occupancy of the Project by the Agency shall not constitute acceptance of Work not in accordance with the Contract Documents.

E. Failure of Payment. If the Agency, through no fault of the Contractor, does not pay the Contractor within forty-five (45) days after the date established in the Contract Documents the amount properly due and no good faith dispute exists as to the obligation to pay that amount, then the Contractor may, upon seven (7) additional days' written notice to the Agency and Engineer, stop the Work until payment of the amount owing has been received. The Contract term shall be extended appropriately and the Contract amount shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-ups, plus interest.

F. Substantial Completion. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Agency can utilize the Work for its intended use. For the purposes of this Contract, full or partial use of the facility by the Agency shall not, in and of itself, constitute or be sufficient for determining a date or state of completion. All of the following, if applicable to this Work, are prerequisites required for Substantial Completion:

(i) Substantial completion is the time when the Work or a designated portion thereof is sufficiently complete in accordance with the Contract so Agency can use the Work for its intended purpose.

(ii) Inspection, approval, and other permits issued by regulatory agencies having jurisdiction and without conditions. Conditional permits do not satisfy Substantial Completion requirements.

(iii) All building systems are in place, complete, functional, have been fully started and tested, and finally accepted by the Engineer.

(iv) Odor and fume generating activities are complete.

(v) Draft submittal of Operation and Maintenance (O&M) manuals have been submitted and accepted by the Engineer and O&M training necessary for the Agency's personnel to maintain operation of the facility has been completed. Contractor remains liable and responsible for any damage to systems or equipment until Agency receives this information and training.

(vi) The Agency is able to fully utilize all portions of the Work.

(vii) When the Contractor considers that the Work, or a portion thereof which the Agency agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Engineer and Agency a comprehensive list of items to be completed or corrected prior to final payment (punch list). Failure to include an item on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents.

(viii) Upon receipt of the Contractor's list, the Engineer shall make an inspection to determine whether the Work or designated portion thereof is substantially complete. After the Engineer's inspection, the Agency may perform an inspection to determine whether the Work or designated portion thereof is substantially complete. If the inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Agency can utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Engineer and Agency. In such case, the Contractor shall then submit a request for another inspection by the Engineer to determine Substantial Completion.

(ix) Remaining punch list items do not represent a hazard or create an adverse impact to the Agency and occupants in order for the Contractor and/or its subcontractors to complete.

(x) When the Work or designated portion thereof is substantially complete, the Engineer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Agency and Contractor for security, maintenance, heat, utilities, damage to

the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Final Completion.

(xi) The Certificate of Substantial Completion shall be submitted to the Agency and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

G. Final Payment. Final payment, constituting the entire unpaid balance of the Contract sum, shall be paid by the Agency to the Contractor when the Contract Work has been completed, and the Contract fully performed. Final payment will be made only in conjunction with Wyo. Stat. § 16-6-116 and 117, as amended.

(i) No final payment will be made until the Contractor files a sworn statement, stating that all claims for material and labor performed under the Contract have been made and paid. The sworn statement shall be filed with the appropriate entity, as designated in Wyo. Stat. § 16-6-117. A copy of the sworn statement shall be provided to the Agency and Surety. Failure of the Contractor to provide the sworn statement to the Surety will not relieve the Surety from liability under the bond.

(ii) If any claim for material and labor is disputed, the sworn statement shall so state and include a copy of any claim or lien and the amount claimed. The amount claimed shall be deducted from the final payment and retained by the Agency until the dispute is resolved, as provided in Wyo. Stat. § 16-6-117. The parties agree that the Agency may, at its discretion, place the disputed amount in an interest bearing account. In the event the funds are placed in an interest bearing account, any and all accrued interest shall belong to the Contractor.

(iii) Final payment to the Contractor based on its sworn statement of no disputed claims for material or labor shall not relieve the Surety from liability on any bond if outstanding material or labor claims or liens exist, and if material men and/or laborers properly followed the procedures described in Wyo. Stat. § 16-6-121.

5. <u>Responsibilities of Agency.</u>

A. Engineer. The Project Engineer is Victor Anderson, PE of Wenck Associates Inc.

Agency shall pay Contractor in accordance with Section 4 above.

6. <u>Responsibilities of Contractor</u>. The services to be provided by Contractor are described in this Contract, Contract Documents and in Attachment A. By signing this Contract, Contractor acknowledges that its responsibilities under this Contract are further described in the Contract Documents.

7. Work to be Performed. The Contractor shall perform all of the Work on the described project as required by the Contract Documents, including completed construction as described and required by the Contract Documents. The Work to be performed includes the labor and services necessary to produce such construction, and all materials, supplies, tools, transportation, equipment and machinery required for construction.

8. Special Provisions.

A. Agency's Right to Perform

(i) If the Contractor defaults or fails to perform the Work in accordance with the Contract and fails within twenty (20) days after receipt of written notice from the Agency to commence and continue correction of such default or failure to perform with diligence and promptness, the Agency may stop work and/or make good such deficiencies. In such case, an appropriate change order shall be issued deducting from the payments due the Contractor the cost of correcting all deficiencies.

(ii) If it becomes necessary for the Agency to take over the completion of any part of Contract, all of the amounts owing the Contractor, including the withheld percentage, shall first be applied toward the cost of completion of the Contract, as provided in Wyo. Stat. § 16-6-703, as amended. If the payments due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Agency.

B. Review of Contract Documents and Field Conditions by Contractor.

(i) The Contract Documents are complementary. What is required by one part of the Contract Documents shall be binding as if required by all.

(a) Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both.

(ii) Project-specific components generally take precedence over standard provisions.

(iii) Most recent changes, such as change orders, take precedence over original provisions.

(iv) Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents, to the extent referenced.

(v) Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Agency, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Engineer as a request for information in such form as the Engineer may require.

(vi) Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Engineer and Agency, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Engineer and Agency.

(vii) If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Engineer in response to the Contractor's notices or requests for information pursuant to Section 8(B), the Contractor may make a claim. If the Contractor fails to perform the obligations, the Contractor shall pay such costs and damages to the Agency as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Agency or Engineer for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized or should have recognized such error, inconsistency, omission or difference and failed to report it to the Engineer and Agency.

C. Warranty. The Contractor warrants to the Agency and Engineer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor shall replace all such defective and unacceptable materials and equipment at Contractor's expense. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Engineer or

Agency, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

D. Cleanup. The Contractor shall, at all times, keep the premises free from accumulation of waste materials or rubbish caused by operations. At the completion of the Work the Contractor shall remove all waste materials, rubbish, tools, equipment, machinery, materials and supplies from and about the project sites. The Contractor shall dispose of all waste and rubbish in accordance with all applicable laws.

E. Contractor's Cooperation and Supervision of Work.

(i) The Contractor will be supplied with two (2) copies of the Contract, including five sets of plans and specifications and shall keep one set available on the worksite at all times.

(ii) The Contractor shall facilitate progress and cooperate with the Agency and Engineer. The Contractor shall provide sufficient labor to perform the Work. If the Contractor fails to provide sufficient labor force, the Agency may give the Contractor written notice, instructing the Contractor to correct the problem within the time specified in the notice. If the problem has not been corrected within the time specified in the notice, the Agency may utilize the provisions in this Contract for correcting defective or nonconforming work.

(iii) The Contractor shall be responsible to the Agency for the acts and omissions of its employees, subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor. The Contractor shall at all times enforce strict discipline and good order among its employees and shall ensure its employees exhibit appropriate professional behavior and are skilled in the tasks assigned to them. The Agency may direct the Contractor to promptly remove a person who does not comply with this provision from the project site for the duration of the Contract.

(iv) The Contractor shall have on the project site at all times a designated agent, who is a competent supervisor or superintendent capable of reading and understanding the Contract, including the plans and specifications, and experienced in the type of work being performed. This person shall have full authority to execute orders or directions given by the Agency without delay, and to provide materials, equipment, tools, labor and incidentals promptly, as required.

F. Contractor's Construction Schedules. The Contractor, promptly after being awarded the Contract, shall prepare and submit to the Agency and Engineer the Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be updated weekly and delivered

to the Engineer at the weekly coordination meetings, shall be related to the entire project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

(i) The Contractor shall prepare and keep current, for the Engineer's and Agency's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Engineer reasonable time to review submittals.

(ii) The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Agency and Engineer.

G. Labor and Equipment Rates. The Contractor, promptly after being awarded the Contract, shall prepare and submit to the Agency and Engineer a list of hourly labor and equipment rental rates for all of the Contractor's and subcontractor's forces. These rates shall be utilized in all Change Directives, Change Orders and claims.

H. Shop Drawings, Product Data and Samples. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

(i) Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

(ii) Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

(iii) Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Engineer is subject to the limitations of informational submittals upon which the Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Engineer without action.

(iv) The Contractor shall review for compliance with the Contract Documents, approve and submit to the Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Agency or of separate contractors. Submittals which are not

marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Engineer without action.

(v) By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

(vi) The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Engineer.

(vii) The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of submittal and (1) the Engineer has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Engineer's approval thereof.

(viii) The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Engineer on previous submittals. In the absence of such written notice the Engineer's approval of a resubmission shall not apply to such revisions.

(ix) The Contractor shall not be required to provide professional services which constitute the practice of engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Agency and the Engineer will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings,

calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Engineer. The Agency and the Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Agency and Engineer have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this subparagraph, the Engineer will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

I. Cutting and Patching. The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

(i) The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Agency or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Agency or a separate contractor except with written consent of the Agency and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Agency or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

J. Delays and Extensions of Time/Force Majeure. If the Contractor is delayed at any time in the progress of the Work by any change or extra work orders, or an act of God, inclement or adverse weather conditions not reasonably anticipated, or any act or cause beyond the Contractor's control, including but not limited to strikes, lockouts, or unusual delays in shipment, then the Contractor may request a change order for extension of time.

(i) Any request for a change order for extension of time shall be made in writing to the Agency and Engineer within twenty (20) days after commencement of the delay; otherwise it shall be waived. Any request for extension of time shall provide an estimate of the additional time needed.

(ii) Upon written approval of the Engineer, the Contractor may perform work on Saturdays, Sundays, and holidays, or outside Regular Working Hours. If the Contractor works on these days, or outside Regular Working Hours, it shall pay the Engineer two thousand five hundred dollars ($2,500.00) dollars per day, or pro-rated hourly for Work outside Regular Working Hours, for its Construction Management Services. Construction Management Service time paid for by the Contractor shall not count against the Contract time. The Contractor shall

provide written notice to the Engineer forty-eight (48) hours in advance of any said proposed Work.

K. Winter Shutdown and Construction Startup. The Contractor shall submit a Winter Shutdown Request to the Engineer and Agency for a winter shutdown at the end of each construction season. The Contractor shall deliver the winter shutdown request within two (2) days following the suspension of construction activities on the project. Upon receipt of the Winter Shutdown Request, the Engineer and Agency shall issue a Winter Shutdown Notice to the Contractor establishing the Effective Winter Shutdown Date and Remaining Contract Working Days.

At least four (4) weeks prior to construction startup, the Contactor shall notify Engineer and the Engineer shall schedule a pre-construction meeting with the Contactor and the Agency. At the pre-construction meeting, the Contractor shall set a date when the onsite construction activities will resume. The Contractor shall also submit an updated construction schedule to the Engineer and the Agency. Following the pre-construction meeting, and inspection of the project site by the Engineer, the Engineer and Agency shall issue a Construction Startup Notice to the Contractor establishing the Effective Contract Time Start Date and the Remaining Contract Working Days.

The Engineer and Agency will issue a Winter Shutdown Notice and Construction Startup Notice for each shutdown and startup period. The Contractor shall not perform any work on the project during a winter shutdown. Contract time shall not count against the Contractor between the Winter Shutdown Notice and the Construction Startup Notice.

L. Disputes and Claims Procedures. In seeking to resolve any dispute relating to this Contract, the Agency does not waive its sovereign immunity.

(i) In the event of a disagreement, dispute or claim arising between the Contractor and Agency, the Agency shall interpret the requirements of the Contract and the performance there under. If a disagreement, dispute or claim exists, the Contractor shall notify the Agency in writing within seven (7) days, providing the details of the dispute. The Agency shall, within ten (10) days, interpret the Contract, and notify the Contractor in writing whether or not it is entitled to a change order or extra work order on the items at issue.

(ii) During the dispute resolution, the Agency may implement the stop work provision, the Agency's right to perform provision, or other provisions of this Contract.

(iii) If the Contractor is dissatisfied with the determination of the Agency, it may within five (5) days request a partnering session. The parties shall have twenty (20) days from the date of the request for the partnering session to discuss and

attempt to resolve the issue. On resolution of the issue, a resolution agreement shall be developed by the Agency, distributed to all parties, and incorporated into the Contract pursuant to Section 9(A), keeping all of the original terms and conditions of the Contract intact.

(iv) If the dispute is not resolved within the twenty (20) day time provided for a partnering session, the Contractor may within seven (7) days request non-binding mediation or make a modified or amended request for a change order or extra work order. Non-binding mediation shall occur only upon mutual agreement of the parties, and shall be accomplished in accordance with the Wyoming Supreme Court's rules for alternative dispute resolution. The Agency and the Contractor shall jointly select a mediator. The parties to the dispute shall bear their respective costs for the mediation. The mediator may give an oral, or if requested, written, non-binding determination of the dispute. The parties acknowledge and agree that this subsection does not waive, limit, or otherwise affect or reduce the full operation and effect of the provision in this Contract relating to the State's and the Agency's full retention of sovereign immunity.

(v) At the conclusion of the non-binding mediation, the parties may enter into a settlement to be incorporated into the Contract pursuant to Section 9(A), or the Contractor may again request a modified or amended change order or extra work order. If either party disagrees with the proposed determination of the mediator and no settlement or change order or extra work order is pending, the Agency's last determination on the issue is binding.

M. Extra Work. The Contractor shall perform unforeseen work, for which there is no price included in the Contract, whenever it is deemed necessary or desirable in order to fully complete the Work. Such work shall be performed only when authorized and as directed by the Agency. The Agency will determine whether the work at issue is extra work or is work which was contemplated in the Contract. In order to receive compensation for any extra work, the Contractor shall submit a change order request, which must be approved as provided in the change order or extra work order provisions of this Contract. The Contractor will not be paid for the extra work if it fails to submit the change order, field order or extra work order or fails to obtain approval of the change order or extra work order. Field orders and extra work orders shall be approved, denied, or contested, in the same manner as provided for in change orders.

(i) Change orders:

(a) The Agency reserves the right to order, in writing, changes in the Contract, alterations or additions to the Work, or omission of portions of the Work at any time prior to acceptance of the project, without voiding the Contract. The Contractor shall comply with all such written orders. The Contractor

may also request changes in the Contract, but no work will be performed on such requested changes until the request is approved in writing by the Agency and the Engineer.

(b) A change order is a written order authorized and signed by the Agency and the Engineer recommending a change in the Work to be performed under the Contract or authorizing an adjustment in the Contract sum or Contract time.

(c) Any request for a change order shall be in writing, signed and provided to the Agency and the Engineer. It shall include the reasons for the request, and state the change in the Work, and/or the sum and length of time requested. A request for a change order must be made within twenty (20) days after the reason for the request is discovered. Upon discovery, the Contractor shall also provide oral notification to the Engineer. Failure to file a request for a change order within twenty (20) days constitutes a waiver of any future claim.

(d) On receipt of a written request for a change order, the Agency and Engineer, shall determine within fourteen (14) days after receipt of the request, whether a change order should be issued. If a change order is issued, it shall be in writing, signed, and a copy provided to the Contractor no later than fourteen (14) days after receipt of the request. If a change order is not issued, the Contractor will be notified in writing, no later than fourteen (14) days after receipt of its request, of the denial and the reason(s) why its request has been denied.

(e) Changed work shall be performed in accordance with the original Contract requirements.

(f) Any change or deviation from the Contract without written authorization will be at the Contractor's own risk for which no payment, under quantum meruit or otherwise, shall be made.

(g) A change order may also be issued by the Agency without any request having been made by the Contractor, if the Agency determines that an adjustment should be made in the Contract.

(h) Within forty-eight (48) hours, the Contractor may contest the denial of a change order, or state any objection it has to a change order.

(i) Maximum Markup Percentage Allowable on Self-Performed Work: With respect to pricing change orders, the maximum Markup Percentage Fee to be paid to any Contractor (regardless of tier) on self-performed work shall be a single markup percentage not-to-exceed fifteen percent (15%) of the net direct cost of (1) direct labor and allowable labor burden costs applicable to

the change order or extra work; (2) the net cost of material and installed equipment incorporated into the change or extra work, and (3) net rental cost of major equipment and related fuel costs necessary to complete the change in the Work.

(j) Maximum Markup Percentages Allowable on Work Performed by Lower Tier Contractors: With respect to pricing the portion of change order proposals involving work performed by lower tier contractors, the maximum Markup Percentage Fee allowable to the Contractor supervising the lower tier Contractor's work shall not exceed five percent (5%) of the net of all approved change order work performed by all subcontractors combined for any particular change order proposal.

(k) No Markup on Bonds and Liability Insurance Costs: Change Order cost adjustments due to increases or decreases in bond or insurance costs (if applicable) shall not be subject to any Markup Percentage Fee.

(l) Direct and Indirect Costs Covered by Markup Percentages: As a further clarification, the agreed upon Markup Percentage Fee is intended to cover the Contractor's profit and all indirect costs associated with the change order work. Items intended to be covered by the Markup Percentage Fee include, but are not limited to: home office expenses, branch office and field office overhead expense of any kind; project management; superintendents, general foremen; non-working foremen, estimating, engineering; coordinating; expediting; purchasing; detailing; legal, accounting, data processing or other administrative expenses; shop drawings; permits; auto insurance and umbrella insurance; pick-up truck costs; and warranty expense costs.

(m) Deduct Change Orders and Net Deduct Changes: The application of the markup percentages referenced in the preceding paragraphs M(i)(i) and M(i)(j) above will apply to both additive and deductive change orders. In the case of a deductive change order, the credit will be computed by applying the sliding scale percentages as outlined in paragraphs K(i)(i) and K(i)(j) above so that a deductive change order would be computed in the same manner as an additive change order. In those instances where a change involves both additive and deductive work, the additions and deductions will be netted and the markup percentage adjustments will be applied to the net amount.

(n) Without invalidating the Contract and without notice to any surety, Agency and Engineer may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided). If Agency and Contractor are unable to agree on entitlement to, or on the

amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Change Directive, a Claim may be made therefor as provided in Paragraph 8(L).

(ii) Field Orders. The Agency may authorize a field order for changes or alterations in the Work which do not involve change(s) in the unit rates or the Contract price and are not inconsistent with the overall intent of the Contract documents. Alterations which change the character of the Work or materially change the unit costs of the Work will require a change order signed by the Agency and the Engineer.

N. Information required of the Agency. The Agency shall make available a legal description and all surveys in the Agency's possession describing the physical characteristics, easements and utility locations for the project site.

(i) Information or services under the Agency's control shall be furnished by the Agency with reasonable promptness to avoid delay in the orderly progress of the Work.

(ii) The Contractor will be furnished with five (5) copies of drawings and specifications reasonably necessary for the execution of the Work.

O. Inspection. All materials and each part of detail of the Work will be inspected by the Engineer who shall be allowed access to all parts of the Work and shall be furnished with such information and assistance by the Contractor as required to make a complete and detailed inspection.

(i) The Contractor, at any time before acceptance of the Work, shall remove or uncover such portions of the finished Work as directed by the Agency and Engineer. After examination by the Agency and the Engineer, the Contractor shall restore the Work to the standard required by the Contract. Should the Work exposed or examined prove acceptable, the uncovering, removing and replacing, recovering or restoration of the parts removed will be paid as extra work. Should such work prove defective, it shall be replaced at the Contractor's expense.

(ii) All of the Work which does not conform to the requirements of the Contract, or which was unauthorized, will be considered unacceptable, and may be ordered to be removed and replaced in an acceptable manner, at the Contractor's expense, as determined by the Agency. If the Contractor fails to comply with any such order, the Agency may follow the Contract provisions for issuance of a stop work order (see paragraph 8(V)), or under the Agency's right to perform provision (see paragraph 8(A)), the Agency may have unauthorized or unacceptable Work removed and may deduct from any monies due or which become due to the Contractor all costs of removal and correction.

(iii) Acceptance of defective or nonconforming Work: If the Agency prefers to accept defective or nonconforming Work, it may do so instead of requiring its removal and correction, in which case a change order will be issued to reflect a reduction in the Contract sum where appropriate. The Agency may condition its acceptance of nonconforming Work upon the Contractor's agreement to a longer correction period for the nonconforming Work.

(iv) The Contractor warrants to the Agency that all material and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract. All materials and equipment not conforming to these requirements, including substitutions not properly approved and authorized by the Agency may be considered defective and unacceptable. The Contractor shall replace all such defective and unacceptable materials and equipment at Contractor's expense.

P. Labor and Materials. Until final acceptance of the Work, the Contractor shall have the charge, care and sole responsibility of the Work, including any materials and equipment, and shall bear the risk of injury or damage to any part thereof by the action of any party, the elements, or other cause. The Contractor shall bear all expenses to restore all Work which is damaged or destroyed.

Q. Liquidated Damages. Time is of the essence in all phases of the Work. It is specifically understood and agreed by and between the Agency and Contractor that time is of the essence in the Substantial Completion and Final Completion of the Work and the Agency shall sustain actual and direct damages as a result of the Contractor’s failure, neglect or refusal to achieve said deadlines. Such actual and direct damages are, and will continue to be, impracticable and extremely difficult to determine. Execution of this Contract under these specifications shall constitute agreement by the Agency and Contractor that the amounts stated below are the minimum value of the costs and actual and direct damages caused by failure of Contractor to complete the Work within the allotted or agreed extended dates of Substantial and Final Completion, that such sums are liquidated direct damages and shall not be construed as a penalty, and that such sums may be deducted from payments due Contractor if such delay occurs. It is expressly understood that the sum per day is agreed upon as a fair estimate of the pecuniary damages which will be sustained by the Agency in the event that the Work is not completed within the agreed time, or within the agreed extended time, if any, otherwise provided for herein. Said sum shall be considered as liquidated damages only and in no sense shall be considered a penalty, said damages being caused by, but not limited to, additional compensation for personnel, attorneys’ fees, architectural fees, engineering fees, program management fees, inspection fees, storage costs, transportation costs, utilities costs, costs related to loss of beneficial use of water, loss of interest on money, and other miscellaneous increased costs, all of which are difficult to exactly

ascertain. Failure to complete the Work within the designated or agreed extended dates of Substantial or Final Completion shall be construed as a breach of this Agreement.

If the Contractor fails to complete the Work within the time specified in the Contract, or within any authorized extension of time under a change order, Contractor shall pay to the Agency as liquidated damages, the sum of two thousand five hundred dollars ($2,500.00) for each day of delay until the Work is completed or accepted.

(i) The liquidated damages shall be computed beginning the day following the first working day specified for completion and shall continue each and every day until all Work under the Contract is performed.

(ii) After the time specified in the Contract, or any authorized extension of time under a change order, the Agency shall deduct from each payment thereafter the liquidated damages accrued.

(iii) The Agency reserves the right to issue deductive change orders to recover liquidated damages at any time prior to the acceptance of the project, without voiding the Contract.

R. Minor Changes. The Engineer shall have the authority to recommend, and the Agency shall have authority to order, minor changes in the Work not involving an adjustment in the Contract sum or an extension of the Contract time and not inconsistent with the intent of the Contract. Such changes shall be made by written order and shall be binding on the Contractor. The Contractor shall carry out such written orders promptly.

S. Monitoring Activities. The Agency shall have the right to monitor all activities related to this Contract that are performed by Contractor or its subcontractors. This shall include, but not be limited to, the right to make site inspections at any time; to bring experts and consultants on site to examine or evaluate completed work or work in progress; to examine the books, ledgers, documents, papers, and records pertinent to this Contract; and to observe personnel in every phase of performance of Contract related work.

T. Performance and Labor and Material Payment Bonds. If, during the Contract, change orders or other modifications increase the original Contract amount, the Contractor shall furnish to the state additional bonding coverage as required by Wyo. Stat. § 9-2-3004(c)(iv)(C), so that bond of one hundred percent (100%) of the Contract amount is always provided.

U. Site Inspection. By executing this Contract, the Contractor represents that it has visited the site including all locations affected, viewed patent conditions, familiarized itself with the local conditions under which the Work is to be performed and

compared observations with the requirements of the Contract; and shall not complain of any patent site condition in any action against the State. Failure to make careful observations of existing conditions at the site will not result in issuance of a change or extra work order.

V. Stop Work. If the Contractor fails to correct defective Work or fails to perform the Work in accordance with the Contract, the Agency may, by written instrument, order the Contractor to stop the Work or any portion thereof, as provided in the Agency's right to perform provision, until the cause for such order has been eliminated. However, this right to stop the Work shall not give rise to any duty on the part of the Agency to exercise this right for the benefit of the Contractor or any other person or entity.

W. Required Resident Labor. Contractor agrees to comply with the requirements of Wyo. Stat. §16-6-203 for any "Laborers" (as defined in Wyo. Stat. §16-6-202 (a)(i)) employed to perform work under this Contract. Contractor understands that failure to comply with the Required Resident Labor Statute is punishable pursuant to Wyo. Stat. §16-6-206. Unless otherwise provided in the Contract, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent. The Contractor shall comply with all resident and other preference requirements, including but not limited to those applicable to labor, materials and subcontractors.

X. Subcontractors.

(i) The Contractor shall not enter into any subcontract for any of the Work contemplated under this Contract without prior written authorization of the Agency until this Contract is executed.

(ii) Substitution and New Contractors: Within ten (10) days after the award of the Contract, the Contractor shall furnish to the Agency and Engineer a list of subcontractors, even if such list was included in the bid. The Contractor shall not at any time substitute any subcontractor in place of any subcontractor previously listed, without the prior written permission of the Agency. The Contractor must also indicate any additional subcontractor not previously listed or identified. The Agency, shall within twenty (20) days, make any objection to any newly proposed or substituted subcontractor. The Contractor shall not contract with a subcontractor against whom an objection has been made. If the Agency objects to the employment of a particular subcontractor, the Contractor shall then present a substitute subcontractor to which the same objection procedure applies. The Contractor shall not be required to contract with any subcontractor to whom it has a reasonable objection.

(iii) Subcontractual Relations: The Contractor shall require each subcontractor to be bound by the Contract. The Contractor shall make available to each proposed subcontractor, prior to the execution of the subcontract, copies of the Contract to which the subcontractor will be bound.

(iv) Claims by and lien releases from subcontractor: The Contractor shall comply with the provisions of Wyo. Stat. § 16-6-116 to 117, as amended, and verify any amount due to or claims made by subcontractors against the Contractor.

(v) If Contractor bid the Project as a resident Contractor, the resident Contractor shall not subcontract more than thirty percent (30%) of the work covered by this Contract to nonresident subcontractors or nonresident sub-tier subcontractors.

Y. Subsurface or Latent Conditions. If the Contractor encounters concealed or latent conditions below the surface of the ground or in an existing structure which are (1) at variance with or materially different from the conditions indicated by the Contract, or (2) of a nature not ordinarily encountered or inherent in the Work of the character provided for in this Contract, the Contract sum may be adjusted by change order on claim by either party made within twenty (20) days. Upon discovery, the Contractor shall orally inform the Engineer of the condition and provide written notice to the Agency within two (2) weeks.

9. General Provisions

A. Amendments. Any changes, modifications, revisions or amendments to this Contract which are mutually agreed upon by the parties to this Contract shall be incorporated by written instrument, executed by all parties to this Contract.

B. Applicable Law, Rules of Construction, and Venue. The construction, interpretation, and enforcement of this Contract shall be governed by the laws of the State of Wyoming, without regard to conflicts of law principles. The terms "hereof," "hereunder," "herein," and words of similar import, are intended to refer to this Contract as a whole and not to any particular provision or part. The Courts of the State of Wyoming shall have jurisdiction over this Contract and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

C. Assignment Prohibited and Contract Shall Not be Used as Collateral. Neither party shall assign or otherwise transfer any of the rights or delegate any of the duties set out in this Contract without the prior written consent of the other party. The Contractor shall not use this Contract, or any portion thereof, for collateral for any financial obligation without the prior written permission of the Agency.

D. Audit and Access to Records. The Agency and any of its representatives shall have access to any books, documents, papers, electronic data, and records of the Contractor that are pertinent to this Contract. The Contractor shall, immediately upon receiving

written instruction from the Agency, provide to any independent auditor, accountant, or accounting firm, all books, documents, papers and records of the Contractor that are pertinent to this Contract. The Contractor shall cooperate fully with any such independent auditor, accountant, or accounting firm, during the entire course of any audit authorized by the Agency.

E. Availability of Funds. Each payment obligation of the Agency is conditioned upon the availability of government funds which are appropriated or allocated for the payment of this obligation and which may be limited for any reason including, but not limited to, congressional, legislative, gubernatorial, or administrative action. If funds are not allocated and available for continued performance of the Contract, the Contract may be terminated by the Agency at the end of the period for which the funds are available. The Agency shall notify the Contractor at the earliest possible time of the services which will or may be affected by a shortage of funds. No penalty shall accrue to the Agency in the event this provision is exercised, and the Agency shall not be obligated or liable for any future payments due or for any damages as a result of termination under this section.

F. Award of Related Contracts. The Agency may award supplemental or successor contracts for work related to this Contract or may award contracts to other contractors for work related to this Contract. The Contractor shall cooperate fully with other contractors and the Agency in all such cases.

G. Compliance with Laws. The Contractor shall keep informed of and comply with all applicable federal, state and local laws and regulations in the performance of this Contract.

H. Confidentiality of Information. All documents, data compilations, reports, computer programs, photographs, data, and other work provided to or produced by the Contractor in the performance of this Contract shall be kept confidential by the Contractor unless written permission is granted by the Agency for its release. If and when Contractor receives a request for information subject to this Contract, Contractor shall notify Agency within ten (10) days of such request and shall not release such information to a third party unless directed to do so by Agency.

I. Counterparts. This Contract may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Contract. Delivery by the Contractor of an originally signed counterpart of this Contract by facsimile or PDF shall be followed up immediately by delivery of the originally signed counterpart to the Agency. The Contractor's failure to deliver, either personally or via US Mail, postage prepaid, the originally signed counterpart to the Agency within five (5) business days shall be considered a material breach and may result in immediate termination of this Contract by the Agency.

J. Entirety of Contract. This Contract and Attachment A, consisting of thirty-one (31) pages, and the Contract Documents represent the entire and integrated Contract between the parties and supersede all prior negotiations, representations, and agreements, whether written or oral. In the event of conflict between language contained in this Contract and any Attachments or other Contract Documents, the language in this Contract shall control.

K. Ethics. Contractor shall comply with any and all ethical standards governing Contractor's profession, and any applicable statutes, rules, regulations or standards governing contracting with a state agency.

L. Indemnification. The Contractor shall release, indemnify, and hold harmless the State, the Agency, and their officers, agents, and employees from any and all claims, suits, liabilities, court awards, damages, costs, attorneys' fees, and expenses arising out of Contractor's failure to perform any of Contractor's duties and obligations hereunder or in connection with the negligent performance of Contractor's duties or obligations, including, but not limited to, any claims, suits, liabilities, court awards, damages, costs, attorneys' fees, and expenses arising out of Contractor's negligence or other tortious conduct.

M. Independent Contractor. The Contractor shall function as an independent contractor for the purposes of this Contract and shall not be considered an employee of the State of Wyoming for any purpose. Consistent with the express terms of this Contract, the Contractor shall be free from control or direction over the details of the performance of services under this Contract. The Contractor shall assume sole responsibility for any debts or liabilities that may be incurred by the Contractor in fulfilling the terms of this Contract and shall be solely responsible for the payment of all federal, state, and local taxes which may accrue because of this Contract. Nothing in this Contract shall be interpreted as authorizing the Contractor or its agents or employees to act as an agent or representative for or on behalf of the State of Wyoming or the Agency or to incur any obligation of any kind on behalf of the State of Wyoming or the Agency. The Contractor agrees that no health or hospitalization benefits, workers' compensation, unemployment insurance, or similar benefits available to State of Wyoming employees will inure to the benefit of the Contractor or the Contractor's agents or employees as a result of this Contract.

N. Kickbacks. The Contractor certifies and warrants that no gratuities, kickbacks or contingency fees were paid in connection with this Contract, nor were any fees, commissions, gifts, or other considerations made contingent upon the award of this Contract. If the Contractor breaches or violates this warranty, Owner may, at its discretion, terminate this Contract without liability to the Owner, or deduct from the Contract price or consideration, or otherwise recover, the full amount of any commission, percentage, brokerage, or contingency fee per Wyo. Stat. § 9-2-1032.

O. Nondiscrimination. The Contractor shall comply with the Civil Rights Act of 1964, the Wyoming Fair Employment Practices Act (Wyo. Stat. § 27-9-105 *et seq*.), the Americans with Disabilities Act (ADA), 42 U.S.C. § 12101, *et seq*., and the Age Discrimination Act of 1975 and/or any properly promulgated rules and regulations thereto and shall not discriminate against any individual on the grounds of age, sex, color, race, religion, national origin, or disability in connection with the performance under this Contract.

P. Nonresident Contractors. Wyo. Stat. § 17-16-1501 requires nonresident corporations to be registered with the Wyoming Secretary of State's office. Wyo. Stat. § 27-1-106(a) provides that firms, corporations or employers of any kind who are nonresident employers and expect to pay wages in the state of Wyoming in excess of ten thousand dollars ($10,000.00) monthly, or one hundred twenty thousand dollars ($120,000.00) annually, as a result of conducting business within Wyoming, are required to file with the director of the department of workforce services a surety bond or other security meeting these requirements. By signing this Contract, Contractor agrees to abide by these provisions and to contact the Wyoming Department of Workforce Services to obtain proof that it is in good standing with both its Unemployment Tax Division and Worker's Safety and Compensation Division and to provide such proof to Agency upon request.

Q. Notices. All notices arising out of, or from, the provisions of this Contract shall be in writing and given to the parties at the addresses provided below, either by regular mail or delivery in person. Any change of address must be provided in writing to both parties.

If to the Agency:

Wyoming Water Development Commission
6920 Yellowtail Road
Cheyenne, Wyoming 82002

If to the Contractor:

NW Construction, Inc.
7585 Shedhorn Drive
Bozeman, MT 59718

R. Notice of Sale or Transfer. The Contractor shall provide the Agency with notice of any sale, transfer, merger, or consolidation of the assets of the Contractor. Such notice shall be provided in accordance with the notices provision of this Contract and, when possible and lawful, in advance of the transaction. If the Agency determines that the sale, transfer, merger, or consolidation is not consistent with the continued satisfactory performance of the Contractor's obligations under this Contract, then the Agency may, at its discretion, terminate or renegotiate the Contract.

S. Prior Approval. This Contract shall not be binding upon either party, no services shall be performed, and the Wyoming State Auditor shall not draw warrants for payment, until this Contract has been fully executed, approved as to form by the Office of the Attorney General, filed with and approved by A&I Procurement, and approved by the Governor of the State of Wyoming, or his designee, if required by Wyo. Stat. § 9-2-1016(b)(iv).

T. Insurance Requirements.

(i) During the term of this Contract, the Contractor shall obtain and maintain, and ensure that each subcontractor obtains and maintains, each type of insurance coverage specified in Insurance Coverage, below.

(ii) All policies shall be primary over any insurance or self-insurance program carried by the Contractor or the State of Wyoming. All policies shall include clauses stating that each insurance carrier shall waive all rights of recovery under subrogation or otherwise against Contractor or the State, its agencies, institutions, organizations, officers, agents, employees, and volunteers.

(iii) The Contractor shall provide Certificates of Insurance to the Agency verifying each type of coverage required herein. If the policy is a "claims made" policy instead of an "occurrence" policy, the information provided shall include, but is not limited to, retroactive dates and extended reporting periods or tails.

(iv) All policies shall be endorsed to provide at least thirty (30) days advance written notice of cancellation to the Agency. A copy of the policy endorsement shall be provided with the Certificate of Insurance.

(v) In case of a breach of any provision relating to Insurance Requirements or Insurance Coverage, the Agency may, at the Agency's option, obtain and maintain, at the expense of the Contractor, such insurance in the name of the Contractor, or subcontractor, as the Agency may deem proper and may deduct the cost of obtaining and maintaining such insurance from any sums which may be due or become due to the Contractor under this Contract.

(vi) All policies required by this Contract shall be issued by an insurance company with an A.M. Best rating of A- VIII or better.

(vii) The Agency reserves the right to reject any policy issued by an insurance company that does not meet these requirements.

U. Insurance Coverage. The Contractor shall obtain and maintain the following insurance in accordance with the Insurance Requirements set forth above:

(i) Commercial General Liability Insurance. Commercial general liability insurance (CGL) coverage, occurrence form, covering liability claims arising from premises, operations, independent contractors, personal and advertising injury, and liability assumed under an insured contract (including tort liability of another party assumed in a business contract) with minimum limits as follows:

(a) $1,000,000.00 each occurrence;
(b) $1,000,000.00 personal injury and advertising injury;
(c) $2,000,000.00 general aggregate; and
(d) $2,000,000.00 products and completed operations.

The CGL policy shall include coverage for Explosion, Collapse and Underground property damage. This coverage may not be excluded by endorsement. The Contractor shall name the United States Department of Agriculture, Forest Service as an additional insured on the CGL policy.

(ii) Workers' Compensation and Employer's Liability Insurance. Employees hired in Wyoming to perform work under this Contract shall be covered by workers' compensation coverage obtained through the Wyoming Department of Workforce Services' workers' compensation program, if statutorily required. Employees brought into Wyoming from Contractor's home state to perform work under this Contract shall be covered by workers' compensation coverage obtained through the Wyoming Department of Workforce Services' workers' compensation program or other state or private workers' compensation insurance approved by the Wyoming Department of Workforce Services, if statutorily required.

The Contractor shall provide the Agency with a Certificate of Good Standing or other proof of workers' compensation coverage for all of its employees who are to perform work under this Contract, if such coverage is required by law. If workers' compensation coverage is obtained by Contractor through the Wyoming Department of Workforce Services' workers' compensation program, Contractor shall also obtain Employer's Liability "Stop Gap" coverage through an endorsement to the CGL policy required by this Contract, with minimum limits as follows:

(a) Bodily Injury by Accident: $1,000,000.00 each accident;
(b) Bodily Injury by Disease: $1,000,000.00 each employee; and
(c) Bodily Injury by Disease: $1,000,000.00 policy limit.

(iii) Unemployment Insurance. The Contractor shall be duly registered with the Department of Workforce Services and obtain such unemployment insurance coverage as required. The Contractor shall supply Agency with a Certificate of Good Standing or other proof of unemployment insurance coverage.

(iv) Automobile Liability Insurance. Automobile liability insurance covering any auto (including owned, hired, and non-owned) with minimum limits of $1,000,000.00 each accident combined single limit.

V. Severability. Should any portion of this Contract be judicially determined to be illegal or unenforceable, the remainder of this Contract shall continue in full force and effect, and the parties may renegotiate the terms affected by the severance.

W. Sovereign Immunity and Limitations. Pursuant to Wyo. Stat. § 1-39-104(a), the State of Wyoming and Agency expressly reserve sovereign immunity by entering into this Contract and specifically retain all immunities and defenses available to them as sovereigns. The parties acknowledge that the State of Wyoming has sovereign immunity and only the Wyoming Legislature has the power to waive sovereign immunity. The parties further acknowledge that there are constitutional and statutory limitations on the authority of the State of Wyoming and its agencies or instrumentalities to agree to certain terms and conditions supplied by the Contractor, including, but not limited to, the following: liability for damages; choice of law; conflicts of law; venue and forum-selection clauses; defense or control of litigation or settlement; liability for acts or omissions of third parties; payment of attorneys' fees or costs; additional insured provisions; dispute resolution, including, but not limited to, arbitration; indemnification of another party; and confidentiality. Any such provisions in the Contract, or in any attachments or documents incorporated by reference, will not be binding on the State of Wyoming. Designations of venue, choice of law, enforcement actions, and similar provisions shall not be construed as a waiver of sovereign immunity. The parties agree that any ambiguity in this Contract shall not be strictly construed, either against or for either party, except that any ambiguity as to sovereign immunity shall be construed in favor of sovereign immunity.

X. Taxes. The Contractor shall pay all taxes and other such amounts required by federal, state and local law, including, but not limited to federal and social security taxes, workers' compensation, unemployment insurance and sales taxes.

Y. Termination of Contract. This Contract may be terminated, without cause, by Agency upon thirty (30) days written notice. The Agency may terminate this Contract immediately for cause if the Contractor fails to perform in accordance with the terms and conditions of this Contract. Should the Contractor fail to perform in a manner consistent with the terms and conditions set forth in this Contract, payment under this Contract may be withheld until such time as the Contractor performs its duties and responsibilities. If at any time during the performance of this Contract, in the opinion of the Agency, the Work is not progressing satisfactorily or within the terms of the Contract, then at the discretion of the Agency and after written notice to the Contractor, the Agency may terminate this Contract or any part of it. At this termination date, the Contractor will be entitled to a pro rata payment for all work

accomplished and all construction-ready materials provided and accepted by the Agency and all finished documents, data, models and reports prepared under the Contract shall, at the option of the Agency, become its property upon payment for services rendered through the termination of the Contract.

Z. Third-Party Beneficiary Rights. The parties do not intend to create in any other individual or entity the status of third party beneficiary, and this Contract shall not be construed so as to create such status. The rights, duties and obligations contained in this Contract shall operate only between the parties to this Contract, and shall inure solely to the benefit of the parties to this Contract. The provisions of this Contract are intended only to assist the parties in determining and performing their obligations under this Contract.

AA. Time is of the Essence. Time is of the essence in all provisions of this Contract.

BB. Titles Not Controlling. Titles of paragraphs are for reference only, and shall not be used to construe the language in this Contract.

CC. Waiver. No term or condition of this Contract shall be held to be waived, modified, or deleted except by an instrument, in writing, signed by the parties. Failure to object to a breach shall not be deemed to be a waiver.

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10. <u>Signatures</u>. In witness thereof, the parties to this Contract, either personally or through their duly authorized representatives, have executed this Contract on the days and dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Contract.

The Effective Date of this Contract is the date of the signature last affixed to this page.

ATTORNEY GENERAL'S OFFICE APPROVAL AS TO FORM

Tyler M. Renner, Assistant Attorney General	Date

CONTRACTOR

Neil W. VanAmburg, P.E., CEO NW Construction, Inc.	Date

STATE OF WYOMING

David Evans, Water Development Commission Chairman (or designated)	Date
Kellen Lancaster, Water Development Commission Secretary (or designated)	Date

ATTACHMENT A

SUMMARY OF WORK

1. Furnish bonds and insurance.

2. Mobilization to and demobilization from the construction site, including any requisite site access grading and site reclamation.

3. Install cut-off trench, grout curtain, trench drain, and seepage control section.

4. Furnish and install new outlet works, including control structure and building, terminal structures, and all appurtenances.

5. Install new spillway and appurtenances.

6. Provide and install new boat ramp and debris boom.

7. Provide and install key finishes and complete site reclamation.

8. Provide and install site instrumentation and telemetry systems.

9. Stabilize portions of USFS Road 10024.

2018 PURCHASE RECOMMENDATION

Project Name: Lake DeSmet Facilities Acquisition **County:** Johnson County

Project Type: Purchase Existing Water Storage, Supply, Pumping, and Pipeline Assets

Project Manager: Harry LaBonde **Proposed Purchase Price:** $2,500,000.00

PROJECT DESCRIPTION

Sasol Middle East and India (PTY) LTD (Sasol) currently owns the remnants of a large water development project that was developed in the 1970's for a proposed industrial energy project. Several different owners have proposed energy projects over the years but none were ever constructed. Sasol is the most recent company to propose an energy development project and acquired these water assets to facilitate the planned project. However, with the downturn in energy prices, Sasol has now decided to abandon the project and sell all of their holdings including the water assets now proposed for purchase by the State of Wyoming. Those water assets include the following:

- Three storage water right permits in Lake DeSmet totaling 62,199 AF
    - Permit 7533R with a priority date of 8-16-39 and a volume of 11,640 AF. It should be noted that this is a pre-Yellowstone River Compact water right.
    - Permit 7289R with a priority date of 4-15-57 and a volume of 36,834 AF
    - Permit 7290R with a priority date of 10-14-57 and a volume of 13,725 AF
- Reservoir supply permits to supply water to Lake DeSmet from Rock Creek, French Creek, and Clear Creek
    - Permit 22930, supply for 3rd Enlargement of Lake DeSmet from Rock Creek
    - Permit 22929, supply for 3rd Enlargement of Lake DeSmet from French Creek
    - Permit 22928, supply for 3rd Enlargement of Lake DeSmet from Clear Creek
- Clear Creek diversion dam (Permit 8729R - diverts water into Healy Reservoir)
- Healy Reservoir with a storage volume of 5,140 AF (Permit 7289R)
- Clear Creek – Lake DeSmet Pipeline water supply system consisting of 6.7 miles of 66" diameter pipeline including associated easements
- Clear Creek Pumping Plant containing six – 1500 hp pumps and two smaller irrigation pumps. The facility is located next to Healy Reservoir.
- Inlet/outlet structure located on the south dike of Lake DeSmet
- Approximately 445 acres of land with mineral rights containing Healy Reservoir, Pumping Plant and Diversion Structure.

In the development and construction of the above referenced facilities, there have been a number of obligations and institutional arrangements created that will have to continue if the State purchases these facilities. There are also a number of repairs/upgrades that will be required should the State purchase these assets. The estimated cost to service these agreements is $75,000 to $120,000 per year. The cost of the necessary repairs/upgrades are not known at this time. Obligations and repairs include:

- Obligations
    - Obligation to provide up to 2,191 AF of irrigation water to the Clear Creek Water Users Association. This water is pumped from Healy Reservoir to Clear Creek with no costs assessed to the water users association. Orders for water are taken M-W-F during the irrigation season.
    - Irrigation lease to provide water through the pipeline to Wohlbrandt.
    - Irrigation lease to provide water through the pipeline to Morey

- Irrigation lease to wheel water through the pipeline to Belus
- Fishing and access lease of Healy Reservoir to the Wyoming Game & Fish
- Electrical substation lease to Powder River Energy Company
- Pipeline easement requiring liability insurance for Johnston
- Pipeline easement requiring an annual payment of $3,432.00 to the T Cross T Ranch
- Agricultural lease to Merlin Ranch
- Comprehensive reservoir agreement with Johnson County for operation costs on Lake DeSmet
- Service agreement for day to day monitoring, operations and maintenance of all facilities (K. Money is current contractor)
- Continue the annual due diligence reports to the Board of Control on actions to beneficially use the DeSmet water. A comprehensive due diligence report and petition to the Board of Control is also required.
- While the Sasol water storage rights in Lake DeSmet have been adjudicated, the industrial and most of the irrigation use has never been put to beneficial use. This could subject the rights to an abandonment proceeding. W.S. 41-3-401 allows the Lake DeSmet water rights owner to petition the Board of Control every five years to demonstrate due diligence in putting these water rights to beneficial use, therefore avoiding an abandonment proceeding.

- Repairs/Upgrades
  - Provide additional fences to delineate new property boundaries where fences do not currently exist
  - The electrical control systems are 40 plus years old and need to be replaced. The control work should be phased starting with those systems that are used for current operations.

POTENTIAL BENEFITS TO THE STATE

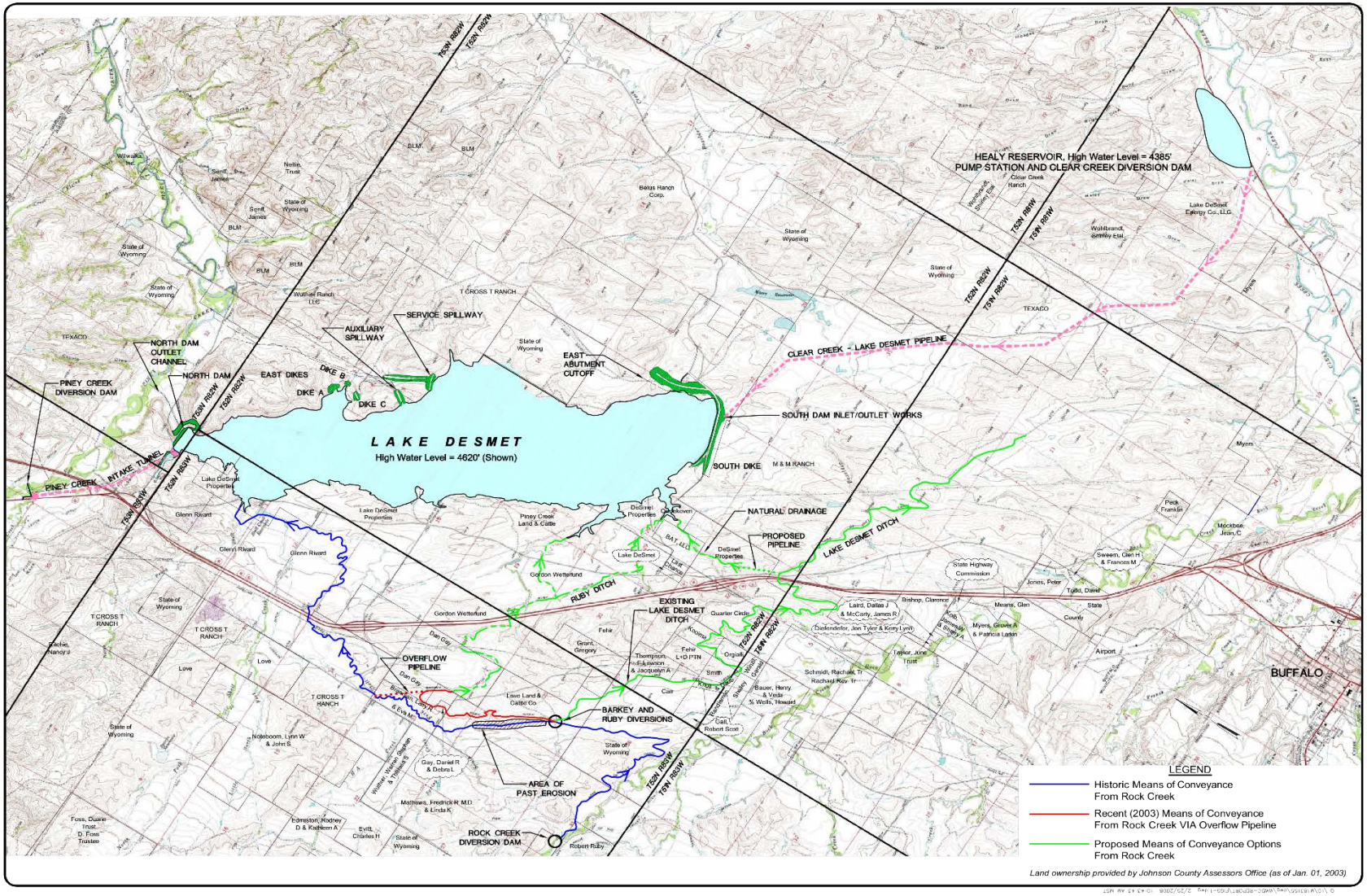
- Lake DeSmet is located approximately 5 miles from the Tongue River drainage and if the appropriate pumping and transmission facilities were constructed, storage water could be pumped from DeSmet to replace out of priority diversions in Wyoming and thereby satisfy a Montana call for regulation. This type of "call" occurred in 2015 and 2016 and is the result of the MT v. WY litigation. The WWDC could offer water service agreements similar to those issued on the Pathfinder Modification Project.
- Lake DeSmet is in the Powder River Basin and while the Powder River was dropped from the MT v. WY lawsuit, storage water could be released from DeSmet to replace out of priority diversions in Wyoming and thereby satisfy a Montana call for regulation. The WWDC could offer water service agreements similar to those issued on the Pathfinder Modification Project.
- Potential to temporarily exchange (lease) Lake DeSmet storage water for out of priority in-state diversions in the Clear Creek system.
- The DeSmet water rights are senior to the proposed Bull Creek Reservoir project and affect the Bull Creek project water yield. By transferring (permanent or temporary) a portion of the Lake DeSmet water rights to the Bull Creek Reservoir project, the new reservoir can be downsized (cost savings) or the yield of the Bull Creek project goes up making more water available to irrigation and municipal water users higher in the basin.
- Healy Reservoir is a popular fishing area that is open to the public through a short term agreement with the G&F. A longer term relationship is desired by the G&F.
- Additional storage water could be delivered to irrigators in the Clear Creek drainage.

POTENTIAL NEGATIVES TO THE STATE

- Annual O&M payments for the 62,199 AF of Lake DeSmet storage space are currently estimated to be $50,000 – $75,000 per year. O&M costs are covered under a water agreement with Johnson County for 31.73% of the annual operation and maintenance costs. This cost will be funded by the WWDC through a new debt service account which will initially be funded from WDA I.
- The Clear Creek water supply system, diversion dam and Healy Reservoir will have annual O&M costs that are the full responsibility of the owner and estimated to be $25,000 - $50,000 per year. This cost will be funded by the WWDC through a debt service account which will initially be funded from WDA I.
- Due to the age of the electrical equipment in the pump station, the equipment likely contains polychlorinated biphenyl (PCB's) which will require hazardous waste remediation if the equipment is removed.
- Due to seepage through dams and dikes at high reservoir levels, Lake DeSmet is operated at a level approximately eight feet below its full pool. This equates to not filling roughly 26,700 acre-feet of the 196,000 acre-foot active pool. The Sasol storage rights in DeSmet share proportionately in this shortfall, which by WWDO estimates equates to roughly 13.6%. Therefore, it is estimated that 53,713 acre-feet of the 62,199 acre-feet can currently be stored.

HISTORY

- Lake DeSmet and the associated facilities have a long history that begins with Reynolds Mining in 1954. Reynolds Mining intended to develop the coal reserves on their properties and enlarged Lake DeSmet to 72,867 AF along with completing the Piney Creek Supply System to bring water to Lake DeSmet from Piney Creek.
- In 1973 Texaco began purchasing the project assets from Reynolds Mining and ultimately gained ownership of the entire property including Lake DeSmet. Under Texaco ownership, Lake DeSmet was enlarged to its present size of 234,987 AF. The company also constructed the Clear Creek Supply System which consists of the Clear Creek Diversion Dam, Healy Reservoir (5,140 AF), the Pumping Plant and the Clear Creek to Lake DeSmet pipeline (6.7 miles of 66" diameter pipe). It was also discovered that the north dam of Lake DeSmet had significant leakage through the right abutment which Texaco partially corrected with a concrete cutoff wall. At this time the lake is only filled to a capacity of approximately 200,000 AF so as to avoid excessive leakage.
- In 1996 Texaco sold the Clear Creek supply facilities and some Lake DeSmet storage to Lake DeSmet Energy Company (LDEC).
- In 2001 Texaco transferred the remaining Lake DeSmet storage to the Lake DeSmet County Coalition Joint Powers Board (LDCCJPB) along with associated Piney Creek Supply System. The LDCCJPB consisted of Johnson, Sheridan and Campbell Counties.
- In 2004 Campbell County left the LDCCJPB.
- In 2010 LDEC sold their assets to PacifiCorp Energy and M&M Ranch Acquisition Company which were holdings of the MidAmerican Energy Holding Company. This acquisition included the land holdings south of Lake DeSmet (approximately 9,986 acres).
- In 2012 PacifiCorp Energy and M&M Ranch Acquisition Company sold their assets to Sasol Synfuels.
- In 2012 LDCCJPB was dissolved with Johnson County buying out Sheridan County and becoming the subsequent owner of Lake DeSmet less those assets owned by Sasol.


HEALY RESERVOIR, High Water Level = 4385'
PUMP STATION AND CLEAR CREEK DIVERSION DAM
LAKE DESMET
High Water Level = 4620' (Shown)
SERVICE SPILLWAY
AUXILIARY SPILLWAY
EAST ABUTMENT CUTOFF
EAST DIKES
DIKE A
DIKE B
DIKE C
NORTH DAM
NORTH DAM OUTLET CHANNEL
PINEY CREEK DIVERSION DAM
PINEY CREEK INTAKE TUNNEL
CLEAR CREEK - LAKE DESMET PIPELINE
SOUTH DAM INLET/OUTLET WORKS
SOUTH DIKE
NATURAL DRAINAGE
PROPOSED PIPELINE
LAKE DESMET DITCH
RUBY DITCH
EXISTING LAKE DESMET DITCH
OVERFLOW PIPELINE
BARKEY AND RUBY DIVERSIONS
AREA OF PAST EROSION
ROCK CREEK DIVERSION DAM
BUFFALO
T CROSS T RANCH
TEXACO
T55N R83W
T55N R82W
T54N R83W
T54N R82W
LEGEND
Historic Means of Conveyance From Rock Creek
Recent (2003) Means of Conveyance From Rock Creek VIA Overflow Pipeline
Proposed Means of Conveyance Options From Rock Creek
Land ownership provided by Johnson County Assessors Office (as of Jan. 01, 2003)

Clear Creek Diversion Dam –Upstream View

Clear Creek Diversion Dam – Downstream View

Pump Station at Healy Reservoir – Exterior View

Pump Station at Healy Reservoir – Interior View

Pump Station with Healy Reservoir in the Background

Inlet/Outlet Structure on the South Dike of Lake DeSmet

Note: The following documents are considered to be provisional as minor revisions are anticipated as the negotiations between Sasol (Seller) and the WWDO are expected to continue through June 8, 2018. These provisional documents are being provided to the WWDC and Select Water Committee so you may become familiar with them in advance of the upcoming June 15, 2018 WWDC/SWC meeting. The final purchase agreement with all exhibits will be available for review at the June 15, 2018 meeting.

Description of Documents

For The

Lake DeSmet Water Assets Purchase Agreement

Document Description	Exhibit
Purchase Agreement	
Special Warranty Deed (Healy Reservoir Parcel) – Exhibit A	A
Special Warranty Deed (Reservoir Water Rights) Exhibit B	B
Comprehensive Reservoirs Agr. Assignments and Assumption Agr.- Exhibit C	C
Bill of Sale (Clear Creek Pipeline, So. Dike Inlet/Outlet Works, and Pumping Plant) (Note: the Pumping Plant includes the Clear Creek Diversion Structure) – Exhibit D	D
Assignment of Johnston Pipeline Easement Agreement – Exhibit E	E
Assignment of Reserved Pipeline Easement (Merlon Ranch) – Exhibit F	F
Assignment of Wohlbrandt Right-of-Way Easements (Pipeline easement) – Exhibit G	G
Assignment of Texaco easement (Pipeline easement) – Exhibit H	H
Assignment and Quitclaim (Pipeline & So. Dike Outlet Works – Johnson Co.) – Exhibit I	I
Assignment of T Cross T Right-of-Way Easement – Exhibit J	J
Bill of Sale (Lake DeSmet Stored Water) – Exhibit K	K
Bill of Sale (Healy Reservoir Stored Water) - Exhibit L	L
Assignment of Permit No. 7499 ENL (Fills DeSmet from Piney Creek) – Exhibit M	M
Assignment of License Agreement w/ Johnson County (Water haul agr.) - Exhibit N	N
Assignment of Lease and Water Purchase Agreements – Exhibit O (Clear Cr Substation, WY G&F, Belus and Morey, & Wohlbrandt agreements)	O

PURCHASE AGREEMENT

SASOL MIDDLE EAST AND INDIA (PTY) LTD ("SELLER")
And
STATE OF WYOMING
By and through the
WYOMING WATER DEVELOPMENT COMMISSION ("WWDC")

LIST OF EXHIBITS

Exhibit A	Special Warranty Deed for Healy Reservoir Parcel
Exhibit B	Special Warranty Deed for Reservoir Water Rights
Exhibit C	Comprehensive Reservoir Agreements Assignment and Assumption Agreement
Exhibit D	Bill of Sale (Clear Creek Pipeline Facilities)
Exhibit E	Assignment of Johnston Pipeline Easement Agreement
Exhibit F	Assignment of Reserved Pipeline Easement
Exhibit G	Assignment of Wohlbrandt Right-of-Way Easement
Exhibit H	Assignment of Texaco Easement
Exhibit I	Assignment and Quitclaim
Exhibit J	Assignment of T Cross T Easement
Exhibit K	Bill of Sale (Lake DeSmet Stored Water)
Exhibit L	Bill of Sale (Healy Reservoir Stored Water)
Exhibit M	Assignment of Permit No. 7499 Enl.
Exhibit N	2018 Assignment of License Agreement
Exhibit O	Assignment of Lease and Water Purchase Agreements

PURCHASE AGREEMENT

THE PARTIES TO THIS PURCHASE AGREEMENT (***"Agreement")*** are the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Agreement ***("WWDC")*** and Sasol Middle East and India (PTY) Ltd, a South Africa corporation**,** whose address is 12120 Wickchester Lane, Houston, TX 77079 ***("SELLER").***

1. Agreement to Sell and Purchase. For and in consideration of the Purchase Price and the mutual covenants contained herein, SELLER agrees to sell and convey to WWDC, and WWDC agrees to purchase from SELLER, in accordance with all of the terms and conditions of this Agreement, the Healy Reservoir Parcel, containing 445.6 acres, more or less; the Reservoir Water Rights; the Lake DeSmet Clear Creek Pipeline; Clear Creek Diversion Dam; Outlet Works and Pump Station; and all of the related easements, rights and agreements ***(*****the *"Property"),*** all fully described in the following Documents of Conveyance and Assignment:

(a) Exhibit A, Special Warranty Deed for Healy Reservoir Parcel

(b) Exhibit B, Special Warranty Deed for Reservoir Water Rights

(c) Exhibit C, Comprehensive Reservoir Agreements Assignment and Assumption Agreement

(d) Exhibit D, Bill of Sale (Clear Creek Pipeline Facilities)

(e) Exhibit E, Assignment of Johnston Pipeline Easement Agreement

(f) Exhibit F, Assignment of Reserved Pipeline Easement

(g) Exhibit G, Assignment of Wohlbrandt Right-of-Way Easement

(h) Exhibit H, Assignment of Texaco Easement

(i) Exhibit I, Assignment and Quitclaim

(j) Exhibit J, Assignment of T Cross T Easement

(k) Exhibit K, Bill of Sale (Lake DeSmet Stored Water)

(l) Exhibit L, Bill of Sale (Healy Reservoir Stored Water)

(m) Exhibit M, Assignment of Permit No. 7499 Enl.

(n) Exhibit N, 2018 Assignment of License Agreement

(o) Exhibit O, Assignment of Lease and Water Purchase Agreements

(referred to herein as the ***"Documents of Conveyance")***

2. Enrolled Act No. 57. This Purchase Agreement is entered into by WWDC in accordance with Enrolled Act No. 57 of the 2018 Budget Session of the Wyoming Legislature, House of Representatives ***("Enrolled Act No. 57").***

(a) Enrolled Act No. 57 provides in part:

> The office is hereby authorized to negotiate a purchase agreement with the owner of the project, the purchase agreement shall be submitted to the commission and governor for approval;
>
> Upon approval of a purchase agreement by the commission and governor, the commission is authorized to expend up to two million five hundred thousand dollars ($2,500,000.00) to purchase project components described in the approved purchase agreement;
>
> In addition to the authorized purchase price in the approved agreement, the office may use appropriated funds to pay fifty percent (50%) of the closing costs;

(b) The parties acknowledge and agree that this Agreement is contingent upon approval of this Agreement by WWDC and the Governor.

(c) The parties further agree that if this Agreement is not approved by both WWDC and the Governor on or before June 30, 2018, this Agreement may be declared terminated by either party by written notice of termination to the other party ***("Notice of Termination")***. Upon delivery of a Notice of Termination, this Agreement shall terminate and the parties shall have no further obligations, one to the other, pursuant to this Agreement.

3. Term of the Agreement. This Agreement is effective when all parties have executed it ***("Effective Date")***. The Term of the Agreement is from the Effective Date until all provisions and conditions set forth herein have been fully satisfied.

4. Purchase Price. The Purchase Price for the Property is Two Million Five Hundred Thousand Dollars ($2,500,000) ***("Purchase Price").*** The Purchase Price shall be paid to SELLER in cash or cash equivalent at Closing.

5. Closing. Closing of the purchase and sale of the Property ***("Closing")*** shall be held at the offices of the Title Company (see Section 8(b)) on Tuesday, June 26, 2018 ***("Closing Date").***

6. Taxes. SELLER shall be responsible for the payment of all city, state and county ad valorem taxes and similar impositions levied or imposed upon or assessed against the Property ("Taxes") prior to and for the year of the sale.

7. Prorations and Adjustments to Purchase Price. The following prorations and adjustments to the Purchase Price shall be made between WWDC and SELLER at Closing:

(a) All utility charges and deposits and any other items which are customarily prorated shall be prorated as of the Closing Date.

(b) All payments received for water purchases and lease payments shall be prorated as of the Closing Date.

(c) In making the prorations required by this paragraph, the economic burdens and benefit of ownership of the Property for the Closing Date shall be allocated to SELLER.

7. Access and Due Diligence Materials. Prior to execution of this Agreement, SELLER has provided to WWDC extensive documentation about, and access to the Property. To the extent further access to or documentation about the Property is reasonably requested by WWDC, the SELLER promptly shall provide such access and/or documentation to the extent available.

8. Title for Healy Reservoir Parcel

(a) The ***"Title Company"*** is the Johnson County Title Company, Inc., a subsidiary of First American Title Guaranty, 25 North Main Street, Buffalo, WY 82834.

(b) SELLER has delivered to WWDC a title commitment for the Healy Reservoir Parcel ("***Title Commitment")*** for the Title Policy as defined in Section 8(c), together with copies of all title exception documents referenced in the Title Commitment. The Title Commitment is Number 4561-2977574; Revision #3 (5/92/2018); Commitment Date: May 16, 2018 at 5:00 p.m.

(c) WWDC has had a full and complete opportunity to review the Title Commitment prior to execution of this Agreement.

(d) WWDC has advised SELLER by a certain letter dated the ____ day of ____ , 2018 that WWDC waives any and all title objections to the condition of the title to the Healy Reservoir Parcel and that WWDC approves marketable fee simple title to the Healy Reservoir Parcel.

(e) WThe Title Company shall be ready, willing and able to issue to WWDC at Closing an ALTA Form B owner's policy of title insurance for the Healy Reservoir Parcel ("Title Policy"), insuring title to the Healy Reservoir Parcel to

be in the name of WWDC in the allocated amount of $2,500,000 containing only Exceptions consistent with the Title Commitment.

9. Proceedings at Closing. On the Closing Date:

(a) SELLER shall deliver to WWDC the following documents appropriately executed by or on behalf of SELLER:

(i) The Documents of Conveyance listed in Section 1 of this Agreement;

(ii) evidence in form and substance reasonably satisfactory to WWDC that SELLER has the power and authority to execute and enter into this Agreement and to consummate the purchase and sale of the Water Rights, and that any and all actions required to authorize and approve the execution of this Agreement by SELLER, the performance by SELLER of all of SELLER's duties and obligations under this Agreement, and the execution and delivery by SELLER of all documents and other items to be executed and delivered to WWDC at Closing, have been accomplished;

(iii) a certificate stating that all representations, warranties and covenants of SELLER set forth herein shall have been true and correct in all material respects when made and stating that all such representations, warranties and covenants remain true and correct in all material respects at and as of Closing;

(iv) a Closing Statement showing the Purchase Price and any adjustments thereto; and

(v) such other documents as may be appropriate, in the reasonable opinion of WWDC's counsel, to consummate the purchase of the Property contemplated herein.

(b) WWDC shall deliver to SELLER the following funds and documents appropriately accepted and/or executed on behalf of WWDC:

(i) the Purchase Price in accordance with the provisions of this Agreement;

(ii) the Documents of Conveyance listed in Section 1 of this Agreement;

(iii) evidence in form and substance reasonably satisfactory to SELLER that WWDC has the power and authority to execute and enter into this Agreement and to consummate the purchase and sale of the Property, and that any and all actions required to authorize and approve the execution of this Agreement by WWDC, the performance by WWDC of all of WWDC's duties and obligations under this Agreement, and the

execution and delivery by WWDC of all documents and other items to be executed and delivered to SELLER at Closing, have been accomplished;

(iv) a Closing Statement showing the Purchase Price and all adjustments thereto.

(v) such other documents as may be appropriate, in the opinion of SELLER's counsel, to consummate the purchase and sale of the Property contemplated herein.

(vi) a certificate stating that all representations, warranties and covenants of WWDC set forth herein shall have been true and correct in all material respects and that all such representations, warranties and covenants remain true and correct in all material respects at and as of Closing.

10. Closing Costs. Each party shall pay fifty percent (50%) of the Closing Costs, which shall include the cost of recording documents and the closing fee. The SELLER shall pay for and provide WWDC with the Title Policy.

11. Representations and Warranties. To induce WWDC to enter into this Agreement, SELLER covenants, represents and warrants as follows:

(a) That, as of the Closing Date, SELLER shall have record title to the Healy Reservoir Parcel and the Reservoir Water Rights.

(b) That this Agreement has been duly authorized and executed on behalf of SELLER and constitutes the valid and binding agreement of SELLER, enforceable against SELLER in accordance with its terms.

(c) That to the best of SELLER's knowledge, information and belief, there are no actions, suits or proceedings pending or threatened against, by or affecting SELLER which affect title to the Property or which question the validity or enforceability of this Agreement or of any action taken by SELLER under this Agreement, in any court or before any governmental authority, domestic or foreign.

(d) That the execution of and entry into this Agreement, the execution and delivery of the documents and instruments to be executed and delivered by SELLER on the Closing Date, and the performance by SELLER of SELLER's duties and obligations under this Agreement and of all other acts necessary and appropriate for the full consummation of the purchase and sale of the Property as contemplated by and provided for in this Agreement, are, to the best of SELLER's knowledge, consistent with and not in violation of, and will not create any adverse condition under, any contract, agreement or other instrument to which SELLER is a party, any judicial order or any judgment of any nature by which SELLER is bound.

(e) That SELLER has not received any written notice from any governmental authority of any violations of environmental, health, safety, clean air, clean water, federal, state, county or municipal law, ordinance, order, regulation or requirement affecting the Reservoir Water Rights.

(f) That with respect to the compliance of the Reservoir Water Rights with Environmental Law:

(i) To the best of SELLER's information, knowledge and belief, the Healy Reservoir Parcel and all existing uses and conditions of the Healy Reservoir Parcel are in compliance with Environmental Law (as hereinafter defined), and SELLER has not received any written notice of violation issued pursuant to any Environmental Law with respect to the Healy Reservoir Parcel or any use or condition thereof. For purposes of this Agreement, the term "***Environmental Law***" means the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601 et seq., the Resource Conservation and Recovery Act of 1976, 42 U.S.C. § 6901 et seq., the Clean Water Act, 33 U.S.C. § 1251 et seq., The Hazardous Materials Transportation Act, as amended, 49 U.S.C. § 1801 et seq., and The Federal Water Po1lution Control Act, as amended, 33 U.S.C. § 1251 et seq., as said laws have been supplemented or amended to date, the regulations promulgated pursuant to said laws and any other federal, state or local law, statute, rule, regulation or ordinance which regulates or proscribes the use, storage, disposal, presence, cleanup, transportation or release or threatened release into the environment of any Hazardous Substance. The term ***"Hazardous Substance"*** means any substance which is (1) designated, defined, classified or regulated as a hazardous substance, hazardous material, hazardous waste, pollutant or contaminant under any Environmental Law, (2) petroleum hydrocarbon, including crude oil or any fraction thereof and all petroleum products, (3) PCBs, (4) lead, (5) asbestos, (6) flammable explosives, (7) infectious materials, (8) toxic mold, or (9) radioactive materials.

(ii) To the best of SELLER's information, knowledge and belief, SELLER has not engaged in any Environmental Activity related to the Healy Reservoir Parcel (as hereinafter defined) and no Environmental Activity has otherwise occurred in violation of any applicable Environmental Law related to the Healy Reservoir Parcel. For purposes of this Agreement, "***Environmental Activity***" means any actual, proposed or threatened storage, holding, existence, release, emission, discharge, generation, processing, abatement, removal, disposition, handling or transportation of any Hazardous Substance relating to the Healy Reservoir Parcel or the use of the Healy Reservoir Parcel, or any other activity or occurrence that causes or would cause any such event to exist.

(iii) To the best of SELLER's information, knowledge and belief, no investigations, inquiries, orders, hearings, actions or other proceedings by or before any governmental agency or authority are currently pending or threatened in connection with any Environmental Activity or alleged Environmental Activity related to the Healy Reservoir Parcel.

(iv) To the best of SELLER's information, knowledge and belief, SELLER does not have any liability, absolute or contingent, in connection with any Environmental Activity related to the Healy Reservoir Parcel.

12. NO WARRANTIES. Except with regard to paragraph 11 of this Agreement, WWDC acknowledges and agrees that the Property shall be sold to WWDC, and WWDC shall accept title and possession of the Property on the Closing Date, **AS IS**, **WHERE IS, WITH ALL FAULTS,** with no right of set-off or reduction in the Purchase Price, and that sale of the Property shall be without representation or warranty of any kind, whether express, implied, statutory or otherwise, including, without limitation, without warranties of use, merchantability or fitness for a particular purpose, and SELLER does hereby disclaim and renounce any and all such representations or warranties.

13. Remedies.

(a) If the purchase and sale of the Property is not consummated in accordance with the terms and conditions of this Agreement due to circumstances or conditions which constitute a default by WWDC under this Agreement, SELLER shall have available all rights and remedies at law or equity.

(b) If the purchase and sale of the Property is not consummated in accordance with the terms and conditions of this Agreement due to circumstances or conditions which constitute a default by SELLER under this Agreement, then WWDC shall have available all rights and remedies at law or equity.

14. Risk of Loss.

(a) Risk of loss up to and including the Closing Date shall be borne by SELLER.

(b) In the event of any Material Damage or Destruction to the Property or any portion thereof, WWDC may, at its option, by Notice to SELLER given within the earlier of twenty (20) days after WWDC is notified by SELLER of the Material Damage or Destruction, or the Closing Date, but in no event less than ten (10) days after Notice by SELLER to WWDC of the Material Damage or Destruction (and if necessary the Closing Date shall be extended, at WWDC's option, to give WWDC the full ten (l0) day period to make such election): (i)

terminate this Agreement or (ii) proceed to close under this Agreement, receive (and SELLER will assign to WWDC at the Closing) SELLER's rights under insurance policies and any insurance proceeds due SELLER as a result of Material Damage or Destruction and assume responsibility for any and all repairs, and WWDC shall receive a credit at Closing for any deductible, uninsured or coinsured amount under the insurance policies. If WWDC fails to deliver to SELLER Notice of its election within the period set forth above, WWDC will conclusively be deemed to have elected to proceed with the Closing. SELLER will cooperate with WWDC after closing to assist WWDC in obtaining the insurance proceeds from SELLER's insurers

15. Assignment Prohibited and Agreement Shall Not be Used as Collateral. Neither party shall assign or otherwise transfer any of the rights or delegate any of the duties set out in this Agreement without the prior written consent of the other party. Neither party shall use this Agreement, or any portion thereof, for collateral for any financial obligation without the prior written permission of the other party.

16. Parties. This Agreement shall be binding upon, enforceable against, and shall inure to the benefit of the parties and their respective successors and assigns.

17. Indemnification. Each party to this Agreement shall assume the risk of any liability arising from its own conduct. Neither party agrees to insure, defend, or indemnify the other.

18. Miscellaneous Provisions

(a) ***Cooperation.*** SELLER will, whenever and as often as shall be reasonably requested to do so by WWDC, and WWDC will whenever and as often as shall be reasonably requested to do so by SELLER, execute and deliver any and all instruments and documents which may be reasonably required or appropriate in order to complete the transaction contemplated by this Agreement.

(b) ***No Further Encumbrances to the Property.*** During the term of this Agreement, SELLER will not sell, convey, mortgage, pledge, hypothecate, option, grant easements, dedications or otherwise encumber the Property or permit to be done any act or deed to diminish or encumber the title to the Property, except with the prior written consent of WWDC.

(c) ***Entire Agreement.*** This Agreement and the Documents of Conveyance represent the entire and integrated agreement between the parties and supersedes all prior negotiations, representations, and agreements, whether written or oral.

(d) ***Amendments.*** Any changes, modifications, revisions, or amendments to this Agreement which are mutually agreed upon by the parties to this Agreement shall be incorporated by written instrument, executed by all parties to this Agreement.

(e) ***Applicable Law, Rules of Construction, and Venue.*** The construction, interpretation, and enforcement of this Agreement shall be governed by the laws of the State of Wyoming, without regard to conflicts of law principles. The terms "hereof," "hereunder," "herein," and words of similar import, are intended to refer to this Agreement as a whole and not to any particular provision or part. The Courts of the State of Wyoming shall have jurisdiction over this Contract and the parties. The venue shall be the First Judicial District, Laramie County, Wyoming.

(f) ***Availability of Funds.*** Each payment obligation of the WWDC is conditioned upon the availability of government funds which are appropriated or allocated for the payment of this obligation and which may be limited for any reason including, but not limited to, congressional, legislative, gubernatorial, or administrative action. If funds are not allocated and available for continued performance of the Agreement, the Agreement may be terminated by the WWDC at the end of the period for which the funds are available. The Agreement shall notify the SELLER at the earliest possible time of the services which will or may be affected by a shortage of funds. No penalty shall accrue to the WWDC in the event this provision is exercised, and the WWDC shall not be obligated or liable for any future payments due or for any damages as a result of termination under this section.

(g) ***Severability***. Should any portion of this Agreement be judicially determined to be illegal or unenforceable, the remainder of the Agreement shall remain in full force and effect, and the parties may renegotiate the terms affected by the severance.

(h) ***Waiver.*** The waiver of any breach of any term or condition in this Agreement shall not be deemed a waiver of any prior or subsequent breach. Failure to object to a breach shall not constitute a waiver.

(i) ***Sovereign Immunity and Limitations.*** Pursuant to Wyo. Stat. § 1-39-104(a), the State of Wyoming and WWDC expressly reserve sovereign immunity by entering into this Agreement and specifically retain all immunities and defenses available to them as sovereigns. The parties acknowledge that the State of Wyoming has sovereign immunity and only the Wyoming Legislature has the power to waive sovereign immunity. The parties further acknowledge that there are constitutional and statutory limitations on the authority of the State of Wyoming and its agencies or instrumentalities to agree to certain terms and conditions supplied by the SELLER, including, but not limited to, the following: liability for damages; choice of law; conflicts of law; venue and forum-selection clauses; defense or control of litigation or settlement; liability for acts or omissions of third parties; payment of attorneys' fees or costs; additional insured provisions; dispute resolution, including, but not limited to, arbitration; indemnification of another party; and confidentiality. Any such provisions in the Agreement, or in any attachments or documents incorporated by reference, will not be binding on the State of Wyoming. Designations of venue, choice of law, enforcement actions, and similar provisions shall not be construed as a waiver of

sovereign immunity. The parties agree that any ambiguity in this Agreement shall not be strictly construed, either against or for either party, except that any ambiguity as to sovereign immunity shall be construed in favor of sovereign immunity.

(j) ***Third Party Beneficiary Rights.*** The parties do not intend to create in any other individual or entity the status of third party beneficiary, and this Agreement shall not be construed so as to create such status. The rights, duties and obligations contained in this Agreement shall operate only between the parties to this Agreement and shall inure solely to the benefit of the parties to this Agreement. The provisions of this Agreement are intended only to assist the parties in determining and performing their obligations under this Agreement.

(k) ***Titles Not Controlling*****.** Titles of sections and subsections are for reference only and shall not be used to construe the language in this Agreement.

(l) ***Prior Approval.*** This Agreement shall not be binding upon either party and the Wyoming State Auditor shall not draw warrants for payment, until this Agreement has been fully executed, approved as to form by the Office of the Attorney General and approved by the Governor of the State of Wyoming, or his designee.

19. Notice. All Notices to be given under this Agreement ***("Notice")*** shall be in writing and shall be validly given when hand-delivered, sent by courier or express service guaranteeing overnight delivery or by email with a "*request for delivery receipt*", addressed as listed below. Notices shall be deemed delivered on the day after Notice is sent ***("Notice Date").*** The below listed Notice addresses may be changed by a party by giving Notice to the other party:

If intended for SELLER:

Shelley A. Grahmann
Senior Manager, Legal
North America Operations
12120 Wickchester Lane
Houston, TX 77079
Telephone: 281-588-3182
Email: Shelley.grahmann@us.sasol.com

With a copy to:

David F. Palmerlee
Palmerlee & Durrant, LLC
11 North Main Street
Buffalo, WY 82834

Telephone: 307-217-0785
Email: dpal@h2owyo.com

If intended for WWDC:

Harry LaBonde, Jr.
Director
Wyoming Water Development Office
6920 Yellowtail Rd.
Cheyenne, Wyoming 82002
Telephone: (307) 777-7626
Email: harry.labonde@wyo.gov

With a copy to:

Daniel Solish
Senior Assistant Attorney General
2320 Capital Ave.
Cheyenne, WY 82001
Telephone: (307) 777-2560
Email: daniel.solish@wyo.gov

20. Counterparts. This Agreement may be executed in counterparts. Each counterpart, when executed and delivered, shall be deemed an original and all counterparts together shall constitute one and the same Agreement. Delivery by the SELLER of an originally signed counterpart of this Agreement by facsimile or PDF shall be followed up immediately by delivery of the originally signed counterpart to the WWDC.

THE REMAINDER OF THIS PAGE WAS INTENTIONALLY LEFT BLANK.

Signatures. The parties to this Agreement, either personally or through their duly authorized representatives, have executed this Agreement on the dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this Agreement.

The Effective Date of this Agreement is the date of the signature last affixed to this page.

STATE OF WYOMING:

_____ _____
Chairman David Evans Date
Water Development Commission

_____ _____
Secretary Kellen Lancaster Date
Water Development Commission

_____ _____
Governor Matthew H. Mead Date

SELLER:

Sasol Middle East and India (PTY) Ltd.

_____ _____
Name, Title Date

ATTORNEY GENERAL'S OFFICE: APPROVAL AS TO FORM

_____ _____
Tyler M. Renner Assistant Attorney General Date

Exhibit A

SPECIAL WARRANTY DEED
FOR HEALY RESERVOIR PARCEL

SASOL MIDDLE EAST AND INDIA (PTY) LIMITED, whose address is 12120 Wickchester Lane, Houston, TX 77079 ("Grantor"), for and in consideration of TEN DOLLARS ($10.00) and other good and valuable consideration, CONVEYS and WARRANTS against only those claims lawfully claiming by, through or under Grantor, to **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, 6920 Yellowtail Road, Cheyenne, WY 82002, its successors and assigns, all of Grantor's right, title and interest in and to the real estate situate in Johnson County, Wyoming, described on Attachment A to this Special Warranty Deed ("Healy Reservoir Parcel"):

Together with all privileges, rights of way and easements appurtenant thereto,

Together with all water applications, permits and certificates, water rights, ditch rights and reservoir rights, whether surface waters, stored waters or underground waters, owned by Grantor or appurtenant to the Land,

Together with all buildings and improvements situate thereon,

Together with any and all fixtures and appurtenances thereto, including without limitation, all irrigation systems and related equipment and apparatus owned by Grantor,

Together with all of Grantor's right, title and interest in and to all minerals owned by Grantor, of every kind and nature whatsoever located on, in or under the land, including but not limited to all sand and gravel, coal, gas, oil, coal bed methane and fissionable materials,

Free and clear of all liens, mortgages and encumbrances, and

Subject to all reservations restrictions and exceptions listed as "Permitted Exceptions" on Attachment B to this Special Warranty Deed.

[*Signature Page Follows]*

This Special Warranty Deed is executed on the date set forth in the acknowledgement below, effective as of this ____ day of _____, 2018.

GRANTOR:

Sasol Middle East and India (PTY) Ltd.

By: _____
Name: _____
Title: _____

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (PTY) Ltd. on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

Attachment A
TO
SPECIAL WARRANTY DEED
(Legal Description of Healy Reservoir Parcel)

The land referred to in this Commitment is situated in the State of Wyoming, County of Johnson, and is described as follows:

A parcel of land lying in portions of Sections 4, 8, 9, 16 and 17, Township 51 North, Range 81 West of the 6th P.M., Johnson County, Wyoming, more particularly described as follows:

Beginning at the southwest corner of the SE¼SW¼ of Section 4, Township 51 North, Range 81 West, said corner being North 89°46'27" East, a distance of 1334.81 feet from the common corner of Sections 4, 5, 8, and 9;

thence North 00°09'47" West, a distance of 1316.69 feet along the west boundary of the SE¼SW¼ of Section 4 to the corner of a parcel of land described in Special Warranty Deed from M&M Ranch Acquisition Company, LLC, a Delaware limited liability company to Sasol Synfuels International Pty Ltd recorded October 23, 2012 in Book 87A-59, Pages 332-342;

thence North 63°22'21" East, a distance of 2971.44 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 89°41'01" East, a distance of 1074.53 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342 to the boundary of a separate parcel described in said deed;

thence along the boundary of said parcel described in Book 87A-59, Pages 332-342, a distance of 357.87 feet along a curve concave to the Northwest having a radius of 1909.86 feet and a chord bearing North 38°44'07" East, a distance of 357.34 feet to the centerline of U.S. Highway 16;

thence along said centerline of U.S. Highway 16, a distance of 215.87 feet along a curve concave to the Northwest having a radius of 11459.16 feet and a chord bearing South 24°04'08" West, a distance of 215.87 feet, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence South 24°36'31" West, a distance of 4281.73 feet along said centerline of U.S. Highway 16, said line also being the westerly line of Parcel II described in Special Warranty Deed from

Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence along said centerline of U.S. Highway 16, a distance of 1196.46 feet along a curve concave to the Northwest having a radius of 2864.79 feet and a chord bearing South 36°34'24" West, a distance of 1187.78 feet, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence South 48°32'16" West, a distance of 2027.09 feet along said centerline of U.S. Highway 16, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence South 22°28'34" East, a distance of 1976.15 feet to the Southern boundary of Section 9, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 89°46'25" West, a distance of 356.29 feet along the Southern boundary of Section 9 to the northeast corner of a parcel of land described in Special Warranty Deed from M&M Ranch Acquisition Company, LLC, a Delaware limited liability company to Sasol Synfuels International Pty Ltd recorded October 23, 2012 in Book 87A-59, Pages 332-342;

thence South 38°32'37" West, a distance of 1318.78 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence South 57°42'22" West, a distance of 894.07 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 00°07'21" West, a distance of 199.73 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342 to the South boundary of the NE¼NE¼ of Section 17;

thence North 88°06'51" West, a distance of 520.91 feet along the South boundary of the NE¼NE¼ of Section 17 corner to the boundary of a parcel described in Warranty Deed from Reynolds Mining Corporation, a Delaware corporation to Marton Brothers, Inc., a Wyoming corporation recorded June 22, 1974 in Book 87A-13, Pages 429-430;

thence North 20°39'46" East, a distance of 837.04 feet along the boundary of said parcel described in Book 87A-13, Pages 429-430 to the boundary of a parcel described in Special Warranty Deed from M&M Ranch Acquisition Company, LLC, a Delaware limited liability company to Sasol Synfuels International Pty Ltd recorded October 23, 2012 in Book 87A-59, Pages 332-342;

thence along the boundary of said parcel described in Book 87A-59, Pages 332-342, a distance of 102.61 feet along a curve concave to the Southeast having a radius of 5496.69 feet and a chord bearing North 19°29'39" East, a distance of 102.60 feet;

thence North 69°23'52" West, a distance of 47.55 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 20°36'08"East, a distance of 1266.40 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 89°32'08" East, a distance of 77.78 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342 to the centerline of U.S. Highway 16;

thence along said centerline of U.S. Highway 16, a distance of 369.08 feet along a curve concave to the Southeast having a radius of 2864.79 feet and a chord bearing North 31°31'02" East, a distance of 368.82 feet, said boundary also being the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 62°05'48" West, a distance of 606.25 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 01°41'54" West, a distance of 161.46 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 29°38'55" East, a distance of 275.26 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 03°21'17" West, a distance of 581.16 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol

Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 16°50'29" East, a distance of 903.54 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 11°13'53" East, a distance of 370.47 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 20°21'41" East, a distance of 1110.61 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 37°16'05" East, a distance of 499.88 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 47°14'28" East, a distance of 354.96 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch, LLC, a Wyoming limited liability company to the point of beginning.

Attachment B
TO
SPECIAL WARRANTY DEED
(Permitted Exceptions)

(TITLE EXCEPTIONS FROM COVERAGE LISTED ON SCHEDULE B-II TO THE TITLE COMMITMENT NO. 4561-2977574 DATED 5/29/2018

SCHEDULE B - II

EXCEPTIONS FROM COVERAGE

Any policy we issue will have the following exceptions unless they are taken care of to our satisfaction.

1. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or by making inquiry of the persons in possession of the Land.

2. Easements, claims of easements or encumbrances that are not shown in the Public Records.

3. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title including discrepancies, conflicts in boundary lines, shortage in area, or any other facts that would be disclosed by an accurate and complete land survey of the Land, and that are not shown in the Public Records.

4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown in the Public Records.

5. (a) Unpatented mining claims; (b) Reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) Water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the Public Records.

6. Any claim to (a) ownership of or rights to minerals and similar substances, including but not limited to ores, metals, coal, lignite, oil, gas, uranium, clay, rock, sand and gravel located in, on or under the Land or produced from the Land, whether such ownership or rights arise by lease, grant, exception, conveyance, reservation, or otherwise; and (b) any rights, privileges, immunities, rights of way, and easements associated therewith or appurtenant thereto, whether or not the interests excepted in (a) or (b) appear in the Public Records or are shown in Schedule B.

7. The lien of real estate taxes or assessments imposed on the Title by a governmental authority that are not shown as existing liens in the records of the County Treasurer or in the Public Records.

   Taxes for the year 2018.

   NOTE: Taxes for the year 2017 appear to be in the amount of $505.50, Account No. 303103 according to the County Treasurer, as to pt NW¼SW¼ Section 9, Township 51 North, Range 81 West. The first installment is due and payable September 1, delinquent November 10. The second installment is due and payable March 1 of the following year, delinquent May 10. The first installment is $252.75, and PAID, and the second installment is $252.75, and PAID.

   NOTE: Taxes for the year 2017 appear to be in the amount of $17,170.55, Account No. 304713 according to the County Treasurer. The first installment is due and payable September 1, delinquent November 10. The second installment is due and payable March 1 of the following year, delinquent May 10. The first installment is $8,585.28, and PAID, and the second installment is $8,585.27, and PAID.

NOTE: Personal Property Taxes for the year 2017 appear to be in the amount of $276.39, Account No. P0307106, according to the County Treasurer, as to personal property. The first installment is due and payable September 1, delinquent November 10. The second installment is due and payable March 1 of the following year, delinquent May 10. The first installment is $138.20, and PAID, and the second installment is $138.19 and PAID.

Taxes upon Personal Property are a lien upon all real property owned by the person against whom the tax was assessed, per Wyoming Statute 39-13-108.

8. Easement, including terms and conditions contained therein:

Granted to:	Alex McMeans
For:	head gate
Recorded:	March 3, 1918
Recording Information:	Book 25, Page 71, as to SE¼SW¼ Section 9, Township 51 North, Range 81 West.

9. Easement, including terms and conditions contained therein:

Granted to:	Sheridan-Johnson Rural Electrification Association
For:	Electric transmission or distribution line or systems
Recorded:	February 22, 1972
Recording Information:	Book 4 R/W, Page 38, as to Sections 16 and 17, Township 51 North, Range 81 West.

10. Easement, including the terms and conditions contained therein:

Granted To:	Mountain States Telephone and Telegraph
For:	Construction, operation and maintenance of communication facilities.
Recorded:	December 9, 1974
Recording Information:	Book 4 R/W, Page 354, as to Sections 7, 9 and 17, Township 51 North, Range 81 West.

11. Easement, including the terms and conditions contained therein:

Granted To:	Mountain States Telephone and Telegraph
For:	Construction, operation and maintenance of communication facilities.
Recorded:	August 12, 1977
Recording Information:	Book 5 R/W, Page 456, as to Sections 4, 9, 16 and 17, Township 51 North, Range 81 West.

12. Right of way, including terms and conditions contained therein:

Granted To:	Sheridan-Johnson Rural Electrification Association, Inc.
For:	Electric transmission or distribution line or system
Recorded:	May 4, 1978
Recording Information:	Book 6 R/W, Page 264, as to Section 9, Township 51 North, Range 81 West.

13. Right of way, including terms and conditions contained therein:
Granted To: Sheridan Johnson Rural Electric Association, Inc.
For: Electric transmission or distribution line or systems
Recorded: May 4, 1978
Recording Information: Book 6 R/W, Page 276, as to Sections 3 and 4, Township 51 North, Range 81 West, with other land.

14. The terms and conditions of Transmission Line Easement ;
Granted To: Sheridan-Johnson Rural Electrification Association, Inc.
For: Electric transmission or distribution line or systems
Recorded: May 4, 1978
Recording Information: Book 6 R/W, Page 313, as to Sections 9 and 17, Township 51 North, Range 81 West, with other land.

15. Right of way, including terms and conditions contained therein:
Granted To: Sheridan-Johnson Rural Electric Association, Inc.
For: Electric transmission or distribution line or system
Recorded: May 4, 1978
Recording Information: Book 6 R/W, Page 653, as to Section 17, Township 51 North, Range 81 West.

16. Easement, including the terms and conditions contained therein:
Granted To: Mountain States Telephone and Telegraph
For: Construction, operation and maintenance of communication facilities.
Recorded: September 13, 1990
Recording Information: Book 10 R/W, Page 474, as to Section 17, Township 51 North, Range 81 West.

17. Right of way, including terms and conditions contained therein:
Granted To: The State Highway Commission of Wyoming
For: Road for the use of the public
Recorded: August 17, 1990
Recording Information: Book 10 R/W, Page 459, as to Sections 4, 8, 9, 16 and 17, Township 51 North, Range 81 West, with other land.

18. Easement, including the terms and conditions contained therein:
Granted To: Mountain States Telephone and Telegraph
For: Construction, operation and maintenance of communication facilities.
Recorded: October 10, 1990
Recording Information: Book 10 R/W, Page 509, as to Section 17, Township 51 North, Range 81 West.

19. Easement, including terms and conditions contained therein:
Granted to: U S West Communications, Inc.
For: Telecommunications facilities
Recorded: August 4, 1997
Recording Information: Book 14 R/W, Page 199, as to Section 9, Township 51 North, Range 81 West.

20. Notice of Access Agreement including the terms and conditions thereof:

Between:	Lake DeSmet Energy Co., II, LLC
And:	K. G. Construction Co., Inc
Recorded:	May 4, 2004
Recording Information:	Book 18 R/W, Page 600, as to Sections 8 and 9, Township 51 North, Range 81 West.

21. Convenience Fence Agreement including the terms and conditions thereof:

Between:	M & M Ranch Acquisition Company, LLC; T Cross T Ranch, LLC
And:	49 Ranch, LLC and Belus Ranch Corp.
Recorded:	August 9, 2006
Recording Information:	Book 86A-61 Miscellaneous, Page 391, as to the land.

22. Easement, including terms and conditions contained therein:

Granted to:	Powder River Energy Corporation
For:	electric lines
Recorded:	July 5, 2012
Recording Information:	Book 29 R/W, Page 59, as to Sections 8, 9 and 17, Township 51 North, Range 81 West.

23. Easement, including terms and conditions contained therein:

Granted to:	Powder River Energy Corporation
For:	electric lines
Recorded:	July 5, 2012
Recording Information:	Book 29 R/W, Page 61, as to Sections 9, 16 and 17, Township 51 North, Range 81 West.

24. Comprehensive Lease Assignment and Assumption Agreement, including the items disclosed therein, and the terms and conditions thereof:

Between:	M & M Ranch Acquisition Company, LLC, a Delaware limited liability Company and a wholly owned subsidiary of MidAmerica Energy Holdings Company
And:	Sasol Synfuels International Pty Ltd
Recorded:	October 23, 2012
Recording Information:	Book 86A-75 Miscellaneous, Page 716; as amended in Affidavit of Michael S. Thomas recorded January 23, 2018 in Book 86A-86, Page 622 - said amendment more particularly called out in Exception 28, below.

25. Lease and the terms and conditions thereof:

Lessor:	Sasol Synfuels International Pty Ltd
Lessee:	Powder River Energy Corporation, a Wyoming cooperative utility
As disclosed by:	Lease Agreement
Recorded:	October 15, 2013
Recording No.:	Book 86A-78, Page 593, as to a portion of Section 9, Township 51 North, Range 81 West.

26. Access Easement, including terms and conditions contained therein:

Granted to:	Merlon Ranch LLC, a Wyoming limited liability company
For:	access and egress
Recorded:	November 17, 2017
Recording Information:	Book 32 R/W, Page 253, as to Sections 8 and 9, Township 51 North, Range 81 West.

27. Stock Trailing Easement, including terms and conditions contained therein:

Granted to:	Merlon Ranch LLC, a Wyoming limited liability company
For:	stock trailing easement
Recorded:	November 17, 2017
Recording Information:	Book 32 R/W, Page 261, as to Sections 4 and 9, Township 51 North, Range 81 West.

28. An Agreement for Electric Service attached to the Affidavit of Michael S. Thomas, including the terms and conditions thereof:

Between:	Sheridan Johnson Rural Electrification Association
And:	Texaco, Inc.
Recorded:	January 23, 2018
Recording Information:	Book 86A-86, Page 622, as to SW¼SW Section 9, Township 51 North, Range 81 West

29. U. S. Highway 16 as it may cross the Land.

Exhibit B

SPECIAL WARRANTY DEED
OF
RESERVOIR WATER RIGHTS

SASOL MIDDLE EAST AND INDIA (PTY) LIMITED, whose address is 12120 Wickchester Lane, Houston, TX 77079 ***("Grantor"),*** for and in consideration of TEN DOLLARS ($10.00) and other good and valuable consideration, CONVEYS and WARRANTS against only those claims lawfully claiming by, through or under Grantor, to the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Agreement ***("Grantee"),*** its successors and assigns, all of Grantor's right, title and interest in and to the Reservoir Water Rights in Johnson County, Wyoming listed on Attachment A to this Special Warranty Deed of Reservoir Water Rights.

The Reservoir Water Rights are subject to any and all restrictions and limitations on the Reservoir Water Rights set forth in the Reservoir Water Rights and in all petitions, orders and agreements relating thereto reflected in the records of the Wyoming State Engineer and the Wyoming State Board of Control.

The Reservoir Water Rights are subject to the following Reservoir Agreements:

1. The Lake DeSmet Reservoir Transfer Agreement among Texaco Inc., the Lake DeSmet Counties Coalition and Johnson County, Wyoming, dated as of February 12, 2001; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "First Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

2. The Assignment and Assumption Agreement between Texaco, Inc. and Lake DeSmet Energy Co. L.C. dated April 18, 1996 and effective January 2, 1996; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "Second Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

3. The Water Agreement and License between Lake DeSmet Energy Co. L.C. and Texaco Inc., dated April 18, 1996 and effective January 2, 1996; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "Third Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

Except as otherwise expressly provided herein, Grantor hereby disclaims any express or implied warranties of every kind or nature concerning the Reservoir Water Rights disclaiming, without limitation, any express or any implied warranty for any purpose, and Grantee accepts the Reservoir Water Rights "AS IS, WHERE IS".

Grantee hereby assumes all of Grantor's obligations arising under the Reservoir Water Rights which first accrue or are to be performed from and after the date of this Special Warranty Deed of Reservoir Water Rights.

This Special Warranty Deed of Reservoir Water Rights may be executed by the parties by their signatures on separate signature pages, whether original, photocopies, email or .pdf copies. This Special Warranty Deed of Reservoir Water Rights shall be binding and in full force and effect when so executed by both parties.

This Special Warranty Deed of Reservoir Water Rights is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

GRANTOR:

Sasol Middle East and India (Pty) Limited

By: _____

Name: _____
Title: _____

GRANTEE:

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
SPECIAL WARRANTY DEED
OF
RESERVOIR WATER RIGHTS

RESERVOIR WATER RIGHTS

RESERVOIR PERMITS AND RESERVOIR SUPPLY PERMITS

1. Permit No. 7533R, priority date of August 16, 1939, Camp Comfort Reservoir Transferred for storage of 11,640 acre-feet in Lake DeSmet
2. Permit No. 7290 R, priority date of October 14, 1957, 1st Enl. of the Healy Reservoir transferred for storage of 13,725 acre-feet in Lake DeSmet
3. Permit No. 7289 R, priority date of April 15, 1957, Healy Reservoir transferred in part for storage of 36,834 acre-feet in Lake DeSmet
4. Permit No. 7289 R, priority date of April 15, 1957, Healy Reservoir for storage of 5,140 acre-feet in Healy Reservoir
5. Permit No. 8729 R, priority date of September 28, 1977, Reynolds Clear Creek Diversion Dam for diversion from Clear Creek for storage to 285.4 acre-feet and to fill Permits 7289R, 7290R and 7533R
6. Supply Permit No. 22930, priority date of February 25, 1955, Reservoir Supply for 3rd Enl. Lake DeSmet Reservoir from Rock Creek, Permit No. 7009R
7. Supply Permit No. 22929, priority date of February 25, 1955, Reservoir Supply for 3rd Enl. Lake DeSmet Reservoir from French Creek, Permit No. 7009R
8. Supply Permit No. 22928, priority date of February 25, 1955, Reservoir Supply for 3rd Enl. Lake DeSmet Reservoir from Clear Creek, Permit No. 7009R

Exhibit C

COMPREHENSIVE RESERVOIR AGREEMENTS
ASSIGNMENT AND ASSUMPTION AGREEMENT

This Comprehensive Reservoir Agreement Assignment and Assumption Agreement (***"Reservoir Agreements Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is 12120 Wickchester Lane, Houston, TX 77079 (***"Sasol"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Agreement ***("WWDC").***

Sasol is a successor party to the Reservoir Agreements listed on Attachment A ***("Reservoir Agreements")*** under which Sasol has certain rights and obligations.

For good and valuable consideration, including the terms of this Reservoir Agreements Assignment, Sasol assigns, transfers and conveys to WWDC all of Sasol's right, title, interest and obligations in, to and under the Reservoir Agreements and WWDC assumes all of Sasol's obligations in, to and under the Reservoir Agreements from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Reservoir Agreements Assignment.

This Reservoir Agreements Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopies, email or .pdf copies. This Reservoir Agreements Assignment shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Reservoir Assignment Agreement is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission
By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
COMPREHENSIVE RESERVOIR AGREEMENTS
ASSIGNMENT AND ASSUMPTION AGREEMENT

RESERVOIR AGREEMENTS

1. The Lake DeSmet Reservoir Transfer Agreement among Texaco Inc., the Lake DeSmet Counties Coalition and Johnson County, Wyoming, dated as of February 12, 2001; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "First Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

2. The Assignment and Assumption Agreement between Texaco, Inc. and Lake DeSmet Energy Co. L.C. dated April 18, 1996 and effective January 2, 1996; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "Second Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

3. The Water Agreement and License between Lake DeSmet Energy Co. L.C. and Texaco Inc., dated April 18, 1996 and effective January 2, 1996; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "Third Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

The foregoing three documents were assigned by M&M Ranch Acquisition Company, LLC to Sasol Synfuels International (PTY) Ltd. by the Comprehensive Reservoir Agreements Assignment and Assumption Agreement on the 19th day of October, 2012, recorded in the records of the Johnson County Clerk on October 23, 2012 in Book 86A-75 on pages 720-723 as Document #124524, a copy of which is attached to this Attachment A.

STATE OF WYOMING }
COUNTY OF JOHNSON } SS Doc Number: 124524
This instrument was Filed for record on 10/23/2012 at 4:21 PM
and was duly recorded in book: 86A-75 page: 720 - 723 fees: 17.00
Johnson County Clerk
By Mary Klaahsen, Deputy

COMPREHENSIVE RESERVOIR AGREEMENTS ASSIGNMENT AND ASSUMPTION AGREEMENT

This Comprehensive Reservoir Agreement Assignment and Assumption Agreement (*"Reservoir Agreements Assignment"*) is made between **M&M RANCH ACQUISITION COMPANY, LLC**, a Delaware limited liability company and a wholly owned subsidiary of MidAmerican Energy Holdings Company, whose address is 1407 West North Temple, Salt Lake City, Utah 84116 (*"M&M Ranch"*), and **SASOL SYNFUELS INTERNATIONAL PTY LTD**, whose address is c/o SASOL North America Inc., 900 Threadneedle, Suite 100, Houston, TX 77079 (*"SASOL"*).

M&M Ranch is a successor party to the Reservoir Agreements listed on Exhibit A (*"Reservoir Agreements"*) under which M&M Ranch has certain rights and obligations.

For good and valuable consideration, including the terms of this Reservoir Agreements Assignment, M&M Ranch assigns, transfers and conveys to SASOL all of M&M Ranch's right, title, interest and obligations in, to and under the Reservoir Agreements and SASOL assumes all of M&M Ranch's obligations in, to and under the Reservoir Agreements from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Reservoir Agreements Assignment.

This Reservoir Agreement Assignment may be executed in any number of counterparts, and by different parties in separate counterparts, each of which shall be deemed to be an original instrument, but all of which together shall constitute but one instrument.

[Signature Pages Follow]

This Reservoir Assignment Agreement is executed on the dates set forth in the acknowledgements below, effective as of the 23rd day of October, 2012.

M&M Ranch Acquisition Company, LLC

By: _____
Name: Micheal G. Dunn
Title: President

STATE OF UTAH)
) ss.
COUNTY OF SALT LAKE)

This instrument was acknowledged before me on October 19, 2012, by Micheal G. Dunn as President of M&M Ranch Acquisition Company, LLC.

_____
Notary Public

SEAL
(if any)

Notary Public
CAROL M. SABOL
Commission #609675
My Commission Expires
July 12, 2015
State of Utah

My Commission Expires: July 12, 2015

SASOL SYNFUELS INTERNATIONAL PTY LTD

By: A McWatters
Name: Ann McWatters
Title: Attorney-in-Fact

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

This instrument was acknowledged before me on October 19, 2012, by Ann McWatters as Attorney-in-Fact for SASOL SYNFUELS INTERNATIONAL PTY LTD.

Notary Public

SEAL (if any)

LARISSA R. DE LEON
Notary Public, State of Texas
My Commission Expires
February 12, 2013

My Commission Expires: 2-12-2013

EXHIBIT A
TO
COMPREHENSIVE RESERVOIR AGREEMENTS
ASSIGNMENT AND ASSUMPTION AGREEMENT

Between
M&M Ranch Acquisition Company, LLC and
SASOL SYNFUELS INTERNATIONAL PTY LTD

1. The Lake DeSmet Reservoir Transfer Agreement among Texaco Inc., the Lake DeSmet Counties Coalition and Johnson County, Wyoming, dated as of February 12, 2001; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "First Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

2. The Assignment and Assumption Agreement between Texaco, Inc. and Lake DeSmet Energy Co. L.C. dated April 18, 1996 and effective January 2, 1996; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "Second Reservoir Assignment and Assumption Agreement" dated May 18, 2006.

3. The Water Agreement and License between Lake DeSmet Energy Co. L.C. and Texaco Inc., dated April 18, 1996 and effective January 2, 1996; assigned to M&M Ranch Acquisition Company, LLC by Lake DeSmet Energy Co. L.C. by the "Third Reservoir Assignment and Assumption Agreement" dated May 18, 2006; subject to the "Amendment to Water Agreement and License" between Lake DeSmet Counties Coalition and M&M Ranch Acquisition Company, LLC dated November 1st, 2011.

Exhibit D

BILL OF SALE
(Clear Creek Pipeline Facilities)

KNOW ALL MEN BY THESE PRESENTS, that **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED** (***"Grantor"***), whose address is 12120 Wickchester Lane, Houston, TX 77079, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does quitclaim, grant and convey to the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION** ***("WWDC")***, its successors and assigns, all of Grantor's right, title and interest in and to the Clear Creek-Lake DeSmet Pipeline, the Clear Creek-Lake DeSmet Pipeline South Dike Inlet-Outlet Works and the Clear Creek-Lake DeSmet Pumping Plant, all more fully described on Attachment A (***"Facilities"***).

The Facilities are conveyed "AS IS, WHERE IS," with all faults and defects, and no warranties of any kind, whether statutory, written, oral, express or implied, including warranties of fitness for a particular purpose or merchantability, shall apply with respect to the Facilities conveyed herein.

This Bill of Sale is executed on the date set forth in the acknowledgement below, effective as of this ____ day of _____, 2018.

GRANTOR:

Sasol Middle East and India (Pty) Ltd.

By: _____
Name: _____
Title: _____

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Ltd. on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
BILL OF SALE
(Facilities)

Between
SASOL Middle East and India (Pty) Limited and
State of Wyoming by and through the
Wyoming Water Development Commission

CLEAR CREEK-LAKE DESMET PIPELINE

The Clear Creek-Lake DeSmet Pipeline is the concrete and steel water pipeline extending from the Clear Creek Pumping Plant across Sections 7, 8 and 9, T51N, R81W; Sections 1, 2, and 12, T51N, R82W, and Sections 34, 35, 27, and 28, T52N, R82W, all in the 6th P.M., Johnson County, Wyoming, to Lake DeSmet including all associated valves, manholes, inlet and outlet works and pump houses.

CLEAR CREEK-LAKE DESMET PUMPING PLANT

The Clear Creek Pumping Plant is the Clear Creek Diversion Dam, Pumping Plant, pumps, valves, controls and associated works and pipelines located in Section 9, T51N, R81W, 6th P.M., Johnson County, Wyoming, together with all personal property at the Pumping Plant, including the O&M manuals.

CLEAR CREEK-LAKE DESMET PIPELINE
SOUTH DIKE INLET-OUTLET WORKS

The Inlet-Outlet Works under the South Dike provides the means of delivering water into, and out of, the southerly end of Lake DeSmet Reservoir. Water is delivered from the Clear Creek source via the Clear Creek Pipeline through a 60-inch diameter “Inlet” pipe which terminates in a vertical riser within the reservoir.

Exhibit E

ASSIGNMENT OF JOHNSTON PIPELINE EASEMENT AGREEMENT

This Assignment of Johnston Pipeline Easement Agreement (***"Easement Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is c/o SASOL North America Inc., 12120 Wickchester Lane, Houston, TX 77079 (***"Sasol"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Agreement ***("WWDC").***

The Johnston Pipeline Easement Agreement was entered into by Sasol and Summerfield K. Johnston, Jr. on January 16, 2018, effective January 22, 2018 and recorded in the records of the Johnson County Clerk on January 23, 2018 in Book R/W 32, pages 398-416 ***("Johnston Pipeline Easement Agreement")***, under which Sasol has certain rights and obligations.

For good and valuable consideration, including the terms of this Easement Assignment, Sasol quitclaims, assigns and transfers to WWDC all of Sasol's right, title and interest in, to and under the Johnston Pipeline Easement Agreement and WWDC assumes all of Sasol's obligations in, to and under the Johnston Pipeline Easement Agreement from and after the effective date hereof.

This Easement Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Easement Assignment shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

*
My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
ASSIGNMENT OF JOHNSTON PIPELINE EASEMENT AGREEMENT

Between
Sasol Middle East and India (Pty) Limited and
The State of Wyoming by and through the
Wyoming Water Development Commission

The Pipeline Easement Agreement granted by Summerfield K. Johnston, Jr. to Sasol Middle East and India (PTY) Ltd effective January 22, 2018, recorded on January 23, 2018 in the records of the Johnson County Clerk in Book R/W 32, pages 398-416

[See Attached]

ORIGINAL

PIPELINE EASEMENT AGREEMENT

Recorded by First American Title

For and in consideration of Ten Dollars ($10.00) and other good and valuable consideration in hand paid, the receipt and sufficiency of which is hereby acknowledged, **SUMMERFIELD K. JOHNSTON, JR.**, whose address is 9337 Bradmore Lane, Ooltewah, TN 37363, (the ***"Grantor"***), does hereby GRANT, BARGAIN, SELL and CONVEY unto **SASOL MIDDLE EAST AND INDIA (PTY) LTD**, and its successors and assigns (hereinafter called ***"Grantee"***), a non-exclusive, perpetual pipeline easement over, across, through and under the Grantor's Lands (***"Pipeline Easement"***).

This Pipeline Easement is specifically described on Exhibits C-1 and C-2 (referred to herein as the ***"Pipeline Easement"***).

This Pipeline Easement is for the benefit of the Clear Creek-Lake DeSmet Pipeline, Exhibit D-1, (referred to herein as the ***"Pipeline"***), the Clear Creek Pumping Plant, Exhibit D-2, and the Healy Reservoir Unit, Exhibits D-3 and D-4 (***"Benefitted Lands"***).

This Pipeline Easement is for the purpose of access to and operation, maintenance, repair and replacement of the Clear Creek-Lake DeSmet Pipeline.

This Pipeline Easement shall attach to, be appurtenant to and run with the Benefitted Lands.

The Pipeline Easement crosses and burdens the Grantor's Lands described on Exhibit E (***"Grantor's Lands"***). The Pipeline Easement shall attach to, be appurtenant to and run with the Grantor's Lands.

STATE OF WYOMING } SS
COUNTY OF JOHNSON }
Doc Number: 169235
This instrument was Filed for record on 1/23/2018 at 12:17 PM
and was duly recorded in book: R/W 32 page: 398 - 416 fees: 86.00
Vicki Zollman Johnson County Clerk
By _____, Deputy

1 **OWNERSHIP AND CONTROL.** The parties acknowledge and agree that Grantee accepts the right, duty and responsibility for ownership, control, operation and maintenance of that portion of the Pipeline located within the Pipeline Easement on Grantor's Lands and further acknowledges that Grantor has never had such rights, duties or responsibilities.

2 **ACCESS.** Grantee shall have ingress and egress to the easement granted herein only from public roads, ranch roads or from the ends of the easement, unless otherwise specified in writing. Further, Grantee shall have no right to enter upon lands of Grantor other than the Pipeline Easement.

3 **RANCHING AND AGRICULTURAL LIABILITY.** Grantee shall take reasonable precautions to avoid damage to ranching and agricultural operations. Grantee agrees to pay to the person or persons entitled to same, damages to the land, livestock, crops, fences and improvements which may result from the existence or operation of the Pipeline in the Pipeline Easement whether from leakage, breaking or any other cause, whether similar or dissimilar.

4 **FENCES.** Grantee agrees to re-erect, repair or replace all fences, bracing and gates taken down or damaged by Grantee at any point or points where the Pipeline Easement crosses any fences, to at least as good condition as they were in prior to any entry of Grantee on the Pipeline Easement.

5 **HUNTING AND FISHING.** Grantee agrees not to allow its employees, agents, invitees, contractors or owners to engage in or allow hunting or fishing on or along the Pipeline Easement.

6 **RESERVATION OF RIGHTS; NO RELOCATION OR ENLARGEMENT.** Grantor reserves unto itself and its successors, assigns, and lessees, all rights and uses in, to, over and under the Pipeline Easement, including but not limited to the right to cultivate and farm the land embraced within the Pipeline Easement and to irrigate and drain for such purposes, and enjoy and produce minerals under such land, but Grantor shall not construct, or permit to be constructed, any house or building or any other structure (except roadways, power lines and other utilities, and oil and gas lines) on or over the Pipeline Easement which will unreasonably interfere with the rights herein granted.

Grantee may not relocate the existing Pipeline or replace it with a larger pipeline or build or locate any additional facilities on the Pipeline Easement without Grantor's express written consent.

Grantor and Grantor's successors, assigns or lessees, shall have the right of ingress and egress on and along the surface of the Pipeline Easement for the purpose of exploring or prospecting for any minerals therein or thereunder owned by them; but they shall have no right to drill, excavate, mine or dig for such minerals on the Pipeline Easement except by directional methods from other land or in a manner which will not unreasonably interfere with the Pipeline or unreasonably interfere with the rights in the Pipeline Easement hereby granted to Grantee.

7 **LIABILITY OF THE PARTIES.** GRANTEE COVENANTS AND AGREES TO FULLY DEFEND, PROTECT, INDEMNIFY, HOLD HARMLESS AND RENDER WHOLE GRANTOR, ITS OFFICERS, DIRECTORS, EMPLOYEES, AND AGENTS FROM AND AGAINST EACH AND EVERY CLAIM, DEMAND, JUDGMENT, LIEN, INDEBTEDNESS, DAMAGE, LOSS, CLAIM OVER BY THIRD PARTIES, CAUSE OF ACTION, LIABILITY, COST AND/OR EXPENSE (INCLUDING BUT NOT LIMITED TO REASONABLE ATTORNEYS' FEES AND OTHER COSTS OF LITIGATION), ON ACCOUNT OF PERSONAL INJURY OR DEATH OR PROPERTY DAMAGE CAUSED BY, OR ARISING OUT OF:

a. GRANTEE'S USE OF THE PIPELINE EASEMENT OR THE RIGHTS GRANTED HEREUNDER
b. OR GRANTEE'S USE, OWNERSHIP OR OPERATION OF THE PIPELINE LOCATED WITHIN THE PIPELINE EASEMENT ON THE GRANTOR'S LANDS
c. OR THAT PORTION OF THE PIPELINE LYING NORTH OF THE NORTH BOUNDARY OF GRANTOR'S LANDS

d. OR THAT PORTION OF THE PIPELINE AND/OR OUTLET WORKS LYING IN OR UNDER THE SOUTH DIKE OF THE LAKE DESMET RESERVOIR, ALL SITUATE IN THE SE¼NE¼ SECTION 28, T52N, R82W.

IT IS EXPRESSLY AGREED THAT THE INDEMNITY OBLIGATION SPECIFICALLY INCLUDES, BUT IS NOT LIMITED TO, CLAIMS ARISING UNDER THE PROVISIONS HEREIN ENTITLED RANCHING AND AGRICULTURAL LIABILITY IN PARAGRAPH 2 ABOVE, AND ALL FEDERAL LAWS AND REGULATIONS INCLUDING BUT NOT LIMITED TO THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976, 42 U.S.C.A. §6901 ET SEQ. AS AMENDED, COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT, 42 U.S.C.A. §6901 ET. SEQ. AS AMENDED, SAFE WATER DRINKING ACT, 42 U.S.C.A. §300F ET. SEQ. AS AMENDED, TOXIC SUBSTANCES CONTROL ACT, 15 U.S.C.A. §2601 ET. SEQ. AS AMENDED, CLEAN WATER ACT, 33 U.S.C.A. §1251 ET. SEQ. AS AMENDED, CLEAN AIR ACT, 42 U.S.C.A. §7401 AS AMENDED, AND ALL STATE AND LOCAL ENVIRONMENTAL LAWS, RULES AND REGULATIONS.

8 **INSURANCE.** Grantee shall maintain, at all times while this Pipeline Easement is in effect comprehensive general liability insurance coverage with companies satisfactory to Grantor having policy limits not less than Bodily Injury $1,000,000.00 each person, $3,000,000.00 each occurrence/aggregate. This policy shall cover, among other risks, the contractual liability of Grantee under the indemnification and other provisions set forth in this Pipeline Easement Agreement. Grantee shall require any contractor performing work on the Pipeline Easement to maintain comprehensive general liability insurance coverage with companies satisfactory to Grantor having policy limits not less than Bodily Injury $500,000.00 each person, $1,000,000.00 each occurrence/aggregate. Grantee or its insurer shall furnish a certificate naming Grantor (and all applicable subsidiaries and affiliates) as additional insured, together with a receipt for the payment of the premium attached. The certificate shall provide that any change restricting or reducing coverage or cancellation of any policies under which certificates are issued shall not be valid with respect to Grantor until it has received thirty (30) days prior written notice of such change or cancellation. Each policy shall be endorsed to provide waiver of subrogation rights in favor of Grantor. In the event Grantee fails to provide the required policies or keep them in full force and effect, Grantor may, at its election, terminate the easement provisions of this Pipeline Easement after giving Grantee thirty (30) days written notice and opportunity to cure. The insurance coverage and policy limits set forth in this paragraph shall not be interpreted to limit in any way Grantee's liability to Grantor under this Pipeline Easement.

9 **TERM AND TERMINATION.** In the event Grantee should cease to transport water through the Pipeline, and for a period of five (5) consecutive years thereafter does not renew its use of the Pipeline, then this Pipeline Easement shall terminate. For purposes of calculating the five (5) year period, no time prior to January 2, 1996 shall be considered in determining such five (5) year period. In the event of such termination Grantee shall, at its election, have the right to remove the Pipeline from the Pipeline

Easement within nine (9) months after the date of said termination. If the Pipeline is not so removed from the Pipeline Easement within said nine (9) month period, then Grantor or its successors in interest shall become full owners of the Pipeline located within the Pipeline Easement and Grantee shall have no further interest therein. Except as otherwise provided in this paragraph , the Pipeline Easement granted herein shall be permanent and continue in effect indefinitely.

10 **REVERSION AND RE-CONYEYANCE OF EASEMENT.** Upon termination of the Pipeline Easement granted hereunder subject to the Grantee's right to remove the Pipeline, the Pipeline Easement and all other rights granted herein shall revert to Grantor, its successors and assigns. Upon such termination, Grantee shall execute, acknowledge and deliver to Grantor within thirty (30) days a good and sufficient quitclaim deed, in recordable form. Should Grantee fail to deliver to Grantor a quitclaim deed, a written notice by Grantor reciting the failure or refusal of Grantee to execute and deliver said quitclaim deed, as herein provided, and terminating the Pipeline Easement granted herein, shall, after ten (10) days from the date of recordation of said notice, or after sixty (60) days after the notice is sent, whichever is shorter, terminate any remaining rights, but not any remaining obligations Grantee may have hereunder.

11 **RESTOR ATION.** In the event that Grantee elects to remove the Pipeline from the Pipeline Easement following termination of this Pipeline Easement, Grantee shall restore the Pipeline Easement to approximately the same state and condition they were in before the construction of any pipeline. In such event Grantee shall prepare and submit a restoration plan to Grantor, acceptable to Grantor and any federal, state or local governmental authority having jurisdiction over the Pipeline and/or the Pipeline Easement prior to restoration. Reseeding and restoration work shall be commenced as soon as practicable after approval of Grantee's restoration plan by Grantor and any applicable governmental authority. Approval of Grantee's restoration plans and Grantee's final restoration work shall be in Granter's reasonable discretion. Grantee shall not be obligated to restore the Pipeline Easement upon termination of this Pipeline Easement, except in the event Grantee elects to remove the Pipeline from the Pipeline Easement.

12 **LAWS, RULES AND REGULATIONS.** During all periods that the Pipeline Easement granted hereunder remains in effect, Grantee shall comply at its sole expense with all laws and regulations of any federal, state, local and other governmental authority with jurisdiction over the Pipeline Easement and/or the use of the Pipeline Easement and the operations conducted thereon by Grantee, including but not limited to the State of Wyoming, further, including but not limited to grading permits, trenching permits, environmental studies, storm water discharge permits, etc. Grantee further agrees, as its sole responsibility and expense, to obtain any and all permits, licenses, or approvals necessary to operate the Pipeline, and to furnish copies thereof to Grantor upon request. Grantee shall not unreasonably disturb or endanger Granter or Grantor's tenants, livestock or wildlife on the Pipeline Easement.

13 **DRUGS, ALCOHOL AND FIREARMS.** Grantee shall not allow the use, possession, transfer, purchase or sale of illegal drugs, narcotics, or other unlawful substances and

materials by Grantee or it contractors, subcontractors, agents, business invitees or other visitors while on the Pipeline Easement. The use, possession, transfer, purchase or sale of intoxicating beverages, firearms and other weapons upon the Pipeline Easement is absolutely prohibited.

14 **NO ADVANCE COMPENSATION FOR DAMAGES.** The consideration provided for the execution and delivery of this Pipeline Easement Agreement represents consideration solely for the grant of the Pipeline Easement and other rights conveyed hereunder and does not include any compensation for damages of any kind which will result from Grantee's operations, maintenance or repair of the Pipeline, or from removal of the Pipeline in the event Grantee elects to remove the Pipeline upon termination of this Pipeline Easement and Grantor incurs damages that are not remedied by Grantee. Grantee shall be liable for all damages of every kind and nature caused by the exercise of its rights hereunder.

15 **TAXES.** Grantee shall be responsible for payment of all taxes and assessments which, during any period that the Pipeline Easement granted hereunder remains in effect, may be levied upon or assessed against or in any way become a charge against or a lien upon the Pipeline on or under the Pipeline Easement or as a result of any improvements which Grantee owns on the Pipeline Easement. All other taxes and assessments levied upon the Pipeline Easement shall be the responsibility of Grantor. The parties agree that this transaction is not intended to and does not constitute a sale or exchange for income tax purposes.

16 **NOTICE.** Any notice or written demand to be given by either party to the other hereunder may be delivered in person or by certified or registered mail, postage prepaid, addressed to the party for whom intended as follows:

To Grantor: SUMMERFIELD K. JOHNSTON, JR.
9337 Bradmore Lane
Ooltewah, TN 37363

To Grantee: SASOL MIDDLE EAST AND INDIA (PTY) LTD
12120 Wickchester Lane
Houston, TX 77079

Either party may, from time to time, by written notice to the other, designate a different address which shall be substituted for the one above specified. If any notice is given by certified or registered mail, usual time for transmission of mail shall be computed and at the end of such time service of notice will be deemed made.

17 **OTHER AGREEMENTS.** The Pipeline Easement conveyed to Grantee hereunder is subject to all existing contracts, leases, liens, easements and encumbrances or claims of title, if any, which may affect the Pipeline Easement, and nothing contained herein shall be

construed as a covenant or warranty against the existence of any such agreements. Grantor represents that to the best of its knowledge it is not aware of any such agreements or encumbrances that would be prior to the Pipeline Easement granted herein.

18 **NO WARRANTIES.** Grantor makes no warranties or representations, express or implied (a) as to Grantor's title, interest or rights in and to the Premises, or (b) that the Pipeline Easement is suitable for use as a right-of-way or for any other purposes.

19 **ASSIGNMENTS.** This Pipeline Easement and all covenants contained herein shall run with the land and bind and inure to the benefit of the parties hereto and their respective heirs, administrators, successors and assigns. Grantee may assign all or part of its interest in the easement, provided, however, that any assignee must be capable of performing all rights, duties and obligations of Grantee under this Pipeline Easement, and must take subject to and expressly agree to be bound by this Pipeline Easement. Notwithstanding the preceding provisions of this paragraph, Grantee may assign this Pipeline Easement to an affiliate of Grantee (being a party owned by the same person or persons, directly or indirectly) or to a person to whom the Water Agreement and License, dated April 18, 1996, is assigned. Upon assignment of this Pipeline Easement Agreement by Grantee in accordance with this paragraph, it is expressly understood and agreed that all of Grantee's obligations and liability to the Grantor pursuant to this Pipeline Easement Agreement shall automatically terminate.

20 **LIENS.** Grantee shall not suffer or permit to be enforced against the Pipeline Easement, or any part thereof, any mechanic's, materialman's, contractor's or subcontractor's liens arising from or any claim for damage growing out of any operation, repair, restoration (to the extent required hereunder), replacement or improvement by Grantee on the Pipeline Easement or any other similar claim or demand howsoever the same may arise, but Grantee shall pay or cause to be paid (by bonding or otherwise) all of such liens, claims or demands before any action is brought to enforce the same against the Pipeline Easement.

21 **ENTIRE AGREEMENT.** This Pipeline Easement contains the entire agreement between the parties with respect to the subject matter hereof. Any amendment or modification of this instrument must be in writing and signed by both parties hereto.

22 **SEVERABILITY.** In the event any provisions of this Pipeline Easement is held invalid, illegal, or unenforceable by a court of competent jurisdiction, the remainder of this instrument shall not be affected thereby and will continue in full force and effect.

23 **ATTORNEY'S FEES.** In the event legal proceedings are necessary to enforce any provision of this Pipeline Easement Agreement at law or in equity, the prevailing party shall be entitled to recover from the other the costs of such proceedings, including reasonable attorney's fees.

24 **COUNTERPARTS.** This instrument may be signed in counterparts with the same effect as if each of the parties signed one instrument.

IN WITNESS WHEREOF, this Pipeline Easement Agreement is executed this 16th day of January, 2018, to be effective as of January 22, 2018.

GRANTOR:

Summerfield K. Johnston, Jr.

STATE OF TENNESSEE)
) ss.
County of Hamilton)

On this 16th day of January, 2018, before me personally appeared Summerfield K. Johnston, Jr., to me known to be the person described in and who executed the foregoing instrument, and acknowledged that such person executed the same as such person's free act and deed.

Witness my hand and official seal.

Robin R. Ledbetter
Notary Public

My Commission expires: 11/24/2019

Robin R. Ledbetter
State of Tennessee
Notary Public
Hamilton County

ACCEPTED BY GRANTEE:

Sasol Middle East and India (Pty) Ltd, a South Africa corporation

By: _____
Name: Michael S. Thomas
Title: President, Sasol Chemicals (USA) LLC

STATE OF LOUISIANA

PARISH OF CALCASIEU

THUS DONE AND SIGNED by Seller at Lake Charles, State of Louisiana on this 18th day of January, 2018 in the presence of the two undersigned competent witnesses and me, Notary, after a due reading of the whole.

WITNESSES:

_____
Printed Name: Vickye Downey

_____
Printed Name: Kellie D Couvillion

SELLER:

_____
[ ]

_____
NOTARY PUBLIC
Printed Name: Tina Andrus
Bar Roll/Notary No.: 89050
Commission Expires: lifetime

REVIEWED
SASOL LEGAL
BY: _____
1.18.18

EXHIBIT C-1
TO
PIPELINE EASEMENT AGREEMENT

EXHIBIT C-1, LEGAL DESCRIPTION OF PIPELINE EASEMENT

A 100 FOOT WIDE WATER PIPELINE EASEMENT OVER AND ACROSS PORTIONS OF SECTION 2, TOWNSHIP 51 NORTH, RANGE 82 WEST AND SECTIONS 26, 27, AND 35 OF TOWNSHIP 52 NORTH, RANGE 82 WEST, 6TH PRINCIPAL MERIDIAN, JOHNSON COUNTY, STATE OF WYOMING. SAID EASEMENT BEING 50 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE, THE SIDE LINES OF SAID EASEMENT TO BE EXTENDED OR SHORTENED TO MEET AT THE ANGLE POINTS AND TO TERMINIATE AT LEGAL BOUNDARIES CROSSED:

COMMENCING AT WEST 1/4 CORNER OF SECTION 27, TOWNSHIP 52 NORTH, RANGE 82 WEST OF THE 6TH P.M., SAID POINT BEING S89°55'08"W 5277.65 FEET FROM THE EAST 1/4 CORNER OF SECTION 27;

THENCE N89°55'08"E 2433.20 FEET ALONG THE NORTH BOUNDARY OF THE SOUTH 1/2 OF SECTION 27 TO THE TRUE POINT OF BEGINNING;

THENCE S71°23'57"E 2420.90 FEET;

THENCE S39°37'45"E 2796.97 FEET;

THENCE S39°18'00"E 2075.00 FEET;

THENCE S39°26'42"E 1986.96 FEET;

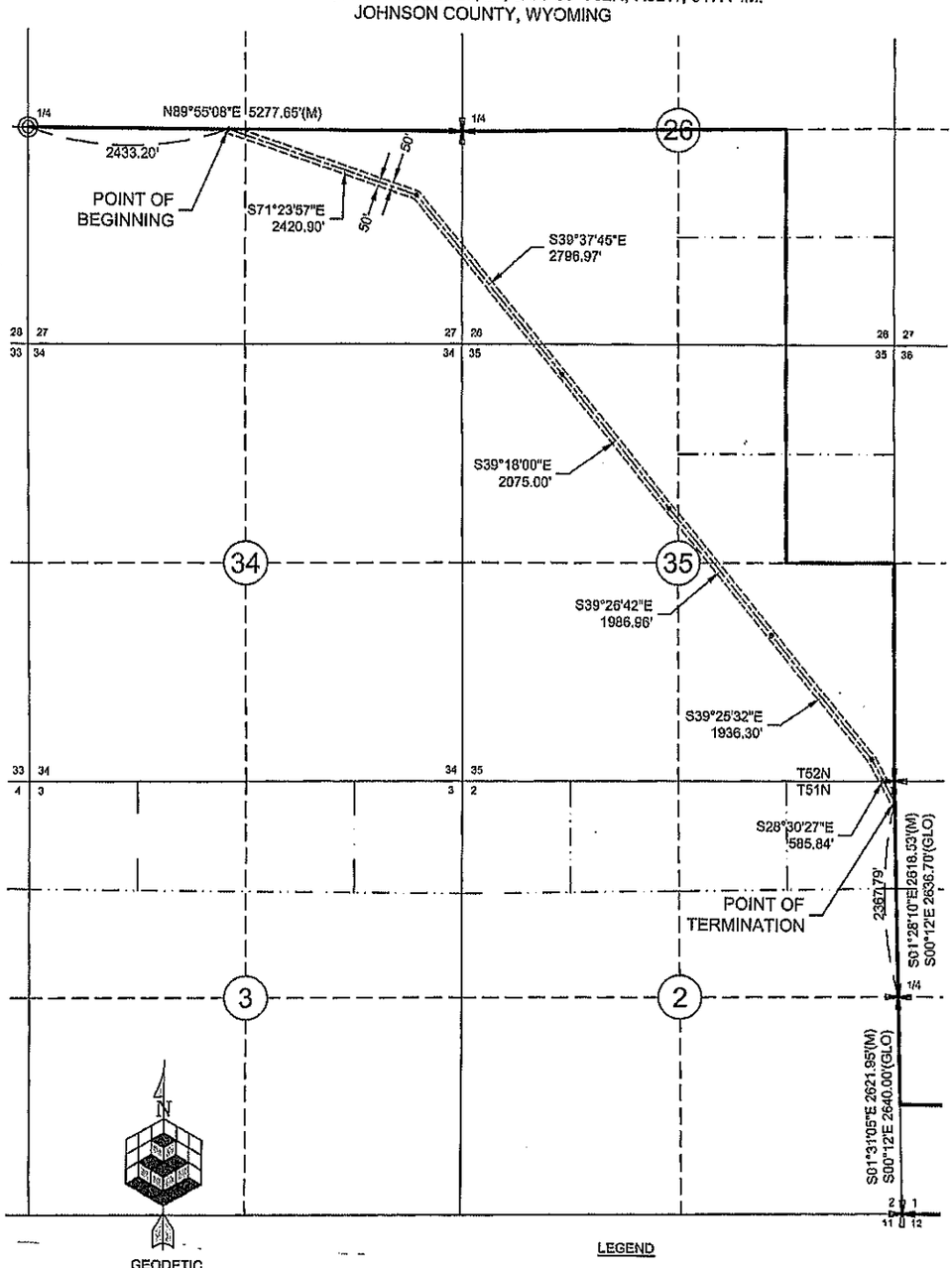
THENCE S39°25'32"E 1936.30 FEET;

THENCE S28°30'27"E 585.84 FEET TO THE EAST BOUNDARY OF SECTION 2, TOWNSHIP 51 NORTH, RANGE 82 WEST, BEING THE POINT OF TERMINATION, SAID POINT BEING S01°28'10"E 250.74 FEET FROM THE NORTHEAST CORNER OF SECTION 2.

SAID EASEMENT CONTAINS 27.09 ACRES, MORE OR LESS, DEPICTED ON "EXHIBIT C-2 – PIPELINE EASEMENT MAP" ATTACHED HERETO.

EXHIBIT C-2 - PIPELINE EASEMENT PLAT

LOCATED WITHIN
SEC. 2 OF T51N, R82W & SEC. 26, 27, & 35 OF T52N, R82W, 6TH P.M.
JOHNSON COUNTY, WYOMING



LEGEND

- FOUND 3-1/4" BRASS CAP
- FOUND 2" ALUM. CAP
- PROPERTY BOUNDARY
- EASEMENT CENTERLINE
- EASEMENT BOUNDARY

Professional Engineer & Land Surveyor
CRAIG SHAVLIK
12309
Date: 01/19/2018
WYOMING

KL&A, Inc.
Structural Engineers and Builders
159 S. Main Street
Buffalo, Wyoming 82834
Ph: (307) 621 7011 Fx: (307) 621 7011
Buffalo, WY • Carbondale, CO • Denver, CO • Orient, CO • Livermore CO

TITLE: WATER PIPELINE EASEMENT	
PROJECT: N0020	
DRAWN BY: CBS	DATE: 01/19/2018
SCALE: 1" = 1500'	PAGE: 1 OF 1

EXHIBIT D
TO
PIPELINE EASEMENT AGREEMENT

BENEFITTED LANDS

EXHIBIT D-1

CLEAR CREEK-LAKE DESMET PIPELINE

The Clear Creek-Lake DeSmet Pipeline is the concrete and steel water pipeline extending from the Clear Creek Pumping Plant across Sections 7, 8 and 9, T51N, R81W; Sections 1 and 12, T51N, R82W, and Sections 34, 35 and 27, T52N, R82W, all in the 6th P.M., Johnson County, Wyoming, to Lake DeSmet including all associated valves, manholes, inlet and outlet works and pump houses.

EXHIBIT D-2

CLEAR CREEK PUMPING PLANT

The Clear Creek Pumping Plant is the Clear Creek Diversion Dam, Pumping Plant, pumps, valves, controls and associated works and pipelines located in Section 9, T51N, R81W, 6th P.M., Johnson County, Wyoming.

EXHIBIT D-3
TO
PIPELINE EASEMENT AGREEMENT

METES AND BOUNDS DESCRIPTION OF HEALY RESERVOIR UNIT:

A parcel of land lying in portions of Sections 4, 8, 9, 16 and 17, Township 51 North, Range 81 West of the 6th P.M., Johnson County, Wyoming, more particularly described as follows:

Beginning at the southwest corner of the SE¼SW¼ of Section 4, Township 51 North, Range 81 West, said corner being North 89°46'27" East, a distance of 1334.81 feet from the common corner of Sections 4, 5, 8, and 9;

thence North 00°09'47" West, a distance of 1316.69 feet along the west boundary of the SE¼SW¼ of Section 4 to the corner of a parcel of land described in Special Warranty Deed from M&M Ranch Acquisition Company, LLC, a Delaware limited liability company to Sasol Synfuels International Pty Ltd recorded October 23, 2012 in Book 87A-59, Pages 332-342;

thence North 63°22'21" East, a distance of 2971.44 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 89°41'01" East, a distance of 1074.53 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342 to the boundary of a separate parcel described in said deed;

thence along the boundary of said parcel described in Book 87A-59, Pages 332-342, a distance of 357.87 feet along a curve concave to the Northwest having a radius of 1909.86 feet and a chord bearing North 38°44'07" East, a distance of 357.34 feet to the centerline of U.S. Highway 16;

thence along said centerline of U.S. Highway 16, a distance of 215.87 feet along a curve concave to the Northwest having a radius of 11459.16 feet and a chord bearing South 24°04'08" West, a distance of 215.87 feet, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126

thence South 24°36'31" West, a distance of 4281.73 feet along said centerline of U.S. Highway 16, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126

thence along said centerline of U.S. Highway 16, a distance of 1196.46 feet along a curve concave to the Northwest having a radius of 2864.79 feet and a chord bearing South 36°34'24" West, a distance of 1187.78 feet, said line also being the westerly line of Parcel II described in

Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126

thence South 48°32'16" West, a distance of 2027.09 feet along said centerline of U.S. Highway 16, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126

thence South 22°28'34" East, a distance of 1976.15 feet to the Southern boundary of Section 9, said line also being the westerly line of Parcel II described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126

thence North 89°46'25" West, a distance of 356.29 feet along the Southern boundary of Section 9 to the northeast corner of a parcel of land described in Special Warranty Deed from M&M Ranch Acquisition Company, LLC, a Delaware limited liability company to Sasol Synfuels International Pty Ltd recorded October 23, 2012 in Book 87A-59, Pages 332-342;

thence South 38°32'37" West, a distance of 1318.78 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence South 57°42'22" West, a distance of 894.07 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 00°07'21" West, a distance of 199.73 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342 to the South boundary of the NE¼NE¼ of Section 17;

thence North 88°06'51" West, a distance of 520.91 feet along the South boundary of the NE¼NE¼ of Section 17 corner to the boundary of a parcel described in Warranty Deed from Reynolds Mining Corporation, a Delaware corporation to Marton Brothers, Inc., a Wyoming corporation recorded June 22, 1974 in Book 87A-13, Pages 429-430;

thence North 20°39'46" East, a distance of 837.04 feet along the boundary of said parcel described in Book 87A-13, Pages 429-430 to the boundary of a parcel described in Special Warranty Deed from M&M Ranch Acquisition Company, LLC, a Delaware limited liability company to Sasol Synfuels International Pty Ltd recorded October 23, 2012 in Book 87A-59, Pages 332-342;

thence along the boundary of said parcel described in Book 87A-59, Pages 332-342, a distance of 102.61 feet along a curve concave to the Southeast having a radius of 5496.69 feet and a chord bearing North 19°29'39" East, a distance of 102.60 feet;

thence North 69°23'52" West, a distance of 47.55 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 20°36'08"East, a distance of 1266.40 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342;

thence North 89°32'08" East, a distance of 77.78 feet along the boundary of said parcel described in Book 87A-59, Pages 332-342 to the centerline of U.S. Highway 16;

thence along said centerline of U.S. Highway 16, a distance of 369.08 feet along a curve concave to the Southeast having a radius of 2864.79 feet and a chord bearing North 31°31'02" East, a distance of 368.82 feet, said boundary also being the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 62°05'48" West, a distance of 606.25 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 01°41'54" West, a distance of 161.46 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 29°38'55" East, a distance of 275.26 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 03°21'17" West, a distance of 581.16 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 16°50'29" East, a distance of 903.54 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 11°13'53" East, a distance of 370.47 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

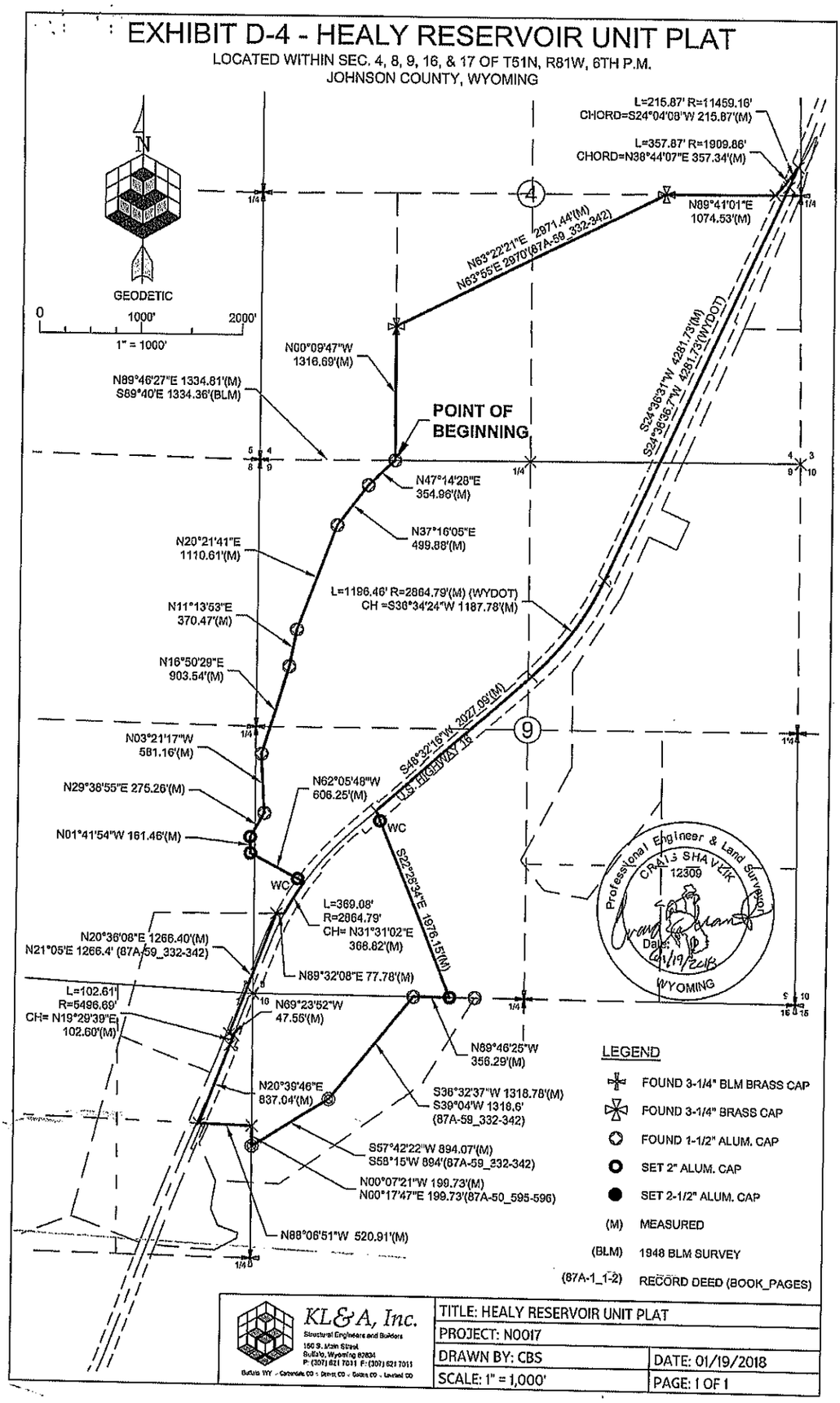
thence North 20°21'41" East, a distance of 1110.61 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 37°16'05" East, a distance of 499.88 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126;

thence North 47°14'28" East, a distance of 354.96 feet along the easterly property line of Parcel I described in Special Warranty Deed from Sasol Synfuels International Pty Ltd n/k/a Sasol Middle East and India (Pty) Ltd, a South Africa corporation to Merlon Ranch LLC, a Wyoming limited liability company recorded November 17, 2017 in Book 87A-66, Pages 107-126, to the point of beginning.

EXHIBIT D-4 - HEALY RESERVOIR UNIT PLAT

LOCATED WITHIN SEC. 4, 8, 9, 16, & 17 OF T51N, R81W, 6TH P.M.
JOHNSON COUNTY, WYOMING



LEGEND

- FOUND 3-1/4" BLM BRASS CAP
- FOUND 3-1/4" BRASS CAP
- FOUND 1-1/2" ALUM. CAP
- SET 2" ALUM. CAP
- SET 2-1/2" ALUM. CAP
- (M) MEASURED
- (BLM) 1948 BLM SURVEY
- (87A-1_1-2) RECORD DEED (BOOK_PAGES)

KL&A, Inc.
Structural Engineers and Builders
160 S. Main Street
Buffalo, Wyoming 82834
P: (307) 621 7011 F: (307) 621 7011
Buffalo WY - Carbondale CO - Denver CO - Golden CO - Loveland CO

TITLE: HEALY RESERVOIR UNIT PLAT	
PROJECT: N0017	
DRAWN BY: CBS	DATE: 01/19/2018
SCALE: 1" = 1,000'	PAGE: 1 OF 1

EXHIBIT E
TO
PIPELINE EASEMENT AGREEMENT

LEGAL DESCRIPTION OF GRANTOR'S LANDS

The land referred to in this Commitment is situated in the State of Wyoming, County of Johnson, and is described as follows:

In Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming:

Section 1: SW¼SW¼
Section 2: All
Section 3: All
Section 4: All EXCEPTING THEREFROM the following two tracts of land:

EXCEPTED TRACT I: Those portions of the SE¼SW¼, W½SW¼, SW¼NW¼ Section 4, Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming conveyed to J.K. Hardy by Warranty Deed recorded March 22, 1900, in Book 12B of Deeds, Page 234, and more particularly described as follows; Beginning at the corner common to Section 4, 5, 8 and 9; and running thence North a distance of 2790 feet to the centerline of the County Road; thence S 32°12' E along the centerline of said road a distance of 1188 feet; thence S 42°31' E along the Centerline of said road a distance of 462 feet; thence S 21°11' E (Record S 37°35' E) along the centerline of said road 1552 feet (Record 2400 Feet) to the section line between Sections 4 and 9; Thence N 89°53' W along said section line a distance of 1506 feet to the point of beginning.

EXCEPTED TRACT II: Those portions of the W½NW¼, SW¼ Section 4, Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 5: Lot 1, SE¼NE¼ EXCEPTING THEREFROM those portions of the Lot 1, SE¼NE¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 9: N½NE¼,SE¼NE¼ and those portions of the NE¼NW¼ and the SW¼NE¼ described as follows: Beginning at the ¼ section corner between Sections 4 and 9; running thence South 1320 feet; thence East 1318 feet; thence South 1320 feet; thence West 410 feet (calculated) (130 feet record) to the centerline of the County Road formerly used as the main highway between Buffalo and Sheridan; thence N 37°35' W along the centerline of said road a distance of 3334 feet (calculated) (3,550 feet record) to the section line between Sections 4 and 9; thence S 89°53' E along the section line a distance of 1125 feet to the point of beginning EXCEPTING THEREFROM those portions of the W½NE¼, E½NW¼ conveyed to The State of Wyoming by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345 and also EXCEPTING THEREFROM those portions of the W½NE¼,

SE¼NE¼, E½NW¼ conveyed to The State Highway Commission of Wyoming by Quitclaim Deed recorded December 17, 1986, in Book 87A-27 of Deeds, Page 621.

Section 10: All EXCEPTING THEREFROM the following two tracts of land:

EXCEPTED TRACT I: That portion of the SW¼SW¼ Section 10, Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

EXCEPTED TRACT II: that portion of the SW¼SW¼ Section 10, Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming as conveyed to Biscuit Investment Co., Inc., a Colorado Corporation by Quitclaim Deed recorded April 13, 2007 in Book 87A52, Page 356.

Section 11: All
Section 12: S½, S½N½, NW¼NW¼
Section 13: All
Section 14: N½, N½S½, SE¼SE¼
Section 15: E½ EXCEPTING THEREFROM the following three (3) tracts of land:

EXCEPTED TRACT I: That portion of the NW¼SE¼ Section 15, Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming as conveyed to Fred M. Torrence and Claudia J. Torrence, husband and wife, by Quit Claim Deed recorded September 6, 1991, in Book 87A-32 of Deeds, Page 225.

EXCEPTED TRACT II: That portion of the SW¼SE¼ Section 15, Township 51 North, Range 82 West of the 6th P.M., Johnson County, Wyoming as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

EXCEPTED TRACT III: That land conveyed to James J. Mangan and Mildred L. Mangan, Trustees of the Mangan Family Trust by Warranty Deed recorded February 28, 2006 in Book 87A-50 of Deeds, Page 546.

In Township 52 North, Range 82 West of the 6th P.M., Johnson County, Wyoming:

Section 26: SW¼, W½SE¼
Section 27: S½
Section 28: All EXCEPTING THEREFROM the following two tracts of land;

EXCEPTED TRACT I: That land conveyed to Wyoming Storage and Water Supply Company by Warranty Deed recorded May 29, 1907, in Book 14 of Deeds, Page 281.

EXCEPTED TRACT II: That land conveyed to Texaco Inc. by Deed recorded January 21, 1998, in Book 87A-40 of Deeds, Page 124.

Section 32: SE¼SE¼ EXCEPTING THEREFROM the following two tracts of land:

EXCEPTED TRACT I: That land conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

EXCEPTED TRACT II: That land conveyed to The State Highway Commission of Wyoming by Warranty Deed recorded November 3, 1964, in Book 87A-7 of Deeds, Page 225.

Section 33: All
Section 34: All
Section 35: W½, W½NE¼, SE¼

Exhibit F

ASSIGNMENT OF RESERVED PIPELINE EASEMENT

This Assignment of Reserved Pipeline Easement (***"Easement Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is c/o SASOL North America Inc., 12120 Wickchester Lane, Houston, TX 77079 (***"Sasol"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Assignment ***("WWDC").***

The Reserved Pipeline Easement was reserved by Sasol in a Special Warranty Deed to Merlon Ranch, LLC dated the 15th day of November, 2017 and effective as of the 15th day of November, 2017 and recorded in the records of the County Clerk, Johnson County, Wyoming on November 17, 2017 in Book 87A-66 at pages 107-126 ***("Reserved Pipeline Easement")***. The Reserved Pipeline Easement is described on Attachment A and depicted on Attachment B to this Assignment.

For good and valuable consideration, including the terms of this Easement Assignment, Sasol quitclaims, assigns and transfers to WWDC all of Sasol's right, title and interest in, to and under the Reserved Pipeline Easement and WWDC assumes all of Sasol's obligations in, to and under the Reserved Pipeline Easement from and after the effective date hereof.

This Easement Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Easement Assignment shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____ , the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A

LEGAL DESCRIPTION OF RESERVED PIPELINE EASEMENT

A 100 FOOT WIDE WATER UTILITY EASEMENT OVER AND ACROSS A PORTION OF SECTION 8 OF TOWNSHIP 51 NORTH, RANGE 81 WEST, 6TH PRINCIPAL MERIDIAN, JOHNSON COUNTY, STATE OF WYOMING. SAID EASEMENT BEING 50 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE, THE SIDE LINES OF SAID EASEMENT TO BE EXTENDED OR SHORTENED TO MEET AT THE ANGLE POINTS AND TO TERMINIATE AT LEGAL BOUNDARIES CROSSED:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 8, SAID CORNER BEING S89°26’52”W 2640.01 FEET FROM THE SOUTH 1/4 CORNER OF SAID SECTION;

THENCE N00°52’26”W 972.85 FEET ALONG THE WESTERN BOUNDARY OF SAID SECTION TO THE POINT OF BEGINNING;

THENCE S81°33’14”E 3074.35 FEET;

THENCE N69°15’31”E 2380.43 FEET TO THE BOUNDARY OF THE PARCEL DESCRIBED BY PARCEL I BEING CONVEYED BY THIS SPECIAL WARRANTY DEED, BEING TO THE POINT OF TERMINATION, SAID POINT BEING S02°04’00”W 1163.23 FEET FROM THE EAST 1/4 CORNER OF SAID SECTION.

SAID EASEMENT CONTAINS 12.52 ACRES, MORE OR LESS; AND IS FURTHER DEPICTED ON EXHIBIT C-2 – PIPELINE EASEMENT PLAT.

ATTACHMENT B

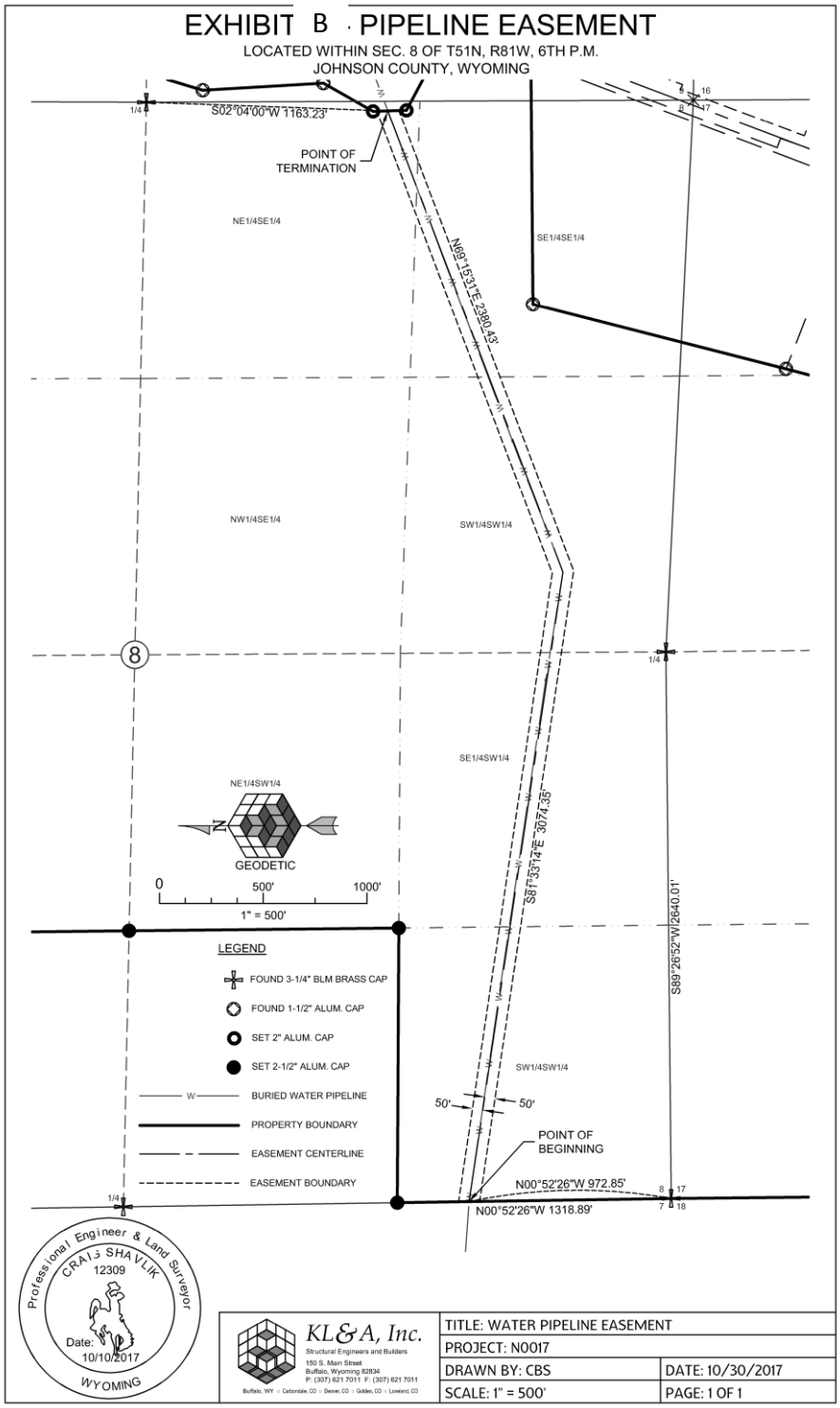


Exhibit G

ASSIGNMENT OF WOHLBRANDT RIGHT-OF-WAY EASEMENTS
(Clear Creek-Lake DeSmet Pipeline)

This Assignment of Wohlbrandt Easements (***"Easement Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is 12120 Wickchester Lane, Houston, TX 77079 (***"SASOL"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Assignment ***("WWDC")***

The Wohlbrandt Easements listed on Attachment A to this Easement Assignment ***("Wohlbrandt Easements")***, have been assigned, transferred and conveyed to each new successor in interest upon subsequent sales of the lands benefitted by the Wohlbrandt Easements by documents recorded in the records of the Johnson County Clerk ***("Assignment Documents")*** as listed on Attachment B to this Easement Assignment.

For good and valuable consideration, including the terms of this Easement Assignment, SASOL quitclaims, assigns and conveys to WWDC all of SASOL's right, title, interest and obligations in, to and under the Wohlbrandt Easements and WWDC assumes all of SASOL's obligations in, to and under the Wohlbrandt Easements, from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Easement Assignment

This Easement Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Easement Assignment shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2016, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
ASSIGNMENT OF WOHLBRANDT EASEMENTS

Between
Sasol Middle East and India (Pty) Limited
And
State of Wyoming by and through
Wyoming Water Development Commission

WOHLBRANDT EASEMENTS

Document No.	Document Description
1.	"Easement for Water Pipeline" from Wohlbrandt, et al., to Reynolds Mining Corporation, dated August 23, 1973; recorded in R/W #4, p. 266-273 (signed by all parties except Murphy)
2.	"Easement for Water Pipeline" from Wohlbrandt, et al., to Reynolds Mining Corporation, dated February 2, 1974; recorded in R/W #4, p. 274-280 (signed only by Murphy and Reynolds)
3.	"Assignment" of Documents 1 and 2 above listed from Reynolds to Texaco, Inc. dated March 18, 1974; recorded in R/W #4, p. 281-282
4.	"Amendment of Easement for Water Pipeline" from Wohlbrandt, et al., to Texaco, Inc. dated March 25, 1975, recorded in R/W #5, p. 86-90 AND a duplicate filed in R/W #5, p. 81-85
5.	"Second Amendment of Easement for Water Pipeline" from Wohlbrandt to Texaco, Inc., dated April 1, 1989; recorded in R/W #10, p. 141-144
6.	"Ratification" of Second Amendment by Mylerberg dated April 25, 1989, recorded in R/W #10, p/ 196-200
7.	"Ratification" of Second Amendment by O'Dea dated May 25, 1989, recorded in R/W #10, p/ 186-190
8.	"Ratification" of Second Amendment by Miller dated April 25, 1989, recorded in R/W #10, p/ 191-195
9.	"Ratification" of Second Amendment by Murphy dated April 25, 1989, recorded in R/W #10, p/ 206-210

10. "Assignment of Easement" from Texaco, Inc. to Lake DeSmet Energy Co. L.C. dated April 18, 1996, effective as of January 2, 1996; recorded in R/W # 14, p. 402-404, assigning all of Texaco, Inc's right, title and interest in and to the easement evidenced by Documents 1 through 9 above listed.

The instruments listed as Documents 1 through 9 above describe the following lands located in Johnson County, Wyoming

Township 51 North, Range 81 West, 6th P.M.
Section 7: SE¼NW¼ , NE¼SW¼, NW¼SE¼ , S½SE¼

In addition, Documents 5 through 9 provide for a bypass water pipeline across the following land:

Township 51 North, Range 81 West, 6th P.M.
Section 7: W½SE¼

At a location more specifically shown on a plat attached to Documents 5 through 9.

Document 10, being an assignment of the easements evidenced by Documents 1 through 9, also relates to the above-described land.

ATTACHMENT B
TO
ASSIGNMENT OF WOHLBRANDT EASEMENTS

Between
Sasol Middle East and India (Pty) Limited
And
State of Wyoming by and through
Wyoming Water Development Commission

Assignment Documents

"Assignment of Wohlbrandt Easements" dated May 18, 2006 Lake DeSmet Energy Company II, LLC to M&M Ranch Acquisition Company, LLC and recorded in the records of the Johnson County Clerk in Book R/W 21, pages 672-729.

"Assignment of Wohlbrandt Right of Way Easements" dated October 23, 2012 from M&M Ranch Acquisition Company, LLC to Sasol Synfuels International PTY Ltd. and recorded in the records of the Johnson County Clerk in Book R/W 29, pages 377-382.

[See Attached]

CD#14

Filed for record 5-23-2006 at 4:15 o'clock
Recorded in Book 21W 21 of Easements page 223-229
$ 179-
JOHNSON COUNTY CLERK
DEPUTY

ASSIGNMENT OF WOHLBRANDT EASEMENT
(Clear Creek-Lake DeSmet Pipeline)

052304

This Assignment of Wohlbrandt Easement ("Assignment") is made between **LAKE DESMET ENERGY CO. II, L.C., and LAKE DESMET ENERGY CO., L.C.**, both Iowa limited liability companies, whose address is c/o Hills Bank and Trust Company, 1401 South Gilbert Street, Iowa City, IA 52240 ("Assignors"), and **M&M RANCH ACQUISITION COMPANY, LLC**, a Delaware limited liability company ("Assignee"), whose address is Suite 400, 302 South 36th Street, Omaha, NE 68131-3845.

Assignors are parties to, beneficiary of, or otherwise affected by the Wohlbrandt Easements listed on Exhibit A, attached hereto and by reference made a part hereof ("Wohlbrandt Easements") under which Assignor has certain rights and obligations.

For good and valuable consideration, including the terms of this Assignment, Assignors assign, transfer and convey to Assignee, its successors and assigns, all of Assignors' right, title, interest and obligations in, to and under the Wohlbrandt Easements and Assignee assumes all of Assignors' obligations in, to and under the Wohlbrandt Easements.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, execute, acknowledge, deliver or cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Assignment.

Dated and effective as of this 18th day of May, 2006.

ASSIGNORS:

LAKE DESMET ENERGY CO. II, L.C.

By: _____
Michael B. Miller, Manager

By: _____
Bradford C. Zuber, Manager

LAKE DESMET ENERGY CO., L.C.

By: _____
Michael B. Miller, Manager

By: _____
Bradford C. Zuber, Manager

ASSIGNEE:

M&M RANCH ACQUISITION COMPANY, LLC

By: _____
Mitchell L. Pirnie, Vice President

STATE OF Iowa)
) ss.
County of Linn)

The foregoing instrument was acknowledged before me on this 15th day of May, 2006, by Michael B. Miller, the Manager of Lake DeSmet Energy Co. II, L.C. and Lake DeSmet Energy Co, L.C., both Iowa limited liability companies, on behalf of the limited liability companies.

Witness my hand and official seal.

Notary Public

My Commission expires:

STATE OF Iowa)
) ss.
County of Linn)

DENNIS J. MCMENIMEN
COMMISSION NUMBER 110803
MY COMMISSION EXPIRES
August 19, 2006

The foregoing instrument was acknowledged before me on this 15th day of May, 2006, by Bradford C. Zuber, the Manager of Lake DeSmet Energy Co. II, L.C. and Lake DeSmet Energy Co, L.C., both Iowa limited liability companies, on behalf of the limited liability companies.

Witness my hand and official seal.

Notary Public

My Commission expires:

STATE OF Nebraska)
) ss.
County of Douglas)

DENNIS J. MCMENIMEN
COMMISSION NUMBER 110803
MY COMMISSION EXPIRES
August 19, 2006

The foregoing instrument was acknowledged before me on this 17th day of May, 2006, by Mitchell L. Pirnie, Vice President of M&M Ranch Acquisition Company, LLC, a Delaware limited liability company, on behalf of the limited liability company.

Witness my hand and official seal.

Connie J. Tomes
Notary Public

My Commission expires:
Oct 27, 2007

GENERAL NOTARY - State of Nebraska
CONNIE J. TOMES
My Comm. Exp. Oct. 27, 2007

EXHIBIT A

TO

ASSIGNMENT OF WOHLBRANDT EASEMENT
(CLEAR CREEK-LAKE DESMET PIPELINE)

Between

Lake DeSmet Energy Co. II, L.C., Lake DeSmet Energy Co. L.C. and M&M Ranch Acquisition Company, LLC
Dated May 18, 2006

WOHLBRANDT EASEMENTS

Document No.	Document Description
1.	"Easement for Water Pipeline" from Wohlbrandt, et al., to Reynolds Mining Corporation, dated August 23, 1973; recorded in R/W #4, p. 266-273 (signed by all parties except Murphy)
2.	"Easement for Water Pipeline" from Wohlbrandt, et al., to Reynolds Mining Corporation, dated February 2, 1974; recorded in R/W #4, p. 274-280 (signed only by Murphy and Reynolds)
3.	"Assignment" of Documents 1 and 2 above listed from Reynolds to Texaco, Inc. dated March 18, 1974; recorded in R/W #4, p. 281-282
4.	"Amendment of Easement for Water Pipeline" from Wohlbrandt, et al., to Texaco, Inc. dated March 25, 1975, recorded in R/W #5, p. 86-90 AND a duplicate filed in R/W #5, p. 81-85
5.	"Second Amendment of Easement for Water Pipeline" from Wohlbrandt to Texaco, Inc., dated April 1, 1989; recorded in R/W #10, p. 141-144
6.	"Ratification" of Second Amendment by Mylerberg dated April 25, 1989, recorded in R/W #10, p/ 196-200
7.	"Ratification" of Second Amendment by O'Dea dated May 25, 1989, recorded in R/W #10, p/ 186-190
8.	"Ratification" of Second Amendment by Miller dated April 25, 1989, recorded in R/W #10, p/ 191-195
9.	"Ratification" of Second Amendment by Murphy dated April 25, 1989,

recorded in R/W #10, p/ 206-210

10. "Assignment of Easement" from Texaco, Inc. to Lake DeSmet Energy Co. L.C. dated April 18, 1996, effective as of January 2, 1996; recorded in R/W # 14, p. 402-404, assigning all of Texaco, Inc's right, title and interest in and to the easement evidenced by Documents 1 through 9 above listed.

STATE OF WYOMING }
COUNTY OF JOHNSON } SS Doc Number: 124528
This instrument was Filed for record on 10/23/2012 at 4:21 PM
and was duly recorded in book: R/W 29 page: 377 - 382 fees: 23.00
Johnson County Clerk
By Mary Klaahsen Asst, Deputy

ASSIGNMENT OF WOHLBRANDT RIGHT-OF-WAY EASEMENT
(Clear Creek-Lake DeSmet Pipeline)

This Assignment of Wohlbrandt Easement (*"Easement Assignment"*) is made between **M&M RANCH ACQUISITION COMPANY, LLC**, a Delaware limited liability company and a wholly owned subsidiary of MidAmerican Energy Holdings Company, whose address is 1407 West North Temple, Salt Lake City, Utah 84116 (*"M&M Ranch"*), and **SASOL SYNFUELS INTERNATIONAL PTY LTD**, whose address is c/o SASOL North America Inc., 900 Threadneedle, Suite 100, Houston, TX 77079 (*"SASOL"*).

The Wohlbrandt Easements listed on Exhibit A, attached to this Easement Assignment (*"Wohlbrandt Easements"*) were assigned to M&M Ranch by the Assignment of Wohlbrandt Easement dated May 18, 2006 and recorded in the records of the Johnson County Clerk in Book R/W 21, pages 672-729.

For good and valuable consideration, including the terms of this Easement Assignment, M&M Ranch assigns, transfers and conveys to SASOL all of M&M Ranch's right, title, interest and obligations in, to and under the Wohlbrandt Easements and SASOL assumes all of M&M Ranch's obligations in, to and under the Wohlbrandt Easements, from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Easement Assignment.

This Easement Assignment may be executed in any number of counterparts, and by different parties in separate counterparts, each of which shall be deemed to be an original instrument, but all of which together shall constitute but one instrument.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of the 23rd day of October, 2012.

M&M Ranch Acquisition Company, LLC

By: _____
Name: Micheal G. Dunn
Title: President

STATE OF UTAH)
) ss.
COUNTY OF SALT LAKE)

This instrument was acknowledged before me on October 19, 2012, by Micheal G. Dunn as President of M&M Ranch Acquisition Company, LLC.

SEAL (if any)

Notary Public
CAROL M. SABOL
Commission #609675
My Commission Expires
July 12, 2015
State of Utah

_____
Notary Public

My Commission Expires: July 12, 2015

SASOL SYNFUELS INTERNATIONAL PTY LTD

By: Ann McWatters
Name: Ann McWatters
Title: Attorney-in-Fact

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

This instrument was acknowledged before me on October 19, 2012, by Ann McWatters as Attorney-in-Fact for SASOL SYNFUELS INTERNATIONAL PTY LTD.

Larissa R. De Leon
Notary Public

SEAL (if any)

LARISSA R. DE LEON
Notary Public, State of Texas
My Commission Expires
February 12, 2013

My Commission Expires: 2-12-2013

EXHIBIT A
TO
ASSIGNMENT OF WOHLBRANDT EASEMENTS

Between
M&M Ranch Acquisition Company, LLC and
SASOL SYNFUELS INTERNATIONAL PTY LTD

[See Attached]

WOHLBRANDT EASEMENTS

Document No.	Document Description
1.	"Easement for Water Pipeline" from Wohlbrandt, et al., to Reynolds Mining Corporation, dated August 23, 1973; recorded in R/W #4, p. 266-273 (signed by all parties except Murphy)
2.	"Easement for Water Pipeline" from Wohlbrandt, et al., to Reynolds Mining Corporation, dated February 2, 1974; recorded in R/W #4, p. 274-280 (signed only by Murphy and Reynolds)
3.	"Assignment" of Documents 1 and 2 above listed from Reynolds to Texaco, Inc. dated March 18, 1974; recorded in R/W #4, p. 281-282
4.	"Amendment of Easement for Water Pipeline" from Wohlbrandt, et al., to Texaco, Inc. dated March 25, 1975, recorded in R/W #5, p. 86-90 AND a duplicate filed in R/W #5, p. 81-85
5.	"Second Amendment of Easement for Water Pipeline" from Wohlbrandt to Texaco, Inc., dated April 1, 1989; recorded in R/W #10, p. 141-144
6.	"Ratification" of Second Amendment by Mylerberg dated April 25, 1989, recorded in R/W #10, p/ 196-200
7.	"Ratification" of Second Amendment by O'Dea dated May 25, 1989, recorded in R/W #10, p/ 186-190
8.	"Ratification" of Second Amendment by Miller dated April 25, 1989, recorded in R/W #10, p/ 191-195
9.	"Ratification" of Second Amendment by Murphy dated April 25, 1989, recorded in R/W #10, p/ 206-210
10.	"Assignment of Easement" from Texaco, Inc. to Lake DeSmet Energy Co, L.C. dated April 18, 1996, effective as of January 2, 1996; recorded in R/W # 14, p. 402-404, assigning all of Texaco, Inc's right, title and interest in and to the easement evidenced by Documents 1 through 9 above listed.

The instruments listed as Documents 1 through 9 on the preceding page describe the following lands located in Johnson County, Wyoming:

Township 51 North, Range 81 West, 6th P.M.
Section 7: SE/4NW/4, NE/4SW/4, NW/4SE/4, S/2SE/4

In addition, Documents 5 through 9 provide for a bypass water pipeline across the following land:

Township 51 North, Range 81 West, 6th P.M.
Section 7: W/2SE/4

at a location more specifically shown on a plat attached to said Documents.

Document 10, being an assignment of the easements evidenced by Documents 1 through 9, also relates to the above-described land.

Exhibit H

ASSIGNMENT OF TEXACO EASEMENT
(Clear Creek-Lake DeSmet Pipeline)

This Assignment of Texaco Easement (***"Easement Assignment"***) is made between **SASOL SYNFUELS INTERNATIONAL PTY LTD n/k/a/ SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is 12120 Wickchester Lane, Houston, TX 77079 (***"SASOL"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Assignment ***("WWDC")***

The Texaco Easement from Texaco, Inc. to Lake DeSmet Energy Co. II, L.C. and Lake DeSmet Energy Co., L.C. effective as of January 2, 1996, recorded in the records of the Johnson County Clerk at Book R/W 14 at pages 387-401 (the ***"Easement")*** was assigned to M&M Ranch Acquisition Company, LLC by the ***"Assignment of Texaco Easement"*** dated May 18, 2006, recorded in the records of the Johnson County Clerk in Book R/W 21, pages 654-671.

The Easement was assigned and transferred to Sasol by an "Assignment of Texaco Easement" dated October 23, 2012, and recorded in the records of the Johnson County Clerk in Book R/W 29, pages 328-365.

For good and valuable consideration, including the terms of this Easement Assignment, Sasol quitclaims, assigns and conveys to WWDC all of Sasol's right, title, interest and obligations in, to and under the Easement and WWDC assumes all of Sasol's obligations in, to and under the Easement from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Easement Assignment.

This Easement Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Easement Assignment shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____ , the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

Exhibit I

ASSIGNMENT AND QUITCLAIM

This Assignment and Quitclaim is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is 12120 Wickchester Lane, Houston, TX 77079 (***"Sasol"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Assignment ***("WWDC")***

For good and valuable consideration, including the terms of this Assignment and Quitclaim, Sasol quitclaims, assigns and conveys to WWDC all of Sasol's right, title and interest in and to the following:

1. The Quitclaim Deed for Lake DeSmet Clear Creek Pipeline and Outlet Works (***"Quitclaim Deed")*** granted by the Board of County Commissioners, Johnson County, Wyoming to Sasol dated November 4, 2014, recorded on November 18, 2014 in the records of the Johnson County Clerk in Book R/W 30 at pages 555-563, a copy of which is attached hereto and marked Attachment A to this Assignment and Quitclaim, and the Lake DeSmet Clear Creek Pipeline and Outlet Works therein conveyed.

2. The Easement for Lake DeSmet Clear Creek Pipeline and Outlet Works ***("Easement")*** granted by the Board of County Commissioners, Johnson County, Wyoming to Sasol dated November 4, 2014, recorded on November 18, 2014 in the records of the Johnson County Clerk in Book R/W 30 at pages 564-585, a copy of which is attached hereto and marked Attachment B to this Assignment and Quitclaim, and the Easement therein conveyed.

WWDC assumes all of Sasol's obligations in, to and under the Quitclaim Deed and the Easement from and after the effective date hereof.

This Assignment and Quitclaim may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Assignment and Quitclaim shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Assignment and Quitclaim is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
ASSIGNMENT AND QUITCLAIM

From
SASOL Middle East and India (Pty) Limited to
State of Wyoming by and through the
Wyoming Water Development Commission

Quitclaim Deed for Lake DeSmet Clear Creek Pipeline and Outlet Works granted by the Board of County Commissioners, Johnson County, Wyoming to Sasol dated November 4, 2014 and recorded on November 18, 2014 in the records of the Johnson County Clerk in Book R/W 30 at pages 555-563

[See Attached]

COUNTY OF JOHNSON }
STATE OF WYOMING } ss

I hereby certify the within and foregoing is a full, true and complete copy of the original as recorded in Book R/W 30 page 555-563 of the Easements records on file in my office
Subscribed and sealed this 18
day of Nov. A.D. 2014.

Mary Kleahsen Asst
County Clerk

QUITCLAIM DEED
FOR
LAKE DESMET-CLEAR CREEK PIPELINE AND OUTLET WORKS

The Board of County Commissioners, Johnson County, Wyoming, whose address is 76 North Main, Buffalo, WY 82834 ***("Commissioners")*** in consideration of Ten Dollars ($10.00) and other good and valuable consideration CONVEYS AND QUITCLAIMS, together with any after acquired title, to Sasol Synfuels International Pty Ltd, a South African corporation, 900 Threadneedle, Suite 100, Houston Texas, 77079 ***("Sasol")***, that portion of the Lake DeSmet-Clear Creek Pipeline lying under the South Dike of the Lake DeSmet Reservoir ***("Pipeline")*** and the Outlet Works for the Pipeline located in the South Dike of the Lake DeSmet Reservoir ***("Outlet Works")***, all situated in the SE¼NE¼, Section 28, T.52N., R.82W., Johnson County, Wyoming, and all more particularly described on Exhibit A to this Quitclaim Deed.

In further consideration of this Quitclaim Deed, Sasol accepts this Quitclaim Deed and Sasol accepts the right, duty and responsibility for control, operation and maintenance of the Pipeline and Outlet Works.

Dated this 4th day of November, 2014.

BOARD OF COUNTY COMMISSIONERS,
JOHNSON COUNTY, WYOMING

Delbert Eitel, Commissioner — Date: 11-4-14

John Gibbs, Commissioner — Date: 11-4-14

Jim Hicks, Commissioner — Date: 11-4-14

Accepted by:

SASOL SYNFUELS INTERNATIONAL PTY LTD

By: M Schnell
Name: M. SCHNELL
Title: VP: MARKETING

RFM 11/10/14

STATE OF WYOMING }
COUNTY OF JOHNSON } SS Doc Number: 143025
This instrument was Filed for record on 11/17/2014 at 3:48 PM
and was duly recorded in book: R/W 30 page: 555 - 563 fees: 36.00
Johnson County Clerk
By Mary Kleahsen Asst, Deputy

STATE OF WYOMING)
) ss.
County of Johnson)

This instrument was acknowledged before me on November 4th, 2014, by Delbert Eitel, Commissioner, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC
COUNTY OF JOHNSON STATE OF WYOMING
MY COMMISSION EXPIRES DECEMBER 2, 2016

Notary Public

My Commission Expires: 12/02/2016

STATE OF WYOMING)
) ss.
County of Johnson)

This instrument was acknowledged before me on November 4th, 2014, by John Gibbs, Commissioner, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC
COUNTY OF JOHNSON STATE OF WYOMING
MY COMMISSION EXPIRES DECEMBER 2, 2016

Notary Public

My Commission Expires: 12/02/2016

STATE OF WYOMING)
) ss.
County of Johnson)

This instrument was acknowledged before me on November 4th, 2014, by Jim Hicks, Commissioner, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC
COUNTY OF JOHNSON STATE OF WYOMING
MY COMMISSION EXPIRES DECEMBER 2, 2016

Notary Public

My Commission Expires: 12/02/2016

STATE OF Texas)
) ss.
County of Harris)

This instrument was acknowledged before me on November 10, 2014, by Mark Schnell, on behalf of Sasol Synfuels International Pty Ltd.

Donna Roscette Houston
Notary Public

SEAL
(if any)

My Commission Expires: Aug 18, 2015

DONNA ROSCETTE HOUSTON
Notary Public, State of Texas
My Commission Expires
August 18, 2015

EXHIBIT A

SOUTH DIKE INLET - OUTLET WORKS

Function

The Inlet-Outlet Works under the South Dike (Figure 7) provide the means of delivering water into, and out of, the southerly end of Lake DeSmet Reservoir. Water is delivered from the Clear Creek source via the Clear Creek Pipeline through a 60-inch diameter "inlet" pipe which terminates in a vertical riser within the reservoir. Stored water is released through a 54-inch diameter "outlet" pipe which terminates within the connection structure at the downstream toe of the dike. The latter outlet pipe is intended to deliver water from Lake DeSmet Reservoir to a future industrial installation but at present is equipped with a blind flange at its downstream end. A temporary bypass between the inlet and outlet pipes is provided to permit delivery of stored water into the valley of Box Elder Creek for irrigation use.

Description

The Inlet-Outlet Works comprise a 60-inch diameter inlet pipe and a 54-inch diameter outlet pipe arranged in a vertical plane with the outlet pipe directly below the inlet pipe. Each pipe is equipped with a butterfly shutoff valve housed in a valve chamber at the base of an access shaft which extends to a control house on the crest of the dike. (1/SD) (2/SD)

Within the connection structure at the downstream toe of the dike a 10-inch diameter bypass, equipped with a manually operated gate valve, is provided between the inlet and outlet pipes. The sole purpose of this bypass is to enable delivering water from the reservoir to an offtake (blow-off) on the Clear Creek Pipeline whenever that pipeline is not conveying water from Clear Creek and the level of water in Lake DeSmet Reservoir is below the top of the riser (Elevation 4590) on the inlet pipe. Whenever the reservoir is at a higher level, or water is being pumped from Clear Creek, there will be sufficient pressure in the pipeline to deliver water through the blow-off into Box Elder Creek for irrigation of certain lands in that valley. (3/SD)

24

Both the 54-inch and 60-inch butterfly valves are hydraulically operated by means of a motor-driven oil pump. The valves are controlled from a control cabinet situated in the control house atop the dike. An electrical control panel (Figure C-2) inside the control cabinet contains the valve and hydraulic pump control pushbuttons. (4/SD) (4a/SD)

Under all normal operating conditions both the 54-inch and 60-inch butterfly valves should remain in a full-open position. The 60-inch valve would only be closed in the case of a breach in the Clear Creek Pipeline or if that pipeline is unwatered for inspection and maintenance. As explained hereinafter, special features have been incorporated to prevent closing of this valve if water is being pumped from the Clear Creek source. The 54-inch butterfly valve would only be closed to install (or unwater) the future works that will be supplied from this outlet.

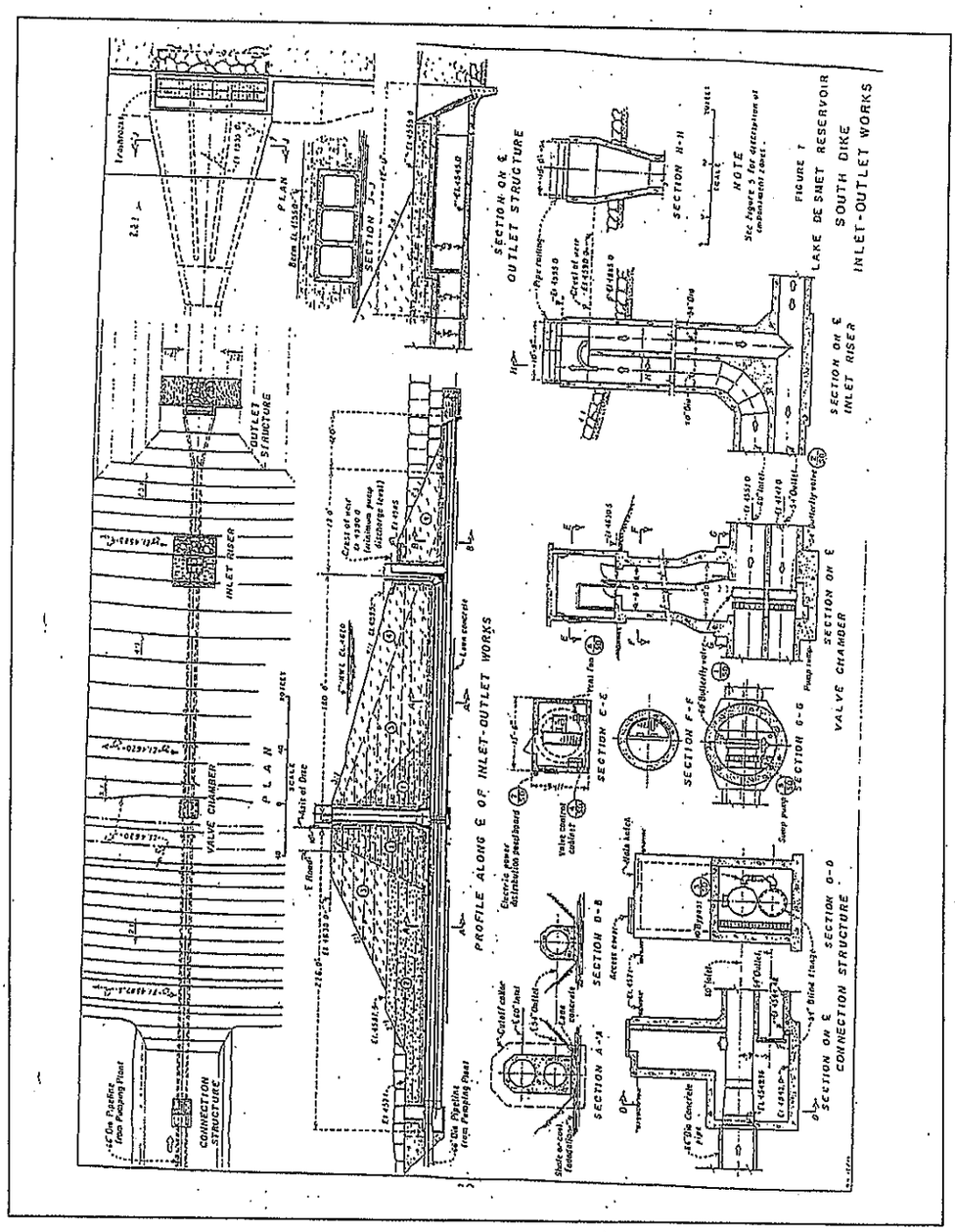
A float operated sump pump is provided in the bottom of the valve chamber to dewater the structure. (5/SD)

A ventilation fan is provided in the control house. The fan, which operates automatically whenever the sump pump operates and also whenever the upper level lights are turned on, draws air from the outside and blows it through a vent pipe which extends down the shaft to the valve chamber. Thus, air is circulated upward in the shaft and is exhausted through a louver in the control house. The upper level lights, including the exterior light, are turned on by means of a key operated switch outside the entrance door. With this arrangement, the lights and the vent fan can be switched on prior to entering the control structure. The same precautions, set forth on page 17 for the outlet works at the North Dam, apply to all operations at the control house and in the valve chamber of the Inlet-Outlet Works of the South Dike. (6/SD)

Operation

An electrical interlock arrangement between the controls for the 60-inch butterfly valve and the controls for the main unit pumps at the Clear Creek pumping plant, is provided to prevent operation of any main unit pump whenever the 60-inch butterfly valve is closed. To operate the 60-inch butterfly valve, it is necessary to

turn the key interlock switch in the main unit pump controls to the off position, remove the key and take it to the South Dike to turn the key interlock switch for the 60-inch butterfly valve control to on. If the 60-inch butterfly valve is not opened before the key interlock switch at the South Dike is turned off, when the key interlock switch is turned off the hydraulic pump will automatically start and the 60-inch butterfly valve will automatically open. The key interlock switch does not control operation of the 54-inch butterfly valve.


PLAN
OUTLET STRUCTURE
INLET RISER
VALVE CHAMBER
CONNECTION STRUCTURE
PROFILE ALONG ℄ OF INLET-OUTLET WORKS
SECTION ON ℄ OUTLET STRUCTURE
SECTION ON ℄ INLET RISER
SECTION ON ℄ CONNECTION STRUCTURE
VALVE CHAMBER
NOTE
FIGURE 7
LAKE DE SMET RESERVOIR
SOUTH DIKE
INLET-OUTLET WORKS

CLEAR CREEK PIPELINE

The Clear Creek Pipeline (Figure 5) conveys water pumped from Healy Reservoir (Clear Creek) to Lake DeSmet Reservoir. Additionally water can be released from the pipeline at an intermediate location for irrigation use.

The Clear Creek Pipeline consists of a buried 66-inch inside diameter concrete-pipe conduit, 6.7 miles in length, extending from the pumping plant to the connection structure at the South Dike. The first 1.6 miles of the pipeline extends from the pumping plant up the hill to a "summit" where the surge tank is situated (Point "A"). The invert of the pipeline at this summit is at elevation 4621 and as such forms a control point in the hydraulic gradient whenever the water level in Lake DeSmet Reservoir is at, or below, elevation 4590 and fewer than four main unit pumps are in operation. If the reservoir is at a higher level, or if four or more main pumps are operating, the water level at Point "A" will rise in the inclined surge tank to the level of the hydraulic gradient.

A total of 17 manholes are provided at intervals of approximately 2,000 feet along the line for inspection and maintenance purposes. Two of these manholes (at Stations 39+00 and 217+15) are provided with air valves of the vacuum-pressure relief type which admit air when the line is being drained and thus eliminate negative pressures within the pipe, and release air as the pipeline is being refilled after being emptied. Additionally, the surge tank functions as a large open air valve.

Blowoff valves (in addition to the 8-inch drain in the pumping plant) for draining the pipeline are provided at two points along its length; one being at the low point at station 103+40 and the other at station 276+50 where the pipeline crosses the valley of Box Elder Creek. The blowoff facilities provided at the latter point can be used to deliver water into Box Elder Creek. In the event such deliveries are required to be made at times when Lake DeSmet Reservoir is below elevation 4590 and the pumping plant is not in operation, water can be delivered into the Clear Creek Pipeline from the reservoir through the 10-inch bypass in the connection structure at the South Dike. If the water

level in the reservoir is below 4590.0, water can be released at the blowoff at Station 272+00 if any main unit pump at the pumping plant is operating or if water is allowed to enter the pipeline through the South Dike inlet-outlet works. To run water into the pipeline through the inlet-outlet works the 54-inch butterfly valve on the South Dike outlet pipe and the 10-inch valve in the crossover connection between the 60-inch pipe and the 54-inch pipe must be opened. (Figure 7) (2 SD) (3 SD)

There are no equipment operational requirements applicable to the Clear Creek Pipeline other than manual operation of the blowoff valves for draining the pipeline or to regulate releases as authorized for irrigation use.

163

ATTACHMENT B
TO
ASSIGNMENT AND QUITCLAIM

From
Sasol Middle East and India (Pty) Limited to
State of Wyoming by and through
Wyoming Water Development Commission

Easement for Lake DeSmet Clear Creek Pipeline and Outlet Works granted by the Board of County Commissioners, Johnson County, Wyoming to Sasol dated November 4, 2014 and recorded on November 18, 2014 in the records of the Johnson County Clerk in Book R/W 30 at pages 564-585

[See Attached]

COUNTY OF [illegible]
STATE OF WYOMING }
I hereby [illegible]
R/W 30 564-585
Easements
Subscribed and sworn [illegible] 18
day of Nov A. D. 2014
Mary Kleahsen
County Clerk

EASEMENT
FOR
LAKE DESMET-CLEAR CREEK PIPELINE AND OUTLET WORKS

For and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the Board of County Commissioners, Johnson County, Wyoming, whose address is 76 North Main, Buffalo, WY 82834 ***("Commissioners")*** CONVEYS AND QUITCLAIMS, together with any after acquired title, to Sasol Synfuels International Pty Ltd, a South African corporation, 900 Threadneedle, Suite 100, Houston Texas, 77079 ***("Sasol")*** a non-exclusive, perpetual easement ***("Easement")*** over, across, through and under the South Dike of Lake DeSmet Reservoir ***("South Dike")*** for the purpose of access to and operation, maintenance, repair and replacement of the Outlet Works ***("Outlet Works")*** for the Lake DeSmet-Clear Creek Pipeline ***("Pipeline")*** and for operation, maintenance, repair and replacement of the Pipeline, all situated in the SE¼NE¼, Section 28, T52N, R82W, Johnson County, Wyoming.

The Easement shall extend outward from the description in Exhibit D from the Pipeline and the Outlet Works so far as is reasonably necessary for operation, repair, maintenance and replacement of the Pipeline and Outlet Works according to reasonable engineering standards.

The South Dike is specifically described on Exhibit A.

The Pipeline is specifically described on Exhibit B.

The Outlet Works are specifically described on Exhibit C.

The Easement is specifically described on Exhibit D.

The ***"Benefited Lands"*** are described on Exhibit E.

The Easement is for the benefit of, shall attach to, be appurtenant to and run with the Benefited Lands and the Pipeline as it is currently located or as it may be relocated in the future.

Any maintenance, replacement or repair of the Outlet Works to be undertaken pursuant to this Easement that would require invasion of the structural integrity of the South Dike is termed ***"Structural Repair."*** In the event that Sasol determines that Structural Repair is necessary or appropriate, Sasol shall comply with the following procedures prior to undertaking any Structural Repair:

STATE OF WYOMING }
COUNTY OF JOHNSON } SS Doc Number: 143026
This instrument was Filed for record on 11/17/2014 at 3:56 PM
and was duly recorded in book: R/W 30 page: 564 - 585 fees: 93.00
Johnson County Clerk
By Mary Kleahsen Deputy

1. Sasol shall notify the Commissioners of Sasol's intent to undertake Structural Repair three (3) months prior to the intended commencement of the Structural Repair ***("Structural Repair Notice")***.

2. The Structural Repair Notice shall contain a detailed description of the intended Structural Repairs, including plans and specifications.

3. The Commissioners shall have thirty (30) days to provide Sasol with written comments regarding the Structural Repair ***("Structural Repair Comments")***. If the Commissioners object to the Structural Repair, the Structural Repair Comments shall explain the objections in detail and any recommendations that the Commissioners may have to eliminate the objections.

4. Upon receipt of the Structural Repair Comments, Sasol shall consult with the Commissioners, but Sasol can proceed with the Structural Repair, unless the Structural Repair Comments specifically allege that the Structural Repair will impair the structural integrity of the South Dike, based on reasonable engineering analysis. If the Structural Repair Comments allege that the Structural Repair will impair the structural integrity of the South Dike, Sasol may not undertake the Structural Repair without obtaining the written consent of the Commissioners on such reasonable engineering terms, conditions and specifications as the Commissioners and Sasol may agree.

5. If the Commissioners and Sasol do not agree on the reasonable engineering terms, conditions and specifications to obtain the Commissioners' consent for the Structural Repair, within sixty (60) days of the date of the Structural Repair Notice, the matter shall be submitted to informal, non-binding mediation by a qualified engineer jointly selected by the Commissioners and Sasol ***("Mediation")***.

6. If the Commissioners' objections are not resolved by the Mediation and the written consent of the Commissioners is not received within one hundred twenty (120) days of the date of the Structural Repair Notice, the matter shall be submitted to Arbitration in accordance with Paragraph 7.2 in the 1996 Water Agreement and License effective January 2, 1996 or any subsequent and superseding Operating Agreement between the Commissioners and Sasol.

7. In the event of an emergency which requires immediate Structural Repair, Sasol may commence Structural Repair as soon as possible with immediate notice to and consultation with the Commissioners.

8. Sasol shall indemnify and hold harmless the Commissioners, and its subsidiaries, affiliates, officers, directors, shareholders, employees, agents, independent contractors, successors or assigns for any and all claims, causes of action, actions, judgments, liens, indebtedness, damages, losses, claims over by third parties, liability and demands of whatever kind and character (including without limitation attorneys' fees or other costs of litigation) arising from Sasol's operation, maintenance, repair or replacement of the Pipeline and Outlet Works pursuant to this Easement, excluding costs associated with Structural Repair Notices, Comments, Mediation or Arbitration.

DATED this 4th day of November 2014.

BOARD OF COUNTY COMMISSIONERS, JOHNSON COUNTY, WYOMING

Delbert Eitel, Chairman — Date: 11-4-14

John Gibbs, Commissioner — Date: 11-4-14

Jim Hicks, Commissioner — Date: 11-4-14

SASOL SYNFUELS INTERNATIONAL PTY LTD

By: _____

Name: M. Scanlon

Title: VP: MARKETING

9 AM 11/10/14

STATE OF WYOMING)
) ss.
County of Johnson)

This instrument was acknowledged before me on November 4th 2014, by Delbert Eitel, Chairman, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC
COUNTY OF JOHNSON STATE OF WYOMING
MY COMMISSION EXPIRES DECEMBER 2, 2016

Notary Public

My Commission Expires: 12/02/2016

STATE OF WYOMING)
) ss.
County of Johnson)

This instrument was acknowledged before me on November 4th, 2014, by John Gibbs, Commissioner, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC COUNTY OF JOHNSON STATE OF WYOMING MY COMMISSION EXPIRES DECEMBER 2, 2016

Notary Public

My Commission Expires: 12/02/2016

STATE OF WYOMING)
) ss.
County of Johnson)

This instrument was acknowledged before me on November 4th, 2014, by Jim Hicks, Commissioner, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC COUNTY OF JOHNSON STATE OF WYOMING MY COMMISSION EXPIRES DECEMBER 2, 2016

Notary Public

My Commission Expires: 12/02/2016

STATE OF Texas)
) ss.
County of Harris)

This instrument was acknowledged before me on November 10, 2014, by Mark Schnell, on behalf of Sasol Synfuels International Pty Ltd.

SEAL (if any)

DONNA ROSCETTE HOUSTON Notary Public, State of Texas My Commission Expires August 18, 2015

Notary Public

My Commission Expires: Aug 18, 2015

EXHIBIT A
TO
EASEMENT FOR LAKE DESMET-CLEAR CREEK PIPELINE AND OUTLET WORKS

Description of the South Dike

A tract of land situated in the S½NE¼, NW¼, N½SW¼ and in the N½SE¼ of Section 28, Township 52 North, Range 82 West of the Sixth Principal Meridian, Johnson County, Wyoming; more particularly described as follows:

Beginning at the West ¼ Corner of said Section 28, thence S 1°07' E for a distance of 89.0 feet to a point on the North right-of-way line of a County Road; thence along said right-of-way line, S 75°04'E for a distance of 1479.88 feet to a point of curvature; thence following a curve to the left, having a radius of 1115.9 feet, a central angle of 30°03'32", an arc length of 585.43 feet and a chord bearing N 89°53'47" E for a distance of 578.74 feet; thence leaving said curve and County Road right-of-way line on a bearing of S 17°49' E for a distance of 362.41 feet; thence N 72°11' E for a distance of 3311.36 feet to a point on the East line of said Section 28; thence along said line on a bearong of N 0° 45' E for a distanc of 430.0 feet; thence leaving said Section line on a bearing of N 63°51' W for a distance of 470.0 feet; thence N 76°51' W for a distance of 850.0 feet; thence S 26°39'W for a distance of 250.0 feet; thence S 42°21' E for a distance of 260.0 feet; thence S 50°39'W for a distance of 560.0 feet; thence S 32°51' E for a distance of 335.0 feet; thence N72°21' W for a distance of 400.0 feet; thence N 52°21' W for a distance of 700.0 feet; thence S 29°09' W for a distance of 450.0 feet; thence N 14°51' W for a distance of 350.0 feet; thence N 57°36' W for a distance of 1630.0 feet; thence S 62°09' W for a distance of 475.0 feet; thence S 79°39' W for a distance of 475.0 feet; thence N 27°09' E for a distance of 320.0 feet; thence N 61°51' W for a distance of 565.6 feet to the West line of said Section 28; thence along said West line, S 0°41' E for a distance of 1589.27 feet to the point of beginning.

Said tract of land contains 138.91 acres together with any and all real, personal and mixed property located on said land.

EXHIBIT B
TO
EASEMENT FOR LAKE DESMET-CLEAR CREEK PIPELINE
AND OUTLET WORKS

Description of the Clear Creek Pipeline
The Lake DeSmet Project
Operation &Maintenance Manual
February 1977

CLEAR CREEK PIPELINE

The Clear Creek Pipeline (Figure 5) conveys water pumped from Healy Reservoir (Clear Creek) to Lake DeSmet Reservoir. Additionally water can be released from the pipeline at an intermediate location for irrigation use.

The Clear Creek Pipeline consists of a buried 66-inch inside diameter concrete-pipe conduit, 6.7 miles in length, extending from the pumping plant to the connection structure at the South Dike. The first 1.6 miles of the pipeline extends from the pumping plant up the hill to a "summit" where the surge tank is situated (Point "A"). The invert of the pipeline at this summit is at elevation 4621 and as such forms a control point in the hydraulic gradient whenever the water level in Lake DeSmet Reservoir is at, or below, elevation 4590 and fewer than four main unit pumps are in operation. If the reservoir is at a higher level, or if four or more main pumps are operating, the water level at Point "A" will rise in the inclined surge tank to the level of the hydraulic gradient.

A total of 17 manholes are provided at intervals of approximately 2,000 feet along the line for inspection and maintenance purposes. Two of these manholes (at Stations 39+00 and 217+15) are provided with air valves of the vacuum-pressure relief type which admit air when the line is being drained and thus eliminate negative pressures within the pipe, and release air as the pipeline is being refilled after being emptied. Additionally, the surge tank functions as a large open air valve.

Blowoff valves (in addition to the 8-inch drain in the pumping plant) for draining the pipeline are provided at two points along its length; one being at the low point at station 103+40 and the other at station 276+50 where the pipeline crosses the valley of Box Elder Creek. The blowoff facilities provided at the latter point can be used to deliver water into Box Elder Creek. In the event such deliveries are required to be made at times when Lake DeSmet Reservoir is below elevation 4590 and the pumping plant is not in operation, water can be delivered into the Clear Creek Pipeline from the reservoir through the 10-inch bypass in the connection structure at the South Dike. If the water

level in the reservoir is below 4590.0, water can be released at the blowoff at Station 272+00 if any main unit pump at the pumping plant is operating or if water is allowed to enter the pipeline through the South Dike inlet-outlet works. To run water into the pipeline through the inlet-outlet works the 54-inch butterfly valve on the South Dike outlet pipe and the 10-inch valve in the crossover connection between the 60-inch pipe and the 54-inch pipe must be opened. (Figure 7)

(2/SD)

(3/SD)

There are no equipment operational requirements applicable to the Clear Creek Pipeline other than manual operation of the blowoff valves for draining the pipeline or to regulate releases as authorized for irrigation use.

EXHIBIT C

TO

EASEMENT FOR LAKE DESMET-CLEAR CREEK PIPELINE

AND OUTLET WORKS

Description of the Outlet Works

The Lake DeSmet Project
Operation &Maintenance Manual
February 1977

SOUTH DIKE INLET - OUTLET WORKS

Function

The Inlet-Outlet Works under the South Dike (Figure 7) provide the means of delivering water into, and out of, the southerly end of Lake DeSmet Reservoir. Water is delivered from the Clear Creek source via the Clear Creek Pipeline through a 60-inch diameter "inlet" pipe which terminates in a vertical riser within the reservoir. Stored water is released through a 54-inch diameter "outlet" pipe which terminates within the connection structure at the downstream toe of the dike. The latter outlet pipe is intended to deliver water from Lake DeSmet Reservoir to a future industrial installation but at present is equipped with a blind flange at its downstream end. A temporary bypass between the inlet and outlet pipes is provided to permit delivery of stored water into the valley of Box Elder Creek for irrigation use.

Description

The Inlet-Outlet Works comprise a 60-inch diameter inlet pipe and a 54-inch diameter outlet pipe arranged in a vertical plane with the outlet pipe directly below the inlet pipe. Each pipe is equipped with a butterfly shutoff valve housed in a valve chamber at the base of an access shaft which extends to a control house on the crest of the dike. (1/SD) (2/SD)

Within the connection structure at the downstream toe of the dike a 10-inch diameter bypass, equipped with a manually operated gate valve, is provided between the inlet and outlet pipes. The sole purpose of this bypass is to enable delivering water from the reservoir to an offtake (blow-off) on the Clear Creek Pipeline whenever that pipeline is not conveying water from Clear Creek and the level of water in Lake DeSmet Reservoir is below the top of the riser (Elevation 4590) on the inlet pipe. Whenever the reservoir is at a higher level, or water is being pumped from Clear Creek, there will be sufficient pressure in the pipeline to deliver water through the blow-off into Box Elder Creek for irrigation of certain lands in that valley. (3/SD)

Both the 54-inch and 60-inch butterfly valves are hydraulically operated by means of a motor-driven oil pump. The valves are controlled from a control cabinet situated in the control house atop the dike. An electrical control panel (Figure C-2) inside the control cabinet contains the valve and hydraulic pump control pushbuttons. (4/SD) (4a/SD)

Under all normal operating conditions both the 54-inch and 60-inch butterfly valves should remain in a full-open position. The 60-inch valve would only be closed in the case of a breach in the Clear Creek Pipeline or if that pipeline is unwatered for inspection and maintenance. As explained hereinafter, special features have been incorporated to prevent closing of this valve if water is being pumped from the Clear Creek source. The 54-inch butterfly valve would only be closed to install (or unwater) the future works that will be supplied from this outlet.

A float operated sump pump is provided in the bottom of the valve chamber to dewater the structure. (5/SD)

A ventilation fan is provided in the control house. The fan, which operates automatically whenever the sump pump operates and also whenever the upper level lights are turned on, draws air from the outside and blows it through a vent pipe which extends down the shaft to the valve chamber. Thus, air is circulated upward in the shaft and is exhausted through a louver in the control house. The upper level lights, including the exterior light, are turned on by means of a key operated switch outside the entrance door. With this arrangement, the lights and the vent fan can be switched on prior to entering the control structure. The same precautions, set forth on page 17 for the outlet works at the North Dam, apply to all operations at the control house and in the valve chamber of the Inlet-Outlet Works of the South Dike. (6/SD)

Operation

An electrical interlock arrangement between the controls for the 60-inch butterfly valve and the controls for the main unit pumps at the Clear Creek pumping plant, is provided to prevent operation of any main unit pump whenever the 60-inch butterfly valve is closed. To operate the 60-inch butterfly valve, it is necessary to

turn the key interlock switch in the main unit pump controls to the off position, remove the key and take it to the South Dike to turn the key interlock switch for the 60-inch butterfly valve control to on. If the 60-inch butterfly valve is not opened before the key interlock switch at the South Dike is turned off, when the key interlock switch is turned off the hydraulic pump will automatically start and the 60-inch butterfly valve will automatically open. The key interlock switch does not control operation of the 54-inch butterfly valve.

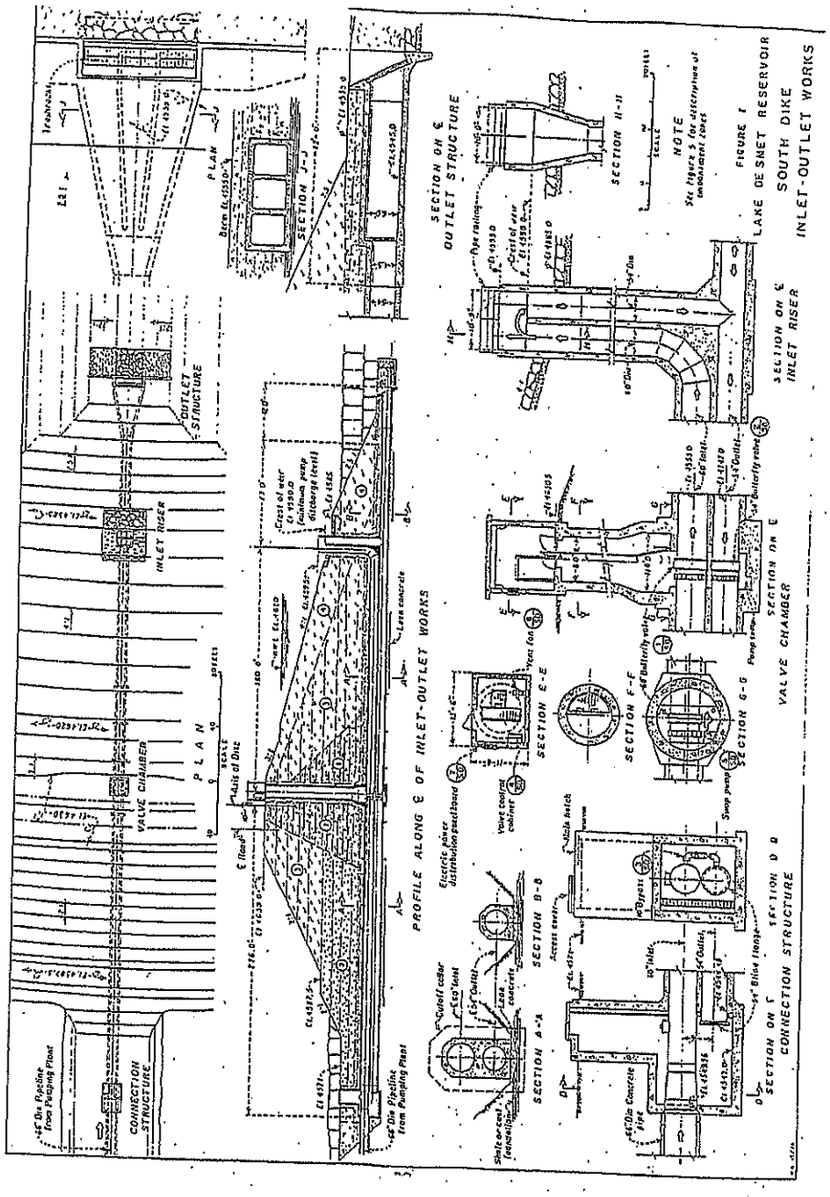
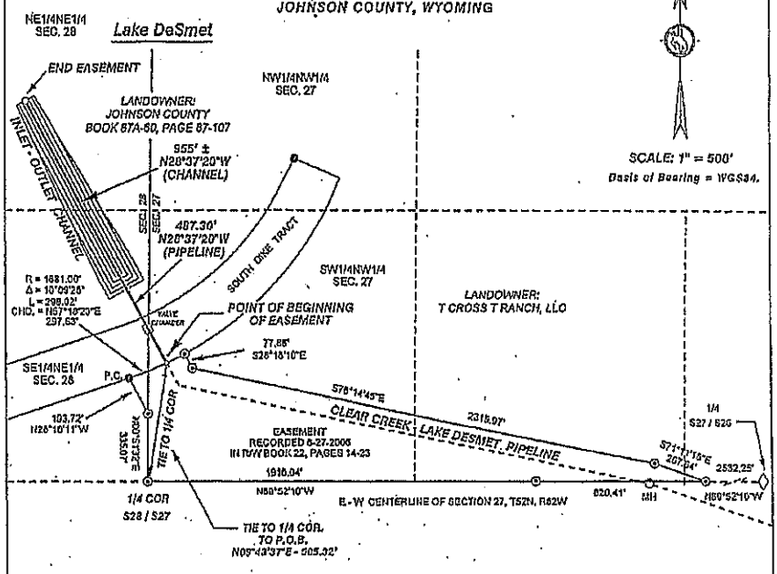

PLAN
PROFILE ALONG ℄ OF INLET-OUTLET WORKS
SECTION ON ℄ OUTLET STRUCTURE
SECTION ON ℄ INLET RISER
SECTION ON ℄ VALVE CHAMBER
SECTION ON ℄ CONNECTION STRUCTURE
NOTE
FIGURE 1
LAKE DESNET RESERVOIR
SOUTH DIKE
INLET-OUTLET WORKS

EXHIBIT D
TO
EASEMENT FOR LAKE DESMET-CLEAR CREEK PIPELINE
AND OUTLET WORKS

Description of the Easement

CERTIFICATE OF SURVEY

LAKE DESMET RESERVOIR - SOUTH DIKE
INLET - OUTLET WORKS EASEMENT
LOCATED IN THE SW¼NW1/4 OF SECTION 27, AND
E½NE¼ OF SECTION 28, T 52 N, R 82 W, OF THE 6th P.M.,
JOHNSON COUNTY, WYOMING



This Easement extends outward from the Clear Creek - Lake DeSmet Pipeline and the Inlet - Outlet Works so far as is reasonably necessary for operation, repair, maintenance and replacement of said Pipeline and Inlet - Outlet Works according to reasonable engineering standards.

⊙ = Set 2" Aluminum Capped Rebar, Stamped PLS 5367

● = Found 2" Aluminum Capped Rebar, Stamped PELS 3159

◊ = Found Brass Cap, LS 102

CERTIFICATE OF SURVEYOR

STATE OF WYOMING)
) SS
COUNTY OF JOHNSON)

I, KERRY C. MONEY, being a duly Registered Land Surveyor in the State of Wyoming, do hereby certify that this Certificate of Survey does represent an actual survey performed by me in July 2013, and that it correctly shows the conditions on the ground.

Professional Land Surveyor
Kerry C. Money
5367
Date
8/19/2013
WYOMING

KERRY C. MONEY
PROFESSIONAL LAND SURVEYOR
43 Reno Road
Buffalo, WY 82834
Ph. 307-684-2949

Date Drawn: 8-19-2013
Drawing: SOUTH DAM

LAKE DESMET RESERVOIR SOUTH DIKE
INLET – OUTLET WORKS EASEMENT

An easement located in the SW¼NW¼ of Section 27 and the E½NE¼ of Section 28, T52N, R82W, of the 6th P.M., with the centerline of said easement being more particularly described as follows:

Commencing at an existing 2 inch aluminum capped rebar, stamped PLS 5367, marking the quarter (¼) corner common to said Sections 27 and 28;

thence N9°43'37"E a distance of 585.32 feet to a point on the centerline of the Clear Creek - Lake DeSmet Pipeline, said point being on the Southerly line of a tract of land known as the South Dike Tract, as conveyed to Johnson County and filed for public record on April 25, 2013, in Book 87A-60, pages 87-107, and said point also being the true point of beginning of said easement;

thence N28°37'20"W along said centerline of the Clear Creek - Lake DeSmet Pipeline a distance of 487.30 feet to a point, said point being the end of said Clear Creek - Lake DeSmet Pipeline;

thence N28°37'20"W along the centerline of the Lake DeSmet Inlet-Outlet Channel a distance of 955 feet, more or less, to the point of ending of said easement.

The Easement shall extend outward from the Pipeline and the Inlet-Outlet Works so far as is reasonably necessary for operation, repair, maintenance and replacement of the Pipeline and Inlet-Outlet Works according to reasonable engineering standards.

EXHIBIT E
TO
EASEMENT FOR LAKE DESMET-CLEAR CREEK PIPELINE
AND OUTLET WORKS

Description of the "Benefited Lands"

(Note: This description includes the main M&M Ranch lands and the lands surrounding the Pump Station and Healy Reservoir.)

(Benefited Lands)

Township 51 North, Range 81 West, 6th P.M.

Section 4: S½SE¼, SE¼SW¼,

Excepting that portion of the SE¼SE¼ conveyed to Russell O. Wright and Ruby E. Wright, husband and wife, by Warranty Deed recorded November 20, 1974, in Book 87A-14 of Deeds, Page 375.

Section 4: A tract of land in the N½SE¼, NE¼SW¼ more particularly described as follows:

Commencing at the East ¼ corner of Section 4:

Thence S 23°04' W a distance of 1432 feet to the south line of the N½SE¼;

Thence N 89°43' W along the south line of the N½SE¼ and the NE¼SW¼ a distance of 3432 feet;

Thence N 63°55' E a distance of 2970 feet to the north line of the NE¼SW¼;

Thence S 89°46' E along the north line of the NE¼SE¼ a distance of 1326 feet to the point of beginning.

Sections 3 & 4: A tract of land situated in the SW¼NW¼ of Section 3 and the SE¼NE¼ of Section 4 more particularly described as follows:

Commencing at the ¼ corner common to Sections 3 and 4;

Thence N 89°46' W (calculated) (S 89°46' W record) a distance of 251.4 feet to the east right of way line for U.S. Highway 16;

Thence along said highway right of way line through a 3° curve to the left having a radius of 1909.86 feet, for a chord distance of 693.7 feet along a chord bearing N 34°12' E;

Thence N 76°12' E a distance of 20.9 feet along the right of way line;

Thence S 15°19' W a distance of 601.1 feet to the point of beginning.

Section 5: SE¼SW¼
Section 8: NE¼, SE¼, E½W½, SW¼SW¼

Excepting therefrom that portion of the SE¼SE¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Section 9: NE¼, W½SE¼, SW¼, NW¼

Excepting therefrom that portion of the SW¼SW¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Also excepting therefrom that portion of the NE¼, W½SE¼ as conveyed to Russell O. Wright and Ruby E. Wright, husband and wife, by Warranty Deed recorded November 20, 1974, in Book 87A-14 of Deeds, Page 375.

Section 17: NE¼, N½NW¼

Excepting therefrom that portion of the NE¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Sections 8, 9 & 17: A tract of land situated in the SE¼SE¼ of Section 8, SW¼SW¼ of Section 9 and the NE¼NE¼ of Section 17, described as follows:

Commencing at a point which is N 28°16' E a distance of 886.3 feet from the corner common to Sections 8, 9, 16 and 17, said point of beginning being on the centerline of U.S. Highway No. 16;

Thence on tangent and along the centerline of U.S. Highway No. 16, S 30°25' W a distance of 394.9 feet to the point of curvature of said highway;

Thence along the centerline of U.S. Highway No. 16, through a 1° curve to the left having a radius of 5729.58 feet, with a chord bearing of S 25°20' W and a chord distance of 950.5 feet, to point of tangency;

Thence N 68°55' W a distance of 50.0 feet;

Thence N 21°05' E a distance of 1266.4 feet;

Thence S 89°59' E a distance of 197.7 feet to the point of beginning.

Section 16: A tract of land situated in the N½NW¼, SW¼NW¼ and more particularly described as follows:

Commencing at the NW corner of Section 16;

Thence S 89°12' E along the north line of the NW¼ of Section 16 a distance of 1583.6 feet;

Thence S 39°04' W a distance of 1318.6 feet;

Thence S 58°15' W a distance of 894 feet to the west line of the NW¼ of Section 16;

Thence N 0°18' E along the west line of the NW¼ a distance of 1516.5 feet to the point of beginning.

Section 26: W½
Section 27: E½

Excepting therefrom any portion of the land granted by an act of Congress for railroad purposes.

Township 51 North, Range 82 West, 6th P.M.

Section 1: SW¼SW¼
Section 2: All
Section 3: All
Section 4: All

Excepting therefrom those portions of the SE¼SW¼, W½SW¼, SW¼NW¼ conveyed to J.K. Hardy by Warranty Deed recorded March 22, 1900, in Book 12B of Deeds, Page 234, and more correctly described as follows;

Beginning at the corner common to Section 4, 5, 8 and 9; and running thence North a distance of 2790 feet to the centerline of the County Road;

Thence S 32°12' E along the centerline of said road a distance of 1188 feet;

Thence S 42°31' E along the Centerline of said road a distance of 462 feet;

Thence S 21°11' E (Record S 37°35' E) along the centerline of said road 1552 feet (Record 2400 Feet) to the section line between Sections 4 and 9;

Thence N 89°53' W along said section line a distance of 1506 feet to the point of beginning.

Also excepting therefrom those portions of the W½NW¼, SW¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 5: Lot 1, SE¼NE¼

Excepting therefrom those portions of the Lot 1, SE¼NE¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 9: N½NE¼, SE¼NE¼, and those portions of the NE¼NW¼, and the SW¼NE¼ described as follows:

Beginning at the ¼ section corner between Sections 4 and 9; running thence South 1320 feet; thence East 1318 feet; thence South 1320 feet; thence West 410 feet (calculated) (130 feet record) to the centerline of the County Road formerly used as the main highway between Buffalo and Sheridan; thence N 37°35' W along the centerline of said road a distance of 3334 feet (calculated) (3,550 feet record) to the section line between Sections 4 and 9; thence S 89°53' E along the section line a distance of 1125 feet to the point of beginning.

Excepting therefrom those portions of the W½NE¼, E½NW¼ conveyed to The State of Wyoming by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom those portions of the W½NE¼, SE¼NE¼, E½NW¼ conveyed to The State Highway Commission of Wyoming by Quitclaim Deed recorded December 17, 1986, in Book 87A-27 of Deeds, Page 621.

Section 10: All

Excepting therefrom that portion of the SW¼SW¼ as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom that portion of the SW¼SW¼ as conveyed to Biscuit Investment Co., Inc., a Colorado Corporation by Quitclaim Deed recorded April 13, 2007 in Book 87A52, Page 356

Section 11: All
Section 12: S½, S½N½, NW¼NW¼
Section 13: All

Section 14: N½, N½S½, SE¼SE¼
Section 15: E½

Excepting therefrom that portion of the NW¼SE¼ as conveyed to Fred M. Torrence and Claudia J. Torrence, husband and wife, by Quit Claim Deed recorded September 6, 1991, in Book 87A-32 of Deeds, Page 225.

Also excepting therefrom that portion of the SW¼SE¼ as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom a tract of land conveyed to James J. Mangan and Mildred L. Mangan, Trustees of the Mangan Family Trust by Warranty Deed recorded February 28, 2006 in Book 87A-50 of Deeds, Page 546.

Township 52 North, Range 82 West, 6th P.M.

Section 26: SW¼, W½SE¼
Section 27: S½
Section 28: All

Excepting therefrom a tract of land conveyed to Wyoming Storage and Water Supply Company by Warranty Deed recorded May 29, 1907, in Book 14 of Deeds, Page 281.

Also excepting therefrom a tract of land conveyed to Texaco Inc. by Deed recorded January 21, 1998, in Book 87A-40 of Deeds, Page 124.

Section 32: SE¼SE¼

Excepting therefrom a tract of land conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom a tract of land conveyed to The State Highway Commission of Wyoming by Warranty Deed recorded November 3, 1964, in Book 87A-7 of Deeds, Page 225.

Section 33: All
Section 34: All
Section 35: W½, W½NE¼, SE¼

Exhibit J

ASSIGNMENT OF T CROSS T RIGHT-OF-WAY EASEMENT

This Assignment of T Cross T Right-of-Way Easement (***"Easement Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is c/o SASOL North America Inc., 12120 Wickchester Lane, Houston, TX 77079 (***"Sasol"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Assignment ***("WWDC").***

The T Cross T Easement was granted by T Cross T Ranch, LLC to M&M Ranch Acquisition Company, LLC ***("M&M Ranch")*** on June 15, 2006, ***("Easement")*** recorded on June 27, 2006 in the records of the Johnson County Clerk in Book R/W 22, pages 14-23, a copy of which is attached and marked Attachment A to this Easement Assignment, under which M&M Ranch had certain rights and obligations.

The Easement was assigned and transferred to Sasol by an "Assignment of T Cross T Ranch-of-Way Easement" dated October 23, 2012, and recorded on October 23, 2012 in the records of the Johnson County Clerk in Book R/W 29, pages 397-410, a copy of which is attached and marked Attachment B to this Easement Assignment

For good and valuable consideration, including the terms of this Easement Assignment, Sasol quitclaims, assigns and conveys to WWDC all of Sasol's right, title and interest in, to and under the T Cross T Easement and WWDC assumes all of Sasol's obligations in, to and under the T Cross T Easement from and after the effective date hereof.

This Easement Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Easement Assignment shall be binding and in full force and effect when so executed by both parties.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
ASSIGNMENT OF T CROSS T RIGHT-OF-WAY EASEMENT

Between
Sasol Middle East and India (Pty) Limited and
State of Wyoming by and through
Wyoming Water Development Commission

The T Cross T Easement granted by T Cross T Ranch, LLC to M&M Ranch Acquisition Company, LLC on June 15, 2006, recorded on June 27, 2006 in the records of the Johnson County Clerk in Book R/W 22, pages 14-23

[See Attached]

053577

STATE OF WYOMING } ss
COUNTY OF JOHNSON }

This instrument was Filed for record on 6-27 2006 at 10:30 AM and was duly recorded in book RW - 22 page 14-23 Fee $ 35.00

Register of Deed

By Deanna McCracken Deputy

EASEMENT
(T Cross T Ranch)

For Three Thousand Four Hundred Thirty-Two Dollars ($3,432.00) and other good and valuable consideration, this Easement is conveyed by T Cross T Ranch, LLC, a Wyoming limited liability company, 1701 East "E" Street, Casper, WY 82602 ("Grantor") to M&M Ranch Acquisition Company, LLC, a Delaware limited liability company and a wholly owned subsidiary of MidAmerican Energy Holdings Company, Suite 400, 302 South 36th Street, Omaha, NE 68131-3845 ("Grantee").

1. Grant of Easement
Grantor grants and conveys to Grantee, its successors and assigns a perpetual easement over, across, under and on the real property specifically described on Exhibit A, entitled "Certificate of Survey" and dated June 3, 2006, by Kerry Money ("Easement").

2. Benefit
The Easement is for the benefit of the M&M Ranch described on Exhibit B.

3. Appurtenant
The Easement is appurtenant to the M&M Ranch and the Easement shall run with the M&M Ranch.

4. Purpose
The Easement is for the construction, maintenance, use and operation of access roads, pump stations, pipelines, electric power lines and industrial facilities ("facilities") which may be necessary, useful or convenient for development, construction, operation and maintenance of mines and/or industrial facilities on or in conjunction with the M&M Ranch and Lake DeSmet.

5. Notice
Grantee shall give Grantor thirty (30) days written notice before commencement of construction of any facilities or other activities which will cause surface disturbance on the Easement.

6. Annual Payments
As continuing consideration for this Easement, Grantee shall pay to Grantor Three Thousand Four Hundred Thirty-Two Dollars ($3,432.00) on each subsequent anniversary date of this Easement, unless and until this Easement is hereafter terminated ("Annual Payments").

7. Default on Annual Payment
If Grantee fails to make an Annual Payment in accordance with this Easement ("Default"), Grantor shall give written notice to Grantee of Default ("Notice of Default") as follows:

a. The Notice of Default shall be in writing specifying the Default.

b. The Notice of Default shall be given to the following Default Addressees:

Mitch Pirnie
MidAmerican Energy Holdings Company
302 S. 36th Street, Suite 400
Omaha, NE 68131-3845

David F. Palmerlee
Palmerlee & Durrant, LLC
11 North Main Street
Buffalo, WY 82834

c. Grantee may change the Default Addressees by giving written notice thereof to Grantor.

d. The Notice of Default shall either be hand delivered to the Default Addressees or actually delivered by Federal Express or United States Mail, return receipt requested.

e. The Notice of Default shall be effective when actually delivered to both Default Addressees.

f. If after the Notice of Default is delivered and effective, the nonpayment of the Annual Payment continues for sixty (60) days thereafter, Grantor may deliver a Notice of Termination of the Easement to Grantee in accordance with this Paragraph 7. If the nonpayment continues for an additional thirty (30) days after the Notice of Termination of the Easement is delivered and effective, Grantor may terminate this Easement by recording an Affidavit of Termination in the Office of the County Clerk, Johnson County, Wyoming.

8. Supercedes

This Easement supercedes and replaces that certain Easement from Texaco, Inc. in favor of Lake DeSmet Energy Co. L.L.C. effective as of January 2, 1996 and recorded January 21, 1998 in Book 14 R/W, Page 387-401 of the records of the Clerk of Johnson County, Wyoming.

9. Termination

Grantee may unilaterally terminate this Easement and be relieved of all future payments under Paragraph 6 of this Easement by delivering a written notice of termination in recordable form to Grantor. In the event of termination of this Easement, Grantee shall, within a reasonable time thereafter, remove Grantee's facilities from the Easement and reclaim any surface disturbance on the Easement in accordance with usual industry standards.

Dated this ___ day of June, 2006.

M&M RANCH ACQUISITION COMPANY, LLC

By: _____
Name: Mitchell Pirnie
Title: Vice President

T CROSS T RANCH, LLC

By: _____
Name: Neil A. McMurry
Title: Member

STATE OF Nebraska)
) ss.
County of Douglas)

The foregoing instrument was acknowledged before me on this 15th day of June, 2006, by Mitchell Pirnie, the Vice-President of M&M Ranch Acquisition Company, LLC, a Delaware limited liability company, on behalf of the limited liability company.

Witness my hand and official seal.

_____
Notary Public

DOUGLAS County, State of Nebraska
BARBARA R. TRACY
My Comm. Exp. April 29, 2008

My Commission expires

STATE OF Wyoming)
) ss.
County of Natrona)

The foregoing instrument was acknowledged before me on this 23rd day of June, 2006, by Neil A. McMurry, the Member of T Cross T Ranch, LLC, a Wyoming limited liability company, on behalf of the limited liability company.

Witness my hand and official seal.

_____
Notary Public

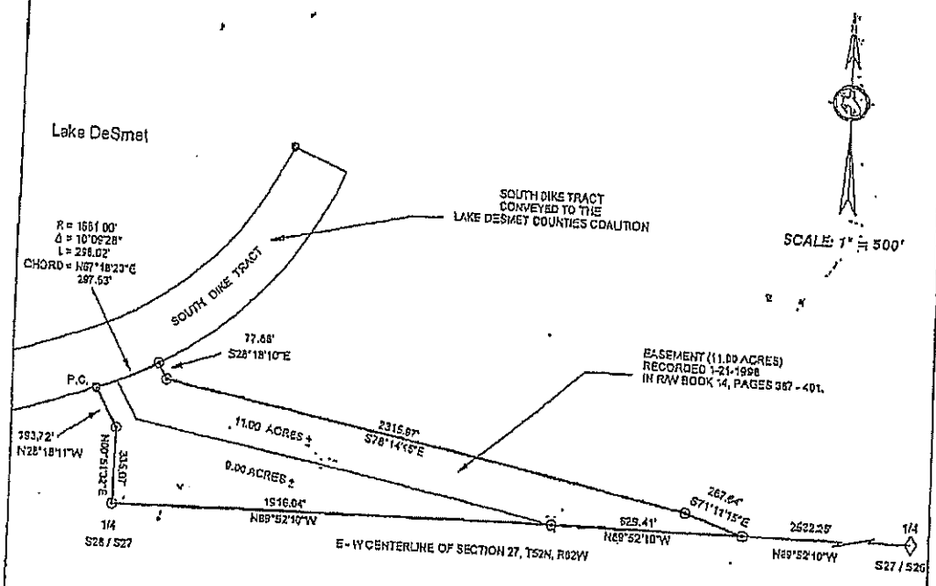
My Commission expires 6 April 2007

THOMAS R. BLEVINS - NOTARY PUBLIC
County of Natrona State of Wyoming
My Commission Expires April 6, 2007

EXHIBIT A TO
EASEMENT, p. 1

CERTIFICATE OF SURVEY

A TRACT OF LAND LOCATED IN THE S1/2NW1/4 AND SW1/4NE1/4 OF SECTION 27, T 52 N, R 82 W, OF THE 6th P.M., JOHNSON COUNTY, WYOMING



⊙ = Set 2" Aluminum Capped Rebar, Stamped PLS 5367

• = Found 2" Aluminum Capped Rebar, Stamped PELS 3159

◊ = Found Brass Cap, LS 102

TOTAL EASEMENT AREA = 20.00 ACRES ±

CERTIFICATE OF SURVEYOR

STATE OF WYOMING)
) SS
COUNTY OF JOHNSON)

I, KERRY C. MONEY, being a duly Registered Land Surveyor in the State of Wyoming, do hereby certify that this Certificate of Survey does represent an actual survey performed by me in June 2006, and that it correctly shows the conditions on the ground.

Professional Land Surveyor
Kerry C. Money
5367
Date 6/3/06
WYOMING

KERRY C. MONEY
PROFESSIONAL LAND SURVEYOR
43 Reno Road
Buffalo, WY 82834
Ph. 307-684-2948

Date Drawn: 6-3-2006
Drawing: M&M / McMURRAY R/W

EASEMENT

A tract of land located in the S½NW¼ and SW¼NE¼ of Section 27, T52N, R82W, of the 6th P.M., Johnson County, Wyoming, being more particularly described as follows:

Commencing at an existing Brass Cap, stamped LS 102, that marks the quarter corner common to Sections 26 and 27, T52N, R82W, of the 6th P.M., Johnson County, Wyoming;

thence N89°52'10"W along the East – West centerline of said Section 27 a distance of 2532.25 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367, and said point being the true point of beginning;

thence continuing N89°52'10"W along said East – West centerline of said Section 27 a distance of 2745.45 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367, marking the quarter corner common to Sections 27 and 28, T52N, R82W;

thence N00°51'32"E a distance of 335.07 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence N28°18'11"W a distance of 193.72 feet to a point, said point being an existing 2 inch aluminum capped rebar, stamped PELS 3159, and said point being the point of beginning of a non-tangent circular curve to the left having a radius of 1681.00 feet and a chord of N87°18'23"E at a distance of 297.63 feet;

thence along said non-tangent circular curve to the left through a central angle of 10°09'28" a distance of 298.02 feet to the point of ending of said non-tangent circular curve to the left, said point of ending being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence S28°18'10"E a distance of 77.88 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence S78°14'45"E a distance of 2315.97 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence S71°11'15"E a distance of 267.64 feet to the true point of beginning.

Said tract of land containing 20.00 acres, more or less.

EXHIBIT B
TO
EASEMENT (T CROSS T RANCH)

DESCRIPTION OF M&M RANCH

The land referred to in this Exhibit B is situate in the State of Wyoming, County of Johnson, and is described as follows:

Township 51 North, Range 81 West, 6th P.M.
Section 4: S½SE¼, SE¼SW¼

Excepting that portion of the SE¼SE¼ conveyed to Russell O. Wright and Ruby E. Wright, husband and wife, by Warranty Deed recorded November 20, 1974, in Book 87A-14 of Deeds, Page 375.

Section 4: A tract of land in the N½SE¼, NE¼SW¼ more particularly described as follows:

Commencing at the East ¼ corner of Section 4;

Thence S 23°04' W a distance of 1432 feet to the south line of the N½SE¼;

Thence N 89°43' W along the south line of the N½SE¼ and the NE¼SW¼ a distance of 3432 feet;

Thence N 63°55' E a distance of 2970 feet to the north line of the NE¼SW¼;

Thence S 89°46' E along the north line of the NE¼SE¼ a distance of 1326 feet to the point of begitining.

Sections 3 & 4: A tract of land situated in the SW¼NW¼ of Section 3 and the SE¼NE¼ of Section 4 more particularly described as follows:

Commencing at the ¼ corner common to Sections 3 and 4;

Thence N 89°46' W (calculated) (S 89°46' W record) a distance of 251.4 feet to the east right of way line for U.S. Highway 16;

Thence along said highway right of way line through a 3° curve to the left having a radius of 1909.86 feet, for a chord distance of 693.7 feet along a chord bearing N 34°12' E;

Thence N 76°12' E a distance of 20.9 feet along the right of way line;

Thence S 15°19' W a distance of 601.1 feet to the point of beginning.

Section 5: SE¼SW¼
Section 8: NE¼, SE¼, E½W½, SW¼SW¼

Excepting therefrom that portion of the SE¼SE¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Section 9: NE¼, W½SE¼, SW¼, NW¼

Excepting therefrom that portion of the SW¼SW¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Also excepting therefrom that portion of the NE¼, W½SE¼ as conveyed to Russell O. Wright and Ruby E. Wright, husband and wife, by Warranty Deed recorded November 20, 1974, in Book 87A-14 of Deeds, Page 375.

Section 17: NE¼, N½NW¼

Excepting therefrom that portion of the NE¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Sections 8, 9 & 17: A tract of land situated in the SE¼SE¼ of Section 8, SW¼SW¼ of Section 9 and the NE¼NE¼ of Section 17, described as follows:

Commencing at a point which is N 28°16' E a distance of 886.3 feet from the corner common to Sections 8, 9, 16 and 17, said point of beginning being on the centerline of U.S. Highway No. 16;

Thence on tangent and along the centerline of U.S. Highway No. 16, S 30°25' W a distance of 394.9 feet to the point of curvature of said highway;

Thence along the centerline of U.S. Highway No. 16, through a 1° curve to the left having a radius of 5729.58 feet, with a chord bearing of S 25°20' W and a chord distance of 950.5 feet, to point of tangency;

Thence N 68°55' W a distance of 50.0 feet;

Thence N 21°05' E a distance of 1266.4 feet;

Thence S 89°59' E a distance of 197.7 feet to the point of beginning.

Section 16: A tract of land situated in the N½NW¼, SW¼NW¼ and more particularly described as follows:

Commencing at the NW corner of Section 16;

Thence S 89°12' E along the north line of the NW¼ of Section 16 a distance of 1583.6 feet;

Thence S 39°04' W a distance of 1318.6 feet;

Thence S 58°15' W a distance of 894 feet to the west line of the NW¼ of Section 16;

thence N 0°18' E along the west line of the NW¼ a distance of 1516.5 feet to the point of beginning.

Section 26: W½
Section 27: E½

Excepting therefrom any portion of the land granted by an act of Congress for railroad purposes.

Township 51 North, Range 82 West, 6th P.M.

Section 1: SW¼SW¼
Section 2: All
Section 3: All
Section 4: All

excepting therefrom those portions of the SE¼SW¼, W½SW¼, SW¼NW¼ conveyed to J.K. Hardy by Warranty Deed recorded March 22, 1900, in Book 12B of Deeds, Page 234, and more correctly described as follows:

Beginning at the corner common to Sections 4, 5, 8 and 9; and running thence North a distance of 2790 feet to the centerline of the County Road;

Thence S 32° 12' E along the centerline of said road a distance of 1188 feet;

Thence S 42° 31' E along the centerline of said road a distance of 462 feet;

Thence S21°11'E (Record S 37° 35' E) along the centerline of said road 1552 feet (Record 2400 feet) to the section line between Sections 4 and 9;

Thence N 89° 53' W along said section line a distance of 1506 feet to the point of beginning.

also excepting therefrom those portions of the W½NW¼, SW¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 5: Lot 1, SE¼NE¼

Excepting therefrom those portions of Lot 1, SE¼NE¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 9: N½NE¼, SE¼NE¼, and those portions of the NE¼NW¼, and the SW¼NE¼ described as follows:

Beginning at the ¼ section corner between Sections 4 and 9; running thence South 1320 feet; thence East 1318 feet; thence South 1320 feet; thence West 410 feet (calculated) (130 feet record) to the centerline of the County Road formerly used as the main highway between Buffalo and Sheridan; thence N 37°35' W along the centerline of said road a distance of 3334 feet (calculated) (3550 feet record) to the section line between Sections 4 and 9; thence S 89°53' E along the section line a distance of 1125 feet to the point of beginning.

Excepting therefrom those portions of the W½NE¼, E½NW¼ conveyed to The State of Wyoming by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom those portions of the W½NE¼, SE¼NE¼, E½NW¼ conveyed to The State Highway Commission of Wyoming by Quitclaim Deed recorded December 17, 1986, in Book 87A-27 of Deeds, Page 621.

Section 10: All

Excepting therefrom that portion of the SW¼SW¼ as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 11: All
Section 12: S½, S½N½, NW¼NW¼
Section 13: All
Section 14: N½, N½S½, SE¼SE¼
Section 15: E½

Excepting therefrom that portion of the NW¼SE¼ as conveyed to Fred M. Torrence and Claudia J. Torrence, husband and wife, by Quit Claim Deed recorded September 6, 1991, in Book 87A-32 of Deeds, Page 225.

also excepting therefrom that portion of the SW¼SE¼ as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

also excepting therefrom a tract of land conveyed to James J. Mangan and Mildred L. Mangan, Trustees of the Mangan Family Trust by Warranty Deed recorded February 28,

2006 in Book 87A-50 of Deeds, Page 546.

Township 52 North, Range 82 West, 6th P.M.

Section 26: SW¼, W½SE¼
Section 27: S½
Section 28: All

excepting therefrom a tract of land conveyed to Wyoming Storage and Water Supply Company by Warranty Deed recorded May 29, 1907, in Book 14 of Deeds, Page 281.

Also excepting therefrom a tract of land conveyed to Texaco Inc. by Deed recorded January 21, 1998, in Book 87A-40 of Deeds, Page 124.

Section 32: SE¼SE¼

Excepting therefrom a tract of land conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom a tract of land conveyed to The State Highway Commission of Wyoming by Warranty Deed recorded November 3, 1964, in Book 87A-7 of Deeds, Page 225.

Section 33: All
Section 34: All
Section 35: W½, W½NE¼, SE¼

ATTACHMENT B
TO
ASSIGNMENT OF T CROSS T RIGHT-OF-WAY EASEMENT

Between
Sasol Middle East and India (Pty) Limited and
State of Wyoming by and through
Wyoming Water Development Commission

"Assignment of T Cross T Right-of-Way Easement" from M&M Ranch Acquisition Company, LLC to Sasol Synfuels International (Pty) Limited dated October 23, 2012, recorded on October 23, 2012 in the records of the Johnson County Clerk in Book R/W 29, pages 397-410

[See Attached]

STATE OF WYOMING }
COUNTY OF JOHNSON } SS Doc Number: 124530
This instrument was Filed for record on 10/23/2012 at 4:21 PM
and was duly recorded in book: R/W 29 page: 397 - 410 fees: 66.00
Johnson County Clerk
By Mary Haahsen Asst, Deputy

ASSIGNMENT OF T CROSS T RIGHT-OF-WAY EASEMENT

This Assignment of T Cross T Right-of-Way Easement (*"Easement Assignment"*) is made between **M&M RANCH ACQUISITION COMPANY, LLC**, a Delaware limited liability company and a wholly owned subsidiary of MidAmerican Energy Holdings Company, whose address is 1407 West North Temple, Salt Lake City, Utah 84116 (*"M&M Ranch"*), and **SASOL SYNFUELS INTERNATIONAL PTY LTD**, whose address is c/o SASOL North America Inc., 900 Threadneedle, Suite 100, Houston, TX 77079 (*"SASOL"*).

The T Cross T Easement was granted by T Cross T Ranch, LLC to M&M Ranch on June 15, 2006, recorded in the records of the Johnson County Clerk in Book R/W 22, pages 14-23, a copy of which is attached and marked Exhibit A to this Easement Assignment, under which M&M Ranch has certain rights and obligations.

For good and valuable consideration, including the terms of this Easement Assignment, M&M Ranch assigns and transfers to SASOL all of M&M Ranch's right, title and interest in, to and under the T Cross T Easement and SASOL assumes all of M&M Ranch's obligations in, to and under the T Cross T Easement from and after the effective date hereof.

This Easement Assignment may be executed in any number of counterparts, and by different parties in separate counterparts, each of which shall be deemed to be an original instrument, but all of which together shall constitute but one instrument.

[Signature Page Follows]

This Easement Assignment is executed on the dates set forth in the acknowledgements below, effective as of the 23rd day of October, 2012.

M&M Ranch Acquisition Company, LLC

By: _____
Name: Micheal G. Dunn
Title: President

STATE OF UTAH)
) ss.
COUNTY OF SALT LAKE)

This instrument was acknowledged before me on October 19, 2012, by Micheal G. Dunn as President of M&M Ranch Acquisition Company, LLC.

_____
Notary Public

SEAL
(if any)

Notary Public
CAROL M. SABOL
Commission #609675
My Commission Expires
July 12, 2015
State of Utah

My Commission Expires: 07/12/2015

SASOL SYNFUELS INTERNATIONAL PTY LTD

By: Ann McWatters
Name: Ann McWatters
Title: Attorney-in-Fact

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

This instrument was acknowledged before me on October 19, 2012, by Ann McWatters as Attorney-in-Fact for SASOL SYNFUELS INTERNATIONAL PTY LTD.

SEAL (if any)

LARISSA R. DE LEON
Notary Public, State of Texas
My Commission Expires
February 12, 2013

Notary Public

My Commission Expires: 2-12-2013

EXHIBIT A
TO
ASSIGNMENT OF T CROSS T RIGHT-OF-WAY EASEMENT

Between
M&M Ranch Acquisition Company, LLC and
SASOL SYNFUELS INTERNATIONAL PTY LTD

[See Attached]

053577

STATE OF WYOMING } ss
COUNTY OF JOHNSON }

This instrument was Filed for record on 6-8-7 2006 at 10:30 AM and was duly recorded in book RW-22 page 14-23 Fee $ 35.00

Register of Deed

By Brenda McCardle Deputy

EASEMENT
(T Cross T Ranch)

For Three Thousand Four Hundred Thirty-Two Dollars ($3,432.00) and other good and valuable consideration, this Easement is conveyed by T Cross T Ranch, LLC, a Wyoming limited liability company, 1701 East "E" Street, Casper, WY 82602 ("Grantor") to M&M Ranch Acquisition Company, LLC, a Delaware limited liability company and a wholly owned subsidiary of MidAmerican Energy Holdings Company, Suite 400, 302 South 36th Street, Omaha, NE 68131-3845 ("Grantee").

1. Grant of Easement
Grantor grants and conveys to Grantee, its successors and assigns a perpetual easement over, across, under and on the real property specifically described on Exhibit A, entitled "Certificate of Survey" and dated June 3, 2006, by Kerry Money ("Easement").

2. Benefit
The Easement is for the benefit of the M&M Ranch described on Exhibit B.

3. Appurtenant
The Easement is appurtenant to the M&M Ranch and the Easement shall run with the M&M Ranch.

4. Purpose
The Easement is for the construction, maintenance, use and operation of access roads, pump stations, pipelines, electric power lines and industrial facilities ("facilities") which may be necessary, useful or convenient for development, construction, operation and maintenance of mines and/or industrial facilities on or in conjunction with the M&M Ranch and Lake DeSmet.

5. Notice
Grantee shall give Grantor thirty (30) days written notice before commencement of construction of any facilities or other activities which will cause surface disturbance on the Easement.

6. Annual Payments
As continuing consideration for this Easement, Grantee shall pay to Grantor Three Thousand Four Hundred Thirty-Two Dollars ($3,432.00) on each subsequent anniversary date of this Easement, unless and until this Easement is hereafter terminated ("Annual Payments").

7. Default on Annual Payment
If Grantee fails to make an Annual Payment in accordance with this Easement ("Default"), Grantor shall give written notice to Grantee of Default ("Notice of Default") as follows:

a. The Notice of Default shall be in writing specifying the Default.

b. The Notice of Default shall be given to the following Default Addressees:

Mitch Pirnie
MidAmerican Energy Holdings Company
302 S. 36th Street, Suite 400
Omaha, NE 68131-3845

David F. Palmerlee
Palmerlee & Durrant, LLC
11 North Main Street
Buffalo, WY 82834

c. Grantee may change the Default Addressees by giving written notice thereof to Grantor.

d. The Notice of Default shall either be hand delivered to the Default Addressees or actually delivered by Federal Express or United States Mail, return receipt requested.

e. The Notice of Default shall be effective when actually delivered to both Default Addressees.

f. If after the Notice of Default is delivered and effective, the nonpayment of the Annual Payment continues for sixty (60) days thereafter, Grantor may deliver a Notice of Termination of the Easement to Grantee in accordance with this Paragraph 7. If the nonpayment continues for an additional thirty (30) days after the Notice of Termination of the Easement is delivered and effective, Grantor may terminate this Easement by recording an Affidavit of Termination in the Office of the County Clerk, Johnson County, Wyoming.

8. Supercedes

This Easement supercedes and replaces that certain Easement from Texaco, Inc. in favor of Lake DeSmet Energy Co. L.L.C. effective as of January 2, 1996 and recorded January 24, 1998 in Book 14 R/W, Page 387-401 of the records of the Clerk of Johnson County, Wyoming.

9. Termination

Grantee may unilaterally terminate this Easement and be relieved of all future payments under Paragraph 6 of this Easement by delivering a written notice of termination in recordable form to Grantor. In the event of termination of this Easement, Grantee shall, within a reasonable time thereafter, remove Grantee's facilities from the Easement and reclaim any surface disturbance on the Easement in accordance with usual industry standards.

Dated this ___ day of June, 2006.

M&M RANCH ACQUISITION COMPANY, LLC

By: _____
Name: Mitchell Pirnie
Title: Vice President

T CROSS T RANCH, LLC

By: _____
Name: Neil A. McMurry
Title: Mgr / Member

STATE OF Nebraska)
) ss.
County of Douglas)

The foregoing instrument was acknowledged before me on this 15th day of June, 2006, by Mitchell Pirnie, the Vice-President of M&M Ranch Acquisition Company, LLC, a Delaware limited liability company, on behalf of the limited liability company.

Witness my hand and official seal.

_____
Notary Public

GENERAL NOTARY-State of Nebraska
BARBARA R. TRACY
My Comm. Exp. April 29, 2008

My Commission expires

STATE OF Wyoming)
) ss.
County of Natrona)

The foregoing instrument was acknowledged before me on this 23rd day of June, 2006, by Neil A. McMurry, the Member of T Cross T Ranch, LLC, a Wyoming limited liability company, on behalf of the limited liability company.

Witness my hand and official seal.

_____
Notary Public

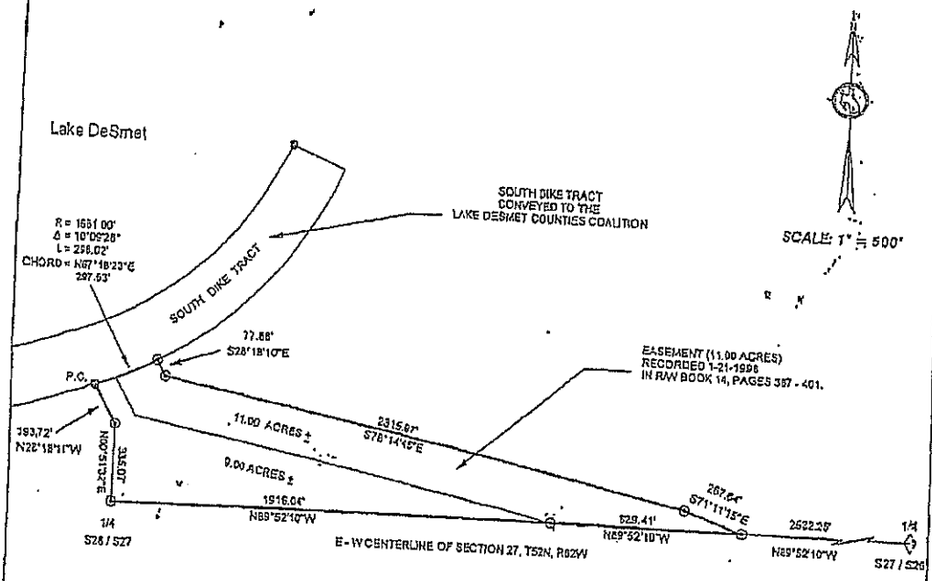
My Commission expires 6 April 2007

THOMAS R. BLEVINS - NOTARY PUBLIC
County of Natrona State of Wyoming
My Commission Expires April 6, 2007

EXHIBIT A TO
EASEMENT, p. 1

CERTIFICATE OF SURVEY

A TRACT OF LAND LOCATED IN THE S1/2NW1/4 AND SW1/4NE1/4 OF SECTION 27, T 52 N, R 82 W, OF THE 6th P.M., JOHNSON COUNTY, WYOMING



⊙ = Set 2" Aluminum Capped Rebar, Stamped PLS 5367

♦ = Found 2" Aluminum Capped Rebar, Stamped PELS 3159

◊ = Found Brass Cap, LS 102

TOTAL EASEMENT AREA = 20.00 ACRES ±

CERTIFICATE OF SURVEYOR

STATE OF WYOMING)
) SS
COUNTY OF JOHNSON)

I, KERRY C. MONEY, being a duly Registered Land Surveyor in the State of Wyoming, do hereby certify that this Certificate of Survey does represent an actual survey performed by me in June 2006, and that it correctly shows the conditions on the ground.

Professional Land Surveyor
Kerry C. Money
5367
Date 6/3/06
WYOMING

KERRY C. MONEY
PROFESSIONAL LAND SURVEYOR
43 Reno Road
Buffalo, WY 82834
Ph. 307-684-2948

Date Drawn: 6-3-2006

Drawing: M&M / McMURRAY R/W

EASEMENT

A tract of land located in the S½NW¼ and SW¼NE¼ of Section 27, T52N, R82W, of the 6th P.M., Johnson County, Wyoming, being more particularly described as follows:

Commencing at an existing Brass Cap, stamped LS 102, that marks the quarter corner common to Sections 26 and 27, T52N, R82W, of the 6th P.M., Johnson County, Wyoming;

thence N89°52'10"W along the East – West centerline of said Section 27 a distance of 2532.25 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367, and said point being the true point of beginning;

thence continuing N89°52'10"W along said East – West centerline of said Section 27 a distance of 2745.45 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367, marking the quarter corner common to Sections 27 and 28, T52N, R82W;

thence N00°51'32"E a distance of 335.07 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence N28°18'11"W a distance of 193.72 feet to a point, said point being an existing 2 inch aluminum capped rebar, stamped PELS 3159, and said point being the point of beginning of a non-tangent circular curve to the left having a radius of 1681.00 feet and a chord of N67°18'23"E at a distance of 297.63 feet;

thence along said non-tangent circular curve to the left through a central angle of 10°09'28" a distance of 298.02 feet to the point of ending of said non-tangent circular curve to the left, said point of ending being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence S28°18'10"E a distance of 77.88 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence S78°14'45"E a distance of 2315.97 feet to a point, said point being a 2 inch aluminum capped rebar, stamped PLS 5367;

thence S71°11'15"E a distance of 267.64 feet to the true point of beginning.

Said tract of land containing 20.00 acres, more or less.

EXHIBIT B
TO
EASEMENT (T CROSS T RANCH)

DESCRIPTION OF M&M RANCH

The land referred to in this Exhibit B is situate in the State of Wyoming, County of Johnson, and is described as follows:

Township 51 North, Range 81 West, 6th P.M.
Section 4: S½SE¼, SE¼SW¼

Excepting that portion of the SE¼SE¼ conveyed to Russell O. Wright and Ruby E. Wright, husband and wife, by Warranty Deed recorded November 20, 1974, in Book 87A-14 of Deeds, Page 375.

Section 4: A tract of land in the N½SE¼, NE¼SW¼ more particularly described as follows:

Commencing at the East ¼ corner of Section 4:

Thence S 23°04' W a distance of 1432 feet to the south line of the N½SE¼;

Thence N 89°43' W along the south line of the N½SE¼ and the NE¼SW¼ a distance of 3432 feet;

Thence N 63°55' E a distance of 2970 feet to the north line of the NE¼SW¼;

Thence S 89°46' E along the north line of the NE¼SE¼ a distance of 1326 feet to the point of begitining.

Sections 3 & 4: A tract of land situated in the SW¼NW¼ of Section 3 and the SE¼NE¼ of Section 4 more particularly described as follows:

Commencing at the ¼ corner common to Sections 3 and 4;

Thence N 89°46' W (calculated) (S 89°46' W record) a distance of 251.4 feet to the east right of way line for U.S. Highway 16;

Thence along said highway right of way line through a 3° curve to the left having a radius of 1909.86 feet, for a chord distance of 693.7 feet along a chord bearing N 34°12' E;

Thence N 76°12' E a distance of 20.9 feet along the right of way line;

Thence S 15°19' W a distance of 601.1 feet to the point of beginning.

Section 5: SE¼SW¼
Section 8: NE¼, SE¼, E½W½, SW¼SW¼

Excepting therefrom that portion of the SE¼SE¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Section 9: NE¼, W½SE¼, SW¼, NW¼

Excepting therefrom that portion of the SW¼SW¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Also excepting therefrom that portion of the NE¼, W½SE¼ as conveyed to Russell O. Wright and Ruby E. Wright, husband and wife, by Warranty Deed recorded November 20, 1974, in Book 87A-14 of Deeds, Page 375.

Section 17: NE¼, N½NW¼

Excepting therefrom that portion of the NE¼ as conveyed to Marton Brothers, Inc., a Wyoming corporation by Warranty Deed recorded June 22, 1974, in Book 87A-13 of Deeds, Page 429.

Sections 8, 9 & 17: A tract of land situated in the SE¼SE¼ of Section 8, SW¼SW¼ of Section 9 and the NE¼NE¼ of Section 17, described as follows:

Commencing at a point which is N 28°16' E a distance of 886.3 feet from the corner common to Sections 8, 9, 16 and 17, said point of beginning being on the centerline of U.S. Highway No. 16;

Thence on tangent and along the centerline of U.S. Highway No. 16, S 30°25' W a distance of 394.9 feet to the point of curvature of said highway;

Thence along the centerline of U.S. Highway No. 16, through a 1° curve to the left having a radius of 5729.58 feet, with a chord bearing of S 25°20' W and a chord distance of 950.5 feet, to point of tangency;

Thence N 68°55' W a distance of 50.0 feet;

Thence N 21°05' E a distance of 1266.4 feet;

Thence S 89°59' E a distance of 197.7 feet to the point of beginning.

Section 16: A tract of land situated in the N½NW¼, SW¼NW¼ and more particularly described as follows:

Commencing at the NW corner of Section 16;

Thence S 89°12' E along the north line of the NW¼ of Section 16 a distance of 1583.6 feet;

Thence S 39°04' W a distance of 1318.6 feet;

Thence S 58°15' W a distance of 894 feet to the west line of the NW¼ of Section 16;

thence N 0°18' E along the west line of the NW¼ a distance of 1516.5 feet to the point of beginning.

Section 26: W½
Section 27: E½

Excepting therefrom any portion of the land granted by an act of Congress for railroad purposes.

Township 51 North, Range 82 West, 6th P.M.

Section 1: SW¼SW¼
Section 2: All
Section 3: All
Section 4: All

excepting therefrom those portions of the SE¼SW¼, W½SW¼, SW¼NW¼ conveyed to J.K. Hardy by Warranty Deed recorded March 22, 1900, in Book 12B of Deeds, Page 234, and more correctly described as follows:

Beginning at the corner common to Sections 4, 5, 8 and 9; and running thence North a distance of 2790 feet to the centerline of the County Road;

Thence S 32° 12' E along the centerline of said road a distance of 1188 feet;

Thence S 42° 31' E along the centerline of said road a distance of 462 feet;

Thence S21°11'E (Record S 37° 35' E) along the centerline of said road 1552 feet (Record 2400 feet) to the section line between Sections 4 and 9;

Thence N 89° 53' W along said section line a distance of 1506 feet to the point of beginning.

also excepting therefrom those portions of the W½NW¼, SW¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 5: Lot 1, SE¼NE¼

Excepting therefrom those portions of Lot 1, SE¼NE¼ conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 9: N½NE¼, SE¼NE¼, and those portions of the NE¼NW¼, and the SW¼NE¼ described as follows:

Beginning at the ¼ section corner between Sections 4 and 9; running thence South 1320 feet; thence East 1318 feet; thence South 1320 feet; thence West 410 feet (calculated) (130 feet record) to the centerline of the County Road formerly used as the main highway between Buffalo and Sheridan; thence N 37°35' W along the centerline of said road a distance of 3334 feet (calculated) (3550 feet record) to the section line between Sections 4 and 9; thence S 89°53' E along the section line a distance of 1125 feet to the point of beginning.

Excepting therefrom those portions of the W½NE¼, E½NW¼ conveyed to The State of Wyoming by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom those portions of the W½NE¼, SE¼NE¼, E½NW¼ conveyed to The State Highway Commission of Wyoming by Quitclaim Deed recorded December 17, 1986, in Book 87A-27 of Deeds, Page 621.

Section 10: All

Excepting therefrom that portion of the SW¼SW¼ as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Section 11: All
Section 12: S½, S½N½, NW¼NW¼
Section 13: All
Section 14: N½, N½S½, SE¼SE¼
Section 15: E½

Excepting therefrom that portion of the NW¼SE¼ as conveyed to Fred M. Torrence and Claudia J. Torrence, husband and wife, by Quit Claim Deed recorded September 6, 1991, in Book 87A-32 of Deeds, Page 225.

also excepting therefrom that portion of the SW¼SE¼ as conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

also excepting therefrom a tract of land conveyed to James J. Mangan and Mildred L. Mangan, Trustees of the Mangan Family Trust by Warranty Deed recorded February 28,

2006 in Book 87A-50 of Deeds, Page 546.

Township 52 North, Range 82 West, 6th P.M.

Section 26: SW¼, W½SE¼
Section 27: S½
Section 28: All

excepting therefrom a tract of land conveyed to Wyoming Storage and Water Supply Company by Warranty Deed recorded May 29, 1907, in Book 14 of Deeds, Page 281.

Also excepting therefrom a tract of land conveyed to Texaco Inc. by Deed recorded January 21, 1998, in Book 87A-40 of Deeds, Page 124.

Section 32: SE¼SE¼

Excepting therefrom a tract of land conveyed to The State of Wyoming, by and through its State Highway Commission by Warranty Deed recorded May 18, 1962, in Book 87A-5 of Deeds, page 345.

Also excepting therefrom a tract of land conveyed to The State Highway Commission of Wyoming by Warranty Deed recorded November 3, 1964, in Book 87A-7 of Deeds, Page 225.

Section 33: All
Section 34: All
Section 35: W½, W½NE¼, SE¼

Exhibit K

BILL OF SALE
(Lake DeSmet Stored Water)

KNOW ALL MEN BY THESE PRESENTS, that **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED** (***"Grantor"***), whose address is 12120 Wickchester Lane, Houston, TX 77079, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does quitclaim, assign and convey to the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION** ***("WWDC")***, its successors and assigns, all of Grantor's right, title and interest in and to the amount of water storage in Lake DeSmet Reservoir listed on Attachment A ("***Stored Water***").

The Stored Water is conveyed "AS IS, WHERE IS," with all faults, and no warranties of any kind, whether statutory, written, oral, express or implied (including warranties of fitness for a particular purpose or merchantability) shall apply with respect to the Stored Water conveyed herein.

This Bill of Sale is executed on the date set forth in the acknowledgement below, effective as of this ____ day of _____, 2018.

GRANTOR:

Sasol Middle East and India (Pty) Ltd

By: _____
Name: _____
Title: _____

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Ltd on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
BILL OF SALE
(Lake DeSmet Stored Water)

Between
SASOL Middle East and India (Pty) Limited and
State of Wyoming by and through the
Wyoming Water Development Commission

Permit No.	**Appropriation Name**	**Approximate Amount of Water in Storage**
7289 Res	Healy Reservoir	_____ acre feet
7290 Res	First Enl. of Healy Reservoir	_____acre feet
7533 Res	Camp Comfort Reservoir	_____ acre feet
TOTAL:		_____ acre feet

NOTE: The amount of water in storage is the amount set forth in the Wyoming State Engineer, Lake DeSmet Reservoir Report as of the ____ day of _____, 2018 ***("Report").*** The amount of water in storage is subject to adjustment for seepage, evaporation or other inputs or outputs of water of every kind and nature that may have occurred after the date of the Report.

Exhibit L

BILL OF SALE
(Healy Reservoir Stored Water)

KNOW ALL MEN BY THESE PRESENTS, that **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED** (***"Grantor"***), whose address is 12120 Wickchester Lane, Houston, TX 77079, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does quitclaim, assign and convey to the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION** ***("WWDC")***, its successors and assigns, all of Grantor's right, title and interest in and to the amount of water storage in the Healy Reservoir listed on Attachment A ("***Stored Water***").

The Stored Water is conveyed "AS IS, WHERE IS," with all faults, and no warranties of any kind, whether statutory, written, oral, express or implied (including warranties of fitness for a particular purpose or merchantability) shall apply with respect to the Stored Water conveyed herein.

This Bill of Sale is executed on the date set forth in the acknowledgement below, effective as of this ____ day of _____, 2018.

GRANTOR:

Sasol Middle East and India (Pty) Ltd

By: _____
Name: _____
Title: _____

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Ltd on behalf of the company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
BILL OF SALE
(Healy Reservoir Stored Water)

Between
SASOL Middle East and India (Pty) Limited and
State of Wyoming by and through the
Wyoming Water Development Commission

Permit No.	**Appropriation Name**	**Approximate Amount of Water in Storage**
7289 Res	Healy Reservoir	_____ acre feet

Exhibit M

ASSIGNMENT OF PERMIT NO. 7499 ENL.

This Assignment of Permit No. 7499 Enl. (***"Permit Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is c/o SASOL North America Inc., 12120 Wickchester Lane, Houston, TX 77079 (***"Sasol"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION** ***("WWDC").***

An Application for Permit to Appropriate Surface Water was filed in the Office of the Wyoming State Engineer by the Lake DeSmet Counties Coalition Joint Powers Board and approved as Permit No. 7499 Enl. by the State Engineer ***("Permit No. 7499 Enl.")***. A copy of Permit No. 7499 Enl. is attached to this Assignment.

For good and valuable consideration, including the terms of this Assignment, Sasol quitclaims to WWDC all of Sasol's right, title and interest, if any, in and to Permit No. 7499 Enl.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Assignment.

This Assignment is executed on the date set forth in the acknowledgement below, effective as of this ____ day of _____, 2018.

Sasol Middle East and India (Pty) Ltd.

By: _____
Name: _____
Title: _____

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Ltd. on behalf of the limited liability company.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

ATTACHMENT A
TO
ASSIGNMENT OF PERMIT NO. 7499 ENL.

Between
Sasol Middle Ease and India (Pty) Limited and
the State of Wyoming by and through the
Wyoming Water Development Commission

Permit No. 7499 Enl.

[See Attached]

Form S.W. 2
Rev. 11-87

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

9:45 11/4 N/C

STATE OF WYOMING

J. Cowley

OFFICE OF THE STATE ENGINEER

SCANNED MAY 15 2007

SUBSTITUTE APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING, STATE ENGINEER'S OFFICE } SS.

The original of This instrument was received and filed for record on the 19th day of June, A.D. 2003, at 9:45 o'clock A.M.

John R. Barnes, for State Engineer

Recorded in Book 33 of Enlargements, — on Page 15.

Fee Paid $ 50. Map Filed G.

WATER DIVISION NO. 2 DISTRICT NO. 11 Temp. Filing No. 31 3/293

PERMIT NO. 7499 ENLARGEMENT

SUBSTITUTE APPLICATION RECEIVED: G-6 11/4/2003 at 9:45 A.M.

NAME OF FACILITY TO BE ENLARGED

COALITION ENLARGEMENT OF THE REYNOLDS LAKE DESMET INTAKE TUNNEL

1. Name(s), mailing address and phone no. of applicant(s) is/are BRUCE R. YATES
LAKE DESMET COUNTIES COALITION JOINT POWERS BOARD
224 SOUTH MAIN STREET, SUITE B-BE
SHERIDAN, WY 82801
(If more than one applicant, designate one to act as Agent for the others)

2. Name & address of agent to receive correspondence and notices BRUCE R. YATES, SHERIDAN CO. ENGINEER, 224 SOUTH MAIN STREET, SUITE B-BE; SHERIDAN, WY 82801

3. (a) The use to which the water is to be applied is RESERVOIR SUPPLY

(b) If more than one beneficial use of water is applied for, the location and ownership of the point(s) of use must be shown in item 10 of the application and the details of the facilities used to divert and convey the appropriation must be shown on the map in sufficient detail to allow the State Engineer to establish the amount of appropriation. In multiple use applications, stock and domestic purposes are limited to 0.056 cubic feet per second.

4. The source of the proposed appropriation is PINEY CREEK, Trib Clear Creek, Trib Powder River, Trib Yellowstone River MC

5. (a) The headgate of the facility to be enlarged is located ~~N38°59'E, 587~~ N38°20'25"E 740.9' feet distant from the SW corner of Section 25 T. 53 N., R. 83 W., and is in the SW 1/4 SW 1/4 of Section 25 T. 53 N., R. 83 W. MC

(b) Said facility has a carrying capacity at the headgate of ~~1018 900~~ cubic feet per second.

(c) Permitted uses under said facility are described in Permit Nos. ~~973 Res, 5829 Res, 6225 Res, 6226 Res, 7009 Res, 7291 Res, 7292 Res~~ 1577, 5550E, 5789E, 6217E, 6352E

6. If the enlarged or extended portion of the proposed facility is located on lands owned by the State or Federal Government, describe lands and indicate whether State or Federally owned. N/A. MC

7. If the proposed application will require a physical enlargement or extension of the facility being enlarged, complete the following:

(a) The head of the extension is located N.A. feet distant from the — corner of Section — T. — N., R. — W., and is in the — of Section — T. — N., R. — W.

(b) The said facility as physically enlarged will have a carrying capacity at the headgate of 1018 cubic feet per second. MC

8. The estimated time required for the commencement of work is completed, for completion of construction is —, and to complete the application of water to the beneficial uses stated in this application is upon application approval.

Permit No. 7499 Enl. Page No. 15 (Leave Blank)

9. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application. The State Engineer may require the filing of detailed construction plans.

10. The land to be irrigated under this permit is described in the following tabulation: (Give irrigable acreage in each 40-acre subdivision. Designate ownership of land, Federal, State or private. If private, list names of owners and land owned separately.) If application is for stock, domestic, or for purposes other than irrigation, indicate point of use by 40-acre subdivision and owner.

Township	Range	Sec.	NE¼ NE¼	NE¼ NW¼	NE¼ SW¼	NE¼ SE¼	NW¼ NE¼	NW¼ NW¼	NW¼ SW¼	NW¼ SE¼	SW¼ NE¼	SW¼ NW¼	SW¼ SW¼	SW¼ SE¼	SE¼ NE¼	SE¼ NW¼	SE¼ SW¼	SE¼ SE¼	TOTALS
		(1)	RESERVOIR SUPPLY FOR THE MOORE RESERVOIR, PERMIT No. 1300 Res., 875 ACRE-FEET																
		(2)	RESERVOIR SUPPLY FOR THE REYNOLDS SHELL CREEK RESERVOIR, PERMIT No. 6227 Res., 1304 ACRE-FEET																
		(3)	RESERVOIR SUPPLY FOR THE ENL. REYNOLDS SHELL CREEK RESERVOIR, PERMIT No. 7532 Res., 740 ACRE-FEET																
		(4)	RESERVOIR SUPPLY FOR THE HEALY RESERVOIR, PERMIT No. 7289 Res., 36,834 ACRE-FEET																
		(5)	RESERVOIR SUPPLY FOR THE ENL. HEALY RESERVOIR, PERMIT No. 7290 Res., 13,725 ACRE-FEET																
↑	↑	(6)	RESERVOIR SUPPLY FOR THE CAMP COMFORT RESERVOIR, PERMIT No. 7533 Res., 11,640 ACRE-FEET																
Dep Res 53	82	31												X					

(Location of Lake DeSmet)

Number of acres to receive original supply _____

Number of acres to receive supplemental supply _____

Total Acreage Under This Enlargement _____

REMARKS

~~RESERVOIR SUPPLY WOULD BE FILLED IN THE FOLLOWING ORDER:~~

(1) MOORE RESERVOIR, PERMIT No. 1300 Res., 875 ACRE-FEET
(2) REYNOLDS SHELL CREEK RESERVOIR, PERMIT No. 6227 Res., 1304 ACRE-FEET
(3) ENL. REYNOLDS SHELL CREEK RESERVOIR, PERMIT No. 7532 Res., 740 ACRE-FEET
(4) HEALY RESERVOIR, PERMIT No. 7289 Res., 36,834 ACRE-FEET
(5) ENL. HEALY RESERVOIR, PERMIT No. 7290 Res., 13,725 ACRE-FEET
(6) CAMP COMFORT RESERVOIR, PERMIT No. 7533 Res., 11,640 ACRE-FEET

33

CONSENT TO ENLARGE

See Consent filed in Miscellaneous Notices under this Permit.

the sole owner of the _____ Ditch,
taking water from _____ under Permit No. _____,
for and in consideration of _____
do hereby give _____ free and voluntary consent to the enlargement or extension of, and to the use of water through the said ditch, for the irrigation of _____ acres, by _____, according to the terms of his application for enlargement.

Dated _____, 20 _____.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Bruce R. Yates
Signature of Applicant or Agent

10-13-03
Date

THE STATE OF WYOMING }
STATE ENGINEER'S OFFICE } ss.

TEMPORARY FILING NO. 31 3/293

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

Supply ditch for Permit Nos. 1300 R (Moore Res), 6227 R (Reynolds Shell Creek Res), 7289 R (Healy Res), 7290 R (Enl Healy Res), 7532 R (Enl Reynolds Shell Creek Res), and 7533 R (Camp Comfort Res) all now being stored in Lake DeSmet, Permit No. 973 Res, et al.

The amount of appropriation for reservoir supply shall be limited to the amount beneficially used to supply the above six reservoirs, not to exceed 65118 acre-feet from all sources for any one year, and at a rate not to exceed 1018 CFS, the supply ditch capacity.

This permit is issued to make an existing facility a matter of record. The notice of completion of construction is hereby waived.

This permit is granted subject to the terms of the Yellowstone River Compact.

~~The time for completing the construction work shall terminate on December 31, 20_____.~~

~~The time for completing the application of water to beneficial use shall terminate on December 31, 20_____, and final proof of appropriation shall be made within 5 years thereafter.~~

Witness my hand this 14 day of May, A.D. 2007.

Patrick T. Tyrrell
PATRICK T. TYRRELL, State Engineer

Permit No. 7499 Enl.

Page No. 15
(Leave Blank)

PERMIT NO. 7499 ENL.

G-6

PERMIT STATUS

Priority Date June 19, 2003

Approval Date May 14, 2007

PROOF PREPARED
ADJUDICATION IN PROCESS

CERT. REC. 86, P. 177 PROOF NO. 39697

IRR. ____ STK. ____ DOM. ____ MISC. Res

AC. ____ C.F.S. 0.0

SCANNED DEC 2 2008

NOTICE

This permit, does not constitute a complete water right. It is your authority to begin construction work.

All appropriations for irrigation are limited to 1 cubic foot per second of time for each 70 acres of land irrigated, except as provided in Section 41-4-320, Wyoming Statutes, 1977. Appropriations for other uses are limited to the amount of water beneficially used in accordance with the terms of the permit.

Notice of completion of work and of application of the water to the beneficial uses described in the permit, must be filed in the State Engineer's Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

To perfect your water right, your Water Division Superintendent, or his authorized representative, will contact you after you have submitted notice to the State Engineer stating that you have applied the water to the beneficial uses described in your permit. After execution of the proof, it will be considered by the State Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Appropriation which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

Exhibit N

2018 ASSIGNMENT OF LICENSE AGREEMENT
(Johnson County, Wyoming)

This 2018 Assignment of License Agreement (***"2018 Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is 12120 Wickchester Lane, Houston, TX 77079 (***"SASOL"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Agreement ***("WWDC").***

Sasol entered into a ***"2012 License Agreement"*** with Johnson County, Wyoming dated December 26, 2012, recorded on January 4, 2013 in the records of the Johnson County Clerk in Book 86A-76 of Miscellaneous, pages 233-239, a copy of which is attached and marked Attachment A to this 2018 Assignment.

For good and valuable consideration, including the terms of this 2018 Assignment, SASOL quitclaims, assigns and transfers to WWDC all of Sasol's right, title, interest and obligations in, to and under the 2012 License Agreement and WWDC assumes all of Sasol's obligations in, to and under the 2012 License Agreement from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this 2018 Assignment.

This 2018 Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This 2018 Assignment shall be binding and in full force and effect when so executed by both parties.

This 2018 Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____

Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

My Commission expires: _____
Notary Public

ATTACHMENT A
TO
ASSIGNMENT OF 2012 LICENSE AGREEMENT

Between

Sasol Middle East and India (Pty) Limited
And
State of Wyoming by and through
Wyoming Water Development Commission

"2012 License Agreement" between Lake DeSmet Energy Co. II, L.C. and Lake DeSmet Energy Co., L.C. and Johnson County, Wyoming, dated December 17, 2002 and recorded in the records of the Johnson County Clerk at Book 86A-55 at pages 310-316

[SEE ATTACHED]

LICENSE AGREEMENT

This Agreement is made and entered into, effective as of the last date on which any person executing this Agreement signs below, by and between Johnson County, Wyoming, a body corporate and politic (hereafter called "Licensor"), and Sasol Synfuels International Pty Ltd, a corporation incorporated in South Africa, whose address is 900 Threadneedle, Suite 100, Houston, TX 77075 (hereafter called "Licensee"), for and in consideration of Ten Dollars, and the benefits and obligations hereby imposed, and other good and valuable consideration, the sufficiency of which consideration is hereby acknowledged by all parties signatory hereto. This Agreement provides as follows:

1. Licensor hereby grants unto Licensee, the non-exclusive right to enter upon and to make use of the surface of the real property described in attached Exhibit "A" (hereafter "the subject real property") for purposes of ingress and egress to and from Lake DeSmet, for the sole purpose of making beneficial use of water which Licensee owns or otherwise has a right to, and which is stored in Lake DeSmet, located in Johnson County, Wyoming, subject to the terms and conditions set forth herein.

2. Licensee may use the surface of the subject real property for access by water tanker-type trucks which shall be licensed for operation on public highways. Licensee may also utilize the surface of the subject real property for temporary placement of a pump and associated intake and discharge lines in order to pump water directly from Lake DeSmet to Licensee's property which is adjacent to the subject real property. Licensee may not place or use any pump which is so large or so loud that it materially interferes with the public's peaceful recreational use of the subject real property and/or the public's use of Lake DeSmet or any other surrounding area which the general public has a right to use No engine driven pump, or other similarly loud type of pump, shall be operated after 6:00 o'clock pm. nor before 8:00 o'clock a.m. during the months of June, July, August, and September of any year.

3. Licensee hereby agrees to restore, reclaim, and reseed the acreage disturbed by its operations as soon as the soil and appropriate planting conditions will permit after its operations have been completed, according to recognized standards governing reclamation of such land then in existence. Furthermore, Licensee hereby agrees not to cause nor allow any condition of erosion to exist or continue on this property, and shall take all steps reasonably necessary in order to abate any condition of erosion or other environmental degradation caused or induced by Licensee's operations or use of the property.

4. This license shall begin immediately upon execution of the Agreement, and shall continue until December 31, 2022, unless sooner terminated by Licensor as provided in this Agreement.

5. Licensee shall secure from any and all proper governmental authorities all licenses and permits as may be required by law for any enterprise which is associated in any way with use of the subject real property and the water which Licensee gathers by using the subject real property.

STATE OF WYOMING }
COUNTY OF JOHNSON } SS Doc Number: 12606
This instrument was Filed for record on 1/3/2013 at 1:41 PM
and was duly recorded in book: 86A-76 page: 233 - 239 fees: (
Johnson County Cle
By Mary Kloahoen, Deput

6. Licensee shall not cause nor permit any Hazardous Material (as defined below) to be brought upon, or kept or used in or about the premises by Licensee, its agents, employees, contractors, or invitees, without the prior written consent of Licensor, which consent Licensor shall not unreasonably withhold so long as Licensee demonstrates to Licensor's reasonable satisfaction that that Hazardous Material is necessary or useful to Licensee's business and will be used, kept, and stored in a manner that complies with all laws, rules, statutes, and. ordinances regulating any such Hazardous Material so brought upon or used or kept in or about the premises. Licensee shall be responsible, without limitation, for any and all costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal, or restoration work required by any federal, state, or local governmental agency or political subdivision because of Hazardous Material present in the soil or ground water on, under or about the subject real property, provided that such condition or event results or arises from the use of the subject real property by Licensee or any other person on the subject real property based upon Licensee's rights under this Agreement. Without limiting the above, if the presence of any Hazardous Material on or about the premises caused or permitted by Licensee results in any contamination of the premises or surrounding area, including but not limited to Lake DeSmet, or causes the subject real property or surrounding area to be in violation of any laws, rules, statutes, or ordinances, Licensee shall promptly take all actions at its sole expense as are necessary to return the premises and surrounding area to the condition existing before the introduction of any such Hazardous Material; provided that Licensor's approval of those actions shall first be obtained, which approval shall not be unreasonably withheld so long as those actions would not potentially have any material adverse long-term or short-term effect on the premises or surrounding area. As used in this Agreement, the term "Hazardous Material" means any hazardous or toxic substance, material, or waste which is or becomes regulated by any local governmental authority, the state of Wyoming, or the United States government. The term "Hazardous Material" includes, without limitation, any material or substance which is defined or designated under law as a "hazardous material," "hazardous substance," "hazardous waste," "extremely hazardous waste" or "restricted hazardous waste."

7. Licensee shall fully indemnify Licensor against any and all claims for damage to property or injury to persons resulting or arising in any manner by Licensee's use of the subject real property or any other matter which is derivative from Licensee's use of the subject real property.

8. It is expressly understood and agreed that the subject real property is property already used for recreational purposes by the public, and Licensee shall not utilize this license in any fashion which materially impairs the public's ability to utilize the same property for any lawful purpose. Provided, however, that if Licensee is making use of the subject property for placement of temporary pumping, as noted above, Licensee shall enclose such minimum area as is necessary for the protection of the public by way of some appropriate fence or other suitable enclosure during such times as pumping equipment is located on the subject property.

9. Licensee acknowledges, for itself, together with its employees, officers, agents, guests, and invitees, that it enters into the use and operation of this license with full knowledge of the potentially dangerous condition of the property, and that it assumes sole and entire responsibility for any loss of life, injuries or damages of any kind or nature whatsoever, that may be sustained by any person as a result of any activity of Licensee related to the use of the subject real property.

10. Licensee shall not assign its rights under this Agreement without the express written consent of Licensor.

11. In case Licensor shall, without any fault, be made a party to any litigation commenced by or against Licensee, Licensee shall pay all costs and attorney's fees incurred by or against Licensor, by or in connection with such litigation, and Licensee shall and will also pay all reasonable costs and attorney's fees incurred by or against Licensor, in enforcing the provisions of this Agreement, and all such costs and attorney's fees, whether or not Licensor prevails, and whether or not a suit is filed.

12. This Agreement is the result of negotiations between the parties, none of whom have acted under duress. The parties waive the application of any rule of construction to the effect that ambiguous or conflicting terms of this Agreement shall be interpreted against the party whose attorney prepared it. This Agreement shall be construed as if all parties prepared it.

13. In every case where, in the opinion of Licensor, or under the conditions of this Agreement, it shall be deemed necessary for the interest of Licensor to serve a notice or demand on Licensee concerning this Agreement, or any of the conditions or provisions thereof, it shall be a sufficient service of such notice, demand or declaration to mail a copy thereof to Licensee at Sasol North America Inc,72 Rock Creek Road, PO Box 865, Buffalo, WY 82834, by ordinary first class mail, or by any other reasonable form of delivery by which proof of delivery may be determined.

14. This Agreement contains the entire understanding between the parties. No modification or waiver of any of the terms of this Agreement shall be valid unless made in writing. The failure of any party to insist upon strict performance of any of the provisions of this Agreement shall not be construed as a waiver of any subsequent default of the same or similar nature. If any provision of this Agreement is held to be invalid or unenforceable, all other provisions shall continue in full force and effect.

15. Licensor does not waive sovereign immunity by entering into this Agreement, and specifically retains all immunities and defenses available to it, and to its employees, agents, and officers as a sovereign pursuant to the Wyoming Governmental Claims Act (Wyo. Stat. § 1-39-101 et seq.), and any other applicable state or federal law.

16. This Agreement, the performance hereunder, and all suits and special proceedings hereunder shall be interpreted according to the law of the State of Wyoming. Licensee, irrevocably, agrees that, subject to Licensor's sole and absolute election to file elsewhere, all actions or proceedings in any way, manner or respect, arising out of or from or related to this Agreement shall be litigated only in courts having situs within the city of Buffalo, State of Wyoming. Licensee hereby irrevocably consents and submits to the jurisdiction of any local, State or Federal court located within the State of Wyoming. Licensee hereby irrevocably waives any right it may have to transfer or change the venue of any litigation brought against it by the Licensor in accordance with this paragraph.

17. In the event any provision of this Agreement shall be held illegal or invalid for any reason, such illegality or invalidity shall not affect the remaining provisions of the Agreement. In

this event, this Agreement shall be construed and enforced as if such illegal or invalid provision had never been contained herein.

18. This Agreement and its terms and obligations shall extend to and be obligatory and binding upon the heirs, executors, administrators, successors, and assigns of the respective parties.

19. Notwithstanding any provision of this Agreement to the contrary, Johnson County, Wyoming acknowledges and agrees that this Agreement is entered into pursuant to and consistent with the terms and provisions of the Water Agreement and License, dated April 12, 1996 and effective as of January 2, 1996, between Lake DeSmet Energy Co., L.C. and Texaco Inc. (the "Water Agreement and License"). The interest of Lake DeSmet Energy Co., L.C., in the Water Agreement and License is now held by the Licensee herein. The interest of Texaco Inc. in the Water Agreement and License is now held by Johnson County, Wyoming pursuant to and in accordance with the Lake DeSmet Reservoir Transfer Agreement, dated February 12, 2001 (the "Transfer Agreement") and the Agreement between the Board of County Commissioners of Sheridan County and the Board of County Commissioners of Johnson County dated November 9, 2012. The property subject to this Agreement was obtained by Licensor from Texaco pursuant to the Transfer Agreement. The parties acknowledge and agree that the terms of this Agreement do not alter or amend any terms or provisions of the Water Agreement and License, which remains in full force and effect. To the extent this Agreement conflicts with any provisions of the Water Agreement and License, the terms of the Water Agreement and License shall control.

20. This License Agreement may be terminated by Licensor without cause at any time in Licensor's sole discretion. Licensee agrees that on termination of this Agreement, Licensee will peaceably deliver up the premises and property to Licensor, with or without process of law.

[Signature Page Follows]

BOARD OF COUNTY COMMISSIONERS
OF JOHNSON COUNTY, WYOMING

Albert "Smokey" Wilderman, Chairman — Date: 12-26-12

Delbert Eitel, Commissioner — Date: 1-3-13

John Gibbs, Commissioner — Date: 12-26-12

Attest:

Vicki Edelman, Johnson County Clerk

STATE OF WYOMING)
) ss.
COUNTY OF JOHNSON)

This instrument was acknowledged before me on December 26, 2012, by Albert "Smokey" Wilderman, Chairman, Board of County Commissioners of Johnson County, Wyoming.

JENNIFER JACKSON NOTARY PUBLIC COUNTY OF JOHNSON STATE OF WYOMING MY COMMISSION EXPIRES DECEMBER 2, 2016

SEAL (if any)

Notary Public

My Commission Expires: 12/2/16

STATE OF WYOMING)
) ss.
COUNTY OF JOHNSON)

This instrument was acknowledged before me on December January 3, 2013, by Delbert Eitel, Member, Board of County Commissioners of Johnson County, Wyoming.

JENNIFER JACKSON NOTARY PUBLIC COUNTY OF JOHNSON STATE OF WYOMING MY COMMISSION EXPIRES DECEMBER 2, 2016

SEAL (if any)

Notary Public

My Commission Expires: 12/2/16

STATE OF WYOMING)
) ss.
COUNTY OF JOHNSON)

This instrument was acknowledged before me on December 26, 2012, by John Gibbs, Member, Board of County Commissioners of Johnson County, Wyoming.

SEAL (if any)

JENNIFER JACKSON NOTARY PUBLIC COUNTY OF JOHNSON STATE OF WYOMING MY COMMISSION EXPIRES DECEMBER 26, 2016

Notary Public

My Commission Expires: 12/26/16

SASOL SYNFUELS INTERNATIONAL PTY LTD

By: Ann McWatters

Title: Attorney in Fact

Dec. 13, 2012
Date

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

This instrument was acknowledged before me on December 13, 2012, by Ann McWatters as Attorney in Fact for SASOL SYNFUELS INTERNATIONAL PTY LTD, a corporation incorporated in South Africa.

SEAL
(if any)

Notary Public

My Commission Expires: 02/07/14

VERONICA C. PEREZ
Notary Public, State of Texas
My Commission Expires
February 07, 2014

EXHIBIT "A"

LAND DESCRIPTION

A tract of land situated in the S½NW¼, N½SW¼ and NW¼SE¼ of Section 28 and in the SE¼NE¼ and NE¼SE¼ of Section 29, Township 52 North, Range 82 West of the Sixth Principal Meridian, Johnson County, Wyoming, being more particularly described as follows:

Beginning a point which bears N80°46'43"E a distance of 1895.51 feet from the West ¼ Corner of said Section 28; thence N28°13'09"E for a distance of 286.97 feet to a point on the high water line of Lake DeSmet at an elevation of 4620; thence following the high water line of Lake DeSmet in a Westerly direction to a point which bears N83°06'3_"W a distance of 2426.61 feet from the point of terminus of the last course and distance; thence leaving said high water line on a bearing of N37°26'09"W for a distance of 273.35 feet; thence S77°50'21"W for a distance of 40.06 feet; thence S70°10'35"W for a distance of 571.44 feet; thence S26°16'41"E for a distance of 834.98 feet to a point on the North right-of-way line of a County Road, this point being on a curve; thence along a curve to the right having a Radius of 1175.90 feet, a central angle of 4°54'26", an arc length of 100.71 feet and a chord bearing S77°31'15"E a with a chord distance of 100.68 feet; thence continuing along the North right-of-way of the County Road, on a bearing of S75°04'E for a distance of 2182.70 feet to a point of curvature, thence along a curve to the left having a Radius of 1115.9 feet, a central angle of 31°32', an arc length of 731.00 feet and a chord bearing N86°09'59"E with a chord distance of 718.00 feet; thence N67°39'45"E for a distance of 866.37 feet; thence leaving said North right-of-way line and following a curve to the right, this curve having a Radius of 1618.00 feet, a central angle of 19°30'54", an arc length of 551.09 feet and a chord bearing N77°38'07"W with a chord distance of 548.43 feet; thence N67°53'59"W for a distance of 90.67 feet; thence N61°52'04"W for a distance of 520.15 feet to the point of beginning.

Said tract contains approximately 60.26 acres.

Basis of bearings is Wyoming State Plane (East Central Zone).

Exhibit O

ASSIGNMENT OF LEASE AND WATER PURCHASE AGREEMENTS

This Assignment of Lease and Water Purchase Agreements (***"Lease Assignment"***) is made between **SASOL MIDDLE EAST AND INDIA (PTY) LIMITED**, whose address is 12120 Wickchester Lane, Houston, TX 77079 (***"SASOL"***), and the **STATE OF WYOMING,** acting by and through the **WYOMING WATER DEVELOPMENT COMMISSION**, the agency authorized by law to enter into this Assignment ***("WWDC")***

For good and valuable consideration, SASOL quitclaims, assigns, transfers and conveys to WWDC all of Sasol's right, title, interest and obligations in, to and under the Lease and Water Purchase Agreements are listed on Attachment A to this Lease Assignment ***("Lease and Water Purchase Agreements"***) and WWDC assumes all of Sasol's obligations in, to and under the Lease and Water Purchase Agreements from and after the effective date hereof.

The parties agree that they will, whenever and as often as shall be reasonably requested to do so, cause to be executed, acknowledged and delivered any and all instruments and documents which may be reasonably required or appropriate to complete the transaction contemplated and carry out the intended purposes of this Lease Assignment.

This Lease Assignment may be executed by the parties by their signatures on separate signature pages, whether original, photocopy, email or .pdf copies. This Lease Assignment shall be binding and in full force and effect when so executed by both parties.

This Lease Assignment is executed on the dates set forth in the acknowledgements below, effective as of this ____ day of _____, 2018.

SASOL:

Sasol Middle East and India (Pty) Limited

By: _____
Name: _____
Title: _____

STATE OF WYOMING

By and through the Wyoming Water Development Commission

By: _____
Name: David Evans
Title: Chairman

By: _____
Name: Kellen Lancaster
Title: Secretary

STATE of WYOMING)
) ss.
County of Laramie)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____ and _____, the Chairman and Secretary of the Wyoming Water Development Commission on behalf of the State of Wyoming.

Witness my hand and official seal.

_____
Notary Public

My Commission expires:

STATE of _____)
) ss.
County of _____)

The foregoing instrument was acknowledged before me on this ___ day of _____, 2018, by _____, the _____ of Sasol Middle East and India (Pty) Limited on behalf of the company.

Witness my hand and official seal.

My Commission expires: _____
Notary Public

ATTACHMENT A
TO
ASSIGNMENT OF LEASE AND WATER PURCHASE AGREEMENTS

Between

Sasol Middle East and India (Pty) Limited
And
State of Wyoming by and through
Wyoming Water Development Commission

1. The Clear Creek Substation Lease Agreement between SASOL and Powder River Energy Corporation, dated as of September 26, 2013.

2. The Non-Exclusive Limited Lease for Public Access between M&M Acquisition Company, LLC and the Wyoming Game and Fish Commission, dated as of May 23, 2007.

3. The Water Purchase and Delivery Agreement among SASOL, Dave Belus, and Jack Morey, dated as of March 1, 2017.

4. The Wohlbrandt Water Purchase and Delivery Agreement between SASOL and Wohlbrandt Ranch, effective as of January 1, 2015.

[SEE ATTACHED]

Add

LEASE AGREEMENT

CLEAR CREEK SUBSTATION

THIS LEASE AGREEMENT, (hereinafter Agreement) made and entered into this 26th day of SEPT., 2013 by and between SASOL SYNFUELS INTERNATIONAL PTY LTD hereinafter called SASOL and POWDER RIVER ENERGY CORPORATION, a Wyoming cooperative utility, hereinafter called the PRECORP.

STATE OF WYOMING } SS
COUNTY OF JOHNSON }
This instrument was Filed for record on 10/15/2013 at 11:31 AM
and was duly recorded in book: 86A-78 page: 593 - 602 fees: 39.00
Doc Number: 133355
Johnson County Clerk
By Deputy

WITNESSETH:

I.

NOTICES

All notices and communications (***"Notice, Notices, Noticed"***) which are required or may be given pursuant to this Agreement shall be sufficient in all respects if given in writing, by certified or registered mail, by recognized overnight courier or by email with receipt acknowledged, as follows:

SASOL: Sasol Synfuels International Pty Ltd
900 Threadneedle, Suite 100
Houston, TX 77079
Email: ann.mcwatters@us.sasol.com

PRECORP: Powder River Energy Corporation
221 Main Street, P.O. Box 930
Sundance, WY 827296
Email: mikee@precorp.coop

Or addressed to such other persons or addresses which SASOL or PRECORP may have given notice of to the other. Notices given as described herein shall be deemed delivered and received on the date of receipt by the party to whom the notice is given.

II

LEGAL DESCRIPTION

SASOL does hereby lease unto PRECORP the following described real property and improvements (hereinafter the "***Leased Premises***"):

A tract of land located in the W½SW¼, Section 9, Township 51 North, Range 81 West, 6th P.M., Johnson County, Wyoming containing 2.0 acres, more or less, being more particularly described as follows, to-wit:

See attached "Exhibit A" ***("Real Property")***

TOGETHER with all improvements and appurtenances situate thereon or thereunto appertaining or belonging.

SUBJECT to all assessments, easements and rights-of-way of record and lawfully established.

A map of the aforementioned plot of land is more fully depicted and attached hereto and marked as Exhibit A and made a part hereof.

III.

TERM

a. This Agreement supercedes and replaces that certain Lease Agreement assumed by and between the parties dated October 1, 1978 ***("Original Lease").***

b. The term of this Agreement shall commence on October 2, 2013 and shall continue thereafter for a term of 10 years ***("Term")***.

IV.

RENTAL AND CONSIDERATION

As lease rental, SASOL agrees to accept and PRECORP agrees to pay the annual sum of $500.00 ($250.00 per acre) per year to SASOL and/or its successors or

assigns. The annual rental payment is consideration for the substation lease site and includes ingress and egress from US Highway 16 East to the substation site ***("Annual Payment").*** The first Annual Payment of $500.00 shall be due on October 2, 2013. Thereafter the annual sum of $500.00 shall be due the same day of each subsequent year. All Annual Payments shall be made in the name of SASOL and delivered to SASOL's address as hereinabove provided.

V.

CONDITIONS OF LEASE

This Agreement is made upon the following express conditions, each of which the Parties covenant will be kept, observed and performed throughout the Term.

a. The Leased Premises shall be occupied, possessed and used by PRECORP for the purpose of planning, constructing, operating, inspecting, and maintaining an electric substation and related facilities. It is understood and agreed PRECORP shall have the right to enter upon the Leased Premises at any time for the purpose of inspection, maintenance, operation and construction of the electric substation and related facilities. SASOL agrees use of the Leased Premises by PRECORP as described above shall include repair and replacement of all substation and related facilities during the Term of this Agreement.

b. SASOL agrees PRECORP'S right to possess the Leased Premises shall be exclusive during the Term, and SASOL will not transfer, dispose of or encumber or allow the Leased Premises to be encumbered in any manner that might interfere with PRECORP'S right to quiet, exclusive and peaceable possession.

c. SASOL further grants to PRECORP full right of ingress and egress to and

from the Leased Premises for any and all purposes necessary and incident to this Agreement. PRECORP shall be responsible for repairing and restoring the ingress and egress road that may be damaged by PRECORP's use of such road.

d. PRECORP is currently in possession of the Leased Premises in accordance with the Original Lease and PRECORP owns the electrical substation currently located on the Real Property pursuant to the Original Lease. PRECORP shall continue possession of the Leased Premises on October 2, 2013 in accordance with this Agreement.

e. Any and all improvements erected upon the Leased Premises by PRECORP shall be severable from the land and shall remain the personal property of the PRECORP. SASOL shall pay all real property taxes and assessments which may be due on the Leased Premises so PRECORP will not be dispossessed during the Term of this Agreement and PRECORP shall pay all taxes attributable to the value of all improvements placed thereon by PRECORP.

f. The Annual Payment shall be deemed to also be compensation to SASOL for any physical damages to the Real Property which may be caused by PRECORP'S activities including, but not limited to, surveying, constructing, operating, and maintaining all improvements on the Real Property.

g. PRECORP shall not allow any liens or encumbrances to accrue upon the above described Real Property and improvements without the prior written consent of the SASOL. However, SASOL agrees PRECORP shall have full and unrestricted right to assign, pledge and hypothecate its leasehold rights under this Agreement (and its improvements upon the Leased Premises) to its general and secured

creditors and to creditors that provide financing for the purchase, construction and installation of facilities upon the Leased Premises, in the exercise of PRECORP'S discretion and without the need to obtain consent or approval from SASOL.

h. PRECORP hereby releases and forever discharges SASOL and PRECORP shall further indemnify and hold harmless SASOL, its officers, directors, employees, subsidiaries and affiliates (collectively ***"Indemnities"***) from and against any losses, claims, liens, demands and causes of action of every kind, including the amount of any judgment, penalty, interest, court cost or legal fee incurred by the Indemnities, or any of them, in the defense thereof, arising in favor of any party, including governmental agencies or bodies, on account of taxes, claims, liens, debts, personal injuries, death or damages to property, violations of Environmental Laws and Regulations, and all other claims or demands of every character arising directly or indirectly out of PRECORP's use or possession of the Property. This Paragraph shall survive the termination of the Agreement. For purposes of this Agreement, ***"Environmental Laws and Regulations"*** shall mean all present and future federal, state and local laws and all rules and regulations promulgated thereunder, relating to pollution or protection of the environment.

i. PRECORP shall have the sole right to terminate this Agreement, without cause, from and after five (5) years from date of execution of this Agreement. PRECORP shall exercise its right of termination, at its sole option, by delivery to SASOL of written notice stating the date of termination. From and after the effective date of termination, this Agreement shall be fully and finally terminated with neither SASOL nor PRECORP having any further obligation or liability to the other,

excepting only the obligation of PRECORP to fulfill its reclamation obligations as set forth below.

j. This Agreement shall inure to the benefit of and shall be binding upon the successors-in-interest of SASOL and PRECORP.

k. SASOL hereby waives and releases all rights under and by virtue of the homestead exemption laws of the State of Wyoming.

l. PRECORP shall reclaim the Leased Premises upon termination of this Agreement and remove all equipment and improvements within a reasonable period of time after termination. PRECORP shall reclaim the Leased Premises to the reasonable satisfaction of SASOL. Upon completion of reclamation and removal activities, PRECORP will return possession of the Real Property to SASOL and PRECORP will file any and all releases necessary or convenient to document termination of this Agreement, or as SASOL may request, in the records of the County Clerk, Johnson County, Wyoming.

m. PRECORP shall peaceably surrender possession and occupancy of the Leased Premises upon termination of this Agreement.

n. In the event PRECORP fails to pay any rental payment, or fails to abide by any material provision of this Agreement, the same shall be a default of this Agreement and SASOL may give PRECORP written notice of the default (***"Default"***). If PRECORP does not cure the Default within sixty (60) days after the notice of the Default, SASOL may terminate all of the rights of PRECORP under this Agreement. In that event, SASOL shall have the right to sue PRECORP for any and all damages, together with all other remedies as provided by law or equity. In

the event there is a default by SASOL with respect to any material provisions of this Agreement, PRECORP may give SASOL written notice of the Default. After notice of Default, SASOL shall have sixty (60) days in which to cure the Default. If SASOL does not cure the Default within sixty (60) days after notice of Default, PRECORP may terminate this Agreement, and/or PRECORP shall have any and all remedies as provided by law or equity.

o. Amendments and alterations to this Agreement shall be in writing and shall be signed by all parties. No oral amendment or oral alteration of this Agreement shall be binding upon either Party unless reduced to writing and signed by both Parties. The rights of SASOL and PRECORP under this Agreement shall be cumulative and failure on the part of either Party to exercise promptly any rights pursuant to this Agreement shall not operate to forfeit any of SASOL'S or PRECORP'S respective rights hereunder.

p. It is understood and agreed that all personal property and improvements of any kind or nature placed upon the Real Property by PRECORP shall be at PRECORP's risk and SASOL shall not be liable to PRECORP for any damage to PRECORP's personal property or improvements by reason of fire, water damage or any act of God. SASOL and PRECORP further agree all improvements, fixtures, personal property, equipment, facilities and components thereof, of whatever kind or nature, placed upon the Leased Premises by PRECORP shall be and remain the sole property of PRECORP (even after termination of this Agreement) and SASOL will not, under any circumstances, acquire any ownership interest in or rights to this property unless mutually agreed by SASOL and PRECORP.

q. This Agreement shall not be assignable without the prior express written consent of the non-assigning party except for change of ownership and/or company mergers.

r. This Agreement may be executed by the parties by their signatures on separate signature pages, whether original, photocopies, email or facsimile copies. This Agreement shall be binding and in full force and effect when so signed by both parties.

DATED This 26th day of SEPT., 2013

SASOL:

SASOL SYNFUELS INTERNATIONAL PTY LTD 900 Threadneedle, Suite 100, Houston TX 77079

(Authorized individual for SASOL)

8/30/13

PRECORP:

POWDER RIVER ENERGY CORPORATION

MICHAEL E. EASLEY, CEO

(CORPORATE SEAL)

STATE OF TEXAS)
)ss
COUNTY OF HARRIS)

The above and foregoing Lease Agreement was subscribed and sworn to before me by Mark Schnell as for SASOL SYNFUELS INTERNATIONAL PTY LTD. this 4th day of September, 2013

Witness my hand and official seal.

Donna Roscette Houston
Notary Public

DONNA ROSCETTE HOUSTON
Notary Public, State of Texas
My Commission Expires
August 18, 2015
SEAL

My Commission Expires: August 18 2015

****

STATE OF WYOMING)
)ss
COUNTY OF CROOK)

On the 26th day of SEPT., 2013, Michael E. Easley appeared before me, was personally known to me and after being duly sworn upon his oath stated he was the CEO of Powder River Energy Corporation, the seal affixed to the instrument was the corporate seal of the corporation, the instrument was signed and sealed on behalf of the corporation of its board of directors and he executed this instrument on the behalf of the corporation and acknowledged it to be the free act and deed of the corporation.

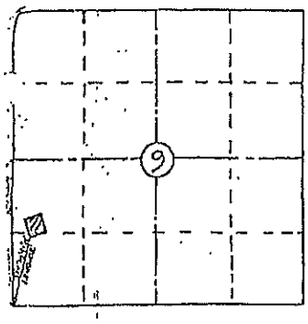
Witness my hand and official seal.

Betty A. Stiles
Notary Public

SEAL

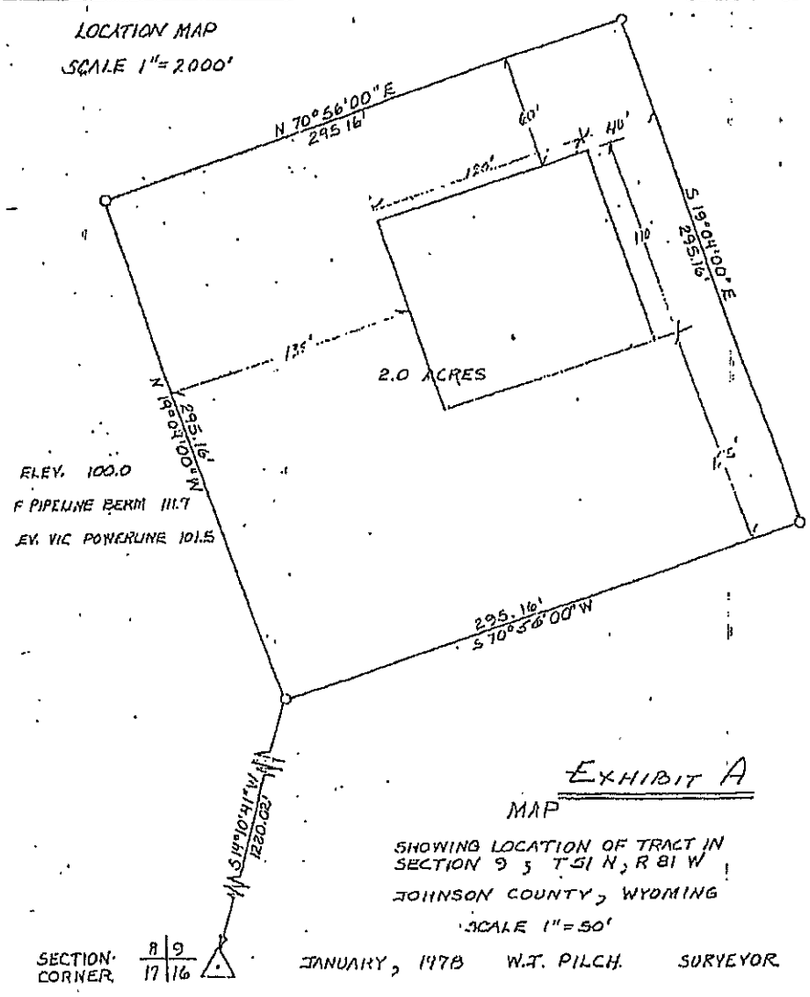
My Commission Expires: Jan. 11, 2014

Attachment
Exhibit A
Clear Creek Substation Lease



LOCATION MAP
SCALE 1"=2000'

SCALE 1"=50'



ELEV. 100.0
F PIPELINE BERM 111.7
EV. VIC POWERLINE 101.5

SECTION CORNER: 8 | 9 / 17 | 16

EXHIBIT A
MAP
SHOWING LOCATION OF TRACT IN
SECTION 9 ; T51 N, R 81 W
JOHNSON COUNTY, WYOMING
SCALE 1"=50'

JANUARY, 1978 W.T. PILCH SURVEYOR

NON-EXCLUSIVE LIMITED LEASE FOR PUBLIC ACCESS
Between
M&M RANCH ACQUISITION COMPANY, LLC
And the
WYOMING GAME AND FISH COMMISSION
At
HEALY RESERVOIR
JOHNSON COUNTY, WYOMING

This Non-exclusive Limited Lease for Public Access (Lease) is entered into this 23rd day of May 2007, by and between M&M RANCH ACQUISITION COMPANY, LLC, a Delaware limited liability company, whose address is 1407 West North Temple, Salt Lake City, Utah 84116 (M&M Ranch), and the STATE OF WYOMING, WYOMING GAME AND FISH COMMISSION located at 5400 Bishop Boulevard, Cheyenne, Wyoming 82006 (Commission.)

RECITALS

A. M&M Ranch owns certain real property located in Johnson County, Wyoming known as Healy Reservoir which is generally depicted on Exhibit A and described on Exhibit A (Property.)

B. M&M Ranch and the Commission desire to cooperatively develop a public access area at Healy Reservoir for the purpose of providing vehicular public access, public boat launching facilities and public fishing opportunities.

C. M&M Ranch has used and will continue to use the Property for its purposes and shall continue to use the Property for the construction, operation, maintenance, repair, and replacement of facilities and equipment as needed by M&M Ranch.

TERMS AND CONDITIONS

NOW, THEREFORE, in consideration of the mutual promises and covenants and other consideration, the receipt and sufficiency of which is hereby acknowledged and received, M&M Ranch leases the Property to the Commission according to the following terms and conditions:

1. General Public Access. Access to Healy Reservoir will be provided for the public to use the Property for recreational purposes for parking, boating and fishing only. These recreational activities shall be provided to the public free of charge, with the following limitations.

a. Public motorized travel will be limited to designated roads only.
b. Use areas will be marked by signs as "Day Use Only" and "No Camping."
c. Firearms restrictions. (See Paragraph #12)
d. Boating restrictions will be established by Game and Fish Commission regulations. (See Paragraph #10) in accordance with the State of Wyoming rulemaking process.

e. Fishing restrictions will be established by Game and Fish Commission regulations. (See Paragraph #9) in accordance with the State of Wyoming rulemaking process.
f. The limitations in this enumerated paragraph may be changed only when agreed upon in writing by both parties.
g The Commission shall have sole responsibility for enforcement of the foregoing limitations and restrictions.

2. Installation of Facilities, Improvements and Maintenance. The Commission shall cause the construction of facilities and improvements, as reasonably required, for public access to the Property as detailed on Exhibit A at no cost to M&M Ranch. Exhibit A may be subject to modification upon mutual, written agreement between the parties. No other improvements or facilities shall be constructed without the written approval of M&M Ranch.

3. Signage. Appropriate signs shall be placed:

a. Indicating the locations of public access and use of the Property.
b. Indicating the boundaries of the Property.
c. Explaining restrictions on public use of the Property.
d. Explaining the cooperative efforts of the Commission and M&M Ranch for public access and use of the Property.

The text of all signage shall be approved by M&M Ranch. The Commission shall be responsible for all costs associated with sign fabrication, placement and maintenance.

4. M&M Ranch Not Obligated for Costs. This Lease does not and shall not obligate M&M Ranch to pay any present or future costs associated with the development, maintenance or operation of the public access facilities to be constructed in accordance with this Lease.

5. Purposes and Intent and Limitation of Liability. Public access to and use of the Property shall be subject to the provisions set forth in Sections 34-19-101 through 106 of the Wyoming Statutes entitled "Liability of Owners of Land Used for Recreation Purposes." The Commission does not waive its sovereign immunity by entering into this Lease and fully retains all immunities and defenses pursuant to W.S. 1-39-104(a) and other law.

6. Reservation of Use. M&M Ranch reserves, in its sole discretion, the right to use and to enter the Property for any purpose and to install and maintain facilities and improvements in connection therewith, and to exclude the public from hazardous areas.

7. Termination of Lease and Events upon Termination or Expiration. M&M Ranch may terminate this Lease for any reason, at any time, in M&M Ranch's sole discretion. Nevertheless, under current conditions, it is M&M Ranch's intent to continue this Lease indefinitely until such time as the Property may be necessary for development of M&M Ranch's other land and water resources in Johnson County, Wyoming. In the event M&M Ranch intends to terminate this lease, and public access to the Property, M&M Ranch shall give the Commission 90 days advance written notice that this Lease will terminate at the expiration of the ninety (90) days. (Notice.) The Notice shall describe the Property and this Lease, shall be signed by M&M Ranch

and shall be notarized and may be recorded in the Office of the County Clerk, Johnson County, Wyoming. Upon termination of this Lease, all improvements constructed on the Property shall become the sole Property of M&M Ranch, except the Commission signage.

8. Waiver of Access Fees. M&M Ranch waives payment from the Commission of any and all fees or payments to M&M Ranch for the public access and use of the Property leased to the Commission by this Lease.

9. Fishing Restrictions. The Commission will propose returning Healy Reservoir to statewide creel limits and allow any legal bait, excluding live minnows for the 2008-9-regulation cycle. Any subsequent changes shall first be agreed to by both parties and shall be in accordance with State of Wyoming rule making process.

10. Boating Restrictions. The Commission will propose allowing motorized watercraft on Healy Reservoir but restrict motors to 15 horsepower or less for the 2008-9 regulation cycle. Any subsequent changes shall first be agreed to by both parties and shall be in accordance with State of Wyoming rule making process

11. Fisheries Management. The Commission is responsible for fishery management at Healy Reservoir including stocking and regulations. For the foreseeable future the Game and Fish plans to manage the reservoir by stocking and introducing Tiger Muskie to control White Sucker and Yellow Perch numbers.

12. Firearms. Discharge of firearms on the Property shall be prohibited.

13. Closure of Highway 16 Access. There are several Commission access signs on the right-of-way fence on the west side of Highway 16, directly adjacent to the Healy Reservoir embankment indicating public access to the Property directly from Highway 16. The Commission shall remove these signs and replace them with signs indicating that there shall be no direct public access from Highway 16 over the embankment and that all public access shall be through the public access road as indicated by the Commission signage.

14. Subject to Mortgage and Indenture. This Lease is granted subject to all mortgages, indentures, and all other existing rights now or hereafter of record.

15. Term, Expiration; and Abandonment. This Lease term shall be for three (3) years, commencing on the 23rd day of May, 2007. The Lease term shall automatically renew on an annual basis unless M&M Ranch gives written notice to the Commission at least ninety (90) days prior to the date of expiration indicating its intent not to extend the Lease for the additional annual term (Notice.) In the event the lease in not renewed, the Commission shall have ninety (90) days from the Notice to remove all of the Commission's signage from the Property. The Notice shall describe the Property and this Lease, shall be signed by M&M Ranch and shall be notarized and may be recorded in the Office of the County Clerk, Johnson County, Wyoming. Upon termination of this Lease, all improvements constructed on the Property shall become the sole Property of M&M Ranch, except the Commission signage.

16. No Public Dedication. The provisions of this Lease are not intended to and do not constitute a dedication for public use of the Public Access Area or any part of the Property, and the rights herein created are private and for the benefit only of the parties.

17. Notices. Notices required herein shall be in writing and shall be given by personal delivery or by deposit in the United States mail, Certified Mail, Return Receipt Requested (which receipt shall be preserved as evidence of delivery), postage prepaid, addressed to M&M Ranch and the Commission at the addresses set forth on Exhibit B.

18. Choice of Law. This instrument shall be construed in accordance with the laws of the State of Wyoming. The Courts of the State of Wyoming shall have jurisdiction over this instrument and the parties, and the venue shall be the 1st Judicial District, Laramie County, Wyoming

19. Acceptance of the Property. Commission has examined the Property and accepts it in its present condition, AS-IS and with all faults. M&M Ranch makes no representation or warranty as to the present or future condition of the Property and shall not be required to perform, pay for, or be responsible for any work to ready the Property for Lessee's occupancy or any other work whatsoever throughout the term of this Lease to repair, maintain or improve the Property.

20. Notice of Damages or Theft. Commission shall notify M&M Ranch of any mortality, theft, vandalism, loss, or damage on or to the Property as soon as possible and in any event within twenty-four (24) hours of the discovery of any such event.

21. Successors and Assigns. The rights and obligations of the parties under this lease shall be binding upon and shall benefit their respective successors and assigns.

22. Liabilities of M&M Ranch. In the event M&M Ranch transfers the ownership of all or any part of the Property, M&M Ranch shall not be liable for the breach, subsequent to such transfer, of any of the covenants contained herein, so long as such breach was not the fault of M&M Ranch.

23. Third Party Beneficiaries. The parties do not intend to create in any other individual or entity the status of third party beneficiary, and this Lease shall not be construed so as to create such status. The rights, duties and obligations contained in this Lease shall operate only between the parties to this Lease, and shall inure solely to the benefit of the parties to this Lease. The provisions of this Lease are intended only to assist the parties in determining and performing their obligations under this Lease. The parties to this Lease intend and expressly agree that only parties signatory to this Lease shall have any legal or equitable right to seek to enforce this Lease, to seek any remedy arising out of a party's performance or failure to perform any term or condition of this Lease, or to bring an action for the breach of this Lease.

24. Amendments. This Lease may only be amended by mutual written consent of the parties.

25. Termination of Lease by the Commission. In the event the Commission desires to terminate this Lease, the Commission shall give M&M Ranch ninety (90) days written notice that the Lease will terminate in ninety (90) days. The Notice shall describe the Property and this Lease, shall be signed by the Commission and shall be notarized and may be recorded in the Office of the County Clerk, Johnson County, Wyoming. Upon termination of this Lease, all

improvements constructed on the Property shall become the sole Property of M&M Ranch, except the Commission signage.

26. Counterpart Execution. This document may be executed and acknowledged in counterparts, all of which executed and acknowledged counterparts shall together constitute a single document. Signature and acknowledgment pages may be detached from the counterparts and attached to a single copy of this document to form physically one document, which may be recorded.

M&M RANCH ACQUISITION COMPANY, LLC

By: _____

Title: Vice Pres. & General Counsel

May 23, 2007
Date

STATE OF WYOMING,
WYOMING GAME & FISH COMMISSION

_____
Gregg Arthur, Deputy Director
Wyoming Game & Fish Department

May 17, 2007
Date

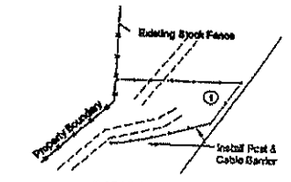
ATTEST:

_____
Richard Reynders, Chief Fiscal Officer

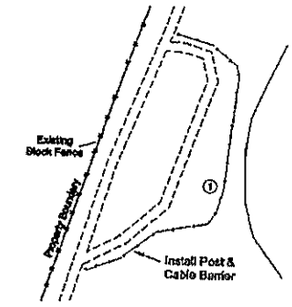
APPROVED AS TO FORM:

_____
Levi Martin, Senior Assistant Attorney General

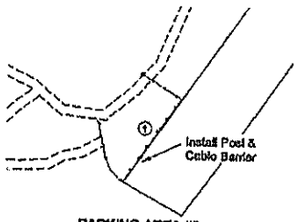
M & M RANCH - HEALY RESERVOIR
EXHIBIT A



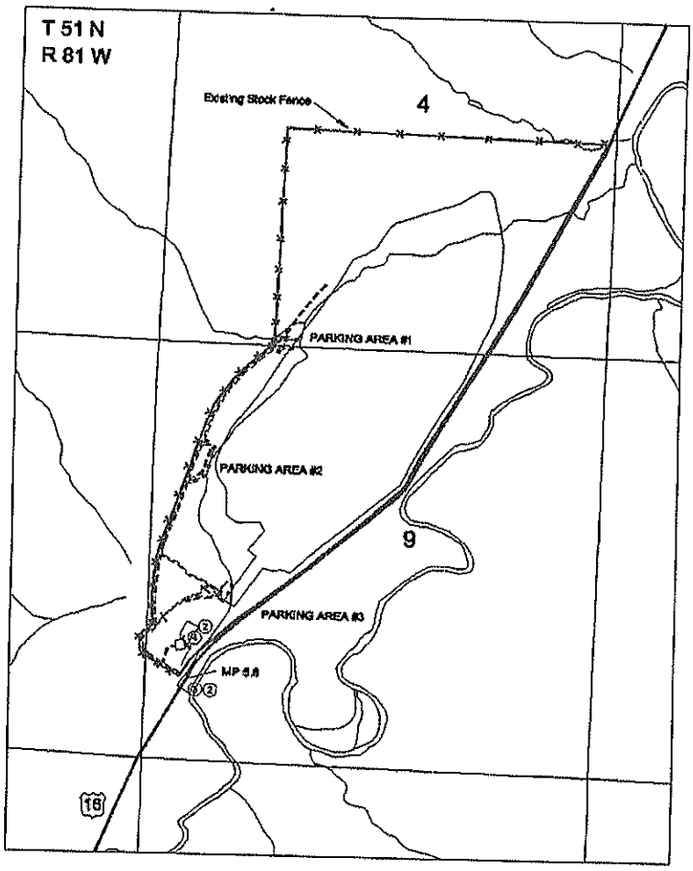
PARKING AREA #1
SCALE 1" = 100'



PARKING AREA #2
SCALE 1" = 100'



PARKING AREA #3
SCALE 1" = 100'



DEVELOPMENT LEGEND

① PLI-264 Parking Lot Information (48"x36")
② RM-80-185 Highway Guide Sign Fishing (42"x36")
③ RM-68-L Left Arrow (24"x18")
④ RM-68-R Right Arrow (24"x18")
— Road Closed
Post and Cable Barrier
Existing Stock Fence, Wire

AA:	M & M Ranch - Healy Reservoir
DWG. NO.:	MA-121 DEVELOPMENT MAP
REVISED:	9/26/07 BY: KATHY DILLON
REVISED:	BY:

EXHIBIT B
NOTICES

M&M RANCH ACQUISITION COMPANY, LLC

Rob Lasich
VP, General Counsel
PacifiCorp Energy
1407 W North Temple
Salt Lake City, UT 84116
Tel: (801) 220-4213
E-Mail: rob.lasich@pacificorp.com

And
Scott Williams, Manager
M&M Ranch
807 Red Cloud Lane
P. O. Box 865
Buffalo, WY 82834
Tel: (307) 684-7073
E-Mail: Swilliams@midamerican.com

With copy to:

David F. Palmerlee
Palmerlee & Durrant, LLC
11 North Main Street
Buffalo, WY 82834
Tel: (307) 684-5454
E-Mail: dpalmerlee@vcn.com

WYOMING GAME AND FISH COMMISSION
Gregg Arthur, Deputy Director
5400 Bishop Blvd.
Cheyenne, WY 82006
Tel: (307) 777-4504
E-Mail: Gregg.Arthur@wgf.state.wy.us

With copies to

Paul Mavrakis
Regional Fisheries Supervisor
700 Valley View Drive
Sheridan, WY 82801
Tel: (307) 672-8003 x 236
E-Mail:Paul.Mavrakis@wgf.state.wy.us

Dave Dearcorn
Habitat and Access Supervisor
700 Valley View Drive
Sheridan, WY 82801
Tel: (307) 672-8003 x 240
E-Mail:David.Dearcorn@wgf.

WATER PURCHASE AND DELIVERY AGREEMENT

This Agreement is made and entered into by and between SASOL CHEMICALS (USA) LLC, a Delaware limited liability company, with a mailing address of 12120 Wickchester Lane, Houston, Texas 77079, ***("Sasol")***, and Jack Morey, whose address is 39 North Main Street, Buffalo, WY 82834 ***("Morey")***, and Dave Belus, whose address is P.O. Box 327, Buffalo, WY 82834 ***("Belus")***.

WHEREAS, Sasol owns water stored in Lake DeSmet Reservoir, Johnson County, Wyoming ***("Sasol Water")*** and,

WHEREAS, Sasol owns the Lake DeSmet Clear Creek Pipeline ***("Pipeline")*** in which there is an existing blow off valve located on Sasol property ***("Valve")*** and,

WHEREAS, water released from the Valve flows into Moore Reservoir and,

WHEREAS, Belus controls the release of water out of Moore Reservoir;

NOW THERFORE, Sasol agrees to sell and Morey agrees to purchase Sasol Water from Sasol ***("Purchase Water")*** and Belus agrees to release water out of Moore Reservoir in accordance with the terms and conditions of this Agreement;

1. The Purchase Water shall be delivered as called for by Morey only during the months of April through October ***("Water Year")***.

2. Payment terms:

   On or before March 1st of each year within this agreement;

   a. Morey shall submit a written request to Sasol with the total amount of Purchase Water requested for the Water Year ***("Annual Request")***, and

   b. Morey shall pay a one-off non-refundable delivery and administration fee to Sasol in the amount of Five Hundred Dollars ($500.00) ***("Administration Fee")***, and

   c. Morey shall pay to Sasol Fifteen Dollars ($15.00) per acre foot of Purchase Water requested for the Water Year ***("Water Fee")*** in addition to the above Administration Fee.

3. The Water Fee for water not delivered during the Water Year shall be non-refundable, except in the event of unilateral termination by Sasol as described in paragraph 11.

4. The water quality of the Purchase Water delivered to Morey shall be the same quality of the Sasol Water in Lake DeSmet at the time of delivery, whatever it may be, and Sasol does not make any representations or assurances as to that water quality. The Purchase Water is being provided on an "as is, where, is, with all faults" basis. Sasol specifically disclaims any and all warranties, either expressed or implied, including, but not limited tc, the implied warranties or merchantability and fitness for a particular use. The entire risk as to quality of the Purchase

Water is with Morey and Belus as recipients. In no event will Sasol, or its officers, directors, shareholders, employees, managers and partners, be liable for any direct, indirect, incidental, special, consequential, or other damages, including loss of profit, loss of use, arising out of the use of the Purchase Water, even if Sasol has been advised of the possibility of such damages.

5. Sasol shall not be obligated to deliver Purchase Water, in the sole and absolute discretion of Sasol, in the event of Sasol water shortage, low Lake DeSmet water elevations preventing gravity flow to the Pipeline, Pipeline repairs or any other eventuality.

6. Morey acknowledges that release of Purchase Water is subject to Belus's approval.

7. Morey acknowledges that due to the size of the Valve that the volumetric flow is limited and that Purchase Water has the lowest priority amongst all potential water releases out of the Valve. Morey further acknowledges that the Belus Ranch and Balleck Ranch have the first priority water release from the Valve.

8. Sasol shall not be liable to Morey for any losses of any kind whatsoever for failure to deliver Purchase Water to Morey upon termination of this Agreement or for any other reason whatsoever.

9. Morey shall cooperate with Sasol in obtaining administrative approval from the State Engineer's Office as may be necessary to authorize implementation of this Agreement.

10. Morey agrees to the following communication protocol:
    a. Morey shall coordinate with Belus and agree on the proposed water delivery quantity and timeline.
    b. Morey shall communicate the proposed water quantity and release timeline to Sasol, giving Sasol a minimum of 72 hours' notice.
    c. Sasol shall confirm the water quantity and release timeline with Morey.
    d. Morey shall notify Dave Belus of the agreed water quantity and release timeline.

11. Sasol may terminate delivery of Purchase Water to Morey at any time at Sasol's sole and absolute discretion. In the event of unilateral termination by Sasol, as authorized by this section, and as a result, less water is provided to Morey than what was paid for, a refund of any shortfall amount, on a prorated basis (calculated proportionately), shall be provided by Sasol, within 60 days after termination of this agreement.

12. This Agreement may be terminated by any party by giving sixty (60) days written notice to the other parties.

13. Morey specifically waives and disclaims any claim of any kind whatsoever to the Sasol Water, the Pipeline or the Valve based on this Agreement.

14. This Agreement does not create any obligation for Sasol to deliver Purchase Water other than by gravity flow from Lake DeSmet through the Pipeline and specifically does not create any obligation to pump water from the Healy Pump Station into the Pipeline for delivery to Morey.

15. Morey hereby agrees to indemnify and hold harmless Sasol, its officers, directors, shareholders, employees, managers and partners from and against any and all liabilities, losses, damages, costs, expenses (including, without limitation, reasonable attorneys' fees and expenses), causes of action, suits, claims, demands or judgments of any nature arising out of or connected with this Agreement, the Purchase Water, the Pipeline and the Valve.

16. All notices to be given with respect to this Agreement shall be in writing ***("Notice").*** Each Notice shall be sent by registered or certified mail postage prepaid return receipt requested, by facsimile, by email receipt confirmed, via overnight delivery courier service, or in person, to the parties to be notified at the addresses set forth below.

Sasol:

Sasol Chemicals (USA) LLC
Attn: Tim Bennett
12120 Wickchester Lane
Houston, Texas 77079
E-mail: Tim.Bennett@us.sasol.com
Phone: (281) 588-3395

With a copy to:

Sasol Chemicals (USA) LLC
Attention: General Counsel, Law Dept.
12120 Wickchester Lane
Houston, Texas 77079
Facsimile: (281) 252-4799

Morey:

Jack Morey
39 N. Main St.
Buffalo, WY 82834
Telephone No. 307-684-1663
Email: jmorey@jlmengineering.com

Belus:

Dave Belus
P.O. Box 327
Buffalo, WY 82834
Telephone No. 307-684-9623
Email: dlbelus@collinscom.net

17. This Agreement shall continue for two (2) years after the Effective Date at which time this Agreement shall terminate ***("Term").***

18. This Agreement and the terms and conditions hereof apply to and shall be binding on the parties' legal representatives, successors and assignees.

19. Morey shall not assign its rights under this Agreement without the express written consent of both Sasol and Belus. Any assignment without such written consent shall be void.

20. This Agreement contains the entire understanding between the parties. No modification or waiver of any of the terms of this Agreement shall be valid unless made in writing and signed by each of the parties.

21. The Effective Date of this Agreement shall be the 1st day of March, 2017.

22. This Agreement may be executed by the parties by their signatures on separate signature pages, whether original, photocopies, .pdf or other electronic copies or facsimile copies.

23. This Agreement is to be interpreted and construed in accordance with the laws of the State of Wyoming.

Sasol Chemicals (USA) LLC:

By: _____

Name: PIETER POTGIETER

Title: VP, SATELLITE OPERATIONS

Morey:

By: _____

Name: JACK L Morey Jr

Title: OWNER

Belus:

By: _____

Name: Belus Land Corp

Title: President

WOHLBRANDT WATER PURCHASE AND DELIVERY AGREEMENT

This Agreement is made and entered into by and between Sasol Synfuels International Pty Ltd, a corporation incorporated in South Africa, whose address is: 900 Threadneedle, Suite 100, Houston, TX 77075; c/o Scott Williams, Asset & Stakeholder Relations Manager, P. O. Box 865, Buffalo, WY 82834 ***("Sasol")***, and Wohlbrandt Ranch, whose address is: 319 Kumor Road, Buffalo WY 82834 ***("Wohlbrandt").***

WHEREAS, Sasol owns water stored in Lake DeSmet Reservoir, Johnson County, Wyoming ***("Sasol Water")*** and,

WHEREAS, Sasol owns the Lake DeSmet Clear Creek Pipeline ***("Pipeline")*** in which there is an existing blow off valve located on Wohlbrandt property ***("Valve");***

NOW THERFORE, Sasol agrees to sell and Wohlbrandt agrees to purchase Sasol Water from Sasol in accordance with the terms and conditions of this Agreement ***("Purchase Water");***

1. The Purchase Water shall be delivered as called for by Wohlbrandt only during the months of April through October ***("Water Year").***

2. Payment terms:

   On or before March 1st of each year pursuant to this agreement;

   a. Wohlbrandt shall submit a written request with the total amount of Purchase Water requested for the Water Year. ***("Annual Request")***, and

   b. Wohlbrandt shall pay an annual delivery and administration fee to Sasol in the amount of Five Hundred Dollars ($500.00) per year ***("Administration Fee")***, and

   c. Wohlbrandt shall pay to Sasol Fifteen Dollars ($15.00) per acre foot of Purchase Water requested for the Water Year ***("Water Fee")*** in addition to the above Administration Fee.

3. The Water Fee for water not delivered during the Water Year shall be non-refundable, except in the event of unilateral termination by Sasol as described in paragraph 11.

4. The water quality of the Purchase Water delivered to Wohlbrandt shall be that of the Sasol Water in Lake DeSmet at the time of delivery, whatever it may be, and Sasol does not make any representations or assurances as to that water quality. The Purchase Water is being provided on an "as is, where is, with all faults" basis. Sasol specifically disclaims any and all warranties, expressed or implied, including, but not limited to, the implied warranties or merchantability and fitness for a particular use. The entire risk as to quality of the Purchase Water is with Wohlbrandt as recipient. In no event will Sasol, or its officers, directors, shareholders, employees, managers and partners, be liable for any direct, indirect, incidental, special, consequential, or other damages, including but not

limited to loss of profit and/or loss of use, arising out of the use of the Purchase Water, even if Sasol has been advised of the possibility of such damages.

5. Sasol shall not be obligated to deliver Purchase Water, in the sole and absolute discretion of Sasol, in the event of Sasol water shortage, low Lake DeSmet water elevations preventing gravity flow to the Pipeline, Pipeline repairs or any other eventuality.

6. Sasol shall not be liable to Wohlbrandt for any losses of any kind whatsoever for failure to deliver Purchase Water to Wohlbrandt upon termination of this Agreement or for any other reason whatsoever.

7. Wohlbrandt shall cooperate with Sasol in obtaining administrative approval from the State Engineer's Office as may be necessary to authorize implementation of this Agreement.

8. Wohlbrandt agrees to the following delivery procedures:
   a. Wohlbrandt shall give Sasol 48 hours' notice of request for water deliveries.
   b. Wohlbrandt shall authorize Sasol's access to the Valve at any time of the day or night, by use of established roads across Wohlbrandt property.
   c. Wohlbrandt shall not enter any manhole to gain access to the Valve nor shall Wohlbrandt adjust the Valve.
   d. Wohlbrandt agrees to provide and attach irrigation equipment, including an additional valve, water meter, and pipeline to take water away from the manhole location, all of which shall be located outside of the manhole.
   e. Wohlbrandt shall prevent water erosion near the Pipeline caused by leakage or irrigation activities incident to this Agreement.

9. Sasol may terminate delivery of Purchase Water to Wohlbrandt at any time, without notice to Wohlbrandt in Sasol's sole and absolute discretion. In the event of unilateral termination by Sasol, as authorized by this section, and as a result, less water is provided to Morey than was requested, a refund of any shortfall amount, on a prorated basis (calculated proportionately), shall be provided by Sasol, within 60 days after the applicable Water Year time period, above, has ended.

10. Wohlbrandt shall pay for all additional valves, materials or equipment necessary or convenient to deliver Purchase Water to Wohlbrandt.

11. This Agreement may be terminated by either party by sixty (60) days written notice to the other party.

12. Wohlbrandt specifically waives and disclaims any claim of any kind whatsoever to the Sasol Water, the Pipeline or the Valve based on this Agreement.

13. This Agreement does not create any obligation for Sasol to deliver Purchase Water other than by gravity flow from Lake DeSmet through the Pipeline and specifically does not

create any obligation to pump water from the Healy Pump Station into the Pipeline for delivery to Wohlbrandt.

14. Wohlbrandt hereby agrees to indemnify and hold harmless Sasol, its officers, directors, shareholders, employees, managers and partners from and against any and all liabilities, losses, damages, costs, expenses (including, without limitation, reasonable attorneys' fees and expenses), causes of action, suits, claims, demands or judgments of any nature arising out of or connected with this Agreement, the Purchase Water, the Pipeline and the Valve.

15. All notices to be given with respect to this Agreement shall be in writing ***("Notice").*** Each Notice shall be sent by registered or certified mail postage prepaid return receipt requested, by facsimile, by email receipt confirmed, or in person, to the party to be notified at the address set forth below.

Sasol:

Sasol Synfuels International Pty, Ltd.
c/o Scott Williams, Asset & Stakeholder Relations Manager
P. O. Box 865
Buffalo, WY 82834
Telephone No. 307-684-7073
Email: scott.williams@us.sasol.com

With a copy to:

Sasol Chemicals (USA) LLC
Attention: General Counsel, Law Dept.
900 Threadneedle, Suite 100
Houston, TX 77079

Facsimile: (281) 252-4799

Wohlbrandt:

Wohlbrandt Ranch
319 Kumor Road
Buffalo WY 82834

Telephone No. 307-684-2483

16. This Agreement shall continue for three (3) years after the Effective Date at which time this Agreement shall terminate ***("Term").***

17. This Agreement and the terms and conditions hereof apply to and shall be binding on the parties' legal representatives, successors and assignees.

18. Wohlbrandt shall not assign its rights under this Agreement without the express written consent of Sasol and any assignment without such written consent shall be void.

19. This Agreement contains the entire understanding between the parties. No modification or waiver of any of the terms of this Agreement shall be valid unless made in writing and signed by both parties.

20. The Effective Date of this Agreement shall be the 1st day of January, 2015.

21. This Agreement may be executed by the parties by their signatures on separate signature pages, whether original, photocopies, .pdf or other electronic copies or facsimile copies.

22. This Agreement is to be interpreted and construed in accordance with the laws of the State of Wyoming.

Sasol Synfuels International Pty, Ltd.

By: _____
Name: Scott Williams
Title: Asset Manager

REVIEWED
SASOL LEGAL
BY: _____
1/15/15

Wohlbrandt Ranch

By: _____
Name: by Phil Wohlbrandt
Title: President

WYOMING WATER DEVELOPMENT OFFICE

6920 Yellowtail Road
Cheyenne, WY 82002

Phone: (307) 777-7626
wwdc.state.wy.us

Matthew H. Mead
Governor

Commissioners

Nick Bettas — Kellen K. Lancaster
Karen Budd-Falen — Sheridan Little
David Evans — Jeanette Sekan
Gerald E. Geis — Larry Suchor
Clinton W. Glick — Rodney Wagner

Harry C. LaBonde, Jr., P.E.
Director

June 4, 2018

To: Wyoming Water Development Commission

From: Harry LaBonde

Subject: Proposed Level II Study for Lake DeSmet/Healy Reservoir

With the pending purchase of Lake DeSmet Water Assets, it is not too early to think about options for the state to use additional water from Lake DeSmet or improve the operations at Healy Reservoir. As such, I am recommending the WWDC add a Level II Feasibility Study for the upcoming 2019 slate of planning projects. The proposed study, "Lake DeSmet/Healy Reservoir Utilization Study" will evaluate two important issues:

1. Feasibility of constructing a pump station and transmission line to move water from Lake DeSmet (Powder River drainage) to the Tongue River drainage where calls for regulation by Montana place post 1950 water rights at risk of curtailment. With water transfer facilities, Lake DeSmet water could then be used to replace out of priority diversions by Wyoming water users while a Montana call was in place. The list of post 1950 Wyoming water rights includes both municipal and irrigation reservoirs in the Big Horn Mountains as well as direct flow water rights in the basin.
2. Develop the feasibility analysis for constructing a low level outlet pipe in Healy Reservoir. Currently the owner of Healy Reservoir is required to annually pump approximately 2100 AF of irrigation water to Clear Creek for downstream irrigators in the later portion of the irrigation season. Is it cost effective to construct the low level outlet and thereby save the electricity and pump maintenance costs now being incurred?

If approved by the WWDC, staff will add this project to the current planning projects now in the consultant selection process.

WYOMING WATER DEVELOPMENT COMISSION

LEVEL III CONSTRUCTION REPORT

June-2018

PROJECT: Austin-Wall Canal Rehabilitation **SPONSOR:** Austin-Wall Irrigation District

PROJECT DESCRIPTION: Design and construction of water canal sytem improvements

WWDC MANAGER: Ken Mitchell

FUNDING

WWDC Appropriation:	$	1,600,000.00	54.2%	WWDC Account:	Account II
WWDC Grant Amount:	$	1,500,000.00	50.9%	Session Law:	2013, 2014, 2015
WWDC Loan Amount:	$	100,000.00	3.4%	Reversion Date:	2018
Funding Source #2:	Bureau of Reclamation				
Amount:	$	1,350,000.00	45.7%		
Total Project Budget:	$	2,950,000.00	100.0%		

ENGINEERING

Engineer:	Sunrise Engineering		Agreement Date:	Aug-01-2016
Design Fee:	$	312,433.00		
Construction Fee:	$	222,148.00		
Total Fee:	$	534,581.00		

CONSTRUCTION

Bid Opening Date:	May-12-2016		Number of Bids:	9
Low Bidder:	MD Nursery & Landscaping		Range of Bids:	$2M-$3.3M
Engineer's Estimate:	$	2,069,900.00	Agreement Date:	Jun-10-2016
Contractor Amount:	$	2,073,365.00	Construction Time:	195 calander days

MISCELLANEOUS COSTS (Easements, Permits, Title Of Opinion, Title Search etc.)

Misc. Costs	$	165,080.79

PROJECT CLOSEOUT

Final Project Cost:	$	2,773,026.79	Date: 5/21/2018	
WWDC Funding Share:	$	1,411,252.77		
Other Funding Sources:	$	1,361,774.02		
WWDC Reverted Funding:	$	188,747.23		

PROJECT STATUS

This project has been completed and closed out.

WYOMING WATER DEVELOPMENT COMISSION

LEVEL III CONSTRUCTION REPORT

June-2018

PROJECT: Dry Creek Irrigation District Pipeline Replacement 2017

SPONSOR: Dry Creek Irrigation District

PROJECT DESCRIPTION: Design and construction of pipelines and appurtenances necessary to make the project function in the manner intended.

WWDC MANAGER: Ken Mitchell

FUNDING

WWDC Appropriation:	$	670,000.00	100.0%	WWDC Account:	II
WWDC Grant Amount:	$	448,900.00	67.0%	Session Law:	2017
WWDC Loan Amount:	$	221,100.00	33.0%	Reversion Date:	2022
Total Project Budget:	$	670,000.00	100.0%		

ENGINEERING

Engineer:	Sunrise Engineering		Agreement Date:	Nov-06-2017
Design Fee:	$	46,000.00		
Construction Fee:	$	46,000.00		
Total Fee:	$	92,000.00		

CONSTRUCTION

Bid Opening Date:	May-22-2018		Number of Bids:	3
Low Bidder:	Rain For Rent		Range of Bids:	$464k - $691k
Engineer's Estimate:	$	422,685.00	Agreement Date:	est. 6/11/2018
Contractor Amount:	$	464,733.33	Construction Time:	45 Days

MISCELLANEOUS COSTS (Easements, Permits, Title Of Opinion, Title Search etc.)

Misc. Costs

PROJECT CLOSEOUT

Final Project Cost:	Date:
WWDC Funding Share:	
Other Funding Sources:	
WWDC Reverted Funding:	

PROJECT STATUS

This project is in the construction phase.

WYOMING WATER DEVELOPMENT COMMISSION
LEVEL III CONSTRUCTION REPORT
June-2018

PROJECT: Sheridan 4MG WTP Tank **SPONSOR:** City of Sheridan

PROJECT DESCRIPTION: Design and Construction of water storage tank

WWDC MANAGER: Keenan Hendon

FUNDING

WWDC Appropriation:	$ 2,144,000.00	67.0%	WWDC Account:	II
WWDC Grant Amount:	$ 2,144,000.00	67.0%	Session Law:	2015
WWDC Loan Amount:	$ -	0.0%	Reversion Date:	2020

Funding Source #2:	City of Sheridan	
Amount:	$ 1,056,000.00	33.0%

Total Project Budget:	$ 3,200,000.00	100.0%

ENGINEERING

Engineer:	DOWL	Agreement Date:	Oct-26-2015
Design Fee:	$ 220,000.00		
Construction Fee:	$ 220,000.00		
Total Fee:	$ 440,000.00		

Engineer:	DOWL	Agreement Date:	Oct-26-2015
Design Fee:	$ 20,000.00		
Construction Fee:	$ 20,000.00		
Total Fee:	$ 40,000.00		

CONSTRUCTION

Bid Opening Date:	Aug-09-2016	Number of Bids:	2
Low Bidder:	Lillard & Clark	Range of Bids:	$2.1-$2.7M
Engineer's Estimate:	$ 2,315,000.00	Agreement Date:	Sep-13-2016
Contractor Amount:	$ 2,130,000.00	Construction Time:	120

Bid Opening Date:	Apr-19-2018	Number of Bids:	7
Low Bidder:	Triple Creek	Range of Bids:	$128-$276K
Engineer's Estimate:	$ 155,075.00	Agreement Date:	May-10-2018
Contractor Amount:	$ 127,879.00	Construction Time:	45

MISCELLANEOUS COSTS (Easements, Permits, Title Of Opinion, Title Search etc.)

Misc. Costs

WYOMING WATER DEVELOPMENT COMMISSION
LEVEL III CONSTRUCTION REPORT
June-2018

PROJECT: Sheridan 4MG WTP Tank **SPONSOR:** City of Sheridan

PROJECT CLOSEOUT

Final Project Cost:	Date:
WWDC Funding Share:	
Other Funding Sources:	
WWDC Reverted Funding:	

PROJECT STATUS

This Phase II is to complete the Tank's drainline.

WYOMING WATER DEVELOPMENT OFFICE

6920 Yellowtail Road
Cheyenne, WY 82002

Phone: (307) 777-7626
wwdc.state.wy.us

Matthew H. Mead
Governor

Commissioners

Nick Bettas — Kellen K. Lancaster
Karen Budd-Falen — Sheridan Little
David Evans — Jeanette Sekan
Gerald E. Geis — Larry Suchor
Clinton W. Glick — Rodney Wagner

Harry C. LaBonde, Jr., P.E.
Director

DATE: May 22, 2018

AGENCY: Wyoming Water Development Office

PROJECT MANAGER: Keenan Hendon

REGARDING: 2018 Wyoming MOA Applications

On April 1st of 2018, the Wyoming Water Development Office (WWDO) received no MOA applications to fund projects located in the Colorado River Basin.

Currently, there are five WY MOA projects that are being managed by the U.S. Bureau of Reclamation. 2017's Upper Green Remote Sensed Data project received comments on May 1, 2018 from Reclamation and requested a revised application. Please find the revised 2017 Upper Green River Remote Sensed Data application.

In order to receive MOA funds, potential projects need to be ranked by the Wyoming Water Development Commission (WWDC) and submitted to the Upper Colorado River Commission for review and final approval.

Please find the following Wyoming MOA project funding information below:

- MOA Agreement executed 1/24/2011- - funds first available in the 2012 federal fiscal year
- MOA Agreement expires 9/30/2025
- Total anticipated WY MOA funds per agreement: $ 24,200,491
- Previously submitted WY MOA Project Under Review:
  - Upper Green River Remote Sensed Data $ 210,000
- Previously funded WY MOA projects: $ 18,734,294
  - Flaming Gorge Aquatic Invasive Species Prevention
  - Big Sandy Reservoir Improvements
  - Stateline Dam Spillway Improvements
  - Farson Lateral Phase I
  - Black Fork River Gauging Station
- Total remaining anticipated WY MOA funds: $ 10,853,197
- Total remaining anticipated WY MOA funds: $ 5,256,197

PROPOSED PROJECT JUSTIFICATION

Item/Activity: Upper Green Remote Sensed Data for Consumptive Use

State: Wyoming

Project Manager: Provo Area Office; Upper Colorado Regional Office

State's Point of Contact:

Keenan Hendon
Wyoming Water Development Office
6920 Yellowtail Rd
Cheyenne, WY 82002
307-777-7626 or keenan.hendon@wyo.gov

Federal Project or Program: The following Federal Projects and the Green River Basin would benefit from the collection of the remote sensed data for Consumptive Use:

- Big Sandy Reservoir
- Eden Reservoir
- Fontenelle Reservoir
- Meeks Cabin Reservoir
- Flaming Gorge Reservoir

Legislative Authority: P.L. 84-485, Colorado River Storage Project Act, April 11, 1956

Origination Date: Not applicable

Revision Date: Not applicable

Estimated Cost: $210,000 for data analysis (this amount includes $10,000 for Reclamation's estimated administration costs).

Project Type: Water Management, Water Efficiency, Consumptive Use, Improve Efficiency and Operation

Description of Item: Funding is being requested to continue the Wyoming State Engineer's Office (SEO) Consumptive Use Program in the Green River Basin (Program). The Program has several components, one of which has been to assess the use of remote sensed data (gathering information or data from a distance, e.g., satellite imagery) to assess the consumptive use of water from irrigated parcels. The remote sensed data has shown great promise in enhancing Wyoming's ability to monitor consumptive use and understand water demands relative to compact appropriations in the basin. To support this work, the SEO has installed and operates ten agricultural weather stations in the basin. To date, the SEO has processed imagery using the METRIC™ energy balance method during two complete growing seasons (2011 and 2015). Additional years of imagery processing are needed to more fully develop SEO's understanding of the relationship between water supply and consumptive use. The Green River Basin Consumptive Use Program was initiated in 2006 and funded by SEO. Due to recent budget reductions to SEO, the agency no longer has the available funds to continue the program. The requested MOA funds would be used by the Bureau of Reclamation to procure the services to process the remote sensed data using METRIC™. The remote

sensed data would be processed to provide monthly estimates of consumptive use for two growing seasons (April-October) during the period of 2016-2020. The years chosen for processing will be based on assessment of image quality during satellite data collection for each growing season.

Construction/Installation Schedule: Project scheduling would be coordinated between Reclamation and the Wyoming State Engineer's Office.

Condition: Not applicable

Cost Effectiveness: No economic analysis has been completed. However, collection and analysis of the Upper Green remote sensed data would be practical in developing solutions to improve delivery and efficiency, energy conservation, reduced operations and maintenance, and improved water management.

Benefits: Collection and analysis of the Upper Green remote sensed data would be practical in developing solutions to improve delivery and efficiency, energy conservation, reduced operations and maintenance, and improved water management.

Alternatives Considered: No alternatives were considered. The identified Project is part of the Wyoming State Engineer's Office's Consumptive Use Program in the Green River Basin. The Consumptive Use Program has been operating for several years. The proposed funding would allow the Wyoming State Engineer's office to complete Consumptive Use analysis using METRIC™.

Recommended Alternative: The recommended alternative is to pursue the proposed use of METRIC™ to process the remote sensed data of the Upper Green River Basin.

Impacts if Schedule Delayed: The Wyoming State Engineer's Office, Wyoming water users and managers will be impacted through Project delays. Wyoming's ability to implement and benefit from improved delivery and efficiency, energy conservation, reduced operations and maintenance, improved water management would be impacted.

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Regional Office
125 South State Street, Room 8100
Salt Lake City, UT 84138-1102

MAY 1 2018

RECEIVED
MAY 04 2018
WY WATER DEVELOPMENT OFFICE

IN REPLY REFER TO:

UC-2010
PRJ-2.00

Keenan Hendon, P.E.
Wyoming Water Development Office
6920 Yellowtail Road
Cheyenne, WY 82002

Dear Mr. Hendon:

Subject: Follow up on Upper Green River Remote Sensed Data for Consumptive Use Proposal Under the Basin Fund Memorandum of Agreement (MOA)

We apologize for the delay in following up with the actions identified in our August 28, 2017, letter regarding the subject proposal from the State of Wyoming. In that letter, we noted that the proposal was not clear as to how the necessary services were to be acquired, did not appear to include administrative costs, and that we would respond with a marked copy of the proposal. A marked copy of your proposal is attached with recommended revisions to your proposal, and reflecting Reclamation's estimate of $10,000 of administration costs to procure and administer the required contract.

Though we have been delayed in getting this response to you, we have not neglected the project. A project management plan has been developed and staff assigned. Our staff has done market research and been able to find a capable and interested source for performing the analysis, in addition to the sources you provided previously. Thank you for providing our staff a copy of the requirements statement the State used to procure the services previously. We will be starting our procurement process soon, and that requirements statement will be very helpful.

If you have any questions about this letter, please contact your Reclamation POC; or Mr. Mike Ward at 801-524-3761.

Sincerely,

Brent Rhees
Regional Director

Enclosure

cc: UC-2000 (SWiser), UC-2010 (MWard), UC-241 (MBainson), UC-2011 (JDFlores)

Identical Letter Sent To:

Mr. Don Ostler
Upper Colorado River Commission
355 South 400 East
Salt Lake City, UT 84111-2969

Amy Haas
Upper Colorado River Commission
355 South 400 East
Salt Lake City, UT 84111-2969

PROPOSED PROJECT JUSTIFICATION

Item/Activity: Upper Green Remote Sensed Data for Consumptive Use

State: Wyoming

Project Manager: Provo Area Office; Upper Colorado Regional Office

State's Point of Contact:

Keenan Hendon
Wyoming Water Development Office
6920 Yellowtail Rd
Cheyenne, WY 82002
307-777-7626 or keenan.hendon@wyo.gov

Federal Project or Program: The following Federal Projects and the Green River Basin would benefit from the collection of the remote sensed data for Consumptive Use:

- Big Sandy Reservoir
- Eden Reservoir
- Fontenelle Reservoir
- Meeks Cabin Reservoir
- Flaming Gorge Reservoir

Legislative Authority: P.L. 84-485, Colorado River Storage Project Act, April 11, 1956

Origination Date: Not applicable

Revision Date: Not applicable

Estimated Cost: ~~$200,000~~ 210 for data analysis (This includes $10,000 for Reclamation's estimated administration costs.)

Project Type: Water Management, Water Efficiency, Consumptive Use, Improve Efficiency and Operation

Description of Item: Funding is being requested to continue the Wyoming State Engineer's Office (SEO) Consumptive Use Program in the Green River Basin (Program). The Program has several components, one of which has been to assess the use of remote sensed data (gathering information or data from a distance, e.g., satellite imagery) to assess the consumptive use of water from irrigated parcels. The remote sensed data has shown great promise in enhancing Wyoming's ability to monitor consumptive use and understand water demands relative to compact appropriations in the basin. To support this work, the SEO has installed and operates ten agricultural weather stations in the basin. To date, the SEO has processed imagery using the METRIC™ energy balance method during two complete growing seasons (2011 and 2015). Additional years of imagery processing are needed to more fully develop SEO's understanding of the relationship between water supply and consumptive use. The Green River Basin Consumptive Use Program was initiated in 2006 and funded by SEO. Due to recent budget reductions to SEO, the agency no longer has the available funds to continue the program. The requested MOA funds would be used by the Bureau of Reclamation to procure the services to process the remote sensed data using METRIC™. The remote sensed data would be processed to provide monthly estimates of consumptive use for two growing seasons (April-October) during the period of 2016-2020.

The years chosen for processing will be based on assessment of image quality during satellite data collection for each growing season.

Construction/Installation Schedule: Project scheduling would be coordinated between Reclamation and the Wyoming State Engineer's Office.

Condition: Not applicable

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Alternatives Considered: No alternatives were considered. The identified Project is part of the Wyoming State Engineer's Office's Consumptive Use Program in the Green River Basin. The Consumptive Use Program has been operating for several years. The proposed funding would allow the Wyoming State Engineer's office to complete Consumptive Use analysis using METRIC™.

Recommended Alternative: The recommended alternative is to pursue the proposed use of METRIC™ to process the remote sensed data of the Upper Green River Basin.

Impacts if Schedule Delayed: The Wyoming State Engineer's Office, Wyoming water users and managers will be impacted through Project delays. Wyoming's ability to implement and benefit from improved delivery and efficiency, energy conservation, reduced operations and maintenance, improved water management would be impacted.

WYOMING DRINKING WATER STATE REVOLVING FUND (DWSRF)
FY2019 INTENDED USE PLAN

The Wyoming Department of Environmental Quality (DEQ), the Office of State Lands and Investments (OSLI), and the Wyoming Water Development Office (WWDO) jointly administers the DWSRF. As required each year the Intended Use Plan (IUP) is revised and updated. The IUP identifies the proposed uses of the funds available through the DWSRF program during the upcoming funding year. The draft IUP is required to be presented to the public at a public hearing and then submitted to the Legislative Select Water Committee for their review and recommendation. A public hearing was held on May 25, 2018, to discuss the draft 2019 DWSRF IUP and to solicit public comments prior to the finalization of the IUP. No comments were received at or prior to the public hearing. Public entities with unranked eligible projects that would qualify for the program were also encouraged to notify OSLI, DEQ, or WWDO in order to rank and include them in the new draft IUP, allowing the projects to become eligible for program assistance.

The draft IUP contains a priority ranked listing of the currently identified publicly owned drinking water system projects to address compliance issues and improvements to address system deficiencies. The draft IUP prioritizes and ranks potential projects based upon several factors. These factors include addressing public health issues, resolving compliance issues, and correcting system deficiencies. It is important to include projects in the draft IUP because it keeps these projects eligible for funding. Water system improvement projects that do not appear on this IUP are not eligible to receive loans or funding from the program. The draft FY2019 IUP Priority Ranking List contains 203 projects with estimated costs over $289 million. It is estimated that applicants seeking funding from the program could total nearly $65 million in requests for 2019. The list also shows an estimated $225 million in requests for 2020-2022.

The DWSRF will provide $220,000 of funding to the Wyoming Association of Rural Water Systems (WARWS) to fund two full time positions. The objectives are to provide technical assistance, operator training/assistance and source water protection assistance/guidance to smaller water systems under 10,000 populations. On-site technical assistance efforts would be directed toward unincorporated rural systems, tribal systems, and small municipal/water districts.

As required by the DWSRF State enabling legislation, the draft IUP is being made available to the Select Water Committee for its review and recommendations. A copy of the draft IUP may be viewed on the Wyoming DEQ website. Following review and input from the Select Water Committee, the draft IUP will be submitted to the State Lands and Investment Board for final approval and then to EPA for Agency approval.

Any comments/recommendations can be made to: Wade Verplancke, phone: (307) 777-7626, fax (307) 777-6819, e-mail: wade.verplancke@wyo.gov, mail: Wyoming Water Development Office, 6920 Yellowtail Road, Cheyenne, Wyoming 82002

FACTS AND ACCOMPLISHMENTS OF THE DWSRF TO DATE

To date the DWSRF has provided a total of $267,365,129 to eligible entities throughout the state utilizing 212 loans including the 25 ARRA funded loans.

Current funds available for loans are estimated to be about $141 million, which includes the estimated FY2018 and FY2019 federal cap grants and the 20% state match. Estimated loan applications for the upcoming year total about $65 million.

Please see page 5 of the Draft FY2019 Intended Use Plan for the complete DWSRF Financial Status.

May 2018

Wyoming Department of Environmental Quality
Wyoming Water Development Commission
Wyoming State Loan and Investment Board

Drinking Water State Revolving Fund

DRAFT FY2019 Intended Use Plan

Introduction

The 1996 Safe Drinking Water Act (SDWA) amendments include requirements for each state to prepare an Intended Use Plan (IUP) for each capitalization grant application. The IUP describes how the State will use the Drinking Water State Revolving Fund (DWSRF) to meet SDWA objectives and further the protection of public health. The IUP contains the following elements:

1. Priority List of Projects
2. Criteria and Method for Distribution of Funds
3. DWSRF Financial Status
4. Additional Subsidization
5. Green Project Reserve
6. Short- and Long-term Goals of the Program
7. Description of Set-Aside Accounts and Activities

The Department of Environmental Quality (DEQ), Office of State Lands and Investments (OSLI), and Water Development Office (WDO) prepared the draft IUP and provided it to the public for review and comment. The DWSRF program held a public meeting on the draft IUP on May 16, 2018, in Cheyenne. Appendix 3 summarizes comments and responses from the public meeting. Additionally, pursuant to State law, DEQ, OSLI and WDO submitted the IUP to the Select Water Committee for review, comment and recommendations. The Wyoming State Loan and Investment Board (SLIB) authorized the Final Intended Use Plan at its meeting on June 7, 2018. The Final IUP will be submitted to EPA Region VIII.

Priority List of Projects

Appendix 1 contains the Comprehensive Priority List of public water systems in Wyoming that have expressed interest in the DWSRF, are planning capital improvement projects, have been identified as serious public health risks, have received notices of SDWA violations, or were issued administrative orders. Not all of the projects in Appendix 1 will use SRF funds. Some systems do not yet have major projects planned; the remainder expect to proceed with projects within the next several years. Cost information is not always available. Some systems have not yet completed the feasibility or financing plans for their projects.

The DWSRF program has identified projects most likely to apply for DWSRF funds during the upcoming year. Staff bases this projection on conversations and contacts made from potential

applicants. However, there is nothing implicit that these potential applications have preferential status to receive funding. Actual funding decisions will be made by the SLIB based on actual applications received and criteria determined by SLIB. The DWSRF program has also made conditional awards to fifteen projects. These projects with conditional awards still need to complete the remaining steps for DWSRF funding, either during the remainder of FY2018 or during FY2019. Projects with conditional awards do have preferential status to receive funding.

The Comprehensive Priority List in Appendix 1 identifies the projects that are expected to apply for DWSRF funds during FY2019 or that are expected to complete the remaining steps on conditional funding awards by the end of FY2018 or during FY2019. Their total estimated cost is $225,662,000. The DWSRF program believes these are the projects that will most likely pursue funding; however, other projects from the priority list may proceed before envisioned. The comprehensive priority list also identifies the projects expected to apply for funding during the FY2020-FY2022 timeframe. Their total estimated cost is $221,709,000. All projects on the Comprehensive Priority List are eligible to receive DWSRF loans. The State intends to fund projects in the actual application pool with both first and second round funds as needed to best meet (in the judgment of the State) the various known federal and state requirements, such as those regarding binding commitments, additional subsidization, green project reserve (GPR), and any as yet undetermined requirements.

Criteria and Method for Distribution of Funds

The Safe Drinking Water Act amendments of 1986 and 1996 imposed many new regulatory requirements upon public water suppliers. Public health and compliance problems related to these requirements are the most influential criteria in Wyoming's project ranking system. System deficiencies, as related to public health and compliance, are also considered in the Wyoming ranking system. The financial impact of the proposed project on the system users is also considered; the communities most in need of low interest loans to fund the project are awarded points under the affordability criteria.

A summary of the ranking criteria and scoring is listed below. The complete Wyoming DWSRF Ranking System is attached to this plan as Appendix 2.

1. Public Health Issues - 200 points maximum
2. Compliance Issues - 240 points maximum
3. System Deficiencies that may affect public health or ability to comply - 85 points maximum
4. Affordability - 30 points maximum

Because public health issues may result from a variety of causes, points may be obtained from more than one of the four ranking system categories listed above. For example, any documented public health issue, such as a boil order resulting from bacteriological contamination, would be accompanied by compliance and system deficiencies points. Points are not awarded for any issue which results from operator error. Typically, project proposals that address immediate public health receive the highest overall scores, followed by proposals that address lower risk public health threats, such as chemical contaminants present at low

levels, and then by proposals that address system deficiencies that may not allow compliance with existing or future regulatory requirements before noncompliance occurs.

The Wyoming DWSRF program is required annually to use at least 15% of all funds credited to the DWSRF account to provide loan assistance to systems serving fewer than 10,000 people. Because the majority of systems in Wyoming serve fewer than 10,000 people, this requirement has and will be achieved.

Financial planning:
The State of Wyoming bases its financial planning for the DWSRF on the following factors: fund utilization, Mineral Royalty Grant funds available, and projects ready to proceed. The core loan program interest rate of 2.5% and the special terms under recent capitalization grants have increased loan applications over the last few years. In addition, the loan origination fees and the interest payments are projected to increase as projects are completed and loan repayments begin. Furthermore, the health of the fund will increase with a higher fund utilization rate to replenish the revolving fund.

Interest rates and different types of assistance:
The current market rate is calculated annually in July; the current market rate is 3.80%. The market rate is calculated using the Range of Yield Curve Scales, for Bonds with a rating of BAA for a twenty year period.

Most loans will be made at a 2.5% interest rate; however, loans under the GPR will be made at a 0% interest rate. Repayment periods are up to twenty (20) years on regular loans and up to thirty (30) years on loans to disadvantaged communities. The interest rates were determined based on the following factors: Mineral Royalty Grant funds available, current market rate, and the need to ensure maximum fund utilization. In addition, each applicant will pay a 0.5% origination fee upon completion of loan documents. Some loans will also include forgiveness of a portion of the loan principal under requirements and criteria for awarding additional subsidization. Both additional subsidization and the GPR are discussed further in separate sections of this IUP.

Project funding decisions and bypass procedures:
Historically, the State has been able to fund all eligible projects which actually apply for loan funding, and it expects to be able to continue to do so during FY2018, though not all applicants will likely be able to receive the full amount of principal forgiveness for which they apply. If and when the loan application amounts exceed the funding available for loans, the State will fund projects in order of priority of those that apply that are ready to proceed promptly with construction (or with design work for a design only loan). An exception may apply to projects eligible for the GPR; these projects, in priority order, may bypass higher ranked projects if needed to achieve the minimum GPR funding requirement. Only projects on the priority list will be considered eligible for funding, except in the case of emergencies as described below.

Non-emergency bypass procedures:
Any projects not ready to proceed, or that do not apply, will be bypassed in favor of projects that actually apply. These determinations will be made at the time applications are received and presented to the SLIB. In addition, the State will do as much as possible to make bypassed projects ready to proceed in future years. This effort will include grant and loan seminars and

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video conferences to help applicants arrange funding for their projects. Only projects on the priority list will be considered eligible for funding, except in the case of emergencies as described below.

Emergency bypass procedures:
If SLIB determines that immediate attention is required to protect public health, a project may be funded with DWSRF funds on an emergency basis, even if it is not on the IUP. Any eligible costs would be reimbursable after the project meets all other applicable DWSRF program requirements. An emergency for this purpose refers to a natural disaster or similar event that causes damage or disrupts normal public water system operations and requires immediate action to protect public health and safety.

Cash Draw Ratio:
In FY2019, the DWSRF program will use the grant-specific proportionality method for cash draws. The federal and state ratios for each open grant are calculated in Table 1. Currently the DWSRF program is using the FY2016 grant to pay for project payment requests.

Table 1. Cash Draw Ratio Calculation

Year	Cap Grant	State Match	Set Aside Accounts	Federal	State	Total	Federal Portion	State Portion
2014	$8,845,000	$1,769,000	$530,700	$8,314,300	$1,769,000	$10,083,300	82.46%	17.54%
2015	$8,787,000	$1,757,400	$853,060	$7,933,940	$1,757,400	$9,691,340	81.87%	18.13%
2016	$8,312,000	$1,662,400	$498,720	$7,813,280	$1,662,400	$9,475,680	82.46%	17.54%
2017	$8,241,000	$1,648,200	$494,460	$7,746,540	$1,648,200	$9,394,740	82.46%	17.54%

Data Entry:
The State will perform monthly updates to the DW Projects & Benefits Reporting (PBR) database. In addition, the State will perform monthly updates to the Federal Funding Accountability and Transparency Act Subaward Reporting System (FSRS) to meet the Federal Funding Accountability and Transparency Act as required by the grant conditions of awarded grants.

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DWSRF Financial Status

The following table summarizes the DWSRF financial status.

Table 2. DWSRF financial status as of 4/1/18

	Federal Grant	State Match (20%)	Total
Capitalization grants FY1997 through FY2007	**$91,793,500**	$18,358,700	**$110,152,200**
Capitalization grants FY2008 through FY2009	**$16,292,000**	$3,258,400	**$19,550,400**
ARRA 2009 grant (state match not required)	**$19,500,000**	$0	**$19,500,000**
Capitalization grants FY2010 through FY2015	**$58,019,000**	$11,603,800	**$69,622,800**
Capitalization grant FY2016	**$8,312,000**	$1,662,400	**$9,974,400**
Capitalization grant FY2017	**$8,312,000** **8,241,000**	$1,662,400 1,648,200	**$** **9,889,200.00**
Capitalization grant FY2018 (estimated)	**$0**	$0	**$0**
Capitalization grant FY2019 (estimated)	**$8,312,000**	$1,662,400	**$9,974,400**
Total into DWSRF Accounts	**210,469,500**	38,193,900	**248,663,400**
Set-asides			
- Administration - 4.0% of FY1997 through FY2011 grants			**3,511,733**
Administration – 4.0% for FY2014 through FY2017			**-$1,693,240**
- Administration - portion of reserved amounts from FY2008 through FY2013 grants*			**-$1,009,800**
- Technical Assistance (closed out) – Amount used from FY2001 grant			**-$23,916**
- Source Water Assessment (closed out) - Amount used from FY1997 grant			**-$936,086**
- Small Systems Technical Assistance - <=2% of FY2011 through FY2017 grants			**1,150,700**
Sub-Total Set-asides			**-8,325,475**
Total Loan Principal Repayments			**$93,685,485**
Total Loan Interest Payments			**$29,140,443**
Investment Income earned			**$25,196,085**
Loans (binding commitments)			**-$267,365,129**
Estimated Fund Balance Available to Capital Construction Funding with estimated FY2018 and FY2019 capitalization grants**			**120,994,809**

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*** Program administration set-aside: In previous IUPs, Wyoming reserved the authority to set aside an amount equal to four percent of each capitalization grant from FY2008 through FY2017, including ARRA 2009 (amount reserved from these grants=$5,364,980). Wyoming also reserves the authority to set aside four percent (estimated amount reserved=$329,640) of the FY2019 capitalization grant. Wyoming took administration set-aside totaling $1,693,240 out of the total reserved amount, as part of its FY2016 and FY2017 capitalization grants. Wyoming now plans to take an administrative set aside equal to four percent ($329,640) of the FY2018 capitalization grant. The remaining amount (estimated at $3,380,600 = $5,073,840 + $332,480 - $1,693,240 - $332,480) remains reserved.**

**** As of 3/8/18, $14,874,220 of the estimated fund balance has been conditionally awarded but is not yet under binding commitment. Projects involved are noted on the priority list and are expected to complete the remaining steps for DWSRF funding during the remainder of FY2018 or in FY2019. Another $1,648,690 of conditional awards was made on 4/12/18.**

A more detailed description of set-asides may be found later in this plan. Any unused administrative funds are placed in an account and used for administration in future years. After federal capitalization grants are no longer available the program must rely solely on loan origination fees and State funds.

The State program legislation and rules provide for the collection of a 0.5% loan origination fee which is to be set aside in a separate account to provide for future administration of the DWSRF program. All current and future fees will be placed into an administration account.

Additional Subsidization

Starting with the FY2010 federal capitalization grant, the State must use certain amounts of the capitalization grant to provide additional subsidization to eligible recipients. In addition to that requirement, the State also intends to take a 30% allowance from both the FY2018 and FY2019 capitalization grants to provide additional subsidization to disadvantaged communities, as allowed under federal DWSRF rules. The 30% allowance is estimated to be $2,472,300 for each of these fiscal years. The State provides additional subsidization in the form of loans in which a portion of the principal will be forgiven upon project completion. SLIB determines the actual amount of principal forgiveness awarded to individual projects based on criteria set forth in SLIB Rules and Regulations Chapter 16 and on the actual applications received. The rules base eligibility for principal forgiveness primarily on disadvantaged community criteria that are based on income data, unemployment data, and population trends. The rules also allow eligibility based only on income criteria in cases where principal forgiveness does not need to be linked to disadvantaged community criteria. The rules specify a maximum percentage of principal forgiveness for applicants based on the given criteria. Table 3 shows the status of the additional subsidization requirement.

Table 3. Additional Subsidization Requirement Status as of 4/1/18

Federal Grant Year	Federal Grant Amount	Min. Required Add. Sub.	Max. Allowable Add. Sub.
FY2010	$13,573,000	$4,071,900	$13,573,000
FY2011	$9,418,000	$2,825,400	$9,418,000
FY2012	$8,975,000	$1,795,000	$2,692,500
FY2013	$8,421,000	$1,684,200	$2,526,300
FY2014	$8,845,000	$1,769,000	$2,653,500
FY2015	$8,787,000	$1,757,400	$2,636,100
FY2016	$8,312,000	$1,662,400	$4,156,000
FY2017	$8,241,000	$1,648,200	$4,120,500

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FY2018 (estimated)	0	$0	$4,120,500
FY2019 (estimated)	$8,241,000	$1,648,200	$4,120,500
Totals		$20,509,900	$50,016,900
Additional subsidization under binding commitment			$32,383,340
Additional subsidization conditionally awarded, binding commitment pending (includes additional amount awarded 4/6/17)			$5,272,060
Minimum additional subsidization still required (for FY2018 and FY2019 grants)			$3,324,800
Maximum additional subsidization still available			$8,312,000

Green Project Reserve

Starting with the FY2010 capitalization grant, to the extent there are sufficient eligible project applications, the State must use certain minimum amounts of the capitalization grants to fund projects which address green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities (collectively referred to as "green" projects). This requirement is referred to as the Green Project Reserve, or GPR. Table 4 shows the status of the GPR. The priority list (Appendix 1) shows that sufficient green projects are anticipated to apply for funding or to complete remaining steps on conditional funding awards to meet the minimum required GPR amount. Other projects on the priority lists may be able to show, through a business case or other information, that they also are green projects; these projects too will be considered eligible for award under the GPR. GPR loans will have an interest rate of 0% and will be eligible for principal forgiveness under the criteria established in SLIB rules.

Table 4. Green Project Reserve Status as of 3/1/17

Federal Grant Year	Federal Grant Amount	Minimum GPR %	Minimum GPR
FY2010	$13,573,000	20%	$2,714,600
FY2011	$9,418,000	20%	$1,883,600
FY2012	$8,975,000	0%	$0
FY2013	$8,421,000	0%	$0
FY2014	$8,845,000	0%	$0
FY2015	$8,787,000	0%	$0
FY2016	$8,312,000	0%	$0
FY2017	$8,312,000	0%	$0
FY2018 (estimated)	$0.00	0%	$0
FY2019 (estimated)	$8,312,000	0%	$0
Totals			$4,598,200
GPR amount under binding commitment			$13,428,236
GPR amount conditionally awarded, binding commitment pending			$0
Minimum GPR amount remaining			$0

Short-term Goals

1. To administer the DWSRF program in Wyoming.

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2. To ensure the technical integrity of DWSRF projects through the review of compliance records; outreach efforts including presentations and training at Wyoming Association of Rural Water and Wyoming Water Quality and Pollution Control Association events and conferences; and review of planning, designs/specifications, and construction documents and activities.

3. To ensure the financial integrity of the DWSRF program through the review of the financial impacts of publicly owned public water supplies' loan applications, and the ability for loan repayment.

Long-term Goals

1. To build and maintain a permanent, self-sustaining State Revolving Fund program that will serve as a cost-effective, convenient source of financing for drinking water projects in Wyoming.

2. To provide a financing assistance program to help publicly owned public water supplies afford sustainable infrastructure and to assist them with funds to complete capital improvement projects to maintain and achieve compliance.

3. To work with other federal, state, and local assistance providers to bundle funding packages that address publicly owned public water supplies' most pressing needs.

4. To have the OSLI, the DEQ, and the WDO recommend priorities for financial assistance from the DWSRF program to the Wyoming SLIB.

Set-Asides

The DWSRF may fund certain provisions of the Federal Safe Drinking Water Act, through the use of "set-aside" accounts. The DWSRF Federal and State enabling legislation allows set-aside amounts of the federal drinking water capitalization grant for specific purposes. These set-asides each have different purposes and conditions. Wyoming currently uses an administration set-aside and a technical assistance set-aside. Other set-asides which may be established include state program management and local assistance. The State of Wyoming reserves its right to implement its option to fund allowable set-asides.

Administration Set-Aside:
Wyoming uses the 4% administration set-aside to cover program development, review of water system facilities plans, construction and bid documents, assistance and oversight during planning, design and construction, loan origination work, administering repayments, costs associated with the Select Water Committee and the public comment process, staff salaries, and other associated costs to administer the program.

Wyoming set-aside 4% of the FY1997 - FY2007 capitalization grants for program administration. In previous IUPs, Wyoming reserved the authority to set aside an amount equal to 4% of each capitalization grant from FY2008 through FY2017, including ARRA 2009 (amount reserved from these grants=$5,364,980). Wyoming also reserves the authority to set-aside 4% (estimated amount reserved=$332,480) of the FY2019 capitalization grant. Wyoming took administration

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set-aside totaling $1,693,240 out of the total reserved amount, as part of its FY2016 and FY2017 capitalization grants. Wyoming does not plan to take an administrative set aside from the FY2018 capitalization grant as we will not be applying for the 2018 Capitalization grant. The remaining amount (estimated at $3,671,740 = $5,364,980 + $332,480 - $1,693,240 - $332,480) remains reserved.

Any funds that were set-aside for administration but not actually spent will be placed in an account and used for administration in future years. After federal capitalization grants are no longer available, the program must rely solely on origination fees and State funds. Spending such funds is subject to approval of the Wyoming Legislature, although federal restrictions will limit use of these funds to purposes related to this program.

Technical Assistance for Small Systems Set-Aside:

A state may use up to 2% of its allotment to provide technical assistance to public water systems serving 10,000 people or fewer (section 1452(g)(2)). If a state does not use the entire 2% for these activities against a given allotment, it can bank the excess balance and use it for the same activities in later years. If a state chooses to use funds under this set-aside, EPA encourages states to use available funds to support small system efforts to apply for DWSRF loans. A state may use these funds to support a technical assistance team or to contract with outside organizations to provide technical assistance. Wyoming plans to continue using this set-aside to fund a contract with the Wyoming Association of Rural Water Systems to assist small systems. An updated work-plan will be submitted to USEPA Region VIII for their approval.

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Appendix 1: FY2019 Drinking Water State Revolving Fund - Comprehensive Priority List

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Alta Community Pipeline	1	172	40	Alta Community Pipeline	5600275	E. coli positive samples resulting in boil order 11/16. Upgrades to achieve compliance.	$200	25%	$50				X
Greater Smoot WSD	2	102	260	Greater Smoot W&S District	5601397	TCR violations 8/13 and 9/13. EPA administrative order issued 11/11, and notice of violation of that order issued 2/14. Install system upgrades to resolve these issues, including disinfection facilities.	$220	25%	$55				X
Bear River Regional	3	82	1200	Bear River Regional JPB	5601019	TTHM violations 2014. TCR violation 10/13. EPA administrative order 9/15. System upgrades to achieve compliance.	$200	25%	$50				X
Lusk Treatment or New Source	4	56	1567	Lusk, Town of	5600032	Gross alpha violations 2014. EPA administrative order 9/14. Treatment or new source and/or other upgrades to achieve compliance.	$1,500	75%	$1,125				X
Wheatland Uranium Compliance	5	56	3627	Wheatland, Town of	5600187	Uranium violations 2015. EPA administrative order 3/16. Upgrades to achieve compliance.	$500	75%	$375				X
Owl Creek & S. Thermop New Source Project	6	52	60	Owl Creek and South Thermopolis WD	OCWS - 5601673 STWSD - 5601083	A new well, storage tank, transmission main and pump station to provide an alternate source of water to Owl Creek and South Thermopolis WD's. Owl Creek is under EPA admin order for violation of DBP. They intend to form a new JPB called Hot Springs County JPB	$6,000	75%	$4,500				X
Kennington Springs	7	52	75	Kennington Springs Water District	5601199	EPA administrative order 3/11 and subsequent violation notices and addenda. Construct upgrades to comply with administrative order; options include redevelop existing source, develop new source, regionalization, and possibly others.	$250	25%	$63				X
Owl Creek TTHM	8	45	60	Owl Creek Water District	5601673	TTHM violation 2016. EPA administrative order 9/16. Upgrades to achieve compliance.	$200	75%	$150			X	
Kemmerer-Diamondville TTHM	9	42	3393	Kemmerer-Diamondville JPB	5600028	TTHM violations 2015. EPA administrative order 3/16. Upgrades to achieve compliance.	$250	0%	$0			X	
Laramie Distribution Upgrades	10	40	30816	Laramie, City of	5600029	Replace old, deteriorated and undersized waterlines (cross contamination potential). DWSRF loans have been made for past similar projects.	$4,000	50%	$2,000	WC	1000	X	X
Manderson Tank	11	38	114	Manderson, Town of	5600204	New storage tank to replace old, deteriorated, leaking tank (cross contamination potential).	$654	75%	$491				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Rawlins Treatment Upgrades	12	37	9259	Rawlins, City of	5600045	Treatment plant nearing end of useful life and has recurring EPA sanitary survey deficiencies related to filters. Upgrades and/or replacements.	$4,500	25%	$1,125				X
Rock River DI Replacement	13	36	245	Rock River, Town of		Replace DI transmission mains which are leaking to reduce water losses and potential contamination.	$1,500		$0			X	
Fort Laramie Main Replacements	14	33	230	Fort Laramie, Town of	5600185	Replace old, deteriorated, and undersized water mains (cross contamination potential).	$240	75%	$180				X
Dubois Distribution Improvements	15	33	971	Dubois, Town of	5600177	Replace old, deteriorated, and undersized water mains and appurtenances (cross contamination potential). DWSRF loans have been made.	$378	75%	$284				X
Dubois Lead Corrosion Control	16	33	971	Dubois, Town of	5600177	Lead result above action level. Install corrosion control system.	$100	75%	$75			X	
Clearmont Main Replacements	17	31	142	Clearmont, Town of	5600013	Replace old, deteriorated water mains (cross contamination potential). DWSRF loan has been made.	$200	75%	$150				X
Lusk Well and Distribution Upgrades	18	31	1567	Lusk, Town of	5600032	Rehabilitate or replace existing well, including raise wellhead above grade and eliminate underground vault. Replace and upsize undersized, corroded, and leaking mains (cross contamination potential). Loop deadend mains to improve water quality.	$1,500	75%	$1,125				X
Evansville Deteriorated Main Replacements	19	31	2544	Evansville, Town of	5600018	Replace old, deteriorated waterlines and appurtenances (cross contamination potential).	$1,500	75%	$1,125				X
Mills Distribution Improvements	20	31	3461	Mills, Town of	5600036	Replace old, deteriorated and undersized water lines (cross contamination potential). Replace old, deteriorated service saddles, valves, hydrants, and other appurtenances.	$2,500	75%	$1,875				X
Mills Tank Rehab	21	31	3461	Mills, Town of	5600036	This project involves the rehabilitation and upgrade of the Town's Water Storage Tank #1. This project will replace the interior and exterior tank coating including spot repair of corroded areas, installation of cathodic protection in the tank and the installation of an in-tank mixing system.	$750	75%	$563				X
Torrington Main Replacements	22	31	6501	Torrington, City of	5600164	Replace old, deteriorated water mains and appurtenances (cross contamination potential).	$1,200	50%	$600				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Turnerville Well Project	23	27	192	Turnerville W&SD	5601115	The Turnerville water source (Willow Creek Spring) has been determined by EPA to be under the influence of surface water. This project would remove the spring from the system and drill a new well	$550	50%	$275				X
Meeteetse Lead Corrosion Control	24	27	327	Meeteetse, Town of	5600035	Lead result above action level. Install corrosion control system.	$100	75%	$75				X
Thayne Main Replacements	25	27	366	Thayne, Town of	5600159	Replace old, deteriorated, and undersized water mains (cross contamination potential). DWSRF loans have been made.	$776	75%	$582			X	
Thayne Tank	26	27	366	Thayne, Town of	5600159	Rehabilitate deteriorated tank (cross contamination potential). Construct additional storage tank. DWSRF conditional award 2/17; expected to become binding commitment by end of FY2017 or in FY2018.	$488	75%	$366				X
Encampment Main Replacements	27	27	450	Encampment, Town of	5600060	Replace old, deteriorated, and undersized water mains (cross contamination potential).	$250	75%	$188				X
Hanna Disribution and Meter Upgrades	28	27	841	Hanna, Town of	5600025	Replace old, deteriorated and undersized water lines and appurtenances (cross contamination potential) and install meters. Two phases expected.	$1,624		$0			X	
Hanna Water Mains	29	27	841	Hanna, Town of	5600025	Replace old, deteriorated, and undersized water lines and appurtenances (cross contamination potential). DWSRF loan made for first of several phases. DWSRF conditional award 4/17 for next phase	$770	50%	$385			X	
Greybull Tank	30	27	1847	Greybull, Town of	5600022	Replace old, deteriorated tank (cross contamination potential).	$1,500	50%	$750				X
Greybull Transmission	31	27	1847	Greybull, Town of	5600022	Upgrade old deteriorated transmission mains and appurtenances (cross contamination potential).	$1,000	50%	$500				X
Powell Main Replacements	32	27	6314	Powell, City of	5600042	Replace old, deteriorated, and undersized water mains with some lead joints and cross contamination potential.	$3,000	50%	$1,500			X	
Lander Tank	33	27	7487	Lander, City of	5600176	Replace or rehabilitate deteriorated tanks (cross contamination potential).	$2,000	50%	$1,000			X	
Lander Transmission Upgrades	34	27	7487	Lander, City of	5600176	Replace old, deteriorated, and undersized mains and appurtenances (cross contamination potential). Includes removal of no longer needed pump houses. DWSRF loans have been made (#180).	$1,000	50%	$500			X	

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Riverton Replacements	35	27	10615	Riverton, City of	5600047	Replace old, deteriorated, and undersized mains and appurtenances (cross contamination potential). DW loan #185	$442	50%	$221			X	
Deaver Main Replacements	36	25	178	Deaver, Town of	5600016	Replace old, deteriorated water mains (cross contamination potential). DWSRF loan has been made.	$100	75%	$75				X
Deavor Distribution Improvements	37	25	178	Deaver, Town of	5600016	Replace/update old, inaccurate and leaking water meters and service lines.	$175	75%	$131			X	
Hudson Transmission Main Repair	38	25	458	Hudson, Town of	5600183	Replace failing sections of Transmission Main, (cross contamination potential)	$200	75%	$150			X	
Salt Creek JPB Transmission Improvements	39	25	599	Salt Creek JPB	5600201	Replace old, deteriorated transmission main (cross contamination potential).	$6,500	50%	$3,250				X
Guernsey Replacements/ Rehabilitation	40	25	1147	Guernsey, Town of	5600023	Replace/rehabilitate old, deteriorated mains, tanks, and appurtenances (cross contamination potential).	$1,130	50%	$565				X
Thermopolis Distribution Improvements	41	25	3009	Thermopolis, Town of	5600056	Replace old, deteriorated, and undersized water mains (cross contamination potential). DWSRF conditional award 4/17	$1,300	50%	$650			X	
Worland Main Replacements	42	25	5487	Worland, City of	5600197	Replace old, deteriorated water mains (cross contamination potential).	$1,000	50%	$500				X
Sheridan Water Main Replacements	43	25	17444	Sheridan, City of	5600052	Replace old, deteriorated, and undersized water mains and appurtenances (cross contamination potential). DWSRF loans have been made for several projects. Estimated $10 million total need. DWSRF conditional awards 10/16 and 4/17; expected to become bind	$1,790	25%	$448			X	
Cambria Tank	44	24	144	Cambria I&S District	5601028	New tank to replace two existing old tanks (cross contamination potential). Includes transmission and pump station. DWSRF loan has been made.	$100	50%	$50			X	
Osage Distribution Improvements	45	24	208	Osage Water District	5600038	Replace old, deteriorated, and undersized water mains (cross contamination potential).	$500	50%	$250				X
Northwest Rural Main Replacements	46	24	5500	Northwest Rural Water District	5601254	Replace old, deteriorated water mains and appurtenances (cross contamination potential).	$1,000	25%	$250			X	
Buffalo Valley Distrib Upgrades & Repairs	47	22	60	Buffalo Valley WD	5600435	Replace leaky piping, install SCADA for tank level and chlorine application. (cross contamination potential)	$256	25%	$64				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Sundance Meadows Lead Corrosion Control	48	22	60	Sundance Meadows Water District	5601639	Lead result above action level. Install corrosion control system.	$100	50%	$50				X
Granger Rehabilitation Projects	49	22	139	Granger, Town of	5600020	Rehabilitate old, deteriorated tank (cross contamination potential); includes repair, coating, cathodic protection, mixing system. Reconstruct old, deteriorated raw water intake, pump station, and pipeline.	$500	50%	$250				X
Green Valley Estates Lead Corrosion Control	50	22	140	Green Valley Estates Imp. District	5601245	Lead result above action level. Install corrosion control system.	$100	50%	$50				X
Bennor Estates Lead Corrosion Control	51	22	174	Bennor Estates I&S District	5601596	Lead result above action level. Install corrosion control system.	$100	50%	$50				X
Kaycee Lead Corrosion Control	52	22	263	Kaycee, Town of	5600196	Lead result above action level. Install corrosion control system.	$100	50%	$50				X
Meeteetse Distribution Improvements	53	22	327	Meeteetse, Town of	5600035	Looping dead end water lines and replace asbestos transmission line with PVC. Improve capacity and resilience.	$372	75%	$279				X
South Park Service Center ISD	54	22	350	South Park Service Center I&S District	5600822	Replace old, deteriorated water system components. Install water meters.	$805	25%	$201	WC	$200		X
Freedom Hills Distribution Improvements	55	22	400	Freedom Hills I&S District	5600789	Replace old, deteriorated water mains (cross contamination potential). Install meters on currently unmetered system (categorically green). DWSRF conditional award 6/15 for $1,127,830; expecting a loan increase application.	$1,850	50%	$925	WC	$400		X
Sinclair Main Replacements	56	22	433	Sinclair, Town of	5600054	Replace old, deteriorated water mains, services, and appurtenances (cross contamination potential).	$600	25%	$150				X
Baggs Distribution Improvements	57	22	440	Baggs, Town of	5600058	Replace old, deteriorated water mains and appurtenances (cross contamination potential).	$486	50%	$243				X
LaBarge Pump House Repair	58	22	551	LaBarge, Town of	5600222	Replace old, deteriorated building and floor which threatens to drop the feed pumps into the wet well (cross contamination potential).	$121	50%	$61			X	
LaBarge Transmission	59	22	551	LaBarge, Town of	5600222	Replace old, deteriorated transmission line from water treatment plant to storage tank (cross contamination potential).	$750	25%	$188				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
HMR Distribution Improvements	60	22	580	High Meadow Ranch Water District	5601569	Replace old, deteriorated, and undersized water mains and appurtenances (cross contamination potential). Includes looping existing deadend lines and adding isolation valves and PRVs. DWSRF conditional award 4/17	$3,590	25%	$898			X	
Byron Distribution Improvements	61	22	593	Byron, Town of	5600008	Replace old, deteriorated, and undersized water mains and appurtenances (cross contamination potential).	$560	50%	$280			X	
Cowley Main Replacements	62	22	655	Cowley, Town of	5600206	Replace old, deteriorated, and undersized water mains (cross contamination potential).	$1,000	25%	$250				X
Melody Ranch ISD Valve Repairs	63	22	900	Melody Ranch I&S District	5601440	Repair valves and hydrants damaged by corrosion (cross contamination potential).	$330	25%	$83			X	
Melody Ranch Water System Improvements	64	22	900	Melody Ranch I&S District	5601440	Improvements to the municipal water system to include the construction of an additional water well, larger diameter transmission main, and a more efficient pumping system. Cond. approval 2/18.	$560	25%	$140		$200		X
Moorcroft Distribution Improvements	65	22	1009	Moorcroft, Town of	5600037	Replace old, deteriorated, undersized water mains and distribution appurtenances (cross contamination potential). Loop water lines. DWSRF conditional award 2/17.	$1,201	25%	$300			X	
Upton Main Replacements	66	22	1100	Upton, Town of	5600140	Replace old, deteriorated water mains and appurtenances (cross contamination potential).	$3,000	50%	$1,500				X
Pine Bluffs Main Replacements	67	22	1129	Pine Bluffs, Town of	5600040	Replace old, deteriorated water mains (cross contamination potential).	$1,057	25%	$264				X
Sundance Storage and Distribution Improvements	68	22	1182	Sundance, City of	5600055	Replace old, deteriorated, undersized tanks, mains, and services (cross contamination potential). Loop mains for water quality and reliability.	$875	25%	$219				X
Sundance Transmission Improvements	69	22	1182	Sundance, City of	5600055	Upgrade aging transmission lines from well field	$375	25%	$94				X
Basin Lead Corrosion Control	70	22	1285	Basin, Town of	5600004	Lead result above action level. Install corrosion control system.	$100	25%	$25				X
Star Valley Ranch Main Replacements	71	22	1503	Star Valley Ranch, Town of	5600287	Replace old, deteriorated, and undersized water mains (cross contamination potential). Estimated total need $12 million phased over several years. DWSRF loan made for first phase. DWSRF conditional award 2/18 for second phase.	$6,136	25%	$1,534	WC	$2,000		X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Saratoga tank repair	72	22	1690	Saratoga, Town of	5600061	Repair leaking panel interfaces of the Town's one million gallon bolted stand pipe (storage tank) to prevent water loss.	$267	25%	$67			X	
Saratoga Main Replacements	73	22	1690	Saratoga, Town of	5600061	Replace old, deteriorated, and undersized mains (cross contamination potential).	$2,500	25%	$625				X
Afton Distribution and Storage Improvements	74	22	1911	Afton, Town of	5600002	Replace old, deteriorated, undersized mains (cross contamination potential), including looping the replacements to eliminate deadends. Rehabilitate deteriorated top slab of concrete water storage tank (cross contamination potential).	$1,300	25%	$325	WB	$600		X
Pinedale Main Replacements	75	22	2030	Pinedale, Town of	5600041	Replace old, deteriorated, and undersized water mains (cross contamination potential). DWSRF loan has been made.	$390	25%	$98			X	
KDJPB Main Replacements	76	22	3393	Kemmerer-Diamondville JPB	5600028	Replace old, deteriorated water mains (cross contamination potential).	$800	0%	$0				X
Rawlins Potable Main Replacements	77	22	9259	Rawlins, City of	5600045	Replace old, deteriorated, and undersized water mains and appurtenances (cross contamination potential).	$750	25%	$188				X
Rawlins Raw Water Transmission Replacement	78	22	9259	Rawlins, City of	5600045	The City of Rawlins main water source is a series of springs 35 miles south of town connected to the City system by a network of aging wooden stave pipelines which require replacement.	$750	25%	$188				X
Rawlins Tanks	79	22	9259	Rawlins, City of	5600045	Replace two old, deteriorated tanks (cross contamination potential).	$2,500	25%	$625				X
Jackson Landslide Water Mains	80	22	9577	Jackson, Town of	5600213	Replace pump station, mains, and appurtenances damaged by landslide (cross contamination potential).	$450	0%	$0				X
Gillette Interstate Industrial Park	81	22	29087	Gillette, City of	5600019	Water system improvements in Interstate Industrial Park (PWS 5600909) to connect to, include in, and bring up to City of Gillette (PWS 5600019) standards; Includes connecting transmission lines, replace old deteriorated distribution mains and appurtenances.	$2,050	0%	$0				X
Gillette Main Replacements	82	22	29087	Gillette, City of	5600019	Replace old, deteriorated, and undersized water mains (cross contamination potential).	$3,400	0%	$0				X
Gillette Tank Rehabilitation	83	22	29087	Gillette, City of	5600019	Rehabilitate tanks that have corrosion, foundation, and site drainage problems (cross contamination potential). Includes project for tank Z1-R3	$2,200	0%	$0				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
GR-RS-SWC JPWB Transmission Replacement	84	22	40000	Green River - Rock Springs - Sweetwater Co JPWB	5600050	Replace old, deteriorated and undersized transmission mains (cross contamination potential).	$4,000	0%	$0				X
Recluse School Lead Corrosion Control	85	22	46133	Campbell County School District	5601057	Lead result above action level. Install corrosion control system.	$100	0%	$0				X
Casper 10 MG Tank Rehabilitation	86	22	55316	Casper, City of	5601415	Rehabilitate old, deteriorated, 10 million gallon finished water storage reservoir (cross contamination potential).	$4,500	25%	$1,125				X
Casper Miscellaneous Water Main Replacements	87	22	55316	Casper, City of	5601415	Replace/rehabilitate old, deteriorated, undersized mains (cross contamination potential).	$6,000	25%	$1,500			X	
Cheyenne Main Rehabilitation and Replacements	88	22	59466	Cheyenne, City of	5600011	Replace/rehabilitate old, deteriorated, and undersized water mains (cross contamination potential). Various DWSRF loans have been made. $10M total need.	$2,000	0%	$0			X	
Cheyenne Round Top Tank Replacement	89	22	59466	Cheyenne, City of	5600011	Replace old, deteriorated Round Top 10 million gallon underground storage tank (cross contamination potential) with new above ground tank.	$10,000	0%	$0				X
Laramie I-80 source protection and monitoring	90	20	30816	Laramie, City of	5600029	Source water protection and monitoring of I-80 contaminants for Pope Springs and Soldier Springs municipal well fields.	$150		$0				X
Laramie Meters	91	20	30816	Laramie, City of	5600029	Implement a fixed base water meter reading system to replace the current drive-by reading system. Install higher accuracy meters. Water conservation.	$2,500	50%	$1,250	WC	$2,500	X	
Laramie Public Works Service Center	92	20	30816	Laramie, City of	5600029	Fund the drinking water system related portions of new or renovated buildings for the City's public works department.	$3,000	50%	$1,500	EC	$1,200	X	
Laramie Tanks	93	20	30816	Laramie, City of	5600029	New tank in northern part of system to better serve area. Includes transmission, pump station, pressure control stations, and other appurtenances. DWSRF conditional award 4/17.	$4,356	50%	$2,178			X	
Laramie Turner Well Field Improvements	94	20	30816	Laramie, City of	5600029	Improvements to Turner Well Field.	$2,500	50%	$1,250				X
South Laramie WSD Well	95	19	550	South of Laramie W&S District	5601393	Drill new well for secondary water source. DWSRF conditional award 2/17; expected to become binding commitment by end of FY2017 or in FY2018.	$193	50%	$97			X	

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Pine Haven Tank and Wells	96	17	490	Pine Haven, Town of	5600191	Construct new tank at higher elevation to correct existing static pressures below 35 psi and to provide additional storage. Plug and abandon one of two existing wells, improvements to the other existing well, and drill new well near tank.	$497	25%	$124			X	
Lovell Tank	97	17	2360	Lovell, Town of	5600031	Water storage tank, new pump station, and associated piping and SCADA improvements for pressure zone 2. Currently no storage in this zone. DWSRF loan has been made.	$200	50%	$100				X
LaGrange Meters	98	16	448	LaGrange, Town of	5600788	Replace existing meters and pits with new meters including automated meter reading and leak detection system.	$350	75%	$263	WC	$350		X
LaGrange Tank	99	16	448	LaGrange, Town of	5600788	New tank and transmission. Chlorination improvements.	$1,100	75%	$825				X
LaGrange Waterline Looping	100	16	448	LaGrange, Town of	5600788	Waterline looping and extension.	$450	75%	$338				X
Teton Village Tank and Distribution Improvements	101	16	660	Teton Village WSD	5600218	Construct new 1 MG buried water storage tank, transmission lines from water supply wells to tank, distribution system connections and pressure reducing valves	$8,900		$0				X
Newcastle AC water line replacement	102	15	3532	Newcastle, City of	5600256	Replace aging 6" AC water line and upsize water line to 8".	$350	50%	$175			X	
Freedom WSD Meters	103	13	214	Freedom W&S District	5600158	Replace existing meters with new meters including automated meter reading and leak detection system.	$50	75%	$38	WC	$50		X
Fort Laramie Meters	104	13	230	Fort Laramie, Town of	5600185	Replace existing old, malfunctioning meters with new meters, including automated meter reading and leak detection system.	$58	75%	$44	WC	$58		X
Pineview ISD Tank and Booster	105	12	71	Pineview I&S District	5601490	New tank and booster station for system that currently has only pressure storage. Piping upgrades, generator, meters.	$265	50%	$133			X	
HMR Interconnection, Tank, and Well	106	12	580	High Meadow Ranch Water District	5601569	District system currently has two parts unconnected to each other, and it lacks storage and adequate redundancy of supply. Install new transmission main to interconnect two separate parts of system, tank and booster station, additional well, disinfection	$1,030	25%	$258				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Cowley Tank	107	12	655	Cowley, Town of	5600206	Replace existing undersized tank and associated transmission main. Chlorination system. Backflow preventers on transmission line taps. Cond. approval 10/17.	$1,509	25%	$377			X	
Cowley water system improvements	108	12	655	Cowley, Town of	5600206	Install a water line that will tie the west end dead end line to a dead end line owned by South End Water Users ISD. The line will loop the systems, improve water quality and pressures for both systems. Replace old, undersized water lines and extend the service to cover the Town's new expansion.	$1,200	25%	$300				X
South Big Horn Extension	109	12	1000	South Bighorn County Water Supply JPB	5601454	Extend water mains to provide service to Greybull River valley area and possible future service as far as Burlington area. Existing individual wells produce groundwater of poor quality; many residents haul water.	$1,900	50%	$950				X
Clearmont Well	110	11	142	Clearmont, Town of	5600013	New well to provide adequate redundancy of supply.	$250	75%	$188				X
Evansville Appurtenances	111	11	2544	Evansville, Town of	5600018	Replace obsolete or poorly functioning hydrants and valves.	$200	75%	$150			X	
Evansville Connection to Central WY Regional	112	11	2544	Evansville, Town of	5600018	Emergency connection to the Central Wyoming Regional Water System.	$350	75%	$263				X
Evansville Main Looping and Upsizing	113	11	2544	Evansville, Town of	5600018	Loop and upsize water lines to improve service.	$7,000	75%	$5,250				X
Evansville New Tank	114	11	2544	Evansville, Town of	5600018	Construct additional storage tank.	$1,500	75%	$1,125				X
Evansville WTP Pump Upgrades	115	11	2544	Evansville, Town of	5600018	Replace and upgrade intake pumps at water treatment plant. Old pumps are t energy efficient. Variable speed drives will be installed on the new pumps.	$400	75%	$300	EC	$400		X
Mills Emergency Generator	116	11	3461	Mills, Town of	5600036	Installation of an emergency generator at the Town's Water Treatment Plant.	$1,200	75%	$900				X
Wheatland Well	117	11	3627	Wheatland, Town of	5600187	New wells for increased source redundancy. Most of town's wells are several decades old.	$500	75%	$375				X
Sheridan Main Extensions	118	10	17444	Sheridan, City of	5600052	Extend water mains to serve areas that currently have water of inadequate quantity and/or quality. Extend	$931	25%	$233			X	

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Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
						and loop transmission main to eliminate deadend and provide redundancy. Extend main to serve new school.							
Broken Wheel Ranch	119	7	50	Broken Wheel Ranch I&S District	5601625	Tank, well, transmission, and pump improvements to address deficiencies identified in EPA sanitary survey (including operating pressure below 20 psi), to meet demands, and to increase reliability. Install new curb stops and meters pits (currently unmetered)	$202	25%	$51			X	
Squaw Creek	120	7	110	Squaw Creek Water District	5600737	Upgrades to more efficiently use limited supply. New tanks. Replace well pumps. SCADA, controls, piping, metering, and valve upgrades. DWSRF loan has been made.	$100	25%	$25				X
Encampment Distribution Looping	121	7	450	Encampment, Town of	5600060	Loop existing dead end distribution mains to improve system reliability and water circulation.	$300	75%	$225				X
Hog Island ISD Water System	122	7	500	Hog Island I&S District	New system	New water system for area where homes are on individual wells with inadequate quality and quantity.	$5,000	25%	$1,250				X
Hanna Meters	123	7	841	Hanna, Town of	5600025	Replace existing meters with new meters including automated meter reading and leak detection system.	$500	50%	$250	WC	$500		X
Hanna Miscellaneous Improvements	124	7	841	Hanna, Town of	5600025	Water source, transmission, treatment, distribution, and storage upgrades. Fencing improvements at storage facilities.	$1,500	50%	$750				X
Lovell Looping and Service Extension	125	7	2360	Lovell, Town of	5600031	Eliminate stagnant water by looping dead end water line and extend service to areas that currently do not have good source of water.	$675	50%	$338				X
Lander Telemetry	126	7	7487	Lander, City of	5600176	Install/upgrade SCADA system monitoring and controls at various locations.	$500	50%	$250			X	
Riverton Meters	127	7	10615	Riverton, City of	5600047	Replace old, deteriorated meters with automated read equipment including leak detection (current equipment at end of service life).	$925	25%	$231	WC	925		X
Riverton Safety Improvements	128	7	10615	Riverton, City of	5600047	Safety and/or regulatory upgrades to the water treatment plant, well houses, and storage tanks. Resulting from EPA Sanitary Survey	$200	0%	$0				X
South End WUD	129	5	150	South End Water Users I&S District	5600970	Control building to replace underground vault at system's connection to Cowley system. Tie a dead end water line in the system back to the Town of Cowley's system along Lane 8. Improve quality in the line and reliability/capacity.	$530	50%	$265			X	

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
South End WUD distribution extensions	130	5	150	South End Water Users I&S District	5600970	Extend district and water lines to serve additional rural customers in our area. The water line will be extended approx. 4.8 miles and service approx. 20 new taps.	$580	50%	$290				X
Deavor Maintenance Shop	131	5	178	Deaver, Town of	5600016	Construct a maintenance shop for the operations center for water portion of the town's public works department.	$113	75%	$84			X	
Pavillion Meters	132	5	231	Pavillion, Town of	5600039	Replace existing meters with new meters including automated meter reading and leak detection system. Cond. approval 2/18	$215	75%	$161	WC	$215	X	
Ten Sleep Miscellaneous Upgrades	133	5	260	Ten Sleep, Town of	5600203	Replace faulty line valves and install new valves to improve system isolation for flushing and repairs. Replace thin wall PVC pipe from 1970's with C900 PVC pipe. Replace old inaccurate well meters. Install flushing/blowoff hydrants to transmission main	$1,000	50%	$500				X
Ten Sleep Well	134	5	260	Ten Sleep, Town of	5600203	Redrill and replace one of two supply wells dating from 1950's to ensure continued source supply redundancy; includes new well house and appurtenances.	$500	50%	$250				X
South Thermopolis Refinance	135	5	300	South Thermopolis W&S District	5601083	Refinance project originally constructed to resolve issues of low pressures and deteriorated and/or undersized infrastructure and to serve additional areas that had inadequate individual wells.	$400	0%	$0				X
Burns Well Replacements	136	5	301	Burns, Town of	5600188	Replacement wells for wells A2, A3, and A4.	$2,400	75%	$1,800				X
Salt Creek JPB Pump Station and Surge Tank Improvements	137	5	599	Salt Creek JPB	5600201	Upgrades to pump station and surge tank constructed in 1995, involving SCADA, controls, electrical, pumps, piping, valves, and various other appurtenances.	$320	50%	$160				X
Thermopolis Backup Generator	138	5	3009	Thermopolis, Town of	5600056	Backup generator for pump station.	$160	50%	$80				X
Newcastle Distribution Line Replacement	139	5	3532	Newcastle, City of	5600256	Replace aging 6 inch steel water distribution line.	$450	50%	$225			X	
Newcastle Meters	140	5	3532	Newcastle, City of	5600256	Retrofit existing meters with automated meter reading and leak detection system.	$500	50%	$250	WC	$500		X
Newcastle Well and Control Upgrades	141	5	3532	Newcastle, City of	5600256	Purchase and connect new well to water system. Transmission and SCADA upgrades throughout well-field.	$740	50%	$370			X	

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Sheridan Hydropower	142	5	17444	Sheridan, City of	5600052	Install hydropower generation on high pressure drinking water transmission mains at Beckton Hall vault and Sheridan WTP. DWSRF loan has been made.	$200	25%	$50	EC	$200	X	
Sheridan Intake Improvements	143	5	17444	Sheridan, City of	5600052	Improvements to our source of supply facilities that serve the Sheridan and Big Goose water treatment plants. Target areas will improve water quality, address health and safety while improving energy efficiencies. Includes facility improvements to communications, SCADA, electrical, screening, piping/valves, flow measurement, security and energy efficiencies.	$300	25%	$75	EB	$50		X
Sheridan water storage improvements	144	5	17444	Sheridan, City of	5600052	Review and evaluate reservoirs within the overall water system to eliminate all EPA deficiencies associated with reservoirs and discharge points. Improvements include upgrades to hatches, screens, flap gates and appurtenances, replacement of aged and corroded piping, potential removal of reservoirs from the system.	$3,000	25%	$750				X
Sheridan/SAWS Treatment Plant Miscellaneous Upgrades	145	5	17444	Sheridan, City of	5600052	Miscellaneous upgrades at the two water treatment plants, involving SCADA, plate settlers, backwash piping, disinfection, sludge handling/drying, vehicle storage building, road surfacing, drainage, security gates, utilidor.	$2,000	25%	$500				X
Shoshone Municipal Main Relocation	146	5	24622	Shoshone Municipal Water JPWB	5601198	Relocate transmission pipeline out of WYDOT right-of-way to accommodate highway project as required by WYDOT.	$500	25%	$125			X	
Dixon Energy Efficiency Upgrades	147	4	97	Dixon, Town of	5600059	Install solar power system at water treatment plant and operations facility (categorically green eligible).	$192	50%	$96	EC	$192		X
Dixon Meters	148	4	97	Dixon, Town of	5600059	Replace existing meters with new meters including automated meter reading and leak detection system. Includes dual check backflow preventers.	$288	50%	$144	WC	$288		X
Dixon Miscellaneous Improvements	149	4	97	Dixon, Town of	5600059	Install an isolated transmission line from the water treatment plant clear well to the storage tank to improve disinfection contact time, promote tank turnover, and improve water quality. Upsize and loop existing 2" deadend water mains. Install solar power	$933	50%	$467	EC	$20		X
Osage Meters	150	4	208	Osage Water District	5600038	Replace existing meters with new meters including automated meter reading and leak detection system.	$300	50%	$150	WC	$300		X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Osage Telemetry	151	4	208	Osage Water District	5600038	Update telemetry system for tank operation to better control levels and reduce water loss.	$100	50%	$50				X
Pioneer Transmission	152	4	450	Pioneer W&S District	5600828	Additional transmission line from regional system to northern part of District to provide looping for more reliable supply.	$636	50%	$318				X
Northwest Rural Operations Center	153	4	5500	Northwest Rural Water District	5601254	Construct a facility to consolidate the District's operations and administration to one location, including offices, records, SCADA, vehicles, equipment, parts, etc. These are currently spread among multiple locations. DWSRF conditional award 2/18	$1,200	25%	$300			X	
Northwest Rural Tanks and Pump Station	154	4	5500	Northwest Rural Water District	5601254	Install tanks for additional storage in O'Donnell and North End service areas. Upgrade North End pump station.	$500	25%	$125			X	
Douglas Well Project	155	4	6120	Douglas, City of		Construction a new water well and water transmission main to increase the water supply reliability to the City of Douglas water customers. We are currently working with WWDC on a Level II Study for this project.	$2,000		$0			X	
Opal Water System Upgrades	156	2	96	Opal, Town of	5600835	Water system upgrades to reduce stagnation.	$520	25%	$130			X	
Fox Ridge ISD System Upgrades	157	2	100	Fox Ridge I&S District	5601615	Well improvements, pump system upgrades, backup generator, master meter, distribution upgrades.	$250	50%	$125				X
Granger secondary water source	158	2	139	Granger, Town of	5600020	Construct new transmission line from the Ham's Fork River to the town's sediment pond as a secondary source of water for the town.	$2,500	50%	$1,250				X
Grover W&S District Meters	159	2	147	Grover W&S District	5600160	Replace existing meters with new meters including automated meter reading and leak detection system.	$120	25%	$30	WC	$120		X
Indian Paintbrush Water District	160	2	150	Indian Paintbrush Water District	5600758	New well, transmission, and storage tank. Install meters on services (currently unmetered). Upgrades also include chlorination, pump station, control valves, controls, and emergency generator. DWSRF loan has been made.	$475	25%	$119				X
Spring Creek Well	161	2	400	Spring Creek I&S District	5600811	New well and associated pump, controls, valves, and piping.	$440	25%	$110				X
Midwest Refinance	162	2	404	Midwest, Town of	5600201	Refinance USDA loan on water system which was installed in 1997	$105	0%	$0			X	

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Baggs Miscellaneous WTP Improvements	163	2	440	Baggs, Town of	5600058	VFDs on pumps, SCADA programming to automate membrane maintenance washes, permanent emergency generator.	$500	50%	$250				X
Baggs Well	164	2	440	Baggs, Town of	5600058	Install horizontal collector well or on-land infiltration gallery to provide alternate raw water supply to treatment plant.	$500	50%	$250				X
Baggs/Dixon Transmission Main	165	2	440	Baggs, Town of	5600058	Transmission main to provide system redundancy and to regionalize the Town of Baggs (5600058) and Town of Dixon (5600059) water treatment plants.	$5,340	50%	$2,670				X
Cokeville Meters	166	2	535	Cokeville, Town of	5600015	New meters and pits in unmetered areas. Replace old faulty well meters.	$500	25%	$125	WC	$500		X
LaBarge Emergency Generator	167	2	551	LaBarge, Town of	5600222	Emergency generator for water treatment plant.	$150	25%	$38				X
HMR Meters	168	2	580	High Meadow Ranch Water District	5601569	Install meters in currently unmetered system. DWSRF conditional award 4/17.	$500	25%	$125	WC	$500		X
Byron Distribution Improvements, leaky hydrants and distribution lines	169	2	593	Byron, Town of	5600008	Replace old, deteriorated, and undersized water mains and leaky appurtenances (cross contamination potential).	$415	50%	$208				X
Byron Distribution Improvements-WYDOT Main St Project	170	2	593	Byron, Town of	5600008	Replace Water Pipes Crossing Under Main Street with WYDOT resurfacing project. Replace old, deteriorated, and undersized water mains (cross contamination potential).	$415	50%	$208				X
Byron Looping	171	2	593	Byron, Town of	5600008	Waterline looping to eliminate deadends and increase reliability on two long dead end lines.	$613	50%	$307				X
Alpine Meters	172	2	828	Alpine, Town of	5600156	Replace existing meters with new meters including automated meter reading and leak detection system.	$300	25%	$75	WC	$300	X	
Upton Refinance	173	2	1100	Upton, Town of	5600140	Refinance project which originally replaced deteriorated tank.	$125	0%	$0				X
Upton Well	174	2	1100	Upton, Town of	5600140	New well to replace an old well.	$1,000	50%	$500				X
Pine Bluffs Miscellaneous Upgrades	175	2	1129	Pine Bluffs, Town of	5600040	Main looping and extensions for water quality and pressure improvement. Install hydrants. Install bulk water fill station.	$175	25%	$44				X

DRAFT

Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Pine Bluffs Reverse Osmosis	176	2	1129	Pine Bluffs, Town of	5600040	Add reverse osmosis to treat water from some wells which are increasing in nitrate concentration.	$1,320	25%	$330				X
Pine Bluffs Low Nitrate Well	177	2	1129	Pine Bluffs, Town of	5600040	This project would develop a new low-nitrate well to help manage nitrates and provide redundancy. Project includes abandonment of the Town's underperforming Well 4. Green benefits include eliminating a hazardous waste stream that would be generated by treatment of nitrate contaminated water and features a high efficiency pump and variable frequency drive, which will provide lower long-term power consumption than treatment and disposal.	$783	25%	$196	EC	$200	X	
Pine Bluffs Well Replacement	178	2	1129	Pine Bluffs, Town of	5600040	Replacement well and transmission. North Wells, on list in case of project changes.	$800	25%	$200			X	
Sundance Wells	179	2	1182	Sundance, City of	5600055	Rehabilitate/redevelop existing wells.	$125	25%	$31				X
Saratoga Well Upgrades	180	2	1690	Saratoga, Town of	5600061	Deepen and/or install additional well screens in Well No. 5 to increase capacity and eliminate air problems. Install additional well for increased capacity.	$300	25%	$75				X
Wright Tank and Chlorination Improvements	181	2	1807	Wright W&S District	5600136	Replace chlorination system in new location for better access. Remove or rehabilitate tank. Associated pipe and valve improvements.	$1,400	25%	$350				X
Afton Source Improvements	182	2	1911	Afton, Town of	5600002	Modify the overflow to the existing spring source so that it meets requirements	$400	25%	$100			X	
Glenrock Transmission	183	2	2576	Glenrock, Town of	5600199	Transmission main improvements to provide more reliable supply to northern part of town.	$130	50%	$65				X
SAWS Control Valve Upgrades	184	2	3900	Sheridan Area Water Supply JPB	5600052	Replace and/or upgrade aging control valves throughout system.	$837	25%	$209			X	
Bridger Valley Transmission	185	2	4320	Bridger Valley JPB	5600757	Install second transmission main to Fort Bridger area for redundancy and increased flow and pressures.	$768	25%	$192				X
Cody Tank	186	2	9520	Cody, City of	5600207	New tank and transmission.	$1,200	25%	$300				X
Green River Main Reconfiguration	187	2	12515	Green River, City of	5601181	Upsize and reconfigure water mains to improve balance of flow between tanks.	$200	0%	$0				X

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Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Gillette Disinfection	188	2	29087	Gillette, City of	5600019	Convert the existing chlorine gas disinfection system to a Sodium Hypo-Chloride generation systems at Pump Station #1	$2,500		$0				X
Gillette Lakeway Area Improvements	189	2	29087	Gillette, City of	5600019	Transmission, storage, and pump station improvements to extend Zone 2 to Lakeway area. This will allow switchover of some current Zone 3 areas to be more appropriately served by Zone 2. Probably not activate until about 2022	$12,300	0%	$0				X
GR-RS transmission system upgrades	190	2	40000	GR/RS/SwCo-JPWB	5600050	Increase capacity and provide redundancy to the pumping and transmission system for the "Windriver Service Zone" in Rock Springs. This zone delivers water to all area north of I-80 including three districts and Reliance. A WWDC Level II study is scheduled for completion in spring/summer 2018.	$6,600		$0				X
GR-RS-SWC JPWB Additional Transmission	191	2	40000	GR/RS/SwCo-JPWB	5600050	Parallel/redundant transmission mains to ensure continuous service in critical mains.	$4,000	0%	$0				X
Cheyenne Main Extensions and Upgrades	192	2	59466	Cheyenne, City of	5600011	Extend and upsize major water mains. DWSRF loans have been made. (Southern Transmission Main)	$5,000	0%	$0			X	
Cheyenne Pressure Management	193	2	59466	Cheyenne, City of	5600011	Improvements associated with pressure management plan phase II. This will allow City to better manage pressures within distribution system to reduce main breaks.	$2,000	0%	$0				X
Cheyenne Reservoir Bypass Transmission Mains	194	2	59466	Cheyenne, City of	5600011	Construct transmission lines to bypass Crystal and Granite Reservoirs to allow water to flow directly to Sherard WTP when necessary.	$2,300	0%	$0				X
Cheyenne Sherard Hydropower Generator	195	2	59466	Cheyenne, City of	5600011	Install a hydropower generator unit at the Sherard Water Treatment Plant. This will generate power to operate the drinking water treatment plant using the excess head available in the raw water pipeline. DWSRF loan has been made.	$500	0%	$0	EC	$500	X	
Cheyenne Treatment Upgrades	196	2	59466	Cheyenne, City of	5600011	Treatment plant upgrades at Crow Creek WRF (WYPDES# 0022381) and Dry Creek WRF (WYPDES# 0022934). Includes improved communications between these two plants, rehabilitation of Crow Creek oil/water separator waste evaporation beds, and installation of additional effluent UV disinfection. Waste Reuse.	$7,000	0%	$0	IG	$7,000		X

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Project	Rank	Rank Points	Population	Owner	PWS No	Description	Allocation Amount $1,000	Est Max % Princ Forg	Est Max Princ Forg $1,000	Green Type	Green Amount $1,000	Expect 2019 Award	2020-2022 Award
Cheyenne Water Treatment Upgrades	197	2	59466	Cheyenne, City of	5600011	Install powder activated carbon system at treatment plant. DWSRF loan has been made.	$250	0%	$0			X	
Central Wyo. Reg. Refinance	198	2	60000	Central Wyo Reg. Water System	5600009	Refinance loans that were originally made for major improvements associated with the creation of the regional water system. The regional system was established to consolidate several independent systems to improve their technical, managerial, and financial capacity.	$6,600	0%	$0				X
Central Wyo. Reg. SCADA Upgrades	199	2	60000	Central Wyo Reg. Water System	5600009	SCADA and PLC system upgrades throughout regional water system. Cond. award 2/18.	$1,700	25%	$425			X	
Central Wyo. Reg. Westwind Rd. Transmission Main	200	2	60000	Central Wyo Reg. Water System	5600009	Transmission main along Westwind road connecting zones IIA and IIB.	$5,500	25%	$1,375				X
Central Wyo. Reg. WTP Disinfection System Replacement	201	2	60000	Central Wyo Reg. Water System	5600009	Install new ultraviolet light disinfection system for groundwater supply treatment.	$12,000	25%	$3,000				X
Central Wyo. Regional Water Alternate Backwash Supply	202	2	60000	Central Wyo Reg. Water System	5600009	Provide alternate backwash water supply to allow current supply components to be taken out of service as needed. Includes drain system improvements for existing backwash supply tank. DWSRF loan has been made.	$500	25%	$125			X	
Natrona Airport Utility Master Plan	203	2	75450	Natrona County International Airport Board	5600079	Master planning study to determine existing conditions and determine needed improvements for water, sanitary sewer, and storm sewer utilities. To be funded jointly with CWSRF; $100k each.	$100	25%	$25				X

Total of all listed projects ($1,000)	$289,422		$84,999	$21,268		
Total of projects expected to submit applications in FY2018 or complete remaining steps on conditional awards by end of FY2018 or in FY2019	$64,892		$19,699	$5,565	X	
Total of projects expected to submit applications in FY2020-FY2022	$224,530		$65,300	$15,703		X

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Appendix 2: Ranking Criteria for DWSRF Priority List

SYSTEM/PROJECT NAME _____

PWS No._____

Wyoming Drinking Water State Revolving Fund Ranking System

		Available Points	Points Received
I.	PUBLIC HEALTH ISSUES		
	Points will be awarded for public health concerns that appear to be beyond the control of the water supplier and have occurred in the last four years. Items beyond the control of the water supplier do not include lab error or operator error.		
	A. Outbreak of waterborne disease	100	
	B. Fecal or other pathogen detection which results in a boil order	80	
	C. Positive Coliform results which do not result in a violation	20	
	Public Health Issues Points		
II.	COMPLIANCE ISSUES		
	Points will be awarded for compliance issues that appear to be beyond the control of the water supplier and have occurred in the last four years. Multiple violations within a 12 month period will add 10 points total for categories in A-D below. For example a single microbiological violation receives 40 points. Two or more microbiological violations would result in a maximum point award of 50 points.		
	A. Microbiological violation	40	
	B. Nitrate or nitrite MCL exceedance	25	
	C. Lead and Copper Rule action level exceedance	20	
	D. Turbidity exceedance	20	
	E. Non-compliance with SWTR, ISWTR, ESWTR, GWDR, GWUDI or currently applicable regulation	25	
	F. MCL exceedances of regulated contaminants (not mentioned above)		
	1. 1 contaminant	10	
	2. 2 to 4 contaminants	20	
	3. >4 contaminants	40	
	G. Facility is subject to a compliance issue, enforcement action and/or enforcement referral.	30	
	Compliance Issues Points		
III.	SYSTEM DEFICIENCIES		

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		Available Points	Points Received
	Points will be awarded for system deficiencies that may affect public health or the ability to comply with SDWA. Points will be awarded to a project from only one of the three categories below.		
	A. Distribution system		
	1. Distribution system equipment is deteriorated and results in numerous or serious leaks, and/or creates a cross-contamination potential.	20	
	2. Applicable disinfectant residual maintenance requirements are not met.	20	
	3. Project will replace unsafe materials.	10	
	4. Minimum normal operating pressure is not met (35 psi).	5	
	5. Distribution system is inadequate to meet existing demands.	5	
	B. Treatment System		
	1. Treatment system cannot consistently meet log removal requirements and/or turbidity standards.	25	
	2. Treatment system is subject to impending failure or has failed.	25	
	3. The required disinfection systems are not installed or are inadequate.	20	
	4. Treatment system equipment does not meet the requirements of Wyoming Water Quality Rules and Regulations Chapter 12.	10	
	5. System equipment is projected to become inadequate without upgrades within 5 years.	5	
	C. Storage System		
	1. Storage system is subject to impending failure, has failed, cannot be easily cleaned, or subject to contamination.	20	
	2. Applicable contact time requirements cannot be met without an upgrade.	20	
	3. System suffers from low static pressures.	15	
	4. Storage system demand exceeds 90% of storage capacity.	10	
		System Deficiencies Points	
IV.	AFFORDABILITY		
	Points will be awarded based on a project's affordability.		
	A. Relative income index: ratio of local annual median household income (AMHI) to the state AMHI.		

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		Available Points	Points Received
	1. < 50%	15	
	2. 50%-70%	10	
	3. 70%-90%	4	
	4. > 90%	1	
	B. Relative water rate index: ratio of expected average annual residential user charge for water services resulting from the project, including costs recovered through special assessments, to the local AMHI.		
	1. > 2.5%	15	
	2. 2.0% to 2.5%	10	
	3. 1.5% to 2.0%	6	
	4. 1.0% to 1.5%	3	
	5. < 1.0%	1	
		Affordability Points	

POINTS AWARDED

Public Health Issues Points _____
Compliance Issues Points _____
System Deficiencies Points _____
Affordability Points _____ _____

Total Points _____

Population = _____

Note: Population will be used in cases of ties. Smaller systems will be given priori

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TOWN OF DEAVER

RECEIVED
MAY 14 2018
WY WATER DEVELOPMENT OFFICE

William R. Camp, Mayor
Town of Deaver
P.O. Box 207
Deaver, WY 82421

May 9, 2018

Mr. Harry C. LaBonde, Jr., Director
Wyoming Water Development Commission
6920 Yellowtail Road
Cheyenne, WY 82003

Dear Director LaBonde:

As work continues to move forward on the Deaver Transmission Pipeline Project, I would like to take a moment to say thank you. Support from both you and the Wyoming Water Development Commissioners for this much needed project is greatly appreciated.

I welcome and encourage you and the Commissioners to visit the Town of Deaver and see firsthand the improvements that your funding is enabling us to implement.

Again, I appreciate the Wyoming Water Development Commission partnering with the Town of Deaver on this community improvement project.

Respectfully,

William R. Camp
Mayor

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News Release RECLAMATION
Managing Water in the West

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For Immediate Release: May 24, 2018

Bureau of Reclamation announces path forward for expanded operational capacity at Fontenelle Reservoir

CHEYENNE, Wyo. - On May 24, Bureau of Reclamation Commissioner Brenda Burman, together with Wyoming Governor Matthew H. Mead, Senators John Barrasso and Mike Enzi, and Representative Liz Cheney, announced collaborative plans to expand operational capacity at Fontenelle Reservoir. Governor Mead developed the Wyoming Water Strategy in 2015, which highlighted the Fontenelle Project.

For several years, Wyoming has sought to place riprap (rock or other material that protects against erosion) to expand the operating capacity of Fontenelle. The expansion will increase flexibility in operating the dam and reservoir – bolstering the region's ability to resist frequent droughts in the arid West – all without increasing the footprint of the reservoir. Additional reservoir capacity will also make possible the creation of new water supplies which would be available for contracting and sale.

"Water is Wyoming's most important natural resource," said Governor Mead. "It is critically important to not only Wyoming but to our country. We need to address water challenges using all the best tools – like conservation, planning and infrastructure. As a headwaters state we recognize the need to protect and develop our water."

"I applaud Commissioner Burman's announcement that the Bureau of Reclamation will increase operational flexibility at Fontenelle Reservoir in southwest Wyoming," said Senator Barrasso. "For years, I've been working to expand storage at Fontenelle. This announcement brings us one step closer to that goal. In order to start construction on this project, we must pass the Fontenelle Reservoir legislation. As chairman of the Senate Environment and Public Works Committee, I included this bill in the bipartisan America's Water Infrastructure Act. I'm confident we will pass this important water infrastructure legislation and make sure that communities in Wyoming have access to a reliable source of water."

"I am glad that the Bureau of Reclamation and Wyoming are working together to help expand capacity at the Fontenelle Reservoir," Senator Enzi said. "Water storage projects like this are vital to meet today's water needs and keep water supplies secure and flexible into the future. I

am also hopeful that Congress will act soon and Pass the Wyoming delegation's legislation designed to help further along the Fontenelle project."

"I'm pleased the Bureau of Reclamation is moving forward to expand the operational capacity of the Fontenelle Reservoir to help protect one of Wyoming's most important resources," Representative Cheney said. "The Fontenelle Reservoir expansion will help combat the effects of drought, help ensure our water infrastructure is properly developed and provide the potential for new commerce and recreation activity by creating new water supplies to be available for contracting and sale. This decision by the Bureau of Reclamation is an important and welcome step for Wyoming."

Under existing law, Wyoming can apply for project funding under the Colorado River Storage Project Basin Fund Memorandum of Agreement. On April 30, Reclamation concluded that it would consider funding the project under this authority, and invited Wyoming to submit a funding request. Under the MOA, many Western water storage projects have received funding from Reclamation for operation, maintenance, and replacement activities. This federal funding can only be used to improve Colorado River Storage Project facilities and operations.

As an alternative to expanding operational flexibility under MOA funding, Wyoming is seeking Congressional approval to create additional water supply for contracting. Two bills which would authorize this plan, Senate Bill 199 and House Resolution 648, have been introduced by the members of the Wyoming Congressional Delegation.

"Reclamation is pleased to be a partner in the state and the delegation's efforts to upgrade crucial water infrastructure at the Fontanelle Project," said Commissioner Burman. "Improving access to reliable water supplies is a key priority for Reclamation and the Adminsitration."

"This is a great project," said Governor Mead. "I am pleased to see it move forward."

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2018 WWDC/SWC MEETING SCHEDULE
(June 2018)

Date	Day	Program Item
JUNE		
June 14, 2018	**Thursday**	**WWDC/SWC/Joint Ag Workshop (Pinedale)**
June 15, 2018	**Friday**	**WWDC/SWC Joint Meeting, Contract Approval**
JULY		
July 18, 2018	**Wednesday**	**Groundbreaking Middle Piney Reservoir 2:00pm**
AUGUST		
August 15-17, 2018	**Wed-Fri**	**WWDC/SWC Workshop/Summer Tour/ Meeting (Gillette)**
OCTOBER		
October 2-4, 2018	**Tues-Thurs**	**Consultant Selection Interviews (Cheyenne)**
October 5, 2018	**Friday**	**WWDC Meeting, Selection Approval (Cheyenne)**
NOVEMBER		
November 7, 2018	**Wednesday**	**WWDC/SWC Workshop (Casper)**
November 8-9, 2018	**Thurs-Fri**	**WWDC/SWC Joint Meeting (Preliminary Funding Recs) (Casper)**
DECEMBER		
December 12-13, 2018	**Wed-Thurs**	**WWDC Workshop/Meeting – Final Funding Recommendations (Cheyenne)**
December 14, 2018	**Friday**	**SWC – Review Draft Funding Bills (Cheyenne)**

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