

PARSONS E&C

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**TENNESSEE VALLEY AUTHORITY
CONTRACT 99998970
KINGSTON FOSSIL PLANT
SCRUBBER ADDITION
GYPSUM STACK
PHASE 1A STUDY
PR- 0637 – PCN N/A**

September 9, 2003
PP-7367-PR-C
Scope Change: 4A
Required Start Date: October 1, 2003
Close Date: December 26, 2003
Lead Eng: T. Stammler
Tech Mgr: R. Purkey

Mr. James G. Adair
Tennessee Valley Authority
1101 Market Street
Chattanooga, TN 37402-2801

Dear Mr. Adair:

Parsons E&C is pleased to submit this proposal for additional work related to preparation of a Phase 1A engineering study for a proposed gypsum stack for the proposed scrubber addition at Kingston Fossil Plant.

SCOPE

The additional scope covered in this proposal is as outlined in the attached Task Work Statement.

ORGANIZATION

All work will be performed under the direction of Mr. Bill Griffith, Manager Chattanooga Operations, who is directly responsible to TVA for the overall quality of the work. Mr. Dan Smith will serve as the Engineering Manager and Lead Engineer, with support provided by the Parsons Chattanooga and Reading offices.

SCHEDULE

We are requesting a TAO end date of December 26, 2003 based on an expeditious authorization of this scope change. Parsons will provide the deliverables outlined in the attached Task Work Statement by October 31, 2003.

Mr. James G. Adair
PP-7367-PR-C
September 9, 2003
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PRICING

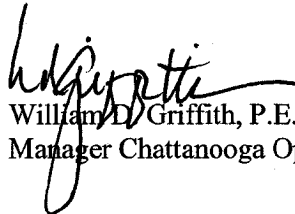
All work performed will be in accordance with the terms of Contract 99998970. The estimated engineering cost for the additional work included here is \$43,408.

This estimate was prepared assuming that overtime will be required. Should emergency conditions or schedule constraints occur, Parsons requests the flexibility to use additional overtime under the original authorization provided the total price is not exceeded.

SUMMARY

Parsons is pleased with the opportunity to be of service to TVA and we look forward to the successful completion of this task. If you have any questions, please feel free to contact Mr. Dan Smith at (423) 757-8088 or me at (423) 757-8027.

Very truly yours,


William D. Griffith, P.E.
Manager Chattanooga Operations

Attachment: Task Work Statement
Proposal Pricing Forms

**TENNESSEE VALLEY AUTHORITY
CONTRACT 99998970
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TASK WORK STATEMENT

1.0 BACKGROUND

A new gypsum disposal area will be constructed due to the addition of scrubbers to Kingston Fossil Plant (KIF). Current disposal plans involve sluicing of gypsum from KIF (wet stacking). In addition, some by-product from Bull Run Fossil Plant (BRF) may also be transported (dry) and disposed at this facility. Previous scope revisions of this study included development of 3 disposal options for gypsum (1, 2, and 3). Each of these options has an additional sub-option, for a total of six options. Option 1 considered gypsum disposal at the peninsula site, a greenfield location east of the plant on the TVA Reservation. Options 2 and 3 were previously developed to study co-disposal of ash and gypsum at the existing fly ash pond at KIF. Scope change 4A includes refining the previous study for Option 3B (gypsum disposal at the ash pond) only.

The previous study for Option 3B determined the maximum volume of gypsum that was considered feasible assuming a 3:1 slope, and free water volume. The footprint resulted in Study Drawing SK PR0637 C 54 that depicts a shallow channel 200 ft wide on the western and southern portions of the pond (adjacent to where the gypsum will be stacked). The 200 ft wide space along the eastern portion of the dike is filled with soil as part of an extension of the existing earthen dike. A preliminary stability analysis was performed using existing available data for this configuration. A dredge will operate in a portion of this channel (western and southwestern portion), and the remainder will be used in concert with the stilling basin to achieve the discharge limits for TSS for ash.

2.0 PURPOSE

This Task Work Statement describes engineering support activities associated with this project. The task revision involves refining Option 3B for fly ash and gypsum disposal at the existing ash pond. TVA has previously estimated that for purposes of this study that 300,000 tons of gypsum produced annually at KIF, and 185,000 tons produced annually at BRF will require disposal over a 20 year period. TVA wants to refine the concept to maximize both ash and gypsum disposal at this site, so that ash and gypsum can be co-disposed over a number of years. The concept needs to be configured such that the facility will complete ash and gypsum disposal activities at the same time. The configuration for Option 3B will result in a velocity increase within the channel, when compared with the existing pond configuration. Depending on the settling characteristics of ash (or gypsum) settling, there is a possibility that ash and/or gypsum will build up over time in the stilling pond, which will reduce the free water volume. Should this be likely, the stilling pond would have to be dredged.

3.0 SCOPE

Perform a Phase IA study to determine a configuration for the pond that will allow wet ash sluicing and dredging to continue at the pond, and also to allow wet sluicing of gypsum from the proposed scrubber to be disposed of at the ash pond location.

- 1) Review ash settling and gypsum settling capability with the reduced pond size. Assume for study purposes that the existing skimmer structures are relocated to the southeast corner of the pond (corner adjacent to stilling pond and Watts Bar Lake). Parsons will look at the ramifications of leaving the stilling basin discharge weirs at their present location versus moving them to the opposite side (southwest corner of the stilling pond/ash pond) of the flow from the influent from the ash pond/gypsum disposal facility. Parsons will perform spreadsheet calculations assuming discrete particle settlement (Stokes' Law) to determine the length/width of the channel. This approach is not definitive, but should provide an indication whether ash buildup in the stilling basin is likely. There are computer programs available to predict with greater accuracy the behavior of ash and gypsum settling; however, site-specific settling data is required for this type of effort, and this cannot be accomplished within the schedule allotted.

Parsons will make a field trip to KIF and perform velocity measurements in the existing pond to compare with computed velocities of Option 3B. These velocities will be used in the spreadsheet calculations to assist in evaluating an appropriate channel geometry.

If results indicate that the volume of the stilling pond will be impacted by ash and/or gypsum buildup, Parsons will continue the study assuming that the stilling pond will require dredging. Parsons will also look at the impact of a reduced footprint if a larger channel is necessary to avoid dredging on the Stilling Basin. The channel depth developed in Option 3B was an approximate average of 4 feet. Based on a review of Option 3B channel depth and configuration, the channel may require deepening up to 10 ft deep to improve ash settling. This will require modifications to the stability analysis to verify that the configuration is still feasible.

- 2) Develop preliminary Autocad drawings for developing simultaneous ash and gypsum disposal, assuming ash continues to be sluiced from the plant and dredged into cells and wet-stacked. Assume gypsum will be sluiced to a separate portion of the pond and wet stacked. Assume 2 separate ponds are required for gypsum stacking operations. Calculate preliminary storage volumes for the two scenarios, based on standard engineering practices. Assume that the disposal volume is maximized. Configure the pond such that ash and gypsum disposal will approximately cease at the roughly the same time.
 - ?? Assume that no liner is required for Option 3B, and there is no geologic buffer requirement.
 - ?? Review the assumptions made previously for the underdrain. Determine if the thickness can be reduced, and consider constructability in the design.

TVA has requested that Parsons subcontract with Ardaman and Associates to assist in the layout of the gypsum configuration for the study. The costs for design assistance by Ardaman and Associates is not included in this scope change.

- 3) Develop new quantities and/or refine previously developed quantities for construction and closure. Quantities will be provided to TVA for development of cost estimates.

- 4) Participate in internal scoping meetings with TVA as required.
- 5) Develop a range for the ash & gypsum quantities (TPY) based on the design & max ash & sulfur % in coal and several load factors.

4.0 CLARIFICATIONS/ASSUMPTIONS

Parsons work scope for this project includes the following clarifications and assumptions:

- ?? The review of ash and gypsum settling capability will involve a relative comparison of existing conditions versus the configuration developed under Scope Change 2A. Ash settling capability will be estimated using spreadsheets based on Stoke's Law, and available data, as well as the existing versus proposed pond configuration.
- ?? TVA will re-evaluate and provide updated gypsum production quantities, if applicable, or will direct Parsons to use the previous volume estimates for gypsum production.
- ?? TVA provides flow rate for ash sluicing.
- ?? Completion of this task within the schedule requested by TVA depends on receipt of updated coal ash & sulfur analyses (for Parsons to determine ash & gypsum production volumes). TVA will need to provide Parsons the percentage of gypsum to be transported from BRF to KIF.
- ?? Additional stability analyses will be performed for Scope Change 4A to ascertain the effects of a deeper channel to assist in ash/gypsum settling. The stability analysis will not consider changes in the facility such as additional ash being disposed of, but will examine the effects of a deeper channel.
- ?? The existing stilling basin will be assumed as the point of discharge for this facility. Parsons E&C will not examine any discharge criteria for NPDES discharges.
- ?? No travel is required for Reading support personnel.
- ?? No allowance is included for DCN preparation.
- ?? Costs for subcontracting with Ardaman and Associates are not included in this scope change.

5.0 DELIVERABLES

Parsons anticipates the following deliverables as part of this task:

- ?? Results of ash settling comparisons between existing and proposed pond configuration (summary only);
- ?? Revised construction quantities for Option 3B.
- ?? Autocad drawings:
 - ~~☒~~ Interior grading depicting layout of gypsum disposal and ash disposal (2 sheets @ 1 inch = 100 ft)
 - ~~☒~~ Intermediate stage stacking configuration at height approximately on-half the total height (2 sheets @ 1 inch = 100 ft)
 - ~~☒~~ Final grading Scenarios 1 and 2 (4 sheets @ 1 inch = 100 ft)
 - ~~☒~~ Cross-sections (2 sheets). Cross sections will depict the phasing of operations, and the underdrain.

PARSONS ENERGY & CHEMICALS GROUP INC.
TVA TASK PROPOSAL FORM - CONTRACT 99998970
KIF, Scrubber Addition, Phase 1A
PR - 0637 SC No.: 4A
9-Sep-03

"LABOR" & "OVERTIME LABOR"

POSITION/ GRADE	ST Billing Rate (\$/HR)	ST HOURS	ST COST	OT Billing Rate (\$/HR)	OT HOURS	OT COST(\$)	TOTAL COST(\$)
Project Management	\$105.85	24	\$2,540	\$86.54	0	\$0	\$2,540
Technical Management	\$88.42	17	\$1,503	\$72.29	0	\$0	\$1,503
Project Services	\$62.06	40	\$2,482	\$50.74	0	\$0	\$2,482
Clerical	\$23.79	20	\$476	\$35.68	3	\$107	\$583
SUBTOTAL SERVICES		101	\$7,002		3	\$107	\$7,109

Senior Supervising Engineer (E11)	\$94.91	6	\$569	\$77.60	0	\$0	\$569
Supervising Engineer (E10)	\$84.03	120	\$10,083	\$68.70	0	\$0	\$10,083
Principal Engr/Spv Designer (E09)	\$81.85	147	\$12,032	\$66.92	0	\$0	\$12,032
Senior Engineer (E08)	\$69.63	0	\$0	\$56.93	0	\$0	\$0
Engineer II (E07)	\$61.01	0	\$0	\$49.88	0	\$0	\$0
Engineer I (E06)	\$53.37	0	\$0	\$43.63	0	\$0	\$0
Associate Engineer (E05)	\$52.25	0	\$0	\$42.72	0	\$0	\$0
Principal Designer (N16)	\$66.05	21	\$1,387	\$81.00	0	\$0	\$1,387
Senior Designer (N14)	\$57.91	0	\$0	\$71.02	0	\$0	\$0
Designer II (N12)	\$42.30	105	\$4,441	\$51.87	53	\$2,749	\$7,191
Senior Drafter (N10)	\$35.69	0	\$0	\$43.77	0	\$0	\$0
Drafter (N08)	\$31.70	0	\$0	\$38.88	0	\$0	\$0
Associate Drafter (N06)	\$27.84	0	\$0	\$34.14	0	\$0	\$0
Technician (N04)	\$18.93	0	\$0	\$23.21	0	\$0	\$0
Proj. Sect'y II (N05)	\$25.55	0	\$0	\$31.33	0	\$0	\$0
Proj. Sect'y I (N04)	\$23.79	0	\$0	\$29.17	0	\$0	\$0
Word Processing (N03)	\$17.03	0	\$0	\$20.89	0	\$0	\$0
Clerical (N02)	\$15.14	0	\$0	\$18.57	0	\$0	\$0
SUBTOTAL ENG'G & DESIGN		399	\$ 28,513		53	\$ 2,749	\$ 31,262

SUBTOTAL LABOR	\$38,371
TRANSPORTATION & SUBSISTANCE	\$96
TEMPORARY ASSIGNMENT LIVING EXPENSES	\$0
COMPUTERS, CAD, TELEPHONE, REPRODUCTION	\$2,639
REPROGRAPHICS (OUTSIDE SERVICES)	\$0
MISCELLANEOUS EXPENSES	\$0
SUBCONTRACTED SERVICES	\$0
SUBTOTAL EXPENSES	\$2,735
SUBTOTAL (Labor & Expenses)	\$41,105
FIXED FEE @ 6% (APPLIED TO LABOR ONLY)	\$2,302
TOTAL TASK ESTIMATED COST	\$43,408

Man-hours by Discipline - Provided for reference only

Project Management	24	Mechanical	57
Technical Management	17	Electrical	0
Project Scheduling/Controls	40	Cntr'l Sytms	0
Specialist	69	Civil/Struct	326
Clerical/Admin Support	23	TOTAL	556

PARSONS ENERGY & CHEMICALS GROUP INC.
TVA FHP TASK PROPOSAL FORM - CONTRACT 99998970
KIF, Scrubber Addition, Phase 1A
PR - 0637 SC No.: 4A
9-Sep-03

Project Spend Plan

01-Oct-03 - Project Start
 26-Dec-03 - Project Complete
 3 - Project Duration - Months

	Hours	Cost
Month 1	89	\$6,581
Month 2	334	\$24,708
Month 3	133	\$9,816
Month 4	0	\$0
Month 5	0	\$0
Month 6	0	\$0
Month 7	0	\$0
Month 8	0	\$0
Month 9	0	\$0
Month 10	0	\$0
Month 11	0	\$0
Month 12	0	\$0
Month 13	0	\$0
Month 14	0	\$0
Month 15	0	\$0
Month 16	0	\$0
Month 17	0	\$0
Month 18	0	\$0
Month 19	0	\$0
Month 20	0	\$0
Fee		\$2,302
TOTAL	556	\$43,408

Resource Loading Reference (Parsons' use)

XE	12	ME	57	NE	0
XT	12	MD/MC	0	CE	147
XC	17	EE	0	CD/CC	179
XP	40	ED/EC	0	TOTAL	555
XS	69				
XA	23				