Ivins City Staff Report
City Council Meeting 3/2/17

Agenda Item: Approval of supplemental watershed work plan agreement with NRCS for Ivins Debris Basins 1-6 Rehabilitation Project and approval of expenditure for engineering services

Submitted by: Thomas Jorgensen, P.E., Assistant Public Works Director

Recommended City Council Action:
Approve supplemental watershed work plan agreement with NRCS and approve expenditure for engineering services to rehabilitate Ivins Debris Basins 1-6 not to exceed the NRCS funding limit of $219,753.

BACKGROUND:
The debris basins located along the base of the Red Mountain are currently not meeting the NRCS and Utah Dam Safety regulations and current engineering standards for a high hazard class dam. Ivins City has requested and has received Watershed Work Plan funding from the Natural Resources Conservation Service (NRCS) to rehabilitate Debris Basins 1-6, and bring them within current regulations and standards. The project would generally consist of the following modifications to some or all of the six basins: rock facing of the dam, crest grading, sediment removal, trash rack replacement, slip-lining principal spillway pipe, new auxiliary spillway, and rill erosion areas filled and compacted.

The NRCS will reimburse 100% of technical and administrative costs associated with project design and development of construction drawings up to $219,753 and will reimburse 65% of total construction costs up to $634,000. Ivins City must pay for the remaining 35% of construction costs, however, it's anticipated that the majority of that contribution will be in-kind, as rock material or sediment removal. These contributions count as the City match to reduce actual cash contributions. Staff expects that the City's cash contribution won't exceed $50,000 and our goal is to have a cash contribution of zero.

Staff has submitted a request for proposals (RFP) for engineering services to prepare the design. Additional details are identified in the attached RFP.

FINDINGS AND ANALYSIS:
Staff has reviewed the work agreement with the NRCS and recommends that the agreement be approved. Staff has also received proposals from engineering companies. The selection process was based on qualifications, with scoring based on criteria identified in the RFP. The rankings are summarized below:

	NRCS Basins 1-6 Rehabilitation Ranking
Bowen Collins & Associates	1
Jones & DeMille Engineering	2
Alpha Engineering	3
Entellus	4
Wilson & Company	5

Staff has evaluated the proposals and determined Bowen Collins & Associates (BC&A) to be the most qualified. BC&A have submitted a Scope of Services and have accompanied it with a cost summary, both of which have been reviewed by Staff and NRCS staff. A copy of the scope of work and cost summary have been included. The scope of work and cost summary appear to be as expected and staff recommends that BC&A be selected for the development of construction drawings and technical assistance.

SUPPORT MATERIALS:

- Work Agreement between NRCS and Ivins City
- Request for Proposals
- Bowen Collins & Associates Scope of Services for the NRCS Debris Basin Rehabilitation Project

FINANCIAL IMPACT:

The expense has been budgeted.
GL 53-42-878: Not to exceed $219,753 (100% of this expense to be reimbursed by NRCS funding)

Respectfully Submitted:

Thomas Jorgensen, P.E., Assistant Public Works Director

Content Review:

Dale Coulam, City Manager

Bowen Collins
& Associates, Inc.
CONSULTING ENGINEERS

20 NORTH MAIN, SUITE 107 • ST. GEORGE, UTAH 84770
TEL: 435.656.3299 • FAX: 435.656.2190

February 15, 2017

Tom Jorgensen, P.E.
Assistant Public Works Director
55 North Main
Ivins, Utah 84738

Subject: Scope of Services for the NRCS Debris Basin Rehabilitation Project

Dear Tom:

Bowen Collins & Associates (BC&A) has studied the scope of services outlined in the City's Request for Proposal (RFP). Based on the level of detail included in your provided scope of work (SOW), it is apparent that the City has carefully thought through the tasks required to accomplish the project. It is our understanding that the following items, obtained from the environmental assessment (EA), will need to be designed at each of the debris basins.

Debris Basin #1

- Level grade the emergency spillway
- Remove vegetation from upstream and downstream faces of the dam embankment
- Excavate deposited sediment within the basin and reseed areas disturbed during construction
- Remove sediment around the riser inlet, extend perimeter trash rack, and install tortoise fencing around the riser inlet
- Slipline the outlet pipe to nearest downstream manhole
- Add compacted fill to and level and grade the dam crest
- Add rock mulch erosion control to downstream face.

Debris Basin #2

- Retain and grade existing spillway as needed
- Remove sediment around the riser inlet, extend perimeter trash rack, and install tortoise fencing around the riser inlet
- Clean clogged outlet pipe
- Slipline the outlet pipe to nearest downstream manhole
- Excavate and grade new spillway connecting Debris Basin #2 with Debris Basin #3
- Add rock mulch erosion control to downstream embankment face.

Debris Basin #3

- Decommission existing emergency spillway and construct an earthen embankment in that area
- Level dam crest
- Remove vegetation from upstream and downstream faces of the dam embankment

- Remove sediment around the riser inlet, extend perimeter trash rack, and install tortoise fencing around the riser inlet
- Slipline the outlet pipe to nearest downstream manhole
- Excavate and grade new spillway connecting Debris Basin #3 with Debris Basin #4 and compact rilling areas.

Debris Basin #4

- Decommission the existing emergency spillway and construct an earthen embankment in that area
- Raise and level the dam crest
- Excavate deposited sediment within the basin and reseed areas disturbed during construction
- Remove vegetation and add crushed rock in areas where rilling has occurred
- Remove sediment around the riser inlet, extend perimeter trash rack, and install tortoise fencing around the riser inlet
- Slipline the outlet pipe to nearest downstream manhole
- Excavate and grade new spillway oriented toward 200 West street and armor it with grouted rock riprap and cap
- Add crushed rock to dam embankment

Debris Basin #5

- Level grade emergency spillway
- Level dam crest and add crushed rock
- Excavate deposited sediment within the basin and reseed
- Remove sediment around the riser inlet, extend perimeter trash rack, and install tortoise fencing
- Slipline the pipe to nearest downstream manhole
- Clear and grub vegetation larger than knee high

Debris Basin #6

- Excavate deposited sediment within the basin and reseed areas disturbed during construciton
- Level grade emergency spillway
- Level dam crest and add crushed rock
- Remove sediment around the riser inlet, extend perimeter trash rack, and install tortoise fencing
- Slipline the pipe to nearest downstream manhole
- Clear and grub vegetation larger than knee high on embankment
- Clean clogged outlet pipe

PROPOSED SCOPE OF SERVICES

Using the Scope of Services outlined in the City's RFP for this project as a guide, we have prepared a detailed Scope of Services that we proposed to complete for the following phases of the project: Design Phase, Bid Phase, and Construction Phase. The tasks we propose to complete and any limiting work or budgetary assumptions are summarized below.

Task B: Coordination Meetings. BC&A personnel will prepare for and attend a kickoff meeting to discuss project parameters, goals, schedule, and lines of communications. BC&A also proposes to have monthly coordination meetings for an assumed 8 month design period. We will prepare for and attend review meetings at the 60- and 90-percent review stages of the project. The total number of meetings held during design of the project will be up to 11 (Kickoff, 8 coordination meetings, 60% design review and 90% design review). Also, we will plan to coordinate via phone call with both Ivins City and the NRCS periodically to discuss information to keep the clients informed and the project progressing.

Task C: Review Existing Information. BC&A will review existing information previously developed for this project to develop a better understanding of the project and to identify design parameters and to define work that can be used in the design phase. We have assumed that the City and/or NRCS will provide the following information, at a minimum, prior to or during the Project Kickoff Meeting.

- McMillen/Rosenberg Site Survey
- EA, BA, BO, preliminary design concepts, work area shapefiles, etc.
- Original Design Drawings and Specifications
- Preliminary design hydrologic and hydraulic models
- Existing City utility information
- Aerial mapping and topography
- GIS layers for staging and construction limitations
- Existing digital Standard Operating Plan (SOP) for the basins
- Geotechnical, Geologic, and Hazard Classification information previously developed, including specific seismic hazard information needed to perform the structural analyses for the riser inlet structures
- Previously completed studies and planning information

Task D: Site and Utilities Investigation. BC&A will complete an existing utility records search for the project by contacting existing utility companies. BC&A will also visit the site to identify pertinent information for the design. We have assumed that the existing Washington County 2-foot aerial contours will be used as the base mapping for the project. This topographic information will be supplemented by the field survey information completed by McMillian/Rosenberg during the preliminary phases of the project and with a details survey of the spillway locations provided by an independent survey. This independent survey will also verify some of the points surveyed from the preliminary design for accuracy. We have also assumed that all work will be on City owned property or at locations with current easement and no right-of-way survey or legal descriptions for easements will be required for the project.

Task E: Design Analysis. BC&A will perform the appropriate engineering analysis to provide a design that will meet objectives and criteria of the project. The analysis shall include the following:

i. *Geology and Soil Mechanics Analysis.* We have assumed that all needed geologic and geotechnical analyses needed to design this project were completed previously by others through the EA. We plan to subcontract with Gerhart Cole Inc. to complete the geotechnical services on this project. They will be completing the following items associated with the geotechnical and geologic work on the project:

   i) Task 1.0 Review Existing Data - The purpose of this task it to more formally review the existing geotechnical and geologic data.

ii) Task 2.0 Site Visit and Kickoff Meeting - This task includes a site visit to coordinate equipment access, utility clearance, and to visually assess debris basins 1-6. As part of this visit we would plan on a kickoff meeting with you to coordinate our efforts.

iii) Task 3.0 Field Studies - Objectives of this task include characterization of potential borrow materials. We have included costs for a full day of test pit excavations to characterize reservoir basin materials for its use as embankment fill. Our costs includes labor for our field personnel to coordinate Blue Stakes and trackhoe/excavator efforts, observe and document field conditions, and log subsurface conditions. Test pit locations will be obtained using a hand-held, civilian-grade GPS unit and/or measurements from physical features.

(1) Assumptions

- Owner / NRCS to provide free and clear access will be provided to the each detention basin site and spillway locations.
- Owner or NRCS will waive any bonding and/or permit costs associated with our field work.
- Geotechnical and Geologic data provided for the sites (Rosenberg Associates, 2014) satisfies data collection intents of NRCS TR-60 and this data can used for design.
- NRCS and/or Owner will provide us with a finalized version of Rosenberg and Associates (2014) report meeting the intent of Utah Administrative Code R156-22 (Professional Engineers and Professional Land Surveyors Licensing Act Rule) and R156-76 (Professional Geologist Licensing Act Rule).
- We will coordinate utility clearances with Blue Stakes.

iv) Task 4.0 Laboratory Studies – Bulk samples obtained from test pits will be tested in our geotechnical laboratory. Actual testing performed will depend upon materials collected and particular data needs. Testing plan includes: a) index tests (grain size distribution, compaction testing, moisture content, Atterberg Limits); b) pinhole dispersion; and c) strength testing, as appropriate.

v) Task 5.0 Data Reduction, Geotechnical Analysis, and Design Recommendations - This task consists of preparing final test pit logs, assessing/summarizing field and laboratory data from previous and our studies. Existing data will be combined with information and data collected from Tasks 1.0 to 4.0 to develop material properties and characteristics of each Detention Basin. Although Rosenberg and Associates (2015) performed some preliminary stability and seepage assessments for Debris Basin 1, our experience with NRCS projects suggests evaluations will be needed for each Debris Basin and as such our costs reflect these analyses.

(1) Deliverable

- Results of our studies will be summarized in a Draft Geotechnical Report by a registered professional engineer; a draft electronic version will be delivered to NRCS, Utah Dam Safety, and Owner.

vi) Task 6.0 Design Support (Plans, Specifications, and Preliminary Opinion of Costs) - This task includes working with you to develop project plans, specifications, and opinions of cost.

vii) Task 7.0 Coordination, Review Meetings and Final Design Report - This Task includes efforts to finalize the Draft Geotechnical Report (Task 5.0). We understand our deliverable for Task 5.0 will be reviewed by the NRCS local and Fort Worth offices along with Dam Safety. This task assumes addressing design comments and up to 4 meetings/conference calls.

(1) Assumptions

- Draft report will be reviewed by the NRCS Fort Worth office and Utah Dam Safety. Addressing review comments from other parties are excluded.
- Draft Report will be finalized following receipt of all written comments. Our costs reflect one (1) round of comments.
- Our costs assume one (1) comment resolution meeting with NRCS and Dam Safety representatives.
- This task includes up to 4 meetings in the Salt Lake area or conference calls if held in Southern Utah.
- Additional support beyond that assumed will be billed according to our fee schedule.

(2) Deliverable

- A final geotechnical report signed by a registered professional engineer; an electronic version will be delivered.

viii) Task 7.0 Construction Support - This task includes submittal review, meetings, conference calls and field observation assistance during construction.

(1) Assumptions:

- Costs reflect an assumed 20 week construction schedule and assumed support.
- Assumes 2 hours per week submittal review, conference calls, meetings or additional support.
- 6 site visits.
- Additional support beyond that assumed will be billed according to our fee schedule.

ii. *Hydrologic/Hydraulics Analysis.* BC&A proposes to use the results from the previously completed hydrologic and hydraulic models to perform our design work. We will review and verify the design hydrology and hydraulics of the debris dams but do not plan to perform any additional modeling to define the inflow design flood or the spillway evaluation flood.

iii. *Structural Analysis.* It is our understanding that there are two different sized outlet risers located within the 6 debris basins. We propose to complete a structural analysis for these two different sized structures using the SARisers computer program assuming that the other risers are similar in size and design.

iv. *Vegetation Considerations.* BC&A will develop reseeding and revegetation plans and specifications to restore native areas that will be disturbed by construction activities.

v. *Safety Considerations.* BC&A will identify and address safety considerations for both the construction and operation of the debris basins. These safety considerations will be identified in the bidding and contract documents and in the Operation and Maintenance plan, if needed.

Task F: Design Report. BC&A will complete a Design Report for the project in accordance with NRCS criteria. This report will document the findings of the Task E – Design Analysis and discuss each of the items outlined in the City's RFP for the Design Report.

Task G: Design Drawings. BC&A will prepare design drawings, meeting NRCS standards, for the project. Our cost estimated has been prepared assuming that no more than 50 design drawings will be prepared for the project as outlined in the table included as Attachment 1.

Task H: Specifications. BC&A will prepare technical specifications for the project. These specifications will reference NRCS Specifications for Construction, where possible, and we will provide other detailed technical specifications when/if needed.

Task I: Bid Schedule. Along with the Bid Schedule, BC&A will prepare front end legal documents for bidding the project. We will use the City's current general conditions, bidding, and contract legal documents for this front end package. For budgetary purposes it has been assumed that all work associated with this project will be included in a single bid package.

Task J: Cost Estimate. BC&A will prepare an engineer's opinion of probable construction cost (OPCC) at the 100% complete design submittal. This OPCC will be set up to help determine phasing for the construction of the projects.

Task K: Performance Schedule. BC&A will prepare a bar chart construction performance schedule which will include estimated duration and sequences for each construction activity.

Task L: Inspection/Quality Assurance Plan (QA Plan). BC&A will prepare an inspection/quality assurance plan that outlines construction oversight needed to ensure the desired construction quality. This will include scheduling of tests and notifications of specialty inspections.

Task M: Operation and Maintenance Plan (O&M Plan). We have assumed that the O&M Plan will be prepared so it can be used to modify or amend the existing Standard Operating Plan.

Task N: As-built Drawings. We have assumed that the as-built construction drawings will be prepared from information and redlines provided by the general contractor and the City. These drawings will be provided to both Ivins City and NRCS in pdf and AutoCAD format.

Task P1: Bid Period Services. Our cost estimate for bid period services has been prepared assuming only one bid package will be prepared and that the bid period will be approximately 4 weeks long. BC&A will complete the following subtasks associated with the bid period services:

i. *Prepare Advertisement.* BC&A will prepare an advertisement to be used to advertise the project to prospective general contractors.

ii. *Pre-Bid Meeting.* BC&A will prepare for and attend the pre-bid meeting with the potential bidders. It has been assumed that this meeting will last three hours and will include a site visit to each of the debris basins.

iii. *Addenda/Drawing Revisions.* BC&A will be available to answer questions from potential bidders regarding the contract documents. BC&A will also prepare clarifications and addenda, if required.

iv. *Bid Opening and Evaluation.* BC&A will attend the bid opening with Ivins City, NRCS, and the general contractors. BC&A will also prepare a bid summary and prepare a letter evaluating the bids and recommending selection of the general contractor to construct the projects.

Task P2: Construction Period Services. Our cost estimate for the construction period services has been prepared assuming that we will provide 20 hours per week of onsite construction observation and coordination for an anticipated 20 week (5 month) period. We have also assumed that the as-built drawings will be completed as part of Task N. BC&A will complete the following subtask associated with the construction period services.

i. *Pre-Construction Meeting.* BC&A will prepare for and attend a pre-construction meeting with the selected general contractor, Ivins City, NRCS, and others as needed. It has been assumed that this meeting will last three hours and will include a site visit of each of the debris basins.

ii. *Submittals, RFI, CO, Payment Requests.* BC&A will review submittals provided by the general contractor, review requests for information (RFIs), review and prepare project change orders, and will review and recommend contractor's payment requests.

iii. *Weekly Progress Meetings.* BC&A will prepare for and attend weekly on-site progress meetings with the general contractor, Ivins City, NRCS, and others as needed.

iv. *Construction Observation.* BC&A will provide construction observation services during the construction period of the project. These services will include answering on-site questions from the contractor, clarifying the contract documents, providing reports and photographic logs of construction. BC&A will plan on working with Ivins City's public works inspector throughout the duration of the project.

v. *Substantial Completion Walkthrough.* BC&A will prepare for and attend a substantial completion walkthrough on the project. This meeting will be held to determine substantial completion of the project, to develop a punch list, and to the start the warrantee period.

vi. *Project Closeout.* BC&A will work with the general contractor to provide the appropriate closeout documents and payments, including retainage.

PROPOSED PROJECT SCHEDULE AND BUDGETARY ASSUMPTIONS

A generalized project schedule is shown below relative to receiving contractual notice to proceed. BC&A estimates that project will be complete in just over 14 months. A detailed design schedule will be developed after meeting with the City/NRCS to kick off the project.

- Design Period — 8 Months following NTP (8 months total)
- Bid Period — 9 Months following NTP (1 month total)
- Construction Period — 14 Months following NTP (5 months total)

For budgetary purposes, the following assumptions were made in developing the engineering cost estimate for this project:

1. All of the project will be bid in a single bid package.
2. All environmental permitting was completed as part of the BA, BO, and EA and no additional environmental permitting or coordination will be required, including clearing or additional disposal sites.

3. Structural evaluation of the debris basin outlet towers for stability will be completed as part of Task E – Design Analysis, but the design of any needed structural modifications has not been included in the scope of services. BC&A would be willing to negotiate a modification in scope to include any structural design modifications recommended in the design analysis if any needed structural improvements are necessary.
4. Existing hydrologic and hydraulic models developed during the preliminary stages of the project will be provided for use during design.

COST SUMMARY

We propose to perform the scope of services on an hourly basis. We have tabulated estimated man-hours and costs to complete each task outlined in the scope of services defined above in Attachment 2.

We are willing to negotiate the scope of services, schedule, and fee if there is something in this proposal that does not meet your needs. We enjoy working with Ivins City and look forward to working with you on this project. Please call if you have any questions or need additional information.

Sincerely,
Bowen Collins & Associates, Inc.

Todd Olsen

Todd Olsen, P.E.
Project Manager

Cc. Chuck Gillette, Ivins City
Lance Smith, NRCS
Cody Moultrie, BC&A
Craig Bagley, BC&A

Attachments

ATTACHMENT 1
NRCS Debris Basin Rehabilitation Project
Ivins City/NRCS
Estimated Drawing Sheet Count

Last Updated: 02/14/17

No.	Sheet	Desc
1	G-1	TITLE PAGE, PROJECT LOCATION MAP, & VICINITY MAP
2	G-2	INDEX OF DRAWINGS
3	G-3	SYMBOLS
4	G-4	ABBREVIATIONS
5	G-5	GENERAL NOTES
6	G-6	OVERALL DRAWING INDEX MAP
7	G-7	STAGING AREA, ACCESS AND HAULING MAP - 1
8	G-8	STAGING AREA, ACCESS AND HAULING MAP - 2
9	G-9	STAGING AREA, ACCESS AND HAULING MAP - 3
10	C-1	DEBRIS BASIN #1 SITE PLAN
11	C-2	DEBRIS BASIN #2 SITE PLAN
12	C-3	DEBRIS BASIN #3 SITE PLAN
13	C-4	DEBRIS BASIN #4 SITE PLAN
14	C-5	DEBRIS BASIN #5 SITE PLAN
15	C-6	DEBRIS BASIN #6 SITE PLAN - 1
16	C-7	DEBRIS BASIN #6 SITE PLAN - 2
17	C-8	DEBRIS BASIN #6 SITE PLAN - 3
18	C-9	DEBRIS BASIN #1 NORTH SPILLWAY PLAN & SECTION
19	C-10	DEBRIS BASIN #1 SOUTH SPILLWAY PLAN & SECTION
20	C-11	DEBRIS BASIN #2 NORTH SPILLWAY PLAN & SECTION
21	C-12	DEBRIS BASIN #2 SOUTH SPILLWAY PLAN & SECTION
22	C-13	DEBRIS BASIN #3 NORTH SPILLWAY PLAN & SECTION
23	C-14	DEBRIS BASIN #3 SOUTH SPILLWAY PLAN & SECTION
24	C-15	DEBRIS BASIN #4 NORTH SPILLWAY PLAN & SECTION
25	C-16	DEBRIS BASIN #5 WEST SPILLWAY PLAN & SECTION
26	C-17	DEBRIS BASIN #6 EAST SPILLWAY PLAN & SECTION
27	C-18	DEBRIS BASIN #1 AND #2 SLIPLINE PROFILE
28	C-19	DEBRIS BASIN #3 AND #4 SLIPLINE PROFILE
29	C-20	DEBRIS BASIN #5 AND #6 SLIPLINE PROFILE
30	C-21	DEBRIS BASIN #6 SLIPLINE PROFILE
31	C-22	DAM EMBANKMENT PROFILES - 1
32	C-23	DAM EMBANKMENT PROFILES - 2
33	C-24	DAM EMBANKMENT PROFILES - 3
34	C-25	DAM EMBANKMENT PROFILES - 4
35	C-26	DAM EMBANKMENT CROSS SECTION - 1
36	C-27	DAM EMBANKMENT CROSS SECTION - 2
37	C-28	DAM EMBANKMENT CROSS SECTION - 3
38	C-29	DAM EMBANKMENT CROSS SECTION - 4
39	GC-1	CIVIL DETAILS - 1
40	GC-2	CIVIL DETAILS - 2
41	GC-3	CIVIL DETAILS - 3
42	GC-4	CIVIL DETAILS - 4
43	S-1	DEBRIS BASIN OUTLET STRUCTURE TYPICAL DETAILS - 1
44	S-2	DEBRIS BASIN OUTLET STRUCTURE TYPICAL DETAILS - 2
45	GS-1	GENERAL STRUCTURAL NOTES
46	GS-2	STRUCTURAL DETAILS - 1
47	GS-3	STRUCTURAL DETAILS - 2
48	GS-4	STRUCTURAL DETAILS - 3

ATTACHMENT 2

NRCS Debris Basin Rehabilitation Project

Ivins City

Engineering Man-hours and Fee Estimate

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

2/14/2017

		Office		Techs		Engineers						Subtotal Hours	Subtotal Labor	Subtotal Expenses	Total Cost
	Labor Category	Account	Editor	Tech 3	Tech 4	Enviro.	Struct.	Staff	PE	PM	PIC				
	Staff	Buhler	Hilbert	CAD	CAD	Tsandes	Davis	Anderson	Moultrie	Olsen	Bagley				
Task	Task Description														
ENGINEERING/DESIGN															
B	Coordination Meetings					2			33	33	10	78	$ 10,190	$ 5,056	$ 15,246
C	Collect and Review Existing Information			3				10	24	10	2	49	$ 5,760	$ 3,988	$ 9,748
D	Site and Utilities Investigation							16	4	1		21	$ 2,308	$ 7,306	$ 9,614
E	Design Analysis	0	0	0	0	16	60	0	50	24	12	153	$ 22,420	$ 21,388	$ 42,518
	i. Geology and Soil Mechanics Analysis								*8*	*4*	*1*	*13*	*$ 1,610*	*$ 20,408*	*$ 22,018*
	ii. Hydrology/Hydraulics Analysis								*30*	*10*	*5*	*45*	*$ 5,550*	*$ 315*	*$ 5,865*
	iii. Structral Analysis						*60*			*2*	*1*	*63*	*$ 10,050*	*$ 441*	*$ 10,491*
	iv. Vegetation Considerations					*16*			*2*		*1*	*19*	*$ 2,310*	*$ 133*	*$ 2,443*
	v. Safety Considerations								*8*	*4*	*1*	*13*	*$ 1,610*	*$ 91*	*$ 1,701*
F	Design Report		16	30	15	10	12		40	20	10	153	$ 17,637	$ 1,071	$ 18,708
G	Construction Drawings			200	145	12	60	75	120	70	20	702	$ 80,475	$ 8,662	$ 89,137
H	Specifications		22				5	5	24	12	2	70	$ 7,474	$ 490	$ 7,964
I	Bid Schedule		6						16	10	2	34	$ 3,902	$ 238	$ 4,140
J	Cost Estimate				2			10	8	8	1	29	$ 3,456	$ 203	$ 3,659
K	Performance Schedule							2		6	1	9	$ 1,226	$ 63	$ 1,289
L	Inspection/Quality Assurance Plan (QA Plan)								13	6	2	21	$ 2,610	$ 147	$ 2,757
M	Operation and Maintenance Plan (O&M Plan)								18	8	2	28	$ 3,440	$ 196	$ 3,636
N	As-built Drawings			70					25	5	1	101	$ 10,620	$ 717	$ 11,337
	Engineering/Design Sub-Total	$ -	$ 44	$ 303	$ 162	$ 40	$ 137	$ 118	$ 373	$ 209	$ 62	$ 1,448	$ 170,228	$ 49,525	$ 219,753
BID PERIOD/CONSTRUCTION															
P.1	**Bid Period Services**	0	0	0	18	0	0	0	28	14	2	62	$ 7,234	$ 454	$ 7,688
	i. Prepare Advertisement								*4*	*1*		*5*	*$ 580*	*$ 35*	*$ 615*
	ii. Hold Pre-Bid Meeting								*3*	*3*		*6*	*$ 750*	*$ 52*	*$ 802*
	iii. Addenda/Drawing Revisions				*18*				*10*	*4*	*1*	*33*	*$ 3,684*	*$ 231*	*$ 3,915*
	iv. Bid Opening and Evaluation								*11*	*6*	*1*	*18*	*$ 2,220*	*$ 136*	*$ 2,356*
P.2	**Construction Period Services**	0	0	0	0	0	5	0	446	80	22	553	$ 64,800	$ 11,254	$ 76,054
	i. Pre-Construction Meeting								*4*	*4*	*3*	*11*	*$ 1,510*	*$ 460*	*$ 1,970*
	ii. Submittals, RFI, CO, Payment Requests						*5*		*30*	*10*	*4*	*49*	*$ 6,180*	*$ 5,843*	*$ 12,023*
	iii. Weekly Progress Meetings									*60*		*60*	*$ 8,400*	*$ 420*	*$ 8,820*
	iv. Construction Observation								*400*		*10*	*410*	*$ 45,700*	*$ 4,370*	*$ 50,070*
	v. Substantial Completion Walkthrough								*4*	*4*	*4*	*12*	*$ 1,680*	*$ 84*	*$ 1,764*
	vi. Project Closeout								*8*	*2*	*1*	*11*	*$ 1,330*	*$ 77*	*$ 1,407*
	Bid/Construction Sub-Total	0	0	0	18	0	5	0	474	94	24	615	72034	11708	$ 83,742
	TOTAL HOURS	*0*	*44*	*303*	*180*	*40*	*142*	*118*	*847*	*303*	*86*	*2063*			
	TOTAL COSTS												$ 242,262	$ 61,233	$ 303,495

Expenses include:
Computer/Communications Charge at $7/labor hour
Mileage Charge at $0.75/mile
10% Markup on other project related expenses

WARNER DRAW WATERSHED

SUPPLEMENTAL WATERSHED WORK PLAN AGREEMENT #5
FOR IVINS DEBRIS BASINS 1-6 REHABILITATION

between

Ivins City
(Referred to herein as sponsors)

and the

Natural Resources Conservation Service,
U.S. Department of Agriculture

(Referred to herein as NRCS)

Whereas, the Watershed Work Plan Agreement for Warner Draw Watershed , State of Utah , executed by the Sponsoring Local Organization named therein and the Service became effective on the 19th day of December 1969; and

Whereas, Supplemental Watershed Work Plan Agreement Number 1 for Warner Draw Watershed , State of Utah , executed by the Sponsoring Local Organization named herein and the Service, became effective on the 4th day of November 1971; and

Whereas, Supplemental Watershed Work Plan Agreement Number 2 for Warner Draw Watershed , State of Utah , executed by the Sponsoring Local Organization named herein and the Service, became effective on the 13th day of November 1975; and

Whereas, Supplemental Watershed Work Plan Agreement Number 3 for Warner Draw Watershed, State of Utah, executed by the Sponsoring Local Organization and the Service, became effective on the 24th day of March 2015. The Sponsoring Local Organization agreed that only the entity of the Sponsoring Local Organization responsible for carrying out operation and maintenance activities for said flood prevention measures (and appurtenances) would be required to sign subsequent watershed work plan supplements and any associated agreements with the Service for that specific rehabilitation work. Therefore, the following entities of the Local Sponsoring Organization would be the only required signatory for watershed work plan supplements and associated agreements with Service for the flood prevention structural measures as outlined below:

i. WCFCA for Gypsum Wash Debris Basin
ii. WCFCA for Warner Draw Debris Basin
iii. WCFCA for Stucki Debris Basin
iv. Ivins City for Ivins Dams 1-6
v. St. George City for City Creek Debris Basin
vi. Hurricane City for Frog Hollow Debris Basin

The Sponsoring Local Organization and the Service further agree to all other terms, conditions and stipulations of said Watershed Work Plan Agreement not modified herein.

Whereas, Supplemental Work Plan Agreement Number 4 for Warner Draw Watershed, State of Utah, executed by the Washington County Flood Control Authority and the Service, became effective on the 11th day of April 2016.

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through NRCS, and Ivins City, Utah hereby agree on this Supplemental Watershed Plan Agreement No. 5:

1. **Term**. The term of this agreement is for the installation period and evaluated life of the project (100 years) and does not commit NRCS to assistance of any kind beyond the end of the evaluated life.

2. **Costs.** The costs shown in this plan are preliminary estimates. Final costs to be borne by the parties hereto will be the actual costs incurred in the installation of works of improvement.

3. **Real Property.** The sponsors will acquire such real property as will be needed in connection with the works of improvement. The amounts and percentages of the real property acquisition costs to be borne by the sponsors and NRCS are as shown in Table 1 hereof.

   The sponsors agree that all land acquired for measures, other than land treatment practices, with financial or credit assistance under this agreement will not be sold or otherwise disposed of for the evaluated life of the project except to a public agency that will continue to maintain and operate the development in accordance with the operation and maintenance agreement.

4. **Uniform Relocation Assistance and Real Property Acquisition Policies Act.** The sponsors hereby agree to comply with all of the policies and procedures of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S.C. Section 4601 et seq. as further implemented through regulations in 49 CFR Part 24 and 7 CFR Part 21) when acquiring real property interests for this federally assisted project. If the sponsor is legally unable to comply with the real property acquisition requirements, it agrees that, before any Federal financial assistance is furnished; it will provide a statement to that effect, supported by an opinion of the chief legal officer of the state containing a full discussion of the facts and law involved. This statement may be accepted as constituting compliance

5. **Cost-Share for Watershed Project Plans.** Table 1-Ivins DBs 1-6 Cost-Share Percentages & Amounts shows the estimated cost-share percentages and amounts for Watershed Project Plan implementation.

Table 1. Ivins Debris Basins 1-6 Rehabilitation Cost-Share Percentages and Amounts

Works of Improvement	NRCS		Sponsors		Total
Cost-Sharable Items	%	Cost	%	Cost	Cost
Ivins Debris Basins 1-6 Rehabilitation /[1]	65	$634,000	35	$341,000	$975,000
Floodplain easements (X acres)					
Land treatment measure					
Mitigation					
Real Property Acquisition Cost					
Real estate appraisal fees, legal fees, survey costs, flowage easements					
Relocation /[2]					
Subtotal: Cost-Sharable Costs		$		$	$
Non-Cost-Sharable Items /[3]					
NRCS Technical Assistance/Engineering		$198,000			
Project Administration /[4]				$30,000	
Construction Management					
Permits					
Real Property Rights					
Relocation, Beyond Required Decent, Safe, …					
Non-Project Costs					
Subtotal: Non-Cost-Sharable Costs		$198,000		$30,000	$228,000
Grand Total:		$832,000		$371,000	$1,203,000

[1] - The cost-share rate is the percentage of the average cost of installing the practice in the selected plan for the evaluation unit. During project implementation, the actual cost-share rate shall not exceed the rate of assistance for similar practices and measures under existing national programs.
[2] - Investigation of the watershed project area indicates that no displacements will be involved under present conditions. However, in the event that displacement becomes necessary at a later date, the cost of relocation assistance and payments will be cost-shared in accordance with the percentages shown.
[3] - If actual Non-Cost-Sharable item expenditures vary from these figures, the responsible party will bear the change.
[4] - The sponsors and NRCS will each bear the costs of project administration that each incurs. Sponsor costs for project administration include relocation assistance advisory service.

6. **Land Treatment Agreements.** The sponsors will obtain agreements from owners of not less than 50 percent of the land above each multiple-purpose and floodwater-retarding structure. These agreements must provide that the owners will carry out farm or ranch conservation plans on their land. The sponsors will ensure that 50 percent of the land upstream of any retention reservoir site is adequately protected before construction of the dam. The sponsors will provide assistance to landowners and operators to ensure the installation of the land treatment measures shown in the Watershed Project Plan. The sponsors will encourage landowners and operators to continue to operate and maintain the land treatment measures after the long-term contracts expire, for the protection and improvement of the watershed.

7. **Floodplain Management.** Before construction of any project for flood prevention, the sponsors must agree to participate in and comply with applicable Federal floodplain management and flood insurance programs. For plans approved as of the date of this revised manual the sponsor is required to have development controls in place below low and significant hazard dams prior to NRCS or the sponsor entering into a construction contract.

8. **Water and Mineral Rights.** The sponsors will acquire or provide assurance that landowners or resource users have acquired such water, mineral, or other natural resources rights pursuant to State law as may be needed in the installation and operation of the works of improvement. Any costs incurred shall be borne by the sponsor and these costs are not eligible as part of the sponsor's cost-share.

9. **Permits.** The sponsor will obtain and bear the cost for all necessary Federal, State, and local permits required by law, ordinance, or regulation for installation of the works of improvement. These costs are not eligible as part of the sponsors' cost-share.

10. **NRCS Assistance.** This agreement is not a fund-obligating document. Financial and other assistance to be furnished by NRCS in carrying out the plan is contingent upon the fulfillment of applicable laws and regulations and the availability of appropriations for this purpose.

11. **Additional Agreements.** A separate agreement will be entered into between NRCS and the sponsor before either party initiates work involving funds of the other party. Such agreements will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

12. **Amendments.** This plan may be amended or revised only by mutual agreement of the parties hereto, except that NRCS may deauthorize or terminate funding at any time it determines that the sponsor has failed to comply with the conditions of this agreement or when the program funding or authority expires. In this case, NRCS must promptly notify the sponsor in writing of the determination and the reasons for the deauthorization of project funding, together with the effective date. Payments made to the sponsors or recoveries by NRCS must be in accord with the legal rights and liabilities of the parties when project funding has been deauthorized. An amendment to incorporate changes affecting a specific measure may be made by mutual agreement between NRCS and the sponsor having specific responsibilities for the measure involved.

13. **Prohibitions.** No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this plan, or to any benefit that may arise there from; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

14. **Operation and Maintenance (O&M).** The sponsor will be responsible for the operation, maintenance, and any needed replacement of the works of improvement by actually performing the work or arranging for such work, in accordance with an O&M Agreement. An O&M agreement will be entered into before Federal funds are obligated and will continue for the project life of 100 years. Although the sponsors' responsibility to the Federal Government for O&M ends when the O&M agreement expires upon completion of the evaluated life of measures covered by the agreement, the sponsors acknowledge that continued liabilities and responsibilities associated with works of improvement may exist beyond the evaluated life.

15. **Emergency Action Plan.** Prior to construction, the sponsors must prepare an Emergency Action Plan (EAP) where failure may cause loss of life or as required by state and local regulations. The EAP must meet the minimum content specified in Part 500.52 of the NRCS Title 180, National Operation and Maintenance Manual (NOMM), Part 500, Subpart F, Section 500.52, and meet applicable State agency dam safety requirements. The NRCS will determine that an EAP is prepared

prior to the execution of fund obligating documents for construction of the structure. The EAP must be reviewed and updated by the sponsors annually.

16. **Nondiscrimination Provisions.** U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases apply to all programs and/or employment activities.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

    By signing this agreement the recipient assures the Department of Agriculture that the program or activities provided for under this agreement will be conducted in compliance with all applicable Federal civil rights laws, rules, regulations, and policies.

17. **Certification Regarding Drug-Free Workplace Requirements (7 CFR Part 3021).** By signing this Watershed Agreement, the sponsors are providing the certification set out below. If it is later determined that the WCFCA knowingly rendered a false certification, or otherwise violated the requirements of the Drug-Free Workplace Act, the NRCS, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.

    Controlled substance means a controlled substance in Schedules I through V of the Controlled Substances Act (21 U.S.C. Section 812) and as further defined by regulation (21 CFR Sections 1308.11 through 1308.15);

    Conviction means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

    Criminal drug statute means a Federal or non-Federal criminal statute involving the manufacturing, distribution, dispensing, use, or possession of any controlled substance;

    Employee means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) all direct charge employees; (ii) all indirect charge employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if used to meet a matching requirement; consultants or independent contractors not on the grantees' payroll; or employees of subrecipients or subcontractors in covered workplaces).

Certification:

A. The sponsors certify that they will or will continue to provide a drug-free workplace by:
(1) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition.
(2) Establishing an ongoing drug-free awareness program to inform employees about:
(a) The danger of drug abuse in the workplace;
(b) The grantee's policy of maintaining a drug-free workplace;
(c) Any available drug counseling, rehabilitation, and employee assistance programs; and
(d) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.
(3) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (1).
(4) Notifying the employee in the statement required by paragraph (1) that, as a condition of employment under the grant, the employee must:
(a) Abide by the terms of the statement; and
(b) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than 5 calendar days after such conviction.
(5) Notifying the NRCS in writing, within 10 calendar days after receiving notice under paragraph (4)(b) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees shall provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification numbers of each affected grant.
(6) Taking one of the following actions, within 30 calendar days of receiving notice under paragraph (4) (b), with respect to any employee who is so convicted.
(a) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
(b) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency.
(7) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (1), (2), (3), (4), (5), and (6).

B. The sponsors may provide a list of the sites for the performance of work done in connection with a specific project or other agreement.

C. Agencies will keep the original of all disclosure reports in the official files of the agency.

18. Certification Regarding Lobbying (7 CFR Part 3018) (*for projects > $100,000*)
A. The sponsors certify to the best of their knowledge and belief, that:
(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the sponsors, to any person for influencing or attempting to influence an officer or employee of an agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of

Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The sponsors must require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

B. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by U.S. Code, Title 31, Section 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

19. Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions (7 CFR Part 3017).

A. The sponsors certify to the best of their knowledge and belief, that they and their principals ---

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(2) Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph A(2) of this certification; and

(4) Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

B. Where the primary sponsors are unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this agreement.

20. Clean Air and Water Certification.

(Applicable if this agreement exceeds $100,000, or a facility to be used has been subject of a conviction under the Clean Air Act (42 U.S.C. Section 7413(c)) or the Federal Water Pollution Control Act (33 U.S.C. Section 1319(c)) and is listed by EPA, or is not otherwise exempt.)

A. The sponsors signatory to this agreement certify as follows:

(1) Any facility to be utilized in the performance of this proposed agreement is (__), is not (X) listed on the Environmental Protection Agency List of Violating Facilities.

(2) To promptly notify the NRCS-State administrative officer prior to the signing of this agreement by NRCS, of the receipt of any communication from the Director, Office of Federal Activities, U.S. Environmental Protection Agency, indicating that any facility which is proposed for use under this agreement is under consideration to be listed on the Environmental Protection Agency List of Violating Facilities.

(3) To include substantially this certification, including this subparagraph, in every nonexempt sub-agreement.

B. The project sponsoring organizations signatory to this agreement agree as follows:

(1) To comply with all the requirements of section 114 of the Clean Air Act as amended (42 U.S.C. Section 7414) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. Section 1318), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, issued there under before the signing of this agreement by NRCS.

(2) That no portion of the work required by this agreement will be performed in facilities listed on the EPA List of Violating Facilities on the date when this agreement was signed by NRCS unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use their best efforts to comply with clean air standards and clean water standards at the facilities in which the agreement is being performed.

(4) To insert the substance of the provisions of this clause in any nonexempt sub-agreement.

C. The terms used in this clause have the following meanings:

(1) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. Section 7401 et seq.).

(2) The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. Section 1251 et seq.).

(3) The term "clean air standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110 of the Air Act (42 U.S.C. Section 7414) or an approved implementation procedure under section 112 of the Air Act (42 U.S.C. Section 7412).

(4) The term "clean water standards" means any enforceable limitation, control, condition, prohibition, standards, or other requirement which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. Section 1342), or by a local government to assure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. Section 1317).

(5) The term "facility" means any building, plant, installation, structure, mine, vessel, or other floating craft, location or site of operations, owned, leased, or supervised by a sponsor, to be utilized in the performance of an agreement or sub-agreement. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.

21. Assurances and Compliance.

As a condition of the grant or cooperative agreement, the sponsors assures and certifies that it is in compliance with and will comply in the course of the agreement with all applicable laws, regulations, Executive orders and other generally applicable requirements, including those set out below which are hereby incorporated in this agreement by reference, and such other statutory provisions as a specifically set forth herein.

State, Local, and Indian Tribal Governments: OMB Circular Nos. A-87, A-102, A-129, and A-133; and 7 CFR Parts 3015, 3016, 3017, 3018, 3021, and 3052.

Nonprofit Organizations, Hospitals, Institutions of Higher Learning: OMB Circular Nos. A-110, A-122, A-129, and A-133; and 7 CFR Parts 3015, 3017, 3018, 3019, 3021 and 3052.

22. Examination of Records.

The sponsors must give the NRCS or the Comptroller General, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to this agreement, and retains all records related to this agreement for a period of three years after completion of the terms of this agreement in accordance with the applicable OMB Circular.

23. Signatures

Sponsoring Local Organization: Ivins City	
By:	
Title:	
Date:	
Address:	Zip Code:

The signing of this plan was authorized by a resolution of the governing body of the Ivins City *adopted at a meeting held on* _____.

_____ Address _____

Secretary [or other Title]

Date: _____

USDA United States Department of Agriculture Natural Resources Conservation Service	
Approved By:	
	DAVID C. BROWN
Title:	NRCS State Conservationist
Date:	

Ivins City
Request for Proposals for

Engineering Services to Design Storm Water Improvement Projects

Ivins City, Utah is soliciting competitive sealed proposals from qualified engineers to provide services as outlined in the **SCOPE OF SERVICES SECTION** of this request.

I. Information:

This request for proposals (RFP) consists of three separate projects: 2016 Storm Drain Master Plan Improvements Projects, NRCS Debris Basin Rehabilitation Project, and NRCS Kayenta Debris Basin(s) Project.

Although this RFP includes a suggested scope of work for each project, the City is requesting if an item has been omitted by the City or if you feel an item would enhance or better the project, please include these types of items in your proposal. The City will be reviewing the proposals for innovative ideas, approaches to the work, and suggestions on additional work, which may be considered.

The City is requesting the consultant prepare a Technical Proposal for this work. Part of the Technical Proposal will be a section demonstrating the Consultant's qualifications. As a minimum, the Consultant will demonstrate past experience in storm drain design, dam rehab design, and debris basin dam design. The experience description will include the size of the project. Provide a contact name and phone number for each client. It may be possible that the City will award these projects to more than one consultant.

II. Background:

2016 Storm Drain Master Plan Improvement Projects

In 2016, a Storm Water Master Plan was prepared by Bowen Collins and Associates. This master plan identified and recommended several high priority facilities be constructed to help alleviate some of the storm water issues within the City. These facilities have been divided into 5 separate projects: P1, P3-P5, P6, P16, and P21. The following table outlines what each of the project entails.

Project	Pipe Length (ft)	Diameter (in)	Detention Basin (ac-ft)
P1	1230	24	2.7
P3-P5	3710	24, 30 & 36	1.8
P6	3270	24 & 30	N.A.
P16	670	36	N.A.
P21	1110	30	N.A.

It should be noted that these pipe lengths, pipe diameters, and detention basins sizes are preliminary and should be used for reference/planning purposes only. The master plan will be available on Ivins City's website for more information regarding the locations of the projects and other various details.

It should also be noted that the City has budgetary constraints and will likely not be able to design or have all these projects constructed, but will work with the Consultant to help decide priorities and phasing. It's anticipated that the consultant will also provide recommendations regarding how the budget can be stretched.

NRCS Debris Basin Rehabilitation Project

The NRCS, in cooperation with Ivins City, is working to rehabilitate Ivins Debris Basins 1-6. These basins are currently not meeting the NRCS and Utah dam Safety regulations and current engineering standards for a high hazard class dam. An Environmental Assessment (EA) and a Biological Assessment (BA) has already been prepared for this project. Each of the six basins require some or all of the following modifications: rock facing of the dam, crest grading, sediment removal, trash rack replacement, slip-lining principal spillway pipe, new auxiliary spillway, and rill erosion areas filled and compacted. Detailed descriptions and maps showing the proposed project action for each basin have already been prepared. Since the BA has already been approved according to these descriptions and maps, the design will be limited to the actions described therein. A copy of the EA and the BA will be made available by the City.

NRCS Kayenta Debris Basin(s) Project

In September of 2014, two major storm events caused severe flooding in the Coyote Gulch Wash, resulting in major property damage. The City requested assistance under the Emergency Watershed Program and has obtained assistance to help fund the project. It is the opinion of the City that either one large or two smaller basins would significantly help alleviate future flooding within this drainage basin. The project would generally consist of a hydrologic analysis to determine the required size of the basin(s), alternative analysis to determine the proper location of the basin(s), and preparing a final design for the basin and all appurtenances. Since this is an NRCS project, the specific scope of work requirements have been outlined in the Scope of Services section below.

The following information will be provided by the City:

- 2016 Storm Water Master Plan
- Environmental Assessment for the Rehabilitation of Ivins Debris Basins 1-6
- Biological Assessment for the Rehabilitation of Ivins Debris Basins 1-6
- 2006 Aerial Photogrammetry, 1" = 100', 2' contours
- 2012 LiDAR Aerial Topography, 1 meter point cloud and processed 2' contours
- March 2014 Aerial Photography by Pictometry, 3-inch pixels (2016 Pictometry Photography should be available by August)

III. Scope of Services:

The City has compiled an anticipated scope of work for the three projects, but once a consultant has been selected we will rely on the consultant to prepare a scope of work for these projects. Since a scope of work is not required for the proposal, the consultant should indicate their understanding of the work required through their experience on previous, similar projects.

2016 STORM DRAIN MASTER PLAN IMPROVEMENT PROJECTS

A. Project Schedule
    1. The City has proposed a timeline for the first phase of the project. The City is proposing 4 months (June-Sept) for engineering and final design, and 6 months (Oct-Mar) for construction.

B. Coordination Meetings
    1. The Consultant shall plan on a kickoff meeting and regular progress meetings to review project progress, to coordinate design efforts, to address issues that arise, and to keep the City informed.

C. Collect and Review Existing Information
    1. The Consultant shall be responsible to determine the information required to complete the project. The City will provide copies of relevant previous studies and planning information and digital copies of aerial photography.

D. Site and Utilities Investigation
    1. The Consultant shall be responsible for visiting the site and conducting investigations to identify existing utilities and other site information pertinent to the design.
    2. The Consultant shall be responsible for the design/topographic survey for the project.

E. Project Prioritization and Budgeting
    1. Work with the City to prioritize project and develop recommendations to maximize budget.

F. Hydrologic and Hydraulic Analysis
    1. The Consultant shall conduct a hydrologic and hydraulic analysis. This analysis shall be detailed enough that it can be used by the Consultant to size pipes, catch basins, detention basins, and other storm water infrastructure as part of the design. A hydrologic and a limited hydraulic analysis has already been conducted as part of the 2016 Master Plan, but the findings of that analysis shall only be used as a reference in the preparation of a more detailed analysis.
    2. The Consultant shall develop alternatives based on the hydrologic and hydraulic analysis that evaluate the size of the storm drain pipes pipe versus the size of the detention basin. The City should be consulted during this process to help make the decisions for the pipe sizes with respect to the detention sizes.

G. Storm Water Pollution Prevention Plan
    1. Prepare a storm water pollution prevention plan for the project.

H. Design Drawings
    1. The Consultant shall provide 60% and 100% design sets for review by the City. Review comments will be addressed in a final design drawing set.

I. Technical Specifications
    1. The Consultant shall provide technical specifications for the project for review at the 100% design stages. Review comments will be addressed in final technical specifications.

J. Contract Documents
    1. The Consultant shall prepare final bid documents for the project, including final design drawings, technical specifications, and standard City bid documents and contract conditions.

K. Construction Cost Estimate
    1. The Consultant shall prepare an engineer's opinion of probable cost for the construction of the project.

L. Easements and ROW Support
    1. The Consultant shall assist the City in preparing legal descriptions and easement deeds.

M. Permits
    1. The Consultant shall be responsible to identify and obtain all necessary permits to complete the project as outlined. Any permit directly associated with construction will be the responsibility of the construction contractor.

N. Bid Period Services
    1. The Consultant shall assist the City in preparing a bid advertisement for the project, providing bid documents, holding a pre-bid meeting, and providing any needed addenda during the bid period.
    2. The Consultant shall assist the City in evaluating the bids received for the project and recommending award of the project.

O. Pre-construction Meeting
    1. The Consultant shall prepare for and attend a pre-construction meeting with the City and the Contractor.

P. Construction Progress Meetings and Support Services
    1. The Consultant shall provide submittal review, response to Contractor Requests for Information, review of and make recommendations regarding change order requests, review of pay applications for the duration of the construction period, and conduct project closeout at completion of the work.
    2. The Consultant will prepare for and attend weekly construction progress meetings.

Q. Construction Inspection
    1. The Consultant shall provide a recommended number of hours of inspection services during construction of the project. The inspector will provide reports and photographic logs of construction as necessary. A public works inspector from Ivins City will be available daily to assist the consultant with the inspection services.

2. The Consultant shall provide a comprehensive inspection with the contractor and the City at substantial completion, final completion, and just prior to warranty expiration. Prepare and deliver to Ivins a written list of observed deficiencies.

R. Project Documentation
   1. The Consultant will use redlined drawings provided by the Contractor to develop as-built construction drawings for the project.
   2. The Consultant shall assist the City in closing out the project.

NRCS DEBRIS BASIN REHABILITATION PROJECT

A. Project Schedule
   1. The timeline for design of this project is flexible, anticipated construction to begin during the summer of 2017 or winter months of 2017-2018. The City anticipates that the design may need to be completed before the end of the 2016 calendar year.

B. Coordination Meetings
   1. The Consultant shall plan on a kickoff meeting and regular progress meetings to review project progress, to coordinate design efforts, to address issues that arise, and to keep the City informed.

C. Collect and Review Existing Information
   1. The Consultant shall be responsible to determine the information required to complete the project. The majority of the existing information will likely be gleaned from the Environmental Assessment and the Biological Assessment document prepared for the project. The City will provide copies of relevant previous studies and planning information and digital copies of aerial photography.

D. Site and Utilities Investigation
   1. The Consultant shall be responsible for visiting the site and conducting investigations to identify site information pertinent to the design.
   2. The Consultant shall be responsible for the design/topographic survey for the project, if required.

E. Design Analysis
   1. Perform the appropriate engineering analysis to provide a design that will meet the objections and criteria established for the project. The analysis shall address but is not limited to the following:
      i. Geology and Soil Mechanics Analysis
      ii. Hydrology/Hydraulics Analysis
      iii. Structural Analysis
      iv. Vegetative Considerations
      v. Safety Considerations
   2. Provide all supporting documentation of the engineering analysis performed to provide design, this includes but is not limited to surveys, computer model files, calculations and computations, sketches, etc.

F. Design Report

1. Summarize in narrative form the objectives, data, criteria, assumptions, procedures, and decisions used in the design. The design report shall address the topics in the following list, as appropriate.
2. Design summary - a concise statement of the history and status of design, previous reviews, disposition of applicable policy items, justification for departure from standards, receipt of waivers, etc.
3. Description of the job - a brief description of the major features, hazard classification, drainage area, storm frequencies, landscape resources, capacities, etc. It includes any variance from project plans.
4. Design objective - a brief, clear statement that may be a summary from a project plan. Differences identified from plans must be supported by proper approvals.
5. Basis for design - a listing of reference documents used in the design such as handbooks, codes, reports, studies, and criteria.
6. General basic data - includes hazard analyses, seismic assessment, and limiting conditions or restraints that may influence design, construction, or facility operation.
7. Location and layout - Documents considerations of site configuration or landscape conditions that had an effect.
8. Hydrology - The data, procedures, determination of spillway operation frequency, reservoir operational studies, and summary of precipitation depth, duration, and distribution. It properly describes the characteristics of the contributing watershed and provides the necessary basis for the hydraulic design.
9. Hydraulic design - Documents the shape and proportioning selected for selected features, adequacy of sediment and flood storage, adequacy of channel stability, and sediment transport considerations.
10. Embankment and foundation design - A summary of data, site conditions, assumptions, treatments selected, and design analysis used to:
    i. Make seepage analysis and design control measures.
    ii. Make stability analyses and determine material quality and quantity.
    iii. Make foundation design analyses.
    iv. Make embankment materials selections.
    v. Permit planning instrumentation systems.
    vi. Includes unique, or critical issues, or issues which have a significant impact on the function of the structure, or cost or duration of construction.
11. Structural design - Documents the assumptions, loading conditions, and design procedures used.
12. Environmental considerations – Summarize considerations given to features or practices to provide for conservation of visual, biological, and surface and ground water resources that may be affected by the planned measures, both during and after construction. Included features or practices used to meet criteria established in the FEIS.
13. Construction Drawings - Describes standard detail drawings or any use of previously prepared special drawings.
14. Specifications - Mentions use of special specifications and why they were needed. Explains special conditions or the need for special provisions in the construction contract.
15. Bid Schedule - Give the rationale for selection of lump sum or subsidiary items.
16. Cost Estimate - Explain the effects of the season, changes in size of contract

17. Construction Schedule - Explanation of any critical starting, delay, or completion dates.
18. Operation and Maintenance (O&M) - Explanation of conditions in which design assumptions depend on proper O&M and significant O&M activities are anticipated (for example, grasses in the emergency spillway to protect against erosion during flow). Items identified and evaluated during the design that are planned for replacement during the evaluation period must be noted and described.
19. Construction Review - A summary of those items, conditions, or features encountered during construction that require a field review by the designer, geologist, soil engineer, or other specialist to ensure that conditions anticipated during the design are verified and consistent with the design assumptions. Include the request for timely notification. Note whether a preconstruction conference is needed.
20. Authority - The name (with signature), title, and seal of the designer must appear on the title sheet of the design report along with this statement "To the best of my professional knowledge and judgment the design summarized by this report meets applicable NRCS standards." The consultant shall provide at the time of 50%, 90%, and 100% design submittal.

G. Construction Drawings
   1. Document the construction drawings to illustrate the work. Drawings shall contain the detail needed to:
      i. Access the site.
      ii. Ensure avoidance of both underground and above ground utilities.
      iii. Establish construction operations including material storage, staging areas, equipment storage, servicing areas, construction office, etc.
      iv. Layout and construct the work as specified.
   2. Ensure where the specifications include "as shown on the drawings" or similar language, the information is included on the drawings and the work illustrated on the drawings can be safely constructed as shown.
   3. Certify on the drawings that "to the best of my professional knowledge, judgment, and belief, these plans meet applicable NRCS standards." The above statement shall be included on the title sheet near the engineer's signature and seal. The Consultant shall provide at the time of 50%, 90%, and 100% design submittal.

H. Specifications
   1. Document the specifications to describe the work. To adequately describe the work, the specifications shall contain the detail needed to:
      i. Define the scope of the work.
      ii. Specify the materials to be incorporated into the work.
      iii. Specify all ancillary work such as foundation preparation, borrowing of earth materials, etc.
      iv. Specify tests and activities necessary to control the quality of the work.
      v. Describe the method of compensation for the work including, if applicable, items that are subsidiary as defined in NEH Part 642, Specifications for Construction Contracts.
   2. Ensure the information is consistent between the specifications and the drawings and between the specifications and the bid schedule.

3. Consultant shall use NRCS National Construction Specifications. Construction specification may be modified to be more restrictive based on the judgement of the Consultant, but may not be modified to reduce the requirements. The Consultant shall provide at the time of 50%, 90% and 100% design submittal.

I. Bid Schedule
   1. Consultant shall create the bid schedule that lists all bid items included in the specifications in a logical sequence commensurate with the work, the method of payment (i.e. lump sum or quantity basis) is consistent with that specified, and the units for bid items are consistent with the method of payment. Shall be provided at the time of 100% design submittal.

J. Cost Estimate
   1. The Consultant shall create a cost estimate and adjust for reasonableness of the values assigned to each bid item. The Consultant shall provide at the time 100% design submittal

K. Performance Schedule
   1. The Consultant shall prepare a construction performance schedule. The construction performance schedule shall give the estimated duration and sequence for activates necessary to construct the design. The Consultant shall provide at the time 100% design submittal.

L. Inspection/quality Assurance Plan (QA Plan)
   1. The Consultant shall create a QA plan and ensure that it is adequate to provide the construction oversight needed to ensure the desired construction quality is attained. The Consultant shall also ensure the plan contains provisions for timely notification of specialists such as the designer, geologist, soil mechanics engineer, or other specialist to ensure that conditions anticipated during design are verified and are consistent with the design assumptions.
   2. As part of the QA plan the contactor shall develop of sheet pile driving plan. The plan shall detail possible conditions encountered during pile driving the appropriate actions to follow. The Consultant shall provide at the time 100% design submittal.

M. Operation and Maintenance Plan (O&M plan)
   1. The Consultant shall prepare an Operation and Maintained Plan for the designed structure. The plan shall detail the actions that need to be performed for the structure to function as designed for the design life of the structure. The O&M plan must include but is not limited to the proper gate operations that will provide water to all users and meets the requirements established in the FEIS and associated documents. The O&M plan shall also include all maintenance actives such as trash and debris removal and repairs of gates, screens, and other appurtenances. The Consultant shall provide at the time 100% design submittal.

N. As-Built Drawings
   1. The Consultant will provide stamped as-built drawings at the end of the project. As-built drawings shall record the materials, dimensions, elevations, and construction methods used during construction. They shall specifically note revisions and

adjustments made during construction and document the process follow to approve these design changes.

O. Reference Materials

1. The following NRCS reference materials are available through the internet, except as otherwise noted, at http://directives.sc.egov.usda.gov/, http://www.nrcs.usda.gov/programs/watershed/NWSM.html, and http://www.economics.nrcs.usda.gov/technical/technotes/index.html. The Consultant shall obtain the reference through internet access unless otherwise noted. Non-NRCS documents will be obtained by the Consultant. The Consultant will identify other applicable reference documentation considered appropriate and applicable to the design. The basis for selecting and using such references in the design shall be included in the design report and references included in the report documentation submitted.

P. Bid Period and Construction Period Services

1. The Consultant shall assist the City in preparing a bid advertisement for the project, providing bid documents, holding a pre-bid meeting, and providing any needed addenda during the bid period.
3. The Consultant shall assist the City in evaluating the bids received for the project and recommending award of the project.
4. The Consultant shall prepare for and attend a pre-construction meeting with the City and the Contractor.
5. The Consultant shall provide submittal review, response to Contractor Requests for Information, review of and make recommendations regarding change order requests, review of pay applications for the duration of the construction period, and conduct project closeout at completion of the work.
6. The Consultant will prepare for and attend weekly construction progress meetings.
7. The Consultant shall plan on providing construction inspection. The inspector will provide reports and photographic logs of construction as necessary. A public works inspector from Ivins City will be available daily to assist the consultant with the inspection services.
8. The Consultant shall provide a comprehensive inspection with the contractor and the City at substantial completion, final completion, and just prior to warranty expiration. Prepare and deliver to Ivins a written list of observed deficiencies.
9. The Consultant will use redlined drawings provided by the Contractor to develop as-built construction drawings for the project.
10. The Consultant shall assist the City in closing out the project.

NRCS KAYENTA DEBRIS BASIN(S) PROJECT

A. Project Schedule
    1. The City has proposed a timeline for the project. The City is proposing 4 months (July-Oct) for engineering and final design, and 5 months (Nov-Mar) for construction. It will be incumbent upon the selected Consultant to propose a project schedule, including major milestones and deliverable dates.

B. Coordination Meetings
    1. The Consultant shall include a kickoff meeting and regular progress meetings to review project progress, to coordinate design efforts, to address issues that arise, and to keep the City informed.

C. Design Analysis
    1. Perform the appropriate engineering analysis to provide a design that will meet the objections and criteria established for the project. The analysis shall address but is not limited to the following:
        i. Geology and Soil Mechanics Analysis
        ii. Hydrology/Hydraulics Analysis
        iii. Structural Analysis
        iv. Vegetative Considerations
        v. Safety Considerations
    2. Provide all supporting documentation of the engineering analysis performed to provide design, this includes but is not limited to surveys, computer model files, calculations and computations, sketches, etc.

D. Design Report
    1. Summarize in narrative form the objectives, data, criteria, assumptions, procedures, and decisions used in the design. The design report shall address the topics in the following list, as appropriate.
    2. Design summary - a concise statement of the history and status of design, previous reviews, disposition of applicable policy items, justification for departure from standards, receipt of waivers, etc.
    3. Description of the job - a brief description of the major features, hazard classification, drainage area, storm frequencies, landscape resources, capacities, etc. It includes any variance from project plans.
    4. Design objective - a brief, clear statement that may be a summary from a project plan. Differences identified from plans must be supported by proper approvals.
    5. Basis for design - a listing of reference documents used in the design such as handbooks, codes, reports, studies, and criteria.
    6. General basic data - includes hazard analyses, seismic assessment, and limiting conditions or restraints that may influence design, construction, or facility operation.
    7. Location and layout - Documents considerations of site configuration or landscape conditions that had an effect.
    8. Hydrology - The data, procedures, determination of spillway operation frequency, reservoir operational studies, and summary of precipitation depth, duration, and

distribution. It properly describes the characteristics of the contributing watershed and provides the necessary basis for the hydraulic design.

9. Hydraulic design - Documents the shape and proportioning selected for selected features, adequacy of sediment and flood storage, adequacy of channel stability, and sediment transport considerations.
10. Embankment and foundation design - A summary of data, site conditions, assumptions, treatments selected, and design analysis used to:
    i. Make seepage analysis and design control measures.
    ii. Make stability analyses and determine material quality and quantity.
    iii. Make foundation design analyses.
    iv. Make embankment materials selections.
    v. Permit planning instrumentation systems.
    vi. Includes unique, or critical issues, or issues which have a significant impact on the function of the structure, or cost or duration of construction.
11. Structural design - Documents the assumptions, loading conditions, and design procedures used.
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20. Authority - The name (with signature), title, and seal of the designer must appear on the title sheet of the design report along with this statement "To the best of my professional knowledge and judgment the design summarized by this report meets applicable NRCS standards." The consultant shall provide at the time of 50%, 90%, and 100% design submittal.

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iv. Layout and construct the work as specified.

2. Ensure where the specifications include "as shown on the drawings" or similar language, the information is included on the drawings and the work illustrated on the drawings can be safely constructed as shown.
3. Certify on the drawings that "to the best of my professional knowledge, judgment, and belief, these plans meet applicable NRCS standards." The above statement shall be included on the title sheet near the engineer's signature and seal. The Consultant shall provide at the time of 50%, 90%, and 100% design submittal.

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7. The Consultant shall provide a comprehensive inspection with the contractor and the City at substantial completion, final completion, and just prior to warranty expiration. Prepare and deliver to Ivins a written list of observed deficiencies.
8. The Consultant will use redlined drawings provided by the Contractor to develop as-built construction drawings for the project.
9. The Consultant shall assist the City in closing out the project.

IV. Compensation for Services:

Ivins City intends to enter into a professional services contract with the Consultant that's chosen by the selection committee based on the selection process below. **The selection of the engineer or engineering firm will be based mainly on qualifications and other criteria as described in the selection process below.** Following the selection of a Consultant, the City and the Consultant will negotiate scope and compensation. If terms between the City and the Consultant regarding scope and/or compensation cannot be agreed upon, the City reserves the right to forgo negotiations with the selected Consultant and begin negotiations with the Consultant with the second highest point total from the selection process.

IV. Evaluation Criteria and Selection Process

Selection of the successful Engineer will be based upon a matrix giving a predetermined value to each of the submissions required in this section. The award of contract will go to the engineer receiving the most points based on the following:

A. Qualifications of the firm, project management and design teams, and key project personnel (40 POINTS AVAILABLE)
B. Design approach and methodology, understanding of work required, proposal presentation (30 POINTS AVAILABLE)
C. Past performance and references, communication skills, local knowledge and experience (30 POINTS AVAILABLE)

V. Proposal Format and Content

Proposals are to follow the format and are to contain information listed in this section. In order to be considered, proposals must address all the items listed in this section and adhere to page limitations.

TECHNICAL PROPOSAL FORMAT

A. Letter of transmittal introducing firm, the office location where the project team will be located, the firm's capabilities, and nature of proposal.
B. Project Team, Approach, and Project Understanding. Sub-contractors need to be listed in this section as well. (Two pages maximum for each project, 6 pages maximum total) If needed, complete resumes can be included as an appendix.
C. Firm Experience, Qualifications, and References (Two pages maximum for each project, 6 pages maximum total)
    1. List projects similar in size and complexity completed by firm (minimum two per project) (include projects that have been done for the NRCS).
    2. Provide names and telephone numbers for each of the projects listed.

The Technical proposal is to be submitted electronically, see the submittal requirements section for more information.

VII Submittal Requirements

Proposals are due on Wednesday, June 22st by 3:00 p.m.

The proposal should be submitted electronically in a PDF format to jchapman@ivins.com. Large files may be transmitted by including a link to an FTP site on the email. Hard copies will not be accepted.

Inquiries regarding the RFP should be directed to Chuck Gillette, P.E., Public Works Director or Tom Jorgensen, P.E., Assistant Public Works Director of Administration at (435) 634-0689, or by inquiry to the address above. The City reserves the right to award the contract to the highest ranked firm without further consideration or discussion. **The City reserves the right to reject any and all proposals received.** The City also reserves the right to waive any irregularity, informality, or technicality in the proposals in its best interest. If terms cannot be mutually agreed upon, The City will enter into negotiations with the secondary engineer/firm.