Ivins City Staff Report
City Council Meeting 11/1/18

Agenda Item: Approval of NRCS Ivins Debris Basins 1-6 Rehabilitation Project expenditure for construction engineering services

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

Recommended City Council Action:
Approve of NRCS Ivins Debris Basins 1-6 Rehabilitation Project expenditure for construction period engineering services not to exceed $83,742.

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 the six basins: crest grading, sediment removal, trash rack replacement, new auxiliary spillways, and rill erosion improvement.

This project has been in design for the past couple years and with the completion of the design, Ivins City is ready to move forward with construction. Staff is anticipating that construction will begin in December.

Staff submitted a request for proposals (RFP) for engineering services to prepare the design, which was awarded to Bowen Collins & Associates back in March of 2017. In their proposal they also included costs for bid period services and engineering construction management services. Additional details are identified in their attached proposal.

The NRCS, in combination with funding from the State, will reimburse 97% of total construction costs and Ivins City must pay for the remaining 3% of construction costs. With that being said, City Staff anticipates that a majority of the contribution will be in-kind, as 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.

FINDINGS AND ANALYSIS:
Staff has reviewed the proposal that Bowen Collins & Associates (BC&A) submitted back in 2017 for bid period and construction engineering services. Staff recommends awarding the contract to BC&A.

SUPPORT MATERIALS:
- 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 $83,742 (97% of this expense to be reimbursed by NRCS/State 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, 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 Rehabiliation 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