



CONSOLIDATED COMMISSION ON UTILITIES
Guam Power Authority | Guam Waterworks Authority
P.O. Box 2977 Hagatna, Guam 96932 | (671)649-3002 | guamccu.org

GWA RESOLUTION NO. 13-FY2018

RELATIVE TO APPROVAL OF THE CONSTRUCTION MANAGEMENT CONTRACT FOR SANTA ROSA, SINIFA, AND SANTA RITA TANK AND SYSTEM UPGRADES

WHEREAS, under 12 G.C.A. § 14105, the Consolidated Commission on Utilities (“CCU”) has plenary authority over financial, contractual and policy matters relative to the Guam Waterworks Authority (“GWA”); and

WHEREAS, the Guam Waterworks Authority (“GWA”) is a Guam Public Corporation established and existing under the laws of Guam; and

WHEREAS, GWA is currently working on critical reservoir projects under the 2011 Court Order (“CO”) Paragraph 29 – Storage Tank/Reservoir Repair, Replacement, and Relocation Program; and

WHEREAS, the design of Santa Rosa, Sinifa, and Santa Rita Tank designs (RFP-09-ENG-2014) have been completed; and

WHEREAS, GWA has advertised the Request for Proposals (RFP-06-ENG-2017) soliciting statement of qualifications from experienced and qualified engineering firms to provide construction management services for the Santa Rosa, Sinifa, and Santa Rita Tank and System Upgrades project; and

WHEREAS, RFP packages were picked up by 19 interested parties, from which GWA received proposal submittals from 8 firms before the RFP submittal deadline; and

WHEREAS, the GWA A-E Selection committee reviewed and evaluated the 8 proposals (See Exhibit A – Score Summary) and generated a short list of the top 3 firms with a

1 recommendation to award a contract to the firm GHD (See Exhibit B – GM’s Determination);
2 and

3
4 **WHEREAS**, GHD and GWA negotiated the price for the construction management
5 services (Santa Rosa, Sinifa, and Santa Rita tank and off-site system upgrades related to all three
6 tank sites) to be provided in the total amount of Two Million Nine Hundred Seventy-Seven
7 Thousand Two Hundred Thirty-Four Dollars and Sixty-Nine Cents (\$2,977,234.69) (See Exhibit
8 C – Scope of Work and Fees); and

9
10 **WHEREAS**, GWA management seeks approval of the fee proposal amount of Two
11 Million Nine Hundred Seventy-Seven Thousand Two Hundred Thirty-Four Dollars and Sixty-
12 Nine Cents (\$2,977,234.69), along with a 10% contingency of Two Hundred Ninety-Seven
13 Thousand Seven Hundred Twenty Three Dollars and Forty Seven Cents (\$297,723.47), to bring
14 the total authorized funding amount to a maximum of Three Million Two Hundred Seventy-Four
15 Thousand Nine Hundred Fifty-Eight Dollars and Sixteen Cents (\$3,274,958.16); and

16
17 **WHEREAS**, funding for this project will be from the Bond Funds under the line item
18 “PW 09-11 Water System Reservoirs 2005 Improvements”; and

19
20 **NOW BE IT THEREFORE RESOLVED**, the Consolidated Commission on Utilities
21 does hereby approve the following:


- 22 1. The recitals set forth above hereby constitute the findings of the CCU.
- 23 2. The CCU finds that the terms of the fee proposal submitted by GHD are fair
24 and reasonable (Exhibit C).
- 25 3. The CCU hereby authorizes the management to accept the fee proposal from
26 GHD, which is also incorporated into this Resolution in its entirety.
- 27 4. The CCU hereby further authorizes the management of GWA to enter into a
28 contract with GHD, in the amount of Two Million Nine Hundred Seventy-
29 Seven Thousand Two Hundred Thirty-Four Dollars and Sixty-Nine Cents
30 (\$2,977,234.69).
- 31 5. The CCU hereby further approves the total funding amount for this project of
32 Two Million Nine Hundred Seventy-Seven Thousand Two Hundred Thirty-

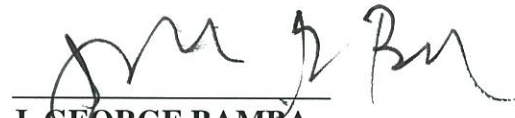
1 Four Dollars and Sixty-Nine Cents (\$2,977,234.69), along with a 10%
2 contingency of Two Hundred Ninety-Seven Thousand Seven Hundred
3 Twenty-Three Dollars and Forty-Seven Cents (\$297,723.47), to bring the total
4 authorized funding amount to Three Million Two Hundred Seventy-Four
5 Thousand Nine Hundred Fifty-Eight Dollars and Sixteen Cents
6 (\$3,274,958.16).

- 7 6. The CCU hereby further authorizes the funding source to be from bond funds
8 under the CIP line Item PW 09-11 "Water System Reservoirs 2005
9 Improvements".

10
11 **RESOLVED**, that the Chairman certified and the Board Secretary attests to the adoption
12 of this Resolution.

13
14 **DULY AND REGULARLY ADOPTED**, this 23rd day of January 2018.

15 Certified by:
16
17 
18 **JOSEPH T. DUENAS**
19 Chairperson

Attested by:
20
21 
22 **J. GEORGE BAMBA**
23 Secretary

24
25 **SECRETARY'S CERTIFICATE**

26 I, J. George Bamba, Board Secretary of the Consolidated Commission on Utilities as
27 evidenced by my signature above do hereby certify as follows:

28 The foregoing is a full, true and accurate copy of the resolution duly adopted at a regular
29 meeting by the members of the Guam Consolidated Commission on Utilities, duly and
30 legally held at a place properly noticed and advertised at which meeting a quorum was
31 present and the members who were present voted as follows:

32
AYES: _____ 5
NAYS: _____ 0
ABSTENTIONS: _____ 0
ABSENT: _____ 0





GUAM WATERWORKS AUTHORITY

Gloria B. Nelson Public Service Building • 688 Route 15 • Mangilao, Guam 96913

June 19, 2017

To: Thomas F. Cruz, P.E., Chief Engineer

From: 
Gloria P. Bensen
Chairperson, Consultant Selection Board9

Subject: RFP-06-ENG-2017
Construction Management Services for the Northern and Southern Guam Reservoirs (Santa Rosa, Sinifa, and Santa Rita) Tank and System Upgrades
GWA Project No. W14-007-BND

The following information is intended to document the evaluation process undertaken for the referenced solicitation.

EVALUATION COMMITTEE MEMBERS	
Name	Title
Brett Railey, P.E.	CIP Water Engineer Supervisor
Garrett Yeoh	Senior Engineer
Delfyn Quitlong	Engineer II
Vincent Pangelinan	Operations Manager

Consultant	Evaluation Score				Total	Rank
1. EMPSCO Engineering Consultants	75	65	90	74	304	7
2. HDR	90	80	95	86	351	2
3. LYON	65	72	89	80	306	6
4. SSFM International	86	82	94	85	347	3
5. Duenas, Camacho & Associates	79	74	92	80	325	4
6. E.M. Chen & Associates	71	67	88	70	296	8
7. AECOM	74	74	93	81	322	5
8. GHD	90	94	91	91	366	1

Scores were evaluated based on sum of the individual scores. The recommendation of the evaluation committee is shown in the ranking above.

Please review and approve at your earliest convenience so that we may proceed with the notification letters.



GUAM WATERWORKS AUTHORITY

"Better Water. Better Lives."

Gloria B. Nelson Public Service Building
688 Route 15, Mangilao, Guam 96913

MEMORANDUM

To: Miguel C. Bordallo, General Manager

From: Thomas F. Cruz, P.E., Chief Engineer

Subject: RFP-06-ENG-2017
Construction Management Services for the Northern and Southern Guam Reservoirs (Santa Rosa, Sinifa, and Santa Rita) Tank and System Upgrades
GWA Project No. W14-007-BND

Date: June 19, 2017

The Selection Committee has completed all necessary actions for selecting the most qualified consultant for the referenced solicitation. All proposals were reviewed and scored according to the conditions established in the solicitation. The evaluation summary sheet is attached for your information.

The committee recommends the following top three (3) firms in order of preference for the project:

- 1. GHD
- 2. HDR
- 3. SSFM International

Concurred:

VINCENT E. GUERRERO
Supply Management Administrator

6/20/2017
Date

GENERAL MANAGER'S DETERMINATION

Consultant Firm Selected:

GHD

Remarks:

MIGUEL C. BORDALLO, P.E.
General Manager

6.21.17
Date



Exhibit C

September 22, 2017

Mr. Miguel Bordallo
General Manager
688 Route 15
Mangilao, GU 96913

SUBJECT: FORMAL SUBMITTAL OF FINAL SCOPE OF WORK AND FEE PROPOSAL FOR NORTHERN AND SOUTHERN GUAM RESERVOIRS (SANTA ROSA, SINIFA, AND SANTA RITA) TANK AND SYSTEM UPGRADES CONSTRUCTION MANAGEMENT SERVICES RFP-06-ENG-2017, PROJECT NO. W14-007-BND

Dear Mr. Bordallo:

GHD is pleased to formally submit our final Scope of Work and Fee Proposal for the above referenced project. The scope of work and fee proposal is based upon detailed meetings we held with GWA staff and we believe it meets GWA's needs in an economically feasible manner by pooling project management and resident engineer resources between the three (3) projects. We look forward to working with GWA on this critical project for Guam. If you have any questions or need additional information, please do not hesitate to contact me directly by email or telephone.

Sincerely,

A handwritten signature in black ink that reads "Paul K. Baron". The signature is written in a cursive, flowing style.

Paul K. Baron, PE
Principal

Attachments: Scope of Work (15 pages)
Fee Proposal (29 pages)



Guam Northern & Southern GWA Reservoirs Construction Management Services Scope of Work & Fees

I. GENERAL

GHD, as the Construction Manager (CM) shall provide services relating to the daily field observation, inspection, testing, supervision, management, coordination, and compliance monitoring for the Guam Northern & Southern GWA Reservoirs (Projects) at the following project locations.

- **Santa Rita GWA Reservoir Replacement**
- **Santa Rosa GWA Reservoir Replacement**
- **Sinifa GWA Reservoir Replacement**

The projects generally consists of geo-technical ground improvements, demolition of existing tank structures, construction of pre-stressed concrete tanks conforming to AWWA/ANSI D110 for Type I Wire-and-Strand Wound, Circular Prestressed Concrete Water Tanks (site adapted for each location), installation of new water lines, construction and refurbishment of booster pump stations, chlorination systems, electrical, instrumentation and control, SCADA controls, plus associated utilities for each site. Additionally, the work includes preconstruction services including constructability review and value engineering of the project design.

Reports submitted to GWA by the CM shall be in a form approved by GWA's Chief Engineer.

II. PROJECT OVERVIEW

The construction management, testing, and field observation services for the projects will require general construction management and observation, as well as specialized inspection and testing. In addition to general construction management duties, the specialized inspection and testing will include, but not be limited to:

- Concrete placement
- Concrete anchors/Adhesive anchoring systems/Expansion bolts
- Grading
- Excavation
- Compaction grouting
- Compaction testing
- Pre-stressing operations
- Concrete cylinder testing
- Shotcrete application
- High strength bolting
- Earthwork/Soil analysis
- Instrumentation and SCADA
- Hydrostatic testing
- Disinfection

In general, the CM shall function as Owner's representative whose primary function shall be to:

- Keep GWA advised and informed as to project progress and cost
- Manage the change process
- Disclose any information relevant to GWA's interest
- Make proactive recommendations to GWA for action to maintain progress and achieve the project schedule and budget
- Observing System Commissioning
- Act in the best interest of GWA

The CM shall administer the Contract, except that the CM is not authorized to make any decisions on the behalf of GWA that materially affect the intent of the design or financially obligate GWA in any manner.

III. TASK AND REQUIREMENTS

The following tasks are applicable to and will be provided to each of the Guam Northern & Southern GWA Reservoirs project locations.

A. PRE-CONSTRUCTION PHASE SERVICES:

In accordance with GWA's RFP, the purpose of this task is to obtain "a clear set of construction documents that will allow the perspective bidder to bid competitively, to build or install the designed facility in an efficient and timely manner, and reduce the number of change orders and delays." Under this task the CM will review the design documents; review the Contractor's Construction Management Quality Control Plan; prepare a Construction Quality Assurance Plan and a Construction Management Plan; provide contract bidding support; participate in meetings to discuss design documents; submit comments on design documents; and participate in meetings to discuss responses to comments as detailed in the following paragraphs.

Task A1: Design Document Review. The CM shall perform review of the design documents. The CM will provide redline mark-up of the plans and specifications and annotated comments. The review shall also verify that the design is clearly presented and potential construction related conflicts or deficiencies which may lead to substantive changes to the design, schedule, or cost of the project have been mitigated as practicable. Based upon our understanding of the current status of the design documents, we will undertake this at the 100% design stages.

Deliverables (electronic pdf files and hard copies):

- Final Design Review Report

Task A2: CM Quality Assurance:

Task A2.1: Review Contractor Construction Management Quality Control Plan. The CM shall review, record, and comment on the Construction Management Quality Control Plan submitted by the Construction Contractor.

Task A2.2: Construction Quality Assurance Plan. The CM will develop, implement, and maintain a Quality Assurance Plan for civil, structural, electrical, mechanical, and instrumentation elements including specialized work related to the construction of concrete

water reservoirs conforming to AWWA/ANSI D110 Type I Wire- and Strand- Wound, Circular Pre-stressed Concrete Water Tanks.

Content of the Quality Assurance Plan shall include, but not be limited to the following:

- Documentation of site conditions prior to beginning construction
- Review of approved submittals from the Contractor prior to fabrication or installation of materials and equipment
- Inspection, observation, and documentation of daily field work
- Monitoring of the Contractor's Quality Control Plan
- In-plant fabrication and/or witness testing at place of manufacture (where applicable)
- Reports and record keeping
- Non-conforming and deficient work resolution process
- Monitoring the Construction Contractor's implementation of their Quality Control Plan
- Complete list of specialized inspections for the tank structure and under tank

It is important to note that the CM is responsible for monitoring the Contractor's compliance with the Contract Documents, but is not responsible for the Contractor's means and methods the Contractor elects to use in performance of their work.

Deliverables (electronic pdf files and hardcopies):

- Quality Assurance Plan

Task A3: Construction Management Plan. The CM will develop and implement the Construction Management Plan (CM Plan) including guidelines for project organization and coordination in the field, standard daily operations, change order procedures, quality, schedule, and cost control. The CM Plan sets forth the procedures and approach for the construction of the project. The CM Plan will serve the CM, the Owner's Representative, and Contractors by defining the project, project team members and their roles, coordination among team members, procedure, key milestones, and schedule constraints. By establishing these parameters early in the project, the CM Plan will help control resources and costs, establish communication and coordination between the CM, Contractor, and GWA.

Deliverables (electronic pdf files and hardcopies):

- Construction Management Plan

Task A4: Contract Bidding:

The CM will review and perform an assessment of the 100% contract bid package (Parts A, B, & C) to assess their readiness, completeness, and suitability to solicit competitive bids. We will assist in the management of the bid documents, prepare for and conduct the pre-bid conference and site visit(s), manage and assist with RFI responses and addendums during the bid period.

After receipt of construction bid packages, the CM will perform an overall review of the bids received with a detailed emphasis on the apparent low bidder(s). The CM will work with GWA to perform the necessary follow-up with the bidders until the lowest responsible and responsive bidder is determined. Upon completion of this process, the CM will provide a technical memorandum summarizing the review and recommendation for award, and/or concurrence of

the proposed selected contractor. Recommendation shall include document review to ensure compliance with all bid requirements and procurement regulations, bid analysis, and contractor selection.

Deliverables (electronic pdf files and hardcopies):

- Pre-Bid Meeting Agenda and Minutes
- Technical Memorandum(s) – Document Review, Bid Analysis, and Contractor Selection

B. CONSTRUCTION PHASE SERVICES:

Task B1.0: Project Records & Document Control. The CM shall provide services and tools to ensure that the project is efficiently managed and constructed according to the terms of the Contract. The primary function shall be the proper collection and organization of construction documents, gathering data regarding project progresses, producing progress reports, and monitoring time, cost, and quality.

The CM shall use Bentley EADOC for the Project Management Information System (PMIS) to track communication, design documents, construction documents, finances, and reporting. Our fee proposal shall include up to 15 users.

- Communication Documents: Memos, daily inspector logs for both contractor and CM, meeting minutes, and all other relevant documentation.
- Construction Documents: Submittals, RFIs, testing results, photo logs, special inspection, change orders, corrective actions, punch list, various construction logs, payment applications, wage rate reporting, and all other relevant documentation.
- Contract Documents: Specifications, drawings, permits, bid documents, contract documents, and all other relevant documentation.

Task B2.0: Daily Construction Reports. The onsite inspectors shall maintain daily reports of the general work performed, visitors to the site, daily production, weather and site condition, field orders, progress photos, material testing, special inspections, documentation of delays, non-conformance, punch lists, and other material and work facts and issues regarding the production of the work. The daily reports and logs shall be available to GWA project team for review at any time via the project management software.

Task B3.0: Progress Photo Log and Live Video Feed:

Task B3.1: Progress Photo Log. The CM shall prepare and retain a construction progress photo log in an album organized by year, month, and day. The photo log shall capture the different phases of the project – pre-construction, construction, and post-construction. The photo log shall be digital and provided to GWA at the end of the project.

Task B3.2: Live Video Feed. The CM shall provide 24 hour monitoring camera(s) to be installed at each project site to allow for regular monitoring of the project work. The camera system will allow for remote view and playback functions. A time-lapse video of the entire project shall be provided to GWA at the end of the project.

Task B4.0: Submittal and Shop Drawings. The CM shall review and act on (accept or reject) submittals required by the Contract documents. The CM shall review and provide comments

regarding shop drawings, work drawings, material submittals, traffic control plan, safety plan, demolition plan, and other submittals for conformance with the Contract Documents. The CM reviewer shall be a competent person. In the event of a Contractor request for a time extension or material or equipment substitution, the CM shall make a recommendation to GWA regarding the substitution. The GWA Chief Engineer or his authorized representative will approve the substitution.

Task B5.0: Contractor Project Schedules. The CM shall review the Contractor's work schedule for accuracy and for efficient sequencing of the work. The CM shall provide recommendations to the Contractor to make changes deemed necessary and coordinate approval of the revised (recovery) schedule with GWA. Any delays shall be documented and notified to GWA and the Contractor when actual progress is behind schedule. The CM shall adhere to the requirements set forth in the Contract document for Contractor project schedule tracking and review.

Task B6.0: Payment Request. The CM shall receive and process payment requests from the Contractor. Payment requests shall be reviewed to be in compliance with the Contract documents and with the actual work completed. Upon completion of the review, the CM shall make any necessary adjustments, certify, and forward the request to GWA for processing of the payment. The CM shall submit their review, recommendation, acceptance, or rejection within five (5) working days of receipt from the Contractor. We assume the payment application will be a standard AIA or EJCDC.

Task B7.0: Payroll Report. The CM shall review any payroll submittals required by the Contract Documents including prevailing wage submissions. At the minimum, the Contractor and its subcontractors shall provide bi-weekly pay records for each of its employees on the project. The CM shall conduct two (2) random employee interviews every two (2) weeks to verify the pay request information. Upon completion of the review, the CM shall require the Contractor to make any necessary adjustments, certify, and forward the Payroll report along with the pay request to GWA for processing. Our review will be based on the wage rates provided in the bid package.

Task B8.0: Project Meetings. The CM shall schedule, arrange, and conduct conferences and meetings as required for clear communication of the Contract requirements and adherence to project schedules.

Task B8.1: Pre-construction Conference. The CM shall prepare for, chair, and provide meeting minutes for the pre-construction conference. The preconstruction conference shall be arranged to discuss mobilization, prosecution of work, safety, environmental protection, historic preservation, processing payments, material submittals, testing procedure, project schedules, inspections, and all other contract issues as necessary.

Task B8.2: Weekly Progress Meetings. The CM shall arrange for a weekly progress meeting with the Contractor and GWA to discuss progress of work, Contract requirements, and other issues related to the administration and prosecution of work. The CM shall prepare meeting minutes for all progress meetings with contractors, sub-contractors, GWA, and all other parties. The meeting minutes shall include action items from week to week until it has been completed.

Task B8.3: Special/Stakeholder Coordination Meetings. The CM shall arrange meetings between the Contractor and GWA, and other parties such as GEPA, DPW, GPA, etc. and other

Stakeholders as necessary to address project issues that require decisions that cannot be made by the CM or to resolve regulatory concerns.

Task B9.0: As-Built Drawings:

Task B9.1: As-Built Drawing Review. After each weekly meeting, the CM shall review the Contractor's review drawings to ensure that they are current and capture any deviations from the original plan set.

Task B9.2: Maintain As-Built Drawing. The CM shall maintain a separate set of red-line as-built drawings on site. Drawings shall be available for GWA at any time. Monthly as-built documents shall be uploaded to the project management software system.

Task B10.0: Request for Information. The CM shall track Requests for Information (RFI) and maintain an RFI log; coordinate receipt of answers from other sources; and provide RFI responses with GWA's input regarding any aspect of the Contract documents, which includes the plans and technical specifications.

Task B11.0: General Compliance Monitoring. The CM shall evaluate and ensure Contractor compliance with all local and federal labor laws applicable to the Project. Any violations shall be immediately reported to GWA. Compliance monitoring shall include but not limited to the following:

Task B11.1: Regulations and Laws. The CM shall monitor compliance with Territorial and/or Federal laws, regulations, and rules.

Task B11.2: Labor Laws. The CM shall monitor Contractor and subcontractor procedures to verify legal status of employees on site. Verify bi-weekly compliance with labor requirements for federally funded projects including posting of wage rate schedules at the job site and safety requirements.

Task B11.3: Licensure. To the best of our ability, the CM shall confirm that the Contractor and its subcontractors and their workers have all required licenses and ensure that said licenses are valid throughout the terms of the Contract.

Task B11.4: Permit Compliance. To the best of our ability, the CM shall monitor and track Contractor's compliance in obtaining required permits and approvals.

Task B11.5: Insurance. To the best of our ability, the CM shall review the Contractor's insurance documents that are submitted to GWA for compliance with Contractor requirements. The CM shall track insurance documents, ensure insurance is valid throughout the term of Contract and maintain an insurance certificate log.

Task B12.0: Claims and Disputes. The CM shall promptly notify GWA regarding any issues that arise during construction of the project that could result in claims and/or disputes. The CM shall provide the following services to assist GWA with the resolution of claims and disputes:

Task B12.1: Claim Records. Maintain copies of all verbal and written communications, submittals, testimony, photos, and meetings regarding a potential dispute and promptly submit all originals to the Chief Engineer and Attorney for GWA.

Task B12.2: Claims Reviews & Interpretation. Review claims submitted by the Contractor. Provide GWA with interpretation of Contract drawings and specifications and provide written recommendations to GWA regarding the solution of the dispute. At the outset of the Contract, the CM shall work with the Contractor to provide pricing for equipment, material, personnel, and other relevant considerations as specified in the bid. Prices agreed upon shall be used in any subsequent Change Order. No amounts shall be paid except for actual losses incurred by the Contractor through no fault of their own or for risks not allocated to the Contractor under the bid.

Task B13.0: Change Order Negotiations and Review:

Task B13.1: Change Order Review. Track all change orders and maintain a change order log. Provide change order evaluations, negotiations, and recommendations for approval by GWA. Change orders shall not be made when the Contractor has assumed such risk in the bid. Change orders may include requests for additional payments for differing site conditions and the CM shall utilize the bid documents to determine if a change order is warranted. The CM shall submit change order requests and supporting documentation to GWA for approval within ten (10) working days of receipt from the Contractor wherever practical.

Task B13.2: Change Order Negotiations with Contractor. Prepare independent cost estimates and negotiate change orders with the Contractor subject to GWA approval (final approval of negotiated change orders can only be made by the GWA General Manager).

Task B13.3: Change Order Documentation and Administration.

The CM shall maintain copies for all approved change orders (originals to be provided to GWA) and ensure that subsequent pay requests accurately represent these change orders. Approved change orders shall be administered by the CM along with other work elements according to the provisions of this scope of work.

Task B14.0: Design Changes and Verification Request:

As directed by GWA, prepare changes to the Contract technical documents (design and specifications) required to address a change order. GWA will direct the CM to make design changes only when changes are deemed by the GWA Chief Engineer and the Engineer of Record to have no material effect on the original intent of the design. All other design changes shall be forwarded to the Engineer of Record for processing.

If the request for change will materially change the original design, the CM shall coordinate with the Engineer of Record to accomplish the necessary design changes. The CM shall prepare a design change/verification request (DCVR) for submission to and for the approval of the Engineer of Record. If the required changes to the design are not covered within the original design scope of service, the CM will prepare a design scope amendment; solicit a fee proposal for the amendment on behalf of GWA, and assist with the negotiations.

Task B15.0: Construction Monitoring, Special Inspection, and Quality Control Monitoring.

The CM shall provide construction management and onsite inspection observation services to ensure that the work is accomplished in accordance with the Contract documents.

Project field staff shall review project documents, conduct daily observations, special inspections (where applicable), prepare and submit daily observation and special inspection reports; communicate deficiency issues and resolve with Contractor; and update a non-

compliance log. It is anticipated that during peak construction as many as four (4) field staff may be present at the site during normal working hours.

Task B15.1: Project Manager. The CM will assign a part time Project Manager (PM) to the Guam Northern and Southern GWA Reservoir project. The PM will be responsible for general over-sight of the project, formal correspondence with GWA and the Contractor, and the professional and technical accuracy of all work and materials of the project.

Task B15.2: Resident Engineer. A full time Resident Engineer (RE) shall be assigned to manage all three (3) sites and will be at one (1) of the sites during normal working hours unless attending project related meetings or during holidays, vacation, or sick days. The Resident Engineer (RE) will determine along with the Project Manager (PM), which field staff will be onsite but it may be comprised of civil, structural, electrical, or mechanical field staff with the intent that there will be at least one (1) of them on site during normal working hours and will be supported by additional Special Inspectors as described in Task 15.4.

Task B15.3: Onsite Construction Inspector. The CM shall provide construction inspector staff at each of the three (3) sites to monitor the construction. The Resident Engineer and onsite field staff shall have demonstrable experience (satisfactory to GWA) relative to the discipline and type of work being performed. Project field staff shall review project documents, conduct daily observations, special inspections (where applicable), prepare and submit daily observation and special inspection reports, communicate deficiency issues and resolve with Contractor, and update a non-compliance log.

Task B15.4: Special Inspector. In addition to general compliance inspections, the CM shall provide special inspections services in accordance with IBC 2009, Chapter 17 by a person with demonstrable experience (satisfactory to GWA) related to concrete placement, structural field welding, field welding of reinforcement, concrete anchoring, expansion bolts, shotcrete application, high strength bolting, reinforcing steel placement, pre-stressing operations, grading, excavation, backfilling, foundation probing and injection, and other operations that require special inspections. The Special Inspections staff shall be accepted by DPW and approved by GWA before inspection.

SCADA, mechanical, and electrical inspections will be handled by competent staff on an "on-call" basis to periodically observe these phases of the construction. The same staff will be used to provide discipline specific submittal, shop drawing, and RFI review and response support. The staff shall have demonstrable experience relative to the discipline and type of work being performed.

Task B16.0: Testing (Quality Assurance).

Task B16.1: Contactor Testing. Schedule, observe, approve or reject, and document testing required under the Contract to be performed by the Contractor.

Task B16.2: Construction Quality Assurance Testing. The CM shall provide the following CQA testing to monitor the Contractor's independent testing firm:

SPECIAL TESTING	STANDARD	FREQUENCY
Concrete Compressive Testing: Water tank, structures, encasement, hand holds,	ASTM C-39	See attached QA Summary of Services

electrical and communication vaults, pavement, retaining walls, drilled piles, etc.		
Backfill Compaction Testing: Over-excavation, tank foundation, structure foundations, manholes, vaults, electrical & communication hand holes, pavement, etc.	ASTM D-698 ASTM D-6938	See attached QA Summary of Services
Soil and Aggregate Analysis: Subgrade, limestone, base course, general fill, and structural fill, etc.	ASTM C-136 ASTM C-117 ASTM C-40 ASTM D-1140 ASTM D-1183 ASTM D-4318	See attached QA Summary of Services

Task B16.2: GWA Testing. Coordinate and monitor testing required to be performed by GWA.

Task B17.0: Acceptance. The CM shall promptly reject, orally, or in writing, any construction work that does not fully comply with Contract documents. Within 24 hours of notification to the Contractor that work elements have been rejected, the CM shall provide a written description of the deficiency to the GWA Chief Engineer for his/her concurrence. When concurrence has been obtained, the Contractor shall be directed to correct the work. The CM shall promptly advise the GWA Project Manager or the GWA Chief Engineer if the Contractor fails to correct or remove the defective work.

The CM shall issue written stop work orders to the Contractor and immediately provide GWA with a copy for a portion of or the entire Contract non-compliance issues as follows:

- If condition of work or Contractor actions threaten the health and safety of Contractor personnel, GWA representatives, or the public in such cases, stop work orders may be oral depending on the circumstances with written stop work order to follow.
- With prior notification and approval of the GWA Chief Engineer or Project Manager in all other cases.

Task B18.0: Construction QA Survey Services. The CM shall conduct survey and field measurements as necessary to verify that the work is located according to the plans and specifications. Changes to the horizontal and vertical alignments and elevations shall be made only with the approval of the GWA Chief Engineer.

- Pipeline Alignments and Location of Structures: Spot check Contractor's construction staking to verify the pipeline alignments and structure locations are as called for on the plan and specifications and in order to ensure that the work is in a location within lawful and approved Rights-of-Way and easements.
- Elevations: Spot check with Contractor's elevations for foundations, pads, pipe line inverts, backfill thickness, manholes, and other structures for which vertical elevations is a critical design element.
- Construction Survey Quality Assurance: The CM shall provide, at the minimum, the following CQA survey to monitor the Contractor's independent survey firm.
- See attached QA Summary of Services for a project specific list of those items to be verified. In general, the following work shall be provided: under-tank piping, over-excavation, tank foundation, vaults, pavement, water line, bench marks, etc.

Task B19.0: Project Closeout (Punch List and Project Closeout Inspections). Throughout the construction of the project, the CM shall prepare and maintain a list of defects and deficiencies in the work which must be corrected by the Contractor prior to final acceptance of work. The list shall be provided to all members of the pre-final and final inspection team. The list shall be revised after inspections to reflect additional items identified during the inspection. Coordinate with the Contractor to ensure that all punch list items have been completed. When all items have been completed, inform GWA in writing recommending that the work be accepted.

Schedule, arrange, and conduct preliminary, pre-final, and final inspections of work with Contractor, GWA, GEPA, DPW, and other stakeholders in this project.

Task B19.1: Deficiency Log. Prepare and maintain a list of defects and deficiencies in the work which must be corrected by the Contractor prior to final acceptance of work.

Task B19.2: Preliminary Inspection. Preliminary inspections shall be arranged as necessary for specific work elements that require the certification and approval of other agencies.

Task B19.3: Pre-final Inspection. A pre-final inspection shall be conducted after substantial completion of the work.

Task B19.4: Final Inspection. The final inspection shall be conducted after correction of pre-final inspection punch list items.

Task B20.0: Train and Warranty Periods.

Task B20.1: Startup Training & Maintenance Procedures Coordination. The CM shall coordinate with the Contractor to schedule and conduct startup training and standard maintenance procedures required by the Contract documents.

Task B20.2: Master Warranty Package. The CM shall maintain a copy of the warranties and compile associated Manufacturer and Contractor warranty documents. Warranty information shall be included in the final project report. All original warranty documents shall be provided to GWA along with Lien Release Information from the Contractor.

Task B21.0: Equipment.

Task B21.1: Pressure Data Loggers. The CM shall provide GWA with 15 water pressure data loggers, batteries, lock boxes, chains, padlocks, and associated fittings. The water pressure data loggers shall contain USB downloading, water resistant case, delay start feature, and 0-300 PSI range. For the purposes of this proposal, the cost of five (5) data loggers has been carried in each of the three (3) projects. Product data for the above has been included as an attachment to this document.

Task B21.2: Equipment. The CM shall provide GWA with a Panasonic Toughbook 20 with Windows Pro operating system per the attached product data. For the purposes of this proposal, the cost of Toughbook has been divided equally and 1/3 of the cost was carried in each of the projects.

Task B22.0: Expenses. The CM has summarized the costs associated with reports & reproduction, mileage, live video fee, website access & maintenance, project management information system (EADOC), QA soil & aggregate analysis, QA backfill compaction testing, QA concrete compressive strength testing, QA survey verification, etc. as a single total for all three (3) projects and carried the average amount equally in each of the projects.

C. POST-CONSTRUCTION SERVICES:

Task C1.0: Final Report. The CM shall prepare a final report after written acceptance of the work by GWA. The final report shall include a narrative documentation of all significant design and construction events and issues and shall become a historical record for the project. The Final Report shall include:

- All communication documentation
- All design documentation
- All construction documentation
- Warranty information
- Operation and maintenance information
- Asset management registry

Deliverables (electronic pdf files and 5 hard copies):

- CM Final Report

Task C2.0: Record Drawings. After the conclusion of the project, the CM shall review and approve the official record drawings prepared by the Contractor.

Deliverables (electronic pdf files and 5 hard copies):

- As-Built Record Drawings

IV. CLARIFICATIONS AND ASSUMPTIONS:

1) For this project, the CM's onsite presence shall consist of the following:

- a) **One (1) part time Project Manager** (assumed 45%) equally distributed to each of the three (3) project locations.
- b) **One (1) full time Resident Engineer** (assumed 100%) equally distributed to each of the three (3) project locations.
- c) **Three (3) full time Civil/Structural Inspector** (assume 100%), one at each of the three (3) project locations.
- d) **One (1) part time Structural Special Inspector** (assumed 24%), equally distributed to each of the three (3) project locations.
- e) **One (1) part time SCADA Inspector** (assume 21%), equally distributed to each of the three (3) project locations.
- f) **One (1) part time equivalent of Mechanical Engineer/ Mechanical Inspector** (assume 21%), equally distributed to each of the three (3) project locations.
- g) **One (1) part time equivalent of Electrical Engineer/ Electrical Inspector** (assume 21%), equally distributed to each of the three (3) project locations.

- h) One (1) part time equivalent of Submittal Manager/Project Manager Assistant** (assume 45%) at each of the three (3) project locations, and various part time support as needed from the Principal, additional inspectors, engineers, etc.
- 2) Per the June 27, 2017 CM Services scoping meeting with GWA, the following project durations were used:**
 - a) Santa Rosa GWA Reservoir Replacement (365 calendar days).**
 - b) Santa Rita GWA Reservoir Replacement (410 calendar days).**
 - c) Sinifa GWA Reservoir Replacement (365 calendar days).**

As requested by GWA, the CM shall provide limited close-out services for a period of 30 to 60 days after substantial completion provided all the construction work is complete and support is mainly at an administrative level (i.e. does not require full time staff to be assigned to the job site).

- 3) In an effort to reduce costs, the following assumptions have been made:**
 - a) Preparation of Construction Management Plan (CMP) assumes a single document can be prepared for all three projects. One third effort carried in each fee proposal.**
 - b) Contract Bidding effort assumes preparation if a single Pre-Bid Meeting, Contract Bidding Management effort, Bid Opening, Review of Bid Packages, Preparation of Recommendation Memorandum, and Technical Memorandums for all three (3) projects as a single bid package. One third of the effort has been carried in each fee proposal.**
 - c) At the end of the project, the CM will turn-over each of the EarthCam - Construction Cam Lite HD to GWA. It is our understanding that GWA will have the cameras permanently installed at each of the three (3) sites by others. The cameras have an approximate value of \$45,000.00 excluding software support and archiving services which are excluded. Note, GHD access to the EarthCam environment is subject to compliance with their terms of use for the service. GHD is a subscriber to the service only and has no control over the performance of the EarthCam Service but will take all reasonable measures and actions within our power to ensure good performance of the system.**
- 4) Inspection and testing of any existing steel storage reservoirs including draining and cleaning is excluded for this scope of services.**
- 5) An amount of \$18,930.00 for the Project Management Information System (PMIS), Bentley's ProjectWise Construction Management Service (EADOC), was budgeted for each project. Our fee assumes a total of 15 users for each project at a cost of approximately \$180.00 per user per quarter as follows:**
 - a) Client – two (2)**
 - b) Construction Manager – five (5)**
 - c) Contractor – five (5)**
 - d) Spare – three (3)**

Additional users can be provided at the request of GWA via Change Order. Note, GHD Access to the ProjectWise Construction Management environment is subject to compliance

with the Bentley Systems terms of use for the service. GHD is a subscriber to the ProjectWise Construction Management service only and has no control over the performance of Bentley's ProjectWise Construction Management Service but will take all reasonable measures and actions within our power to ensure good performance of the system.

- 6) The CM will use Primavera P6 project management software to track the Contractor's project schedule, construction cost, resource tracking, and cost management.
- 7) The CM shall conduct random employee interviews every two (2) weeks for two (2) employees to verify the pay request information.
- 8) Job Site Safety is the sole responsibility of the Contractor. The CM assumes the Contractor shall perform all work in accordance with the requirements of the Contract Documents, applicable federal and local regulations, compliance with regulations of public agencies having jurisdiction, including safety and health requirements of the Territory of Guam and the Occupational Safety and Health Administration of the US Department of Labor (OSHA) as may be required.

In the event that the GHD believes that the Contractor is not conducting their work in compliance with OSHA requirements, we may request GWA to bring in an independent third party safety expert to determine the extent of the Contractor's compliance and potential mitigation for non-compliance. We recommend that GWA include language in the contract documents requiring the contractor to pay for this additional cost in the event it is necessary.

- 9) **Stop Work Orders:** It is understood that the CM may issue written stop work orders to the Contractor in accordance with GWA policies for a portion of or the entire project for Contract non-compliance issues as follows:
 - a) If in the opinion of the CM, the condition of work or Contractor actions threaten the health and safety of Contractor's personnel, GWA representatives, CM Staff, or the public in such cases, stop work orders may be oral depending on the circumstances (with written stop work order to follow).
 - b) With prior notification and approval of the GWA Chief Engineer or GWA Project Manager in all other cases.
- 10) **Authority to Direct Contractor Operations:** The CM shall direct the Contractor's Operations under the following conditions:
 - a) **Safety and Public Convenience:** In order to minimize inconvenience to the public and businesses, and in order to protect the safety of the public.
 - b) **Compliance:** In order to affect compliance with local and federal regulations, such as those dealing with traffic control, environmental protection, cultural protection, and historic protection.
- 11) No formal Partnering Program will be provided but GHD will incorporate partnering to the extent practicable to ensure that environmental commitments are met; complete the

project on time by resolving disputes quickly; finish within budget by proactively monitoring costs and facilitating creative solutions when faced with potential cost increases; ensure that quality is met by adequate oversight by the Contractor and CM.

- 12) An amount has been budgeted as detailed in the attached **QA Services Summary** to provide QA Testing. Material laboratory testing, Compaction testing, and Concrete Compressive Strength Testing shall be provided by a licensed geotechnical engineering firm. If additional services are required, it shall be brought to GWA's attention and a fee negotiated.
- 13) An amount has been budgeted as detailed in the attached **QA Services Summary** to provide QA Field Survey verification services. Survey verification services will be provided by a licensed land surveyor. If additional work is required it will be brought to GWA's attention and a fee negotiated.
- 14) No generator, fuel storage or pump systems are part of the project.
- 15) No project specific permitting services are included in this scope of work, but GHD will assist GWA, the designer, and the Contractor on a limited basis to help facilitate procurement of permits as expeditiously as possible.
- 16) No Archeological survey, Section 106 Historic Preservation, biological resource monitoring, Section 7 Endangered Species Act or related work is included.
- 17) Any and all permit fees are excluded.
- 18) The scope assumes the processing of up to **100 RFIs** (Task B10.0) per project, with the understanding that the EOR will provide responses to all design related RFIs. The scope also assumes **five (5) change orders** for (Task B13.0) and **three (3) design changes** for (Task B14.0). If additional work is required it will be brought to GWA's attention and a fee negotiated.
- 19) Warranty follow-up is not included in the scope. If required, a fee will be negotiated with GWA.
- 20) These CM Services are being provided for the construction of improvements shown on the **90% Design package**. If additional improvements are added to the construction contract then a fee for additional CM Services will be negotiated with GWA.
- 21) The Construction contract shall include requirements that the Construction Contractor pay for all overtime for inspection and special inspection requested by the Contractor outside of the normal 40 hour work week and this requirement will be strictly enforced and supported by GWA with payment coming out of the Contractor's Pay Request and then distributed to GHD by GWA via change order.
- 22) GWA agrees to negotiate with GHD for change orders for additional construction phase services due to construction delays, time extensions, additional work, adverse weather delays (**in excess of 30 days**), or any other reason not due to negligent acts of GHD until final acceptance of the project is achieved.

VI. FEE SCHEDULE

TABLE 01 - SANTA RITA GWA RESERVOIR

Task Description	Amount
Pre-Construction	\$45,820.00
Construction	\$905,939.38
Post-Construction	\$31,802.00
SUBTOTAL	\$983,561.38
GRT	\$40,985.00
Santa Rita Total	\$1,024,546.39

TABLE 02 - SANTA ROSA GWA RESERVOIR

Task Description	Amount
Pre-Construction	\$45,820.00
Construction	\$859,665.38
Post-Construction	\$31,802.00
SUBTOTAL	\$937,287.38
GRT	\$39,056.77
Santa Rosa Total	\$976,344.15

TABLE 03 - SINIFA GWA RESERVOIR

Task Description	Amount
Pre-Construction	\$45,820.00
Construction	\$859,665.38
Post-Construction	\$31,802.00
SUBTOTAL	\$937,287.38
GRT	\$39,056.77
Sinifa Total	\$976,344.15

TABLE 04 - SANTA RITA SANTA ROSA & SINIFA GWA RESERVOIR

Task Description	Amount
Pre-Construction	\$137,460.00
Construction	\$2,625,270.15
Post-Construction	\$95,406.00
SUBTOTAL	\$2,858,136.15
GRT	\$119,098.53
GRAND TOTAL	\$2,977,234.69

See attached spreadsheets for detailed information. Note, work to be invoiced monthly based on prorated effort.

Santa Rosa, Sinifa, and Santa Rita Tank System Upgrades
Fee Summary
09/22/2017

	Amount
Pre-Construction	\$45,820.00
Construction	\$905,939.38
Post-Construction	\$31,802.00
SUBTOTAL	\$983,561.38
GRT	\$40,985.00
Santa Rita TOTAL	\$1,024,546.39

	Amount
Pre-Construction	\$45,820.00
Construction	\$859,665.38
Post-Construction	\$31,802.00
SUBTOTAL	\$937,287.38
GRT	\$39,056.77
Santa Rosa TOTAL	\$976,344.15

	Amount
Pre-Construction	\$45,820.00
Construction	\$859,665.38
Post-Construction	\$31,802.00
SUBTOTAL	\$937,287.38
GRT	\$39,056.77
Sinifa TOTAL	\$976,344.15

	Amount
Pre-Construction	\$137,460.00
Construction	\$2,625,270.15
Post-Construction	\$95,406.00
SUBTOTAL	\$2,858,136.15
GRT	\$119,098.53
GRAND TOTAL	\$2,977,234.69

GHD - PROJECT ESTIMATING SHEET - GHD QA SERVICES SUMMARY

Project Name: Santa Rosa, Sinifa, and Santa Rita Tank & System Upgrades
GHD Project Number:
Description: SANTA RITA
Prepared by: B.Ryley

Attachment:
of:
Checked By: P. Baron
Date: 09/22/17

QA SURVEY ESTIMATE

<u>Under Tank Piping:</u>	<u>Quantity</u>
Inlet Piping & Top of Flange	\$1,200
Outlet Piping & Top of Flange	\$1,200
Over-Flow Piping & Top of Flange	\$1,200
Drain Line Piping & Top of Flange	\$1,200
Wash Down Piping	\$1,200
 <u>Tank Foundation:</u>	
Top of Formwork	\$1,200
 <u>Control Building 1</u>	
Subgrade	\$800
Footing	\$800
Building Corners	\$800
FFE	\$800
 <u>Control Building 2</u>	
Subgrade	\$800
Footing	\$800
Building Corners	\$800
FFE	\$800
 <u>Manhole:</u>	
Below Base	\$800
Top of Manhole	\$800
Bottom of Pipe	\$800
 <u>Ponding Basin 1</u>	
Subgrade	\$800
 <u>Ponding Basin 2</u>	
Subgrade	\$800
 <u>Vaults:</u>	
Top Outlet Meter Vault Footing Formwork	\$800
Top Outlet Meter Vault Roof Slab Formwork	\$800
Top Inlet Meter Vault Footing Formwork	\$800
Top Inlet Meter Vault Roof Slab Formwork	\$800
Top Electrical Handhole	\$800
 <u>Pavement:</u>	
Pavement Formwork	\$800
Sidewalk Formwork	\$800
 <u>Fencing</u>	
Corners	\$800

Drilled Piles

Cast In Place Drilled Piles \$5,500

Bench Marks:

Establish bench marks on top of all vaults,
top of retaining wall, top of footing at water
height gauge, over-flow, drian, & outlet. \$1,200

Contingency 25% \$7,675

TOTAL ESTIMATED BUDGET \$38,375

	<u>Rate</u>
Half Day	\$800
Full Day	\$1,200
Hourly	\$150

CQA TESTING ESTIMATE

Material Laboratory Testing:

<u>Procotor & Sieve Analysis:</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Cost</u>
Subgrade	\$295.00	2	\$590.00
Limestone	\$295.00	2	\$590.00
Base course	\$295.00	2	\$590.00
General Fill	\$295.00	2	\$590.00
		Contingency 25%	\$590.00
TOTAL ESTIMATED BUDGET:			\$2,950.00

Compaction Testing:

<u>Control Building 1</u>			
Subgrade	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
<u>Control Building 2</u>			
Subgrade	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
<u>Reservoir Access Road</u>			
Subgrade	\$74.00	1	\$74.00
Limestone	\$74.00	2	\$148.00
<u>Ponding Basin 1 Access Road</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
General Fill	\$74.00	1	\$74.00
<u>Ponding Basin 2 Access Road</u>			

Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
<u>Manhole</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Outlet Meter Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Inlet Meter Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Electrical Handhole (estimated)</u>			
Below Foundation	\$74.00	1	\$74.00
<u>Pavement:</u>			
Subgrade	\$74.00	1	\$74.00
Limestone	\$74.00	2	\$148.00
Base course	\$74.00	1	\$74.00
		Contingency 25%	\$573.50
TOTAL ESTIMATED BUDGET:			\$2,867.50

	<u>Rate</u>
1st Test	\$55
2nd Test	\$19
	<hr/>
	\$74

Concrete Testing:

<u>Outlet Meter Vault:</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Cost</u>
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Inlet Meter Vault:</u>			
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Encasement:</u>			
Inlet Piping	\$305.00	1	\$305.00
Outlet Piping	\$305.00	1	\$305.00
Over-Flow Piping	\$305.00	1	\$305.00
Drain Line Piping	\$305.00	1	\$305.00
Wash Down Piping	\$305.00	1	\$305.00
Electrical & Communications Ducts	\$305.00	1	\$305.00

<u>Handholes:</u>			
Electrical	\$305.00	1	\$305.00
<u>Pavement:</u>			
Pavement	\$305.00	1	\$305.00
<u>Control Building 1</u>			
Footing	\$305.00	1	\$305.00
Building Corners	\$305.00	1	\$305.00
<u>Control Building 2</u>			
Footing	\$305.00	1	\$305.00
Building Corners	\$305.00	1	\$305.00
<u>Manhole</u>			
Pre-Cast Sections	\$305.00	1	\$305.00
<u>Drilled Piles</u>			
Cast In Drilled Piles	\$305.00	77	\$23,485.00
<u>Water Tank:</u>			
Foundation	\$305.00	1	\$305.00
Core Walls	\$305.00	7	\$2,135.00
Columns	\$305.00	9	\$2,745.00
Column Footings	\$305.00	9	\$2,745.00
Roof Slab	\$305.00	1	\$305.00
Shotcrete	\$305.00	2	\$610.00
		170	

Contingency 15% \$5,718.75

TOTAL ESTIMATED BUDGET: \$43,843.75

DESCRIPTION OF TESTS:

Compressive Strength of Cylindrical Concrete Specimens (4 at \$17.00 ea.):	\$68.00
Curing and Disposal of Cylindrical Concrete Specimens without test, each:	\$12.00
Air Content of Freshly Mixed Concrete by the Pressure/Volumetric Method, per test:	\$50.00
Unit Weight and Yield of Fresh Concrete, each:	\$50.00
Slump Test & Making Concrete Specimens in the field (2.5 Hours of Labor):	\$125.00
SUBTOTAL:	\$305.00

QA SPECIAL INSPECTIONS

Special Inspections:

Outlet Meter Vault:

Footing	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

Inlet Meter Vault:

Footing	hours	2	110	\$220
Walls	hours	2	110	\$220

Roof Slab	hours	2	110	\$220
<u>Encasement:</u>				
Inlet Piping	hours	2	110	\$210
Outlet Piping	hours	2	110	\$210
Over-Flow Piping	hours	2	110	\$210
Drain Line Piping	hours	2	110	\$210
Wash Down Piping	hours	2	110	\$210
Electrical & Communications Ducts	hours	2	110	\$210
<u>Handholes:</u>				
Electrical	hours	2	110	\$210
<u>Pavement:</u>				
Pavement	hours	4	110	\$420
<u>Manhole:</u>				
Pre-Cast Sections	hours	2	110	\$210
<u>Drilled Piles</u>				
Cast In Drilled Piles	hours	616	110	\$67,760
<u>Water Tank:</u>				
Foundation	hours	8	110	\$880
Core Walls	hours	14	110	\$1,540
Columns	hours	18	110	\$1,980
Column Footings	hours	18	110	\$1,980
Roof Slab	hours	12	110	\$1,320
Shotcrete	hours	24	110	\$2,640
Vertical Post-tensioning	hours	8	110	\$880
Circumferential Pre-stressing	hours	16	110	\$1,760
		<u>766</u>		\$84,160
	Contingency	10%		\$8,416.00
	TOTAL ESTIMATED BUDGET:			\$92,576.00
	GRAND TOTAL:			\$177,662.25

GHD - PROJECT ESTIMATING SHEET - GHD QA SERVICES SUMMARY

Project Name: Santa Rosa, Sinifa, and Santa Rita Tank & System Upgrades
GHD Project Number:
Description: SANTA ROSA
Prepared by: B.Ryley

Attachment:
of:
Checked By: P. Baron
Date: 09/22/17

QA SURVEY ESTIMATE

<u>Under Tank Piping:</u>	<u>Quantity</u>
Inlet Piping & Top of Flange	\$1,200
Outlet Piping & Top of Flange	\$1,200
Over-Flow Piping & Top of Flange	\$1,200
Drain Line Piping & Top of Flange	\$1,200
Wash Down Piping	\$1,200

<u>Over Excavation:</u>	
Bottom of Over Excavation	\$800
Top of Base course	\$800
Top of Limestone	\$800

<u>Tank Foundation:</u>	
Top of Formwork	\$1,200

<u>Hydropneumatic Tank Pad</u>	
Top of Formwork	\$800

<u>Control and Pump Room Building</u>	
Subgrade	\$800
Footing	\$800
Building Corners	\$800
FFE	\$800

<u>Manhole:</u>	
Below Base	\$800
Top of Manhole	\$800
Bottom of Pipe	\$800

<u>Ponding Basin</u>	
Subgrade	\$800

<u>Vaults:</u>	
Top Outlet Meter Vault Footing Formwork	\$800
Top Outlet Meter Vault Roof Slab Formwork	\$800
Top Inlet Meter Vault Footing Formwork	\$800
Top Inlet Meter Vault Roof Slab Formwork	\$800
Top Drain Vault Footing Formwork	\$800
Top Drain Vault Roof Slab Formwork	\$800
Top Outlet Check Valve Vault Footing Formwork	\$800
Top Outlet Check Valve Vault Roof Slab Formwork	\$800

<u>Retaining Wall</u>	
Top of Formwork	\$1,200

<u>Pavement:</u>	
Pavement Formwork	\$800

Sidewalk Formwork \$800

Fencing

Corners \$800

Bench Marks:

Establish bench marks on top of all vaults,
top of retaining wall, top of footing at water
height gauge, over-flow, drian, & outlet. \$1,200

Contingency 25% \$7,000

TOTAL ESTIMATED BUDGET \$35,000

	<u>Rate</u>
Half Day	\$800
Full Day	\$1,200
Hourly	\$150

CQA TESTING ESTIMATE

Material Laboratory Testing:

<u>Procotor & Sieve Analysis:</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Cost</u>
Subgrade	\$295.00	2	\$590.00
Limestone	\$295.00	2	\$590.00
Base course	\$295.00	2	\$590.00
General Fill	\$295.00	2	\$590.00
Structural Fill	\$295.00	2	\$590.00
	Contingency 25%		\$737.50
TOTAL ESTIMATED BUDGET:			\$3,687.50

Compaction Testing:

<u>Over-Excavation:</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Control and Pump Room Building</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Hydropnuematic Tank Pad</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Access Road</u>			
Subgrade	\$74.00	1	\$74.00

Structural Fill	\$74.00	2	\$148.00
Limestone	\$74.00	1	\$74.00
<u>Pond Access Road</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
<u>Ponding Basin</u>			
General Fill	\$74.00	1	\$74.00
<u>Off-Site Gravel Road</u>			
Subgrade	\$74.00	1	\$74.00
General Fill	\$74.00	1	\$74.00
<u>AC Pavement</u>			
Subgrade	\$74.00	1	\$74.00
Structural Fill	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Concrete Sidewalk</u>			
Subgrade	\$74.00	1	\$74.00
Structural Fill	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Outlet Meter Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Inlet Meter Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Drain Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Outlet Check Valve Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Retaining Wall</u>			
Limestone	\$74.00	1	\$74.00
<u>Electrical Handhole (estimated)</u>			
Below Foundation	\$74.00	1	\$74.00
Contingency 25%			\$777.00
TOTAL ESTIMATED BUDGET:			\$3,885.00

	<u>Rate</u>
1st Test	\$55
2nd Test	\$19

Concrete Testing:

<u>Outlet Meter Vault:</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Cost</u>
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Inlet Meter Vault:</u>			
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Drain Vault:</u>			
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Outlet Check Valve Vault:</u>			
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Encasement:</u>			
Inlet Piping	\$305.00	1	\$305.00
Outlet Piping	\$305.00	1	\$305.00
Over-Flow Piping	\$305.00	1	\$305.00
Drain Line Piping	\$305.00	1	\$305.00
Wash Down Piping	\$305.00	1	\$305.00
Electrical & Communications Ducts	\$305.00	1	\$305.00
<u>Handholes:</u>			
Electrical	\$305.00	1	\$305.00
<u>Pavement:</u>			
Pavement	\$305.00	1	\$305.00
<u>Retaining Wall</u>			
Footing	\$305.00	1	\$305.00
<u>Hydropneumatic Tank Pad</u>			
Foundation	\$305.00	1	\$305.00
<u>Water Tank:</u>			
Foundation	\$305.00	1	\$305.00
Core Walls	\$305.00	7	\$2,135.00
Columns	\$305.00	9	\$2,745.00
Column Footings	\$305.00	9	\$2,745.00
Roof Slab	\$305.00	1	\$305.00
Shotcrete	\$305.00	2	\$610.00
		94	
	Contingency 15%		\$2,333.25

TOTAL ESTIMATED BUDGET: \$17,888.25

DESCRIPTION OF TESTS:

Compressive Strength of Cylindrical Concrete Specimens (4 at \$17.00 ea.):	\$68.00
Curing and Disposal of Cylindrical Concrete Specimens without test, each:	\$12.00
Air Content of Freshly Mixed Concrete by the Pressure/Volumetric Method, per test:	\$50.00
Unit Weight and Yield of Fresh Concrete, each:	\$50.00
Slump Test & Making Concrete Specimens in the field (2.5 Hours of Labor):	\$125.00
SUBTOTAL:	\$305.00

QA SPECIAL INSPECTIONS

Special Inspections:

Outlet Meter Vault:

Footings	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

Inlet Meter Vault:

Footings	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

Drain Vault:

Footings	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

Outlet Check Valve Vault:

Footings	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

Encasement:

Inlet Piping	hours	2	110	\$210
Outlet Piping	hours	2	110	\$210
Over-Flow Piping	hours	2	110	\$210
Drain Line Piping	hours	2	110	\$210
Wash Down Piping	hours	2	110	\$210
Electrical & Communications Ducts	hours	2	110	\$210

Handholes:

Electrical	hours	2	110	\$210
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Pavement:

Pavement	hours	4	110	\$420
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Retaining Wall

Footings	hours	2	110	\$210
Walls	hours	2	110	\$210

Water Tank:

Foundation	hours	8	110	\$880
Core Walls	hours	14	110	\$1,540
Columns	hours	18	110	\$1,980
Column Footings	hours	18	110	\$1,980
Roof Slab	hours	12	110	\$1,320
Shotcrete	hours	24	110	\$2,640
Vertical Post-tensioning	hours	8	110	\$880
Circumferential Pre-stressing	hours	16	110	\$1,760
		164		\$17,930

Contingency 10% \$1,793.00

TOTAL ESTIMATED BUDGET: \$19,723.00

GRAND TOTAL: \$76,496.25

GHD - PROJECT ESTIMATING SHEET - GHD QA SERVICES SUMMARY

Project Name: Santa Rosa, Sinifa, and Santa Rita Tank & System Upgrades
GHD Project Number:
Description: SINIFA
Prepared by: B.Ryley

Attachment:
of:
Checked By: P. Baron
Date: 09/22/17

QA SURVEY ESTIMATE

<u>Under Tank Piping:</u>	<u>Quantity</u>
Inlet Piping & Top of Flange	\$1,200
Outlet Piping & Top of Flange	\$1,200
Over-Flow Piping & Top of Flange	\$1,200
Drain Line Piping & Top of Flange	\$1,200
Wash Down Piping	\$1,200
 <u>Over Excavation:</u>	
Bottom of Over Excavation	\$800
Top of Base course	\$800
Top of Limestone	\$800
 <u>Tank Foundation:</u>	
Top of Formwork	\$1,200
 <u>Control Room</u>	
Subgrade	\$800
Footing	\$800
Building Corners	\$800
FFE	\$800
 <u>Manhole:</u>	
Below Base	\$800
Top of Manhole	\$800
Bottom of Pipe	\$800
 <u>Ponding Basin</u>	
Subgrade	\$800
 <u>Vaults:</u>	
Top Outlet Meter Vault Footing Formwork	\$800
Top Outlet Meter Vault Roof Slab Formwork	\$800
Top Inlet Meter Vault Footing Formwork	\$800
Top Inlet Meter Vault Roof Slab Formwork	\$800
Top Drain Vault Footing Formwork	\$800
Top Drain Vault Roof Slab Formwork	\$800
 <u>Retaining Wall</u>	
Top of Formwork	\$1,200
 <u>Pavement:</u>	
Pavement Formwork	\$800
Sidewalk Formwork	\$800
 <u>Fencing</u>	
Corners	\$800

Bench Marks:

Establish bench marks on top of all vaults,
top of retaining wall, top of footing at water
height gauge, over-flow, drian, & outlet.

\$1,200

Contingency 25% \$6,400

TOTAL ESTIMATED BUDGET \$32,000

	<u>Rate</u>
Half Day	\$800
Full Day	\$1,200
Hourly	\$150

CQA TESTING ESTIMATE

Material Laboratory Testing:

<u>Procotor & Sieve Analysis:</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Cost</u>
Subgrade	\$295.00	2	\$590.00
Limestone	\$295.00	2	\$590.00
Base course	\$295.00	2	\$590.00
	Contingency 25%		\$442.50
TOTAL ESTIMATED BUDGET:			\$2,212.50

Compaction Testing:

<u>Over-Excavation:</u>			
Base course	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Control Room</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
<u>Ponding Basin Access Road</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
<u>Off-Site Gravel Road</u>			
Subgrade	\$74.00	1	\$74.00
General Fill	\$74.00	1	\$74.00
<u>AC Pavement</u>			
Subgrade	\$74.00	1	\$74.00
Limestone	\$74.00	1	\$74.00
Base course	\$74.00	1	\$74.00
<u>Concrete Sidewalk</u>			
Subgrade	\$74.00	1	\$74.00
Structural Fill	\$74.00	1	\$74.00

Limestone	\$74.00	1	\$74.00
<u>Outlet Meter Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Inlet Meter Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Drain Vault</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Retaining Wall</u>			
Limestone	\$74.00	1	\$74.00
<u>Manhole</u>			
Subgrade	\$74.00	1	\$74.00
Base course	\$74.00	3	\$222.00
<u>Electrical Handhole (estimated)</u>			
Below Foundation	\$74.00	1	\$74.00
Contingency 25%			\$610.50
TOTAL ESTIMATED BUDGET:			\$3,052.50

	<u>Rate</u>
1st Test	\$55
2nd Test	\$19
	<hr style="width: 50px; margin: 0 auto;"/> \$74

Concrete Testing:

<u>Outlet Meter Vault:</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Cost</u>
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Inlet Meter Vault:</u>			
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Drain Vault:</u>			
Footing	\$305.00	1	\$305.00
Walls	\$305.00	1	\$305.00
Roof Slab	\$305.00	1	\$305.00
<u>Control Room</u>			
Footing	\$305.00	1	\$305.00
Building Corners	\$305.00	1	\$305.00

<u>Encasement:</u>			
Inlet Piping	\$305.00	1	\$305.00
Outlet Piping	\$305.00	1	\$305.00
Over-Flow Piping	\$305.00	1	\$305.00
Drain Line Piping	\$305.00	1	\$305.00
Wash Down Piping	\$305.00	1	\$305.00
Electrical & Communications Ducts	\$305.00	1	\$305.00

<u>Pavement:</u>			
Pavement	\$305.00	1	\$305.00

<u>Retaining Wall</u>			
Footing	\$305.00	1	\$305.00

<u>Fencing</u>			
Posts	\$305.00	1	\$305.00

<u>Water Tank:</u>			
Foundation	\$305.00	1	\$305.00
Core Walls	\$305.00	7	\$2,135.00
Columns	\$305.00	9	\$2,745.00
Column Footings	\$305.00	9	\$2,745.00
Roof Slab	\$305.00	1	\$305.00
Shotcrete	\$305.00	2	\$610.00
		90	

Contingency 15% \$2,241.75

TOTAL ESTIMATED BUDGET: \$17,186.75

DESCRIPTION OF TESTS:

Compressive Strength of Cylindrical Concrete Specimens (4 at \$17.00 ea.):	\$68.00
Curing and Disposal of Cylindrical Concrete Specimens without test, each:	\$12.00
Air Content of Freshly Mixed Concrete by the Pressure/Volumetric Method, per test:	\$50.00
Unit Weight and Yield of Fresh Concrete, each:	\$50.00
Slump Test & Making Concrete Specimens in the field (2.5 Hours of Labor):	\$125.00
SUBTOTAL:	\$305.00

QA SPECIAL INSPECTIONS

Special Inspections:

<u>Outlet Meter Vault:</u>				
Footing	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

<u>Inlet Meter Vault:</u>				
Footing	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220

Drain Vault:

Footing	hours	2	110	\$220
Walls	hours	2	110	\$220
Roof Slab	hours	2	110	\$220
<u>Encasement:</u>				
Inlet Piping	hours	2	110	\$210
Outlet Piping	hours	2	110	\$210
Over-Flow Piping	hours	2	110	\$210
Drain Line Piping	hours	2	110	\$210
Wash Down Piping	hours	2	110	\$210
Electrical & Communications Ducts	hours	2	110	\$210
<u>Control Room</u>				
Footing	hours	2	110	\$210
Walls	hours	2	110	\$210
<u>Pavement:</u>				
Pavement	hours	4	110	\$420
<u>Retaining Wall</u>				
Footing	hours	2	110	\$210
Walls	hours	2	110	\$210
<u>Water Tank:</u>				
Foundation	hours	8	110	\$880
Corewalls	hours	14	110	\$1,540
Columns	hours	18	110	\$1,980
Column Footings	hours	18	110	\$1,980
Roof Slab	hours	12	110	\$1,320
Shotcrete	hours	24	110	\$2,640
Vertical Post-tensioning	hours	8	110	\$880
Circumferential Pre-stressing	hours	16	110	\$1,760
		<u>160</u>		\$17,480
	Contingency	10%		\$1,748.00
	TOTAL ESTIMATED BUDGET:			\$19,228.00
	GRAND TOTAL:			\$71,467.25

10 Project Number:

Description: **EXPENSE SUMMARY**

Prepared by: **B.Ryley**

of:

Checked by: **P.Baron**

Date: **09/22/17**

EXPENSE ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT	MARKUP at 10%	TOTAL
RECONSTRUCTION PHASE TASKS						
Report Reproduction, misc.	3	lump sum	1,000.00	3,000.00	300.00	3,300.00
					-	
					-	
SUBTOTAL				3,000.00	300.00	3,300.00
CONSTRUCTION PHASE TASKS						
Lease (1.50 vehicles x 30 miles x 321 days)	43,335	mile	0.52	22,534.20	2,253.42	24,787.62
Report Reproduction, misc	3	lump sum	3,000.00	9,000.00	900.00	9,900.00
Real Time Video Feed, Website Access & Maintenance	3	each	29,642.54	88,927.61	8,892.76	97,820.37
Project Management Information Systems	3	lump sum	16,500.00	49,500.00	4,950.00	54,450.00
Tablet Computer	3	lump sum	5,735.35	17,206.04	1,720.60	18,926.64
Lenovo ThinkPad X1 Carbon	1	ea.	2,399.00	2,399.00	239.90	2,638.90
Soil & Aggregate Analysis	3	lump sum	2,950.00	8,850.00	885.00	9,735.00
Compaction Testing	3	lump sum	3,268.33	9,805.00	980.50	10,785.50
Concrete Testing	3	lump sum	26,306.25	78,918.75	7,891.88	86,810.63
Survey Verification	3	lump sum	35,125.00	105,375.00	10,537.50	115,912.50
SUBTOTAL				392,515.59	39,251.56	431,767.15
POST CONSTRUCTION SERVICES						
Report Reproduction, misc.	3	lump sum	1,500.00	4,500.00	450.00	4,950.00
					-	
					-	
SUBTOTAL				4,500.00	450.00	4,950.00
GRAND TOTAL				400,015.59	40,001.56	440,017.15

10 Project Number:

Description: VIDEO CAMERA EXPENSE BREAKDOWN

Prepared by: B.Ryley

of:

Checked by: P. Baron

Date: 09/22/17

EXPENSE ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT	MARKUP at 10%	TOTAL
RECONSTRUCTION PHASE TASKS						
SUBTOTAL						
CONSTRUCTION PHASE TASKS						
OrthoCam - Construction Cam Lite HD	1	ea.	4,495.00	4,495.00	449.50	4,944.50
Global Power Upgrade	1	ea.	4,022.00	4,022.00	402.20	4,424.20
Global Modem	1	ea.	1,399.00	1,399.00	139.90	1,538.90
Universal Pole Mount	1	ea.	99.00	99.00	9.90	108.90
Software Support & Archiving Services	1	ea.	575.00	575.00	57.50	632.50
MedEx International Economy S&H	1	ls.	2,722.76	2,722.76	272.28	2,995.04
Weather Station w/shipping	1	ea.	1,200.00	1,200.00	120.00	1,320.00
OrthoCam Consulting Services	1	incl.	-	-	-	-
Website Development & MP Image Integration	1	incl.	-	-	-	-
Hand Edited Time-Lapse Move	1	incl.	-	-	-	-
Orbis 6250 Weather Station	1	ea.	465.00	465.00	46.50	511.50
Orbis 7654 Repeater	1	ea.	353.00	353.00	35.30	388.30
Orbis 6555 Weather Link IP software	1	ea.	347.00	347.00	34.70	381.70
Adelco ARC MBR 1400 Series Router	1	ea.	850.00	850.00	85.00	935.00
GB high-speed HSPA data	18	mth.	140.00	2,520.00	252.00	2,772.00
12" Telescoping Light Mast w/Shipping	1	ea.	4,400.00	4,400.00	440.00	4,840.00
Concrete Foundation (5' x 5' x 1') w/single delivery	1	ea.	2,000.00	2,000.00	200.00	2,200.00
Installation & Start up	1	ls.	1,500.00	1,500.00	150.00	1,650.00
SUBTOTAL				26,947.76	2,694.78	29,642.54
POST CONSTRUCTION SERVICES						
SUBTOTAL						
TOTAL				26,947.76	2,694.78	29,642.54

ID Project Number:

of:

Description: DATA LOGGER EXPENSE BREAKDOWN

Checked by: P. Baron

Prepared by: B.Ryley

Date: 09/22/17

EXPENSE ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT	MARKUP at 10%	TOTAL
RECONSTRUCTION PHASE TASKS						
SUBTOTAL						
CONSTRUCTION PHASE TASKS						
ackson PR325: Pressure Data Logger	15	ea.	499.00	7,485.00	748.50	8,233.50
ackson A016: Software w/USB Download Cable	15	ea.	89.00	1,335.00	133.50	1,468.50
ackson 721: Locking Case	15	ea.	79.00	1,185.00	118.50	1,303.50
ackson A220: Card Reader Kit	15	ea.	49.00	735.00	73.50	808.50
ackson R022: Pressure Filter Kit	15	ea.	30.00	450.00	45.00	495.00
ackson A061: USB Download Cable	15	ea.	19.00	285.00	28.50	313.50
ackson A125: 3 Volt (3V) Lithium Battery	15	ea.	16.00	240.00	24.00	264.00
ackson A791: Pressure Kit	15	ea.	149.00	2,235.00	223.50	2,458.50
it. Double Loop Cable w/ Padlock	15	ea.	12.79	191.85	19.19	211.04
Budget for Miscellaneous, Fitting, Tubing, etc.	1	ls.	1,500.00	1,500.00	150.00	1,650.00
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
SUBTOTAL				15,641.85	1,564.19	17,206.04
POST CONSTRUCTION SERVICES						
SUBTOTAL						
TOTAL				15,641.85	1,564.19	17,206.04