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September 12th, 2016

Karen Riggs, PE
Cochise County Highway & Floodplain
1415 Melody Lane
Bisbee, AZ 85603

RE: Proposal – Bella Vista Ranch Recharge Investigation
Phase 2

Dear Karen:

Per your request, JE Fuller/Hydrology & Geomorphology (JEF) is providing you with this proposal for the referenced services. This proposal is based on the Scope of Work (SOW) dated September 12, 2016 (Attachment A) and is intended to be part of the Cochise County Board of Supervisors submittal package for the September 27, 2016 meeting of the Board representing the Flood Control District Board. The following items are attached:

A. Proposed Scope of Work Outline, Bella Vista Ranch Properties Phase 2, dated September 12, 2016 (hereafter referred to as the Bella Vista Phase 2 SOW);
B. Summary Cost Sheet for the Bella Vista Phase 2 SOW;
C. JE Fuller narrative discussion (refinement to supplement Attachment A) of the Bella Vista Phase 2 SOW and JE Fuller cost estimate;
D. GSA narrative discussion of the Bella Vista Phase 2 SOW and GSA cost estimate; and,
E. WestLand Resources proposal for Task 5 support (narrative and cost estimate).

JEF appreciates the opportunity to provide you with this proposal. You may indicate your acceptance of this proposal and provide notice to proceed by forwarding the applicable Professional Services Agreement (PSA) for signature. As always, please feel free to contact me at 520-623-3112 if you have any questions regarding this proposal.

Sincerely,
JE Fuller/Hydrology & Geomorphology, Inc.

Cyrus D. Miller, P.E., CFM
Vice President

ATTACHMENT A

Scope of Work Outline
Bella Vista Ranch Property
Phase 2
Dated September 12th, 2016

Attachment A

PROPOSED SCOPE OF WORK
BELLA VISTA RANCH
PHASE 2
AQUIFER RECHARGE FEASIBILITY STUDY
Dated September 12, 2016

Introduction

An initial feasibility study for aquifer recharge facilities was conducted via a Phase 1 Site Investigation on Bella Vista Ranch. This proposed Phase 2 Scope of Work (SOW) will assess hydrogeological and geotechnical conditions along the Coyote Wash corridor, with the goal of planning for an aquifer recharge facility intended to increase the frequency and/or magnitude of baseflows in the San Pedro River to the maximum extent possible. The source of water to be used for aquifer recharge is intended to be urban-enhanced runoff, however data collected and developed during performance of this Phase 2 SOW may be used to inform decision making relative to other source water.

Project deliverables will include identified location(s) for a stormwater capture and aquifer recharge project and two alternative conceptual designs, based on the results of the analyses and field work. Further design tasks are not part of this Phase 2 scope of work; the following paragraphs discussing potential design focus areas are intended to guide this scope of work and development of future phases and budgets. If the proposed recharge project proves to be feasible, budgeting for future phases will include 100% design and bid package deliverables (Phase 3).

Summary of Approach

The approach to the Phase 2 aquifer recharge feasibility study will include decision points following each primary field task that may affect the type and/or extent of subsequent investigations due to the different options being evaluated and their dependence on site-specific conditions. The goal is to maintain flexibility in the approach to ensure a cost-effective program for obtaining sufficient and critical data to evaluate feasibility of potential recharge methods to meet the project's recharge goals, while acknowledging that significant departure from scope could have substantial effects on cost and schedule.

Scope of Work Outline

The tasks listed below are the proposed elements to this Scope of Work. During the performance of this scope, the Consultant may suggest to the Project Team modifications to this SOW along with justification for those suggested modifications. Where needed, tasks may be performed in the sequence shown below, concurrently, or out of the sequence indicated below.

Task 1: Project Management

The Consultant shall:

- Identify a project manager responsible for managing the budget, schedule, and deliverables throughout the project, including the management of budget, schedule, and deliverables of any Sub consultants, as well as report directly to the County's project manager;
- Identify all Sub-consultants who will be involved in the project;
- Facilitate all monthly Cochise Conservation and Recharge Network (CCRN) Technical Team conference calls/meetings;
- Suggest modification of project scope details, including phasing, critical path items and decision points, as the project progresses;
- Suggest modifications to clarify and prioritize recharge goals/approaches;
- Suggest additional milestones leading to ensured achievement of project goals; and
- Assign roles and communication system for Consultant and Sub-consultant project team members.

Deliverable 1: Monthly Reports and Invoices and Monthly Conference Calls/Meetings

Task 2: Conduct Deeper Subsurface Investigations

The Consultant shall conduct deeper subsurface geologic, hydrogeological, and geotechnical site characterizations at the selected locations shown on Figure 1. Resulting data will include engineering soil descriptions, graphic logs, cross sections of lithologic profiles and identification of optimum areas for groundwater recharge.

For this SOW, ten boreholes are proposed to be drilled using rota-sonic coring methods (Figure 1). Rota-sonic methods are proposed instead of auger methods due to the potential occurrence of clay or duri-pan/calcrete beds. The boreholes are designed to assess the permeability of the underlying sediments located within the Coyote Wash (CW) channel and the adjacent gravel pit area. One concept is that the CW channel could be used as a recharge facility via the installation of check dams to slow down stormwater for infiltration. Likewise, the gravel pit could be used as an off-channel retention and recharge facility. Finally, three boreholes are located in a tributary channel to CW for future assessment of potential wastewater effluent discharge from the City of Sierra Vista EOP. Depending on site access to BH-2, BH-5 BH-8, these borehole locations may be relocated or dropped from consideration.

The Consultant shall contract with a properly-licensed, experienced and equipped drilling company to conduct a field-based borehole drilling campaign at potential aquifer recharge facility locations, to characterize soil layers and potential for impediments to groundwater recharge.

Deliverable 2: Engineering soil descriptions, borehole logs, subsurface cross sections, and contoured lithologic profile results.

Task 3: Conduct Aquifer Testing in Existing Groundwater Wells

The Consultant shall conduct aquifer (slug) tests on two existing wells at the Bella Vista property for determining hydraulic properties of the subsurface materials intersected by the wells. This task will be conducted at the same time permanent pressure transducers will be installed in these wells. These data will provide additional information on the aquifer properties underlying the Bella Vista site which will further support groundwater modeling and groundwater recharge prediction efforts.

Deliverable 3: Aquifer test results.

Task 4: Coordination Meeting to Present Deeper Subsurface Investigation Results

The Consultant shall:

- Prepare a visual presentation summarizing the results of Tasks 2 and 3 and proposed recharge facility locations based on those results and other prior results;
- Conduct a meeting with the Project Team (and any necessary Consultant and Subconsultant personnel) at their office or other appropriate location;
- Discuss the benefits of and additional information that can be gained from the performance of Optional Task A (see below for description) and decide if there is a need for Electrical Resistivity Survey; and
- Prepare meeting notes of all discussions and decisions arrived at during the meeting, including modifications to project budget and schedule (if any) based on the performance of Optional Task A.

Deliverable 4: Meeting notes summarizing discussions, decisions arrived at during the meeting, and necessary SOW revisions for subsequent tasks.

Task 5: Conceptual Recharge Facility Design

The Consultant shall formulate two conceptual designs for potential future aquifer recharge facilities. Concept facility designs will be represented on tabloid-size (11”x17”) sheets, relating to planning-level design detail (10% design). It is anticipated that the two concepts presented may be planned for individual or combined implementation, leading to a potential third concept: a combination of the two otherwise separate concepts.

The designs will employ the use of the Fort Huachuca half-meter contour data for the underlying land surface topography, along with other publically-available aerial photography data. The Consultant shall specify locations for higher resolution topography needed to complete designs and necessary supporting analyses. Preliminary calculations will include an estimate for the annual volume of water recharged via the project conceptual designs. The Memorandum shall provide preliminary engineering calculations on facility sizing and resulting impacts to flood flow/low-flow conditions and elevations as attachments.

The Memorandum shall specify needs for future data and analyses, data gaps identified during formulation of the concepts, and additional information required to support final design efforts.

The Consultant shall review the Revised Regulatory Review Report (Mulhern, 2014) and identify any state, federal and local requirements for the conceptual designs and provide a summary review of concept designs relative to environmental permitting requirements, the likelihood of presence of cultural resources or threatened/endangered species in the selected project areas, as well as summarize the expected regulatory (ADWR, U.S. Army Corps of Engineers, etc.) requirements associated with the concept designs presented.

Deliverable 5: Draft Technical Memorandum detailing the conceptual recharge facilities, including the tabloid-size concept designs (2), preliminary calculations, analysis input & output, and supporting documentation. The memo will also include estimated costs and timelines for the following: final engineering design, required permits, construction and operations/maintenance.

Deliverable 6: Coordination meeting to review Draft Technical Memorandum and designs.

Deliverable 7: Final Technical Memorandum following review and comment by CCRN Technical Team Members, with written responses to comments attached and including any cost estimate changes due to modifications to the conceptual designs.

Following Deliverable 7, the County and TNC project managers will present Final Technical Memo and conceptual designs to the CCRN Leadership team. Feedback from the CCRN Leadership team will be gathered and reported back to the CCRN Technical Team. Additionally, those project managers will work with the CCRN to solicit any needed legal or policy input.

Task 6: Data Collection and Evaluation

The Consultant shall perform data collection and evaluation of existing documentation appropriate to the project and related to other aquifer recharge efforts, and build upon the 'living document' prepared during previous work on Riverstone and Bella Vista site investigations by adding documents and references to that bibliography as appropriate. The Consultant shall finalize the Bibliography with additional data and documentation appropriate to the project, and finalize the updated bibliography during the final tasks of this Phase 2 SOW.

Deliverable 8: Revised bibliography and electronic copies of all references collected during Task 6. This deliverable may be placed on the Consultant's FTP site for download by the project team.

Task 7: Preparation of Draft and Final Conceptual Recharge Facility Summary Report

The Consultant shall provide a Report that summarizes recharge feasibility results at the locations investigated. Conceptual designs (10% level designs, 2 locations/facilities) shown on tabloid-size sheets will be provided. This report shall recommend recharge facilities for Coyote Wash (Bella Vista) including proposed recharge method(s), locations, and potential source water quantities and expected annual recharge volumes according to the alternative conceptual designs of future facilities.

The results from any associated groundwater modeling efforts will also be coordinated with this contract.

Deliverable 9: Draft Summary Report providing the results of the deeper subsurface investigations, describing the conceptual recharge facilities proposed, including the tabloid-size concept designs, the methods employed to arrive at the designs, and additional data required to support future planning/design efforts. The report will also include costs and timing estimates for the following: final engineering design, required permits, construction and operations/maintenance.

Deliverables 2, 3, 4, 7 and 8 included as attachments.

Deliverable 10: Final Summary Report following review and comment by CCRN Technical Team Members, with written responses to comments attached.

OPTIONAL Task A: Conduct Electrical Resistivity Survey in Coyote Wash

The Consultant shall contract with a qualified geophysical survey contractor to conduct an electrical resistivity survey within Coyote Wash and the gravel pit area from the southwestern to northeastern edge of the property boundary (approximately 1.75 miles). The electrical resistivity survey will provide information on the relative abundance and distribution of low resistivity subsurface material (i.e. low permeability fine-grained beds) underlying Coyote Wash. These data will correlated to the borehole data to assess the lateral extent and distribution of low permeability materials within potential recharge site areas.

Deliverable Option A: Electrical Resistivity Survey Results and interpretation of data in context with other site specific (i.e. borehole) data.

Schedule

The Consultant shall work closely with the County's project manager to develop a schedule for review and approval by the Project Team within 10 days of contract award. This Scope of Work must be completed no later than June 30, 2017.

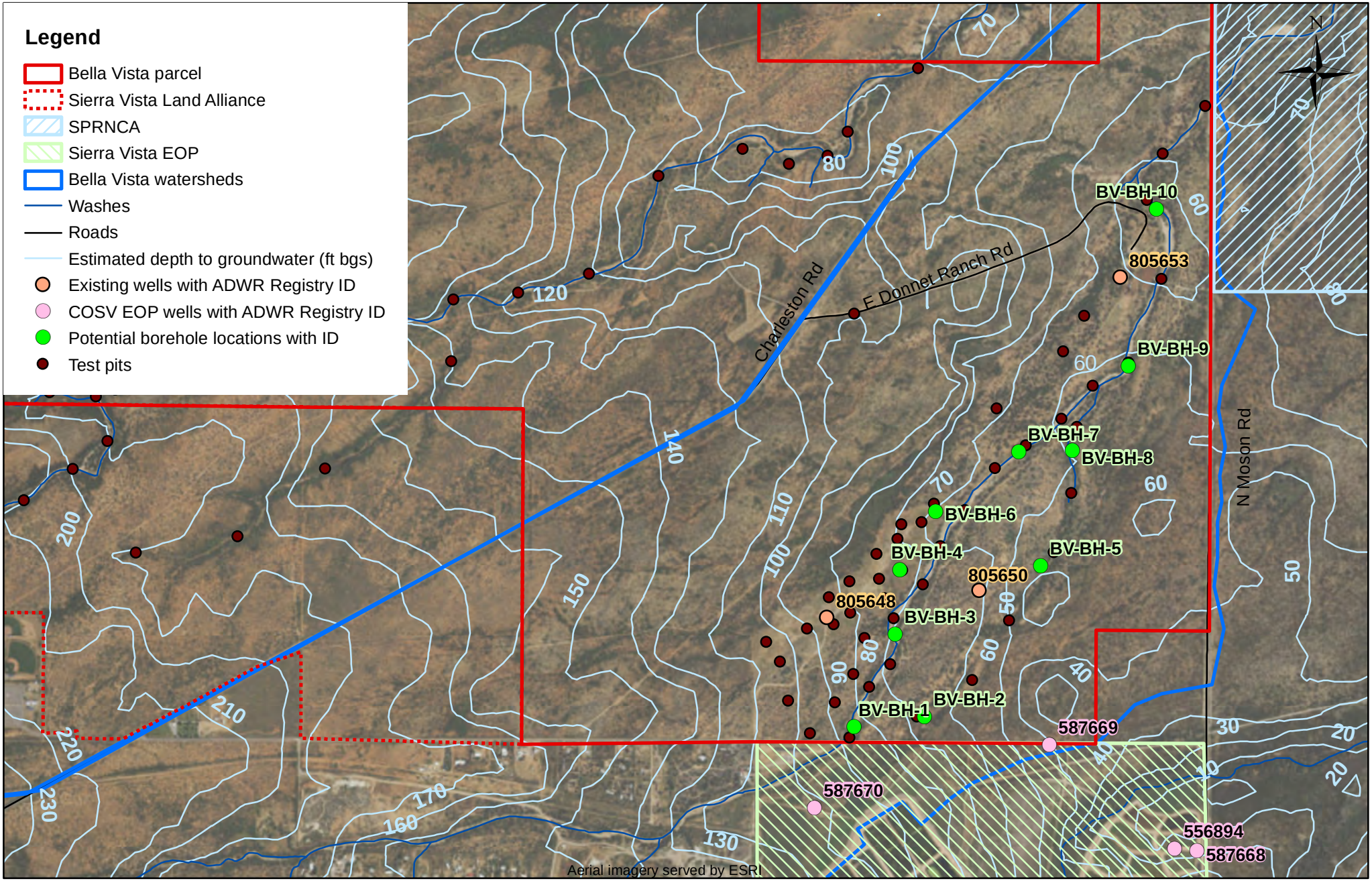


Figure 1. Proposed borehole investigation locations at Bella Vista

ATTACHMENT B
Summary Cost Sheet for the Bella Vista Phase 2 SOW

PROJ: Cochise County/Bella Vista Recharge Project Phase 2
DETAIL: Total Project Fee Estimate
DATE: September 12, 2016
Prepared by: JE Fuller/Hydrology & Geomorphology (JEF)

ATTACHMENT B - Summary Fee Estimate Sheet for the Bella Vista Phase 2 SOW

Task	Title	Deliverable (see SOW for task details)	Costs			
			JE Fuller	GSA	WestLand	TOTAL
1	Project Management	Deliverable 1: Monthly Reports and Invoices and Monthly Conference Calls/Meetings	$13,192	$10,241	$0	$23,433
2	Conduct Deeper Subsurface Investigations	Deliverable 2: Engineering soil descriptions, borehole logs, subsurface cross sections, and contoured lithologic profile results.	$3,341	$66,827	$0	$70,168
3	Conduct Aquifer Testing in Existing Groundwater Wells	Deliverable 3: Aquifer test results.	$266	$5,314	$0	$5,580
4	Coordination Meeting to Present Deeper Subsurface Investigation Results	Deliverable 4: Meeting notes summarizing discussions, decisions arrived at during the meeting, and necessary SOW revisions for subsequent tasks.	$1,733	$2,854	$0	$4,587
5	Conceptual Recharge Facility Design	Deliverable 5: Draft Technical Memorandum detailing the conceptual recharge facilities, including the tabloid-size concept designs (2), preliminary calculations, analysis input & output, and supporting documentation. Deliverable 6: Coordination meeting to review Draft Technical Memorandum and designs. Deliverable 7: Final Technical Memorandum following review and comment by CCRN Technical Team Members, with written responses to comments attached.	$59,356	$5,215	$5,100	$69,671
6	Data Collection and Evaluation	Deliverable 8: Revised bibliography and electronic copies of all references collected during Task 6. This deliverable may be placed on the Consultant's FTP site for download by the project team.	$2,740	$0	$0	$2,740
7	Preparation of Draft and Final Conceptual Recharge Facility Summary Report	Deliverable 9: Draft Summary Report providing the results of the deeper subsurface investigations, describing the conceptual recharge facilities proposed, including the tabloid-size concept designs, the methods employed to arrive at the designs, and additional data required to support future planning/design efforts. Deliverables 2, 3, 4 and 7 included as attachments. Deliverable 10: Final Summary Report following review and comment by CCRN Technical Team Members, with written responses to comments attached.	$8,329	$9,979	$0	$18,308
		PHASE 2 TOTALS	**$88,957**	**$100,430**	**$5,100**	**$194,487**
A (Option)	Conduct Electrical Resistivity Survey in Coyote Wash	Deliverable Option A: Electrical Resistivity Survey Results and interpretation of data in context with other site specific (i.e. borehole) data.	$1,373	$27,463	$0	$28,836
		PHASE 2 TOTALS (WITH OPTIONAL TASK A)	**$90,330**	**$127,893**	**$5,100**	**$223,323**

Notes:
5.00% Subconsultant markup included in JEF Cost
All fee estimates are approximate.
The total fee is a not-to-exceed (NTE) amount and individual task fees may vary within the total NTE.
Where needed tasks may be performed concurrently or out of the sequence indicated above.
Water rights legal consulting and groundwater modeling are to be provided by The Nature Conservancy and are excluded from this cost estimate

ATTACHMENT C
JE Fuller Scope of Work & Fee Estimate

Task 1: Project Management

JE Fuller will provide project management services in coordination with subconsultants Geosystems Analysis (GSA) and WestLand Resources (WestLand) as needed. Cyrus Miller, PE, CFM, will serve as the project manager for JE Fuller. John Wallace, PE, CFM will provide technical oversight and assistance as needed. JE Fuller will provide the monthly reports and invoices called for under this task.

Task 2: Conduct Deeper Subsurface Investigations

GSA will perform the work called for under this task (see Attachment D). JE Fuller will coordinate with GSA as needed to facilitate performance of this task and administer their contract. GSA will prepare Deliverable 2 for this task.

Task 3: Conduct Aquifer Testing in Existing Groundwater Wells

GSA will perform the work called for under this task (see Attachment D). JE Fuller will coordinate with GSA as needed to facilitate performance of this task and administer their contract. GSA will prepare Deliverable 3 for this task.

Task 4: Coordination Meeting to Present Deeper Subsurface Investigation Results

JE Fuller, in coordination with GSA, will prepare visual presentations summarizing the results of Tasks 2 and 3 to date and make recommendations for proposed recharge facility locations based on those results. The presentation will be provided at a meeting with the CCRN Technical Team (and any necessary contractor and subcontractor personnel) at their office or other appropriate location. JE Fuller, in coordination with GSA, will prepare meeting notes (Deliverable 4) of the discussions and decisions arrived at during the meeting and any scope revisions required for Task 5.

Task 5: Conceptual Recharge Facility Design

JE Fuller will develop two separate concepts for aquifer recharge facilities with stormwater as the source water, at agreed-upon (Task 4) locations along the Coyote Wash corridor. The Fort-Huachuca half-meter resolution topography data will be used to represent existing ground conditions, and the concepts will be developed using either AutoCAD Civil3D or ArcView platforms. Concept designs will be formulated to 10% Design detail, and will be represented on 11”x17” size sheets. Analyses and calculations will be provided detailing the flood flow and low-flow conditions expected with the concepts.

GSA will assist JE Fuller in quantifying annual recharge volumes. WestLand will review the designs and locations and provide a discussion on the biological and cultural regulatory issues presented by the concepts, relative to the Regulatory Review Report previously issued by the County.

JE Fuller will formulate Deliverables 5 and 7 and submit those to the Project Team. The Deliverable 6 meeting will be facilitated by JE Fuller.

Task 6: Data Collection and Evaluation

JE Fuller perform data collection and evaluation of data sources collected during performance of the Scope of Work. The previous 'living document' memo produced by JE Fuller, last revised November 23rd, 2015 during the Bella Vista Phase 1 Site Investigation will be updated to include documents and references collected during this Task. JE Fuller will prepare Deliverable 8 for this task.

Task 7: Preparation of Draft and Final Conceptual Recharge Facility Summary Report

JE Fuller, in coordination with GSA will prepare the Conceptual Recharge Facility Summary Report called for under this task. The Summary Report will include the results of the subsurface investigations, the facility concept designs, as well as the results of groundwater modeling (provided by others) as available.

The page which follows provides an estimate of the work effort by JE Fuller (only) to provide the foregoing services. A separate cost estimate for the entire project is provided separately in Attachment B.

PROJ: Cochise County/Bella Vista Recharge Project Phase 2
DETAIL: JE Fuller Fee Estimate
DATE: September 12, 2016
Prepared by: JE Fuller/Hydrology & Geomorphology (JEF)

Task	Title	Deliverable (see SOW for task details)	JEF Hours		JEF Labor Cost	JEF Direct Costs	JEF Total Cost
			PM II	PE II			
			$135.00	$110.00			
1	Project Management	Deliverable 1: Monthly Reports and Invoices and Monthly Conference Calls/Meetings	12	96	$12,180	$500	$12,680
2	Conduct Deeper Subsurface Investigations	Deliverable 2: Engineering soil descriptions, borehole logs, subsurface cross sections, and contoured lithologic profile results.	0	0	$0	$0	$0
3	Conduct Aquifer Testing in Existing Groundwater Wells	Deliverable 3: Aquifer test results.	0	0	$0	$0	$0
4	Coordination Meeting to Present Deeper Subsurface Investigation Results	Deliverable 4: Meeting notes summarizing discussions, decisions arrived at during the meeting, and necessary SOW revisions for subsequent tasks.	2	12	$1,590	$0	$1,590
5	Conceptual Recharge Facility Design	Deliverable 5: Draft Technical Memorandum detailing the conceptual recharge facilities, including the tabloid-size concept designs (2), preliminary calculations, analysis input & output, and supporting documentation. Deliverable 6: Coordination meeting to review Draft Technical Memorandum and designs. Deliverable 7: Final Technical Memorandum following review and comment by CCRN Technical Team Members, with written responses to comments attached.	32	492	$58,440	$400	$58,840
6	Data Collection and Evaluation	Deliverable 8: Revised bibliography and electronic copies of all references collected during Task 6. This deliverable may be placed on the Consultant's FTP site for download by the project team.	0	24	$2,640	$100	$2,740
7	Preparation of Draft and Final Conceptual Recharge Facility Summary Report	Deliverable 9: Draft Summary Report providing the results of the deeper subsurface investigations, describing the conceptual recharge facilities proposed, including the tabloid-size concept designs, the methods employed to arrive at the designs, and additional data required to support future planning/design efforts. Deliverables 2, 3, 4 and 7 included as attachments. Deliverable 10: Final Summary Report following review and comment by CCRN Technical Team Members, with written responses to comments attached.	8	60	$7,680	$150	$7,830
A (Option)	Conduct Electrical Resistivity Survey in Coyote Wash	Deliverable Option A: Electrical Resistivity Survey Results and interpretation of data in context with other site specific (i.e. borehole) data.	0	0	$0	$0	$0
		TOTALS	**54**	**684**	**$82,530**	**$1,150**	**$83,680**

Notes:
All fee estimates are approximate.
The total fee is a not-to-exceed (NTE) amount and individual task fees may vary within the total NTE.
Where needed tasks may be performed concurrently or out of the sequence indicated above.
Rates in accordance with hourly rate schedule submitted May 4, 2016 (RFQ 16-04-HFP-04)

ATTACHMENT D
GSA Scope of Work & Fee Estimate

Proposed Scope of Work for Bella Vista Ranch Phase 2 Aquifer Recharge Feasibility Study

The Section headings in this Scope of Work (SOW) are consistent with the task numbers used in the JE Fuller Scope of Work Bella Vista Ranch Phase 2 Aquifer Recharge Feasibility Study. Only the tasks requiring work by GSA are included in this document, thus Task 6 is excluded.

TASK 1.0 PROJECT MANAGEMENT

GSA will work closely with JEF and the Project Team to manage the budget, schedule, and deliverables and to report to the County's project manager. Mike Milczarek, the GSA project manager will prepare and provide monthly reports and invoices to JEF, and participate in monthly conference calls and meetings (Deliverable 1). In addition, Mike Milczarek will provide technical oversight and be available to assist as needed.

TASK 2.0 CONDUCT DEEPER SUBSURFACE INVESTIGATIONS

GSA will conduct a deeper subsurface hydrogeologic investigation within Coyote Wash and the gravel pit location at Bella Vista Ranch. Ten boreholes will be drilled and drill core samples will be geologically logged with sample selection for further laboratory testing to determine the permeability of the deeper subsurface. GSA will prepare and submit a Phase II Deeper Subsurface Investigation Memo (Deliverable 2) summarizing the results of the borehole investigation.

TASK 3: CONDUCT AQUIFER TESTING IN EXISTING GROUNDWATER WELLS

In support of Task 2, GSA will conduct small-scale aquifer tests (slug tests) in two of the existing Bella Vista wells. GSA will analyze and submit the aquifer test results with the Phase II Deeper Subsurface Investigation Memo (Deliverable 2).

TASK 4: COORDINATION MEETING TO PRESENT DEEPER SUBSURFACE INVESTIGATION RESULTS

GSA will work with JEF to prepare a presentation summarizing the results of Tasks 2 and 3, and recommendations regarding potential recharge locations based on the results. Based on discussions with the Project Team, in-channel and off-channel sites will be identified preliminary engineering (Task 5) conceptual designs. GSA will work with JEF to prepare meeting notes from the Coordination Meeting (Deliverable 4).

TASK 5: CONCEPTUAL RECHARGE FACILITY DESIGN

GSA will assist JEF as needed for preparation of the Draft and Final Conceptual Design Technical Memorandums (Deliverables 5 and 6).

TASK 7: PREPARATION OF DRAFT AND FINAL CONCEPTUAL RECHARGE FACILITY SUMMARY REPORT

In conjunction with JEF, GSA will prepare Draft and Final Summary Reports (Deliverables 9 and 10), that provide the results of the deeper subsurface investigations and describe the conceptual recharge facility(ies) concept designs.

ESTIMATED BUDGET

The estimated budget for Tasks 1 through 7 is summarized in Table 1; detailed estimated costs are provided in Table 2.

Table 1 - Phase II Task Cost Summary

	Total Costs
0 - Project Management	**$10,241**
0a - Management and Coordination	$10,168
0b - Monthly Meetings	$73
2 - Conduct Deeper Subsurface Investigations	**$66,827**
2a - Prepare drilling specifications/contract	$954
2b - Drilling and logging of 10 boreholes (560 ft)	$46,645
2c - Laboratory Analysis	$10,099
2d - Prepare summary documents (Deliverable 2)	$9,129
3 - Conduct Aquifer (Slug) Tests	**$5,314**
3a - Preparation	$538
3b - Conduct BV Slug Tests	$3,355
3c - Data Analysis and Tech Memo	$1,420
4 - Coordination Meeting to Present Deeper Subsurface Investigation Results	**$2,854**
4a - Prepare for and conduct meeting (Sierra Vista)	$2,510
4b - Meeting notes (Deliverable 15)	$344
5 - Conceptual Recharge Facility Design	**$5,215**
5a - Review and Assist on Design as Needed	$3,715
5b - Coordination meeting to review draft conceptual design.	$1,500
6 - Preparation of Draft and Final Conceptual Recharge Facility Summary Report	**$9,979**
No Subtask	$9,979

Table 1 - Phase II Task Cost Summary

	Total Costs
Optional Task A - Conduct Electrical Resistivity Survey	**$27,463**
Aa - Coordination	$723
Ab - Conduct ER Survey	$24,296
Ac - Data Interpretation and Technical Memo	$2,444
Proposal Grand Total	**$127,893**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: 0 - Project Management

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 0a - Management and Coordination					
Program Director	Milczarek	64	$145	NA	9280
Clerical Staff	Torres	12	$65	NA	780
			Subtask Total:		*$10,060*
Other Direct Costs					
Subtask: 0a - Management and Coordination					
Reproduction		1	$50	NA	50
Communications		1	$50	NA	50
			Subtask Total:		*$108*
Subtask: 0b - Monthly Meetings					
2WD Transportation		120	$1	NA	67.8
			Subtask Total:		*$73*
	8.00% Overhead: $13.42		**Task Total**		**$10,241**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: 2 - Conduct Deeper Subsurface Investigations

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 2a - Prepare drilling specifications/contract					
Program Director	Milczarek	4	$145	NA	580
Senior Hydrologist	Rice	2	$95	NA	190
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$900*
Subtask: 2b - Drilling and logging of 10 boreholes (560 ft)					
Program Director	Milczarek	6	$145	NA	870
Senior Hydrologist	Rice	80	$95	NA	7600
Hydrologist 1	Calabrese	24	$75	NA	1800
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$10,400*
Subtask: 2c - Laboratory Analysis					
Laboratory Manager	Yao	4	$135	NA	540
Hydrologist 1	Calabrese	16	$75	NA	1200
			Subtask Total:		*$1,740*
Subtask: 2d - Prepare summary documents (Deliverable 2)					
Program Director	Milczarek	16	$145	NA	2320
Techical Reviewer	Moore	6	$135	NA	810
Senior Hydrologist	Rice	24	$95	NA	2280
Staff Hydrologist	Buchanan	24	$85	NA	2040
Environmental Scientist	Bunting	16	$85	NA	1360
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$8,940*
Drilling Costs					
Subtask: 2b - Drilling and logging of 10 boreholes (560 ft)					
Mob/Demob		1	$2,500	NA	2500
Hole to Hole Move, Standby Time, Other Non-Drilling Activities		9	$450	NA	4050
Chase Truck		6	$400	NA	2400
Per Diem		6	$300	NA	1800
Drilling (Sonic)		560	$38	NA	21280
			Subtask Total:		*$34,592*
Lab Costs					
Subtask: 2c - Laboratory Analysis					
GSA - Particle Size Distribution with Hydrometer		20	$195	NA	3900
GSA - Saturated Hydraulic Conductivity (6-inch Repacked Core)		6	$125	NA	750
GSA - Atterberg Limits		20	$100	NA	2000

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

	GSA - Particle Density	6	$65	NA	390
	GSA - Bulk Density (2-inch core)	20	$20	NA	400
	GSA - Moisture Content (Oven)	20	$10	NA	200
			Subtask Total:		*$8,251*

Other Direct Costs

Subtask: 2a - Prepare drilling specifications/contract					
	Reproduction	1	$50	NA	50
			Subtask Total:		*$54*
Subtask: 2b - Drilling and logging of 10 boreholes (560 ft)					
	2WD car rental	0.2	$350	NA	70
	Lodging	6	$89	NA	534
	Miscellaneous	6	$50	NA	300
	Subsistence	7	$43	NA	301
	4WD Truck	500	$1	NA	325
			Subtask Total:		*$1,652*
Subtask: 2c - Laboratory Analysis					
	Miscellaneous	2	$50	NA	100
			Subtask Total:		*$108*
Subtask: 2d - Prepare summary documents (Deliverable 2)					
	Shipping	0.5	$50	NA	25
	Reproduction	2	$50	NA	100
	Communications	1	$50	NA	50
			Subtask Total:		*$189*
	8.00% Overhead: $3322.00		**Task Total**		**$66,827**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: 3 - Conduct Aquifer (Slug) Tests

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 3a - Preparation					
Program Director	Milczarek	1	$145	NA	145
Senior Hydrologist	Rice	4	$95	NA	380
			Subtask Total:		*$525*
Subtask: 3b - Conduct BV Slug Tests					
Senior Hydrologist	Rice	8	$95	NA	760
Hydrologist 1	Calabrese	8	$75	NA	600
			Subtask Total:		*$1,360*
Subtask: 3c - Data Analysis and Tech Memo					
Program Director	Milczarek	2	$145	NA	290
Modeler	Keller	6	$135	NA	810
Senior Hydrologist	Rice	2	$95	NA	190
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$1,420*
Rental Costs					
Subtask: 3b - Conduct BV Slug Tests					
Hermit Datalogger		1	$250	NA	250
Water Sounder		1	$50	NA	50
pH/Conductivity Meter		1	$50	NA	50
Stainless Steel Slug		1	$40	NA	40
			Subtask Total:		*$421*
Other Direct Costs					
Subtask: 3a - Preparation					
Communications		0.25	$50	NA	12.5
			Subtask Total:		*$13*
Subtask: 3b - Conduct BV Slug Tests					
Pump Contractor		1	$1,000	NA	1000
Lodging		1	$89	NA	89
Shipping		3	$50	NA	150
Miscellaneous		2	$50	NA	100
Subsistence		2	$43	NA	86
4WD Truck		50	$1	NA	32.5
			Subtask Total:		*$1,574*
	8.00% Overhead: $148.80		**Task Total**		**$5,314**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: 4 - Coordination Meeting to Present Deeper Subsurface Investigation Results

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 4a - Prepare for and conduct meeting (Sierra Vista)					
Program Director	Milczarek	12	$145	NA	1740
Environmental Scientist	Bunting	6	$85	NA	510
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$2,380*
Subtask: 4b - Meeting notes (Deliverable 15)					
Program Director	Milczarek	2	$145	NA	290
			Subtask Total:		*$290*
Other Direct Costs					
Subtask: 4a - Prepare for and conduct meeting (Sierra Vista)					
2WD car rental		0.2	$350	NA	70
Reproduction		1	$50	NA	50
			Subtask Total:		*$130*
Subtask: 4b - Meeting notes (Deliverable 15)					
Reproduction		1	$50	NA	50
			Subtask Total:		*$54*
	8.00% Overhead: $13.60		**Task Total**		**$2,854**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: 5 - Conceptual Recharge Facility Design

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 5a - Review and Assist on Design as Needed					
Program Director	Milczarek	20	$145	NA	2900
Environmental Scientist	Bunting	8	$85	NA	680
			Subtask Total:		*$3,580*
Subtask: 5b - Coordination meeting to review draft conceptual design.					
Program Director	Milczarek	8	$145	NA	1160
Environmental Scientist	Bunting	4	$85	NA	340
			Subtask Total:		*$1,500*
Other Direct Costs					
Subtask: 5a - Review and Assist on Design as Needed					
Shipping		0.5	$50	NA	25
Reproduction		2	$50	NA	100
			Subtask Total:		*$135*
	8.00% Overhead: $10.00		**Task Total**		**$5,215**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: 6 - Preparation of Draft and Final Conceptual Recharge Facility Summary Report

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: No Subtask					
Program Director	Milczarek	32	$145	NA	4640
Techical Reviewer	Moore	6	$135	NA	810
Environmental Scientist	Bunting	24	$85	NA	2040
Staff Hydrologist	Buchanan	24	$85	NA	2040
Clerical Staff	Torres	4	$65	NA	260
			Subtask Total:		*$9,790*
Other Direct Costs					
Subtask: No Subtask					
Reproduction		2	$50	NA	100
Communications		1	$50	NA	50
Shipping		0.5	$50	NA	25
			Subtask Total:		*$189*
	8.00% Overhead: $14.00		**Task Total**		**$9,979**

Bella Vista Site Investigation - Phase II
Table 2 - Detailed Costs

Task: Optional Task A - Conduct Electrical Resistivity Survey

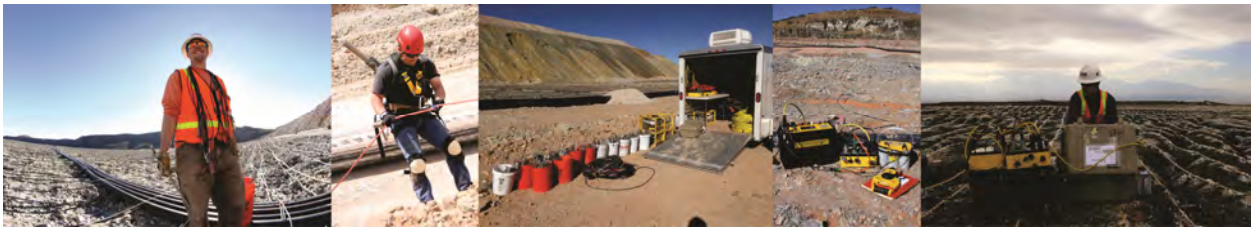
		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: Aa - Coordination					
Program Director	Milczarek	4	$145	NA	580
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$710*
Subtask: Ab - Conduct ER Survey					
Program Director	Milczarek	2	$145	NA	290
Environmental Scientist	Bunting	8	$85	NA	680
			Subtask Total:		*$970*
Subtask: Ac - Data Interpretation and Technical Memo					
Program Director	Milczarek	4	$145	NA	580
Senior Hydrogeologist	Keller	8	$135	NA	1080
AutoCAD/GIS	Osorio	8	$75	NA	600
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$2,390*
Instruments Costs					
Subtask: Ab - Conduct ER Survey					
Pressure transducer and datalogger assembly		1	$500	NA	500
			Subtask Total:		*$540*
Other Direct Costs					
Subtask: Aa - Coordination					
Communications		0.25	$50	NA	12.5
			Subtask Total:		*$13*
Subtask: Ab - Conduct ER Survey					
Geophysical Survey		1	$20,891	NA	20891
Miscellaneous Items		1	$50	NA	50
Subsistence		1	$43	NA	43
4WD Truck		175	$1	NA	113.75
			Subtask Total:		*$22,786*
Subtask: Ac - Data Interpretation and Technical Memo					
Reproduction		1	$50	NA	50
			Subtask Total:		*$54*
	8.00% Overhead: $1732.82		**Task Total**		**$27,463**
			PROPOSAL GRAND TOTAL:		**$127,893**

Proposal

ELECTRICAL RESISTIVITY CHARACTERIZATION OF COYOTE WASH

PREPARED FOR:

Mike Milczarek
GSA
3393 N. Dodge Blvd
Tucson, AZ 85716
520-628-9330
mike@gsanalysis.com



PREPARED BY:

Brian Cubbage, Geophysical Project Manager
bcubbage@hgiworld.com
2302 North Forbes Boulevard, Tucson, Arizona 85745 USA
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Proposal Number: P-2016-081
Date Submitted: August 29, 2016
Validity Period: 60 days from submittal date

PROPOSAL CONTENTS

1.0 PROBLEM STATEMENT

hydroGEOPHYSICS, Inc (HGI) has been requested by GSA to prepare a scope of work and cost estimate for conducting a geophysical survey in the Coyote Wash near Sierra Vista, AZ (Figure 1). A second line will be placed in an old gravel pit. The wash will potentially be used to recharge water. The wash is most likely underlain with beds of silt/clay and occasionally calcrete. Depth to water is about 100 feet at the southwest point and 50 feet at the northeast reach. The goal of the survey would be to map the general thickness of the beds and determine whether or not there may be sufficient high permeable materials that would allow recharge. It is expected that the resistivity survey is to be followed up by drilling.

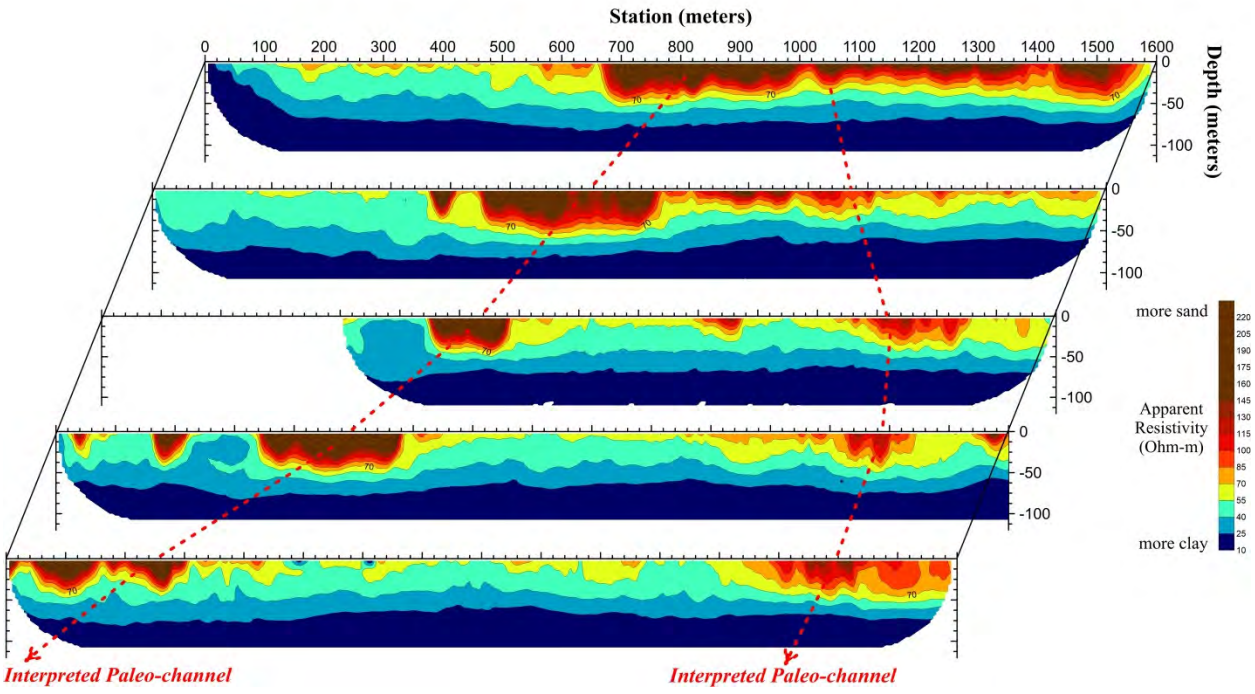
Figure 1. Map of Coyote Wash (red and blue lines indicate area of interest)

Electrical resistivity is the geophysical method of choice. The resistivity of fine grained sediments such as silt and clay can be orders of magnitude lower than coarser grained sediments. In addition, electrical resistivity can see both resistive and conductive materials whereas electromagnetic methods favorably maps conductive materials.

2.0 PREVIOUS WORK

In 2002, the Tucson Water company began the initial planning stage for their Southern Avra Valley Storage and Recovery Project (SAVSARP). This was part of a continuing mission to store transported Colorado River water within the existing aquifer and reduce the possibility of ground subsidence. The goal was to inexpensively locate favorable groundwater recharge locations. Electrical resistivity was selected because it offers a low cost means to help site wells for a more extensive drilling program. The data provided continuous sections of information that accurately characterized the subsurface alluvial geology and moisture distribution. The cross-sections below demonstrate the ability to detect and delineate former stream channel deposits (coarser grained media) that provide more suitable infiltration sites.

Figure 2. Electrical resistivity mapping in Avra Valley in support of SAVSARP



3.0 SCOPE OF WORK

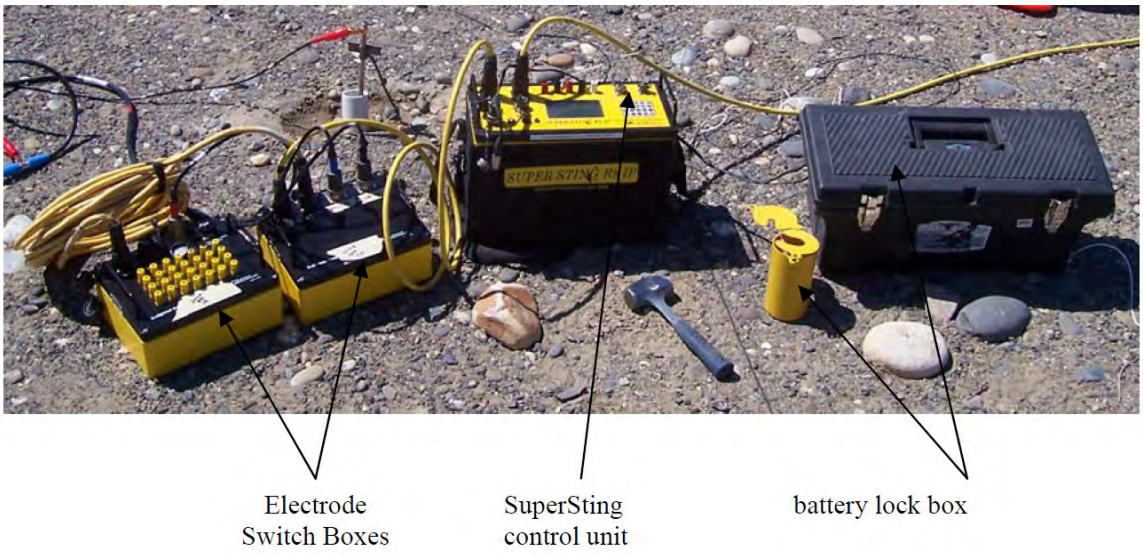
3.1 ELECTRICAL RESISTIVITY – SURVEY DESIGN

HGI will acquire two resistivity lines, one in the Coyote Wash and one in the gravel pit adjacent to the wash. Total coverage for the two lines is approximately 10,600ft. The acquisition is expected to take four days in the field to complete both lines. Data processing is expected to take a week to complete and the report will be an additional week. If desired, HGI can communicate preliminary results of the resistivity to GSA.

3.2 ELECTRICAL RESISTIVITY – DATA COLLECTION EQUIPMENT

Resistivity data acquisition will use an AGI™ SuperSting™ R8 [Advanced Geosciences, Inc., Austin, Texas] resistivity instrument and associated cabling, wires, and battery power supply as show in Figure 3. The R8 has an internal computer which is controlled via a front panel keypad and a view screen. The menu allows the operator to program the field data acquisition parameters that include: maximum output current, output frequency, number of electrodes, array type, multiplexer/cable configuration, etc. An operator uploads a "command file" which contains a list of the desired measurements to be completed by the unit. The R8 is capable of a multitude of arrays and for this survey the Schlumberger array was selected.

Figure 3. Resistivity Meter and Accessories



™ AGI, AGI EarthImager, and SuperSting are trademarks of Advanced Geosciences, Inc. in the United States, other countries, or both.

3.3 DATA PROCESSING

The geophysical data for the resistivity survey will be processed at the Tucson, AZ office upon completion of the field effort. The modern application of the electrical resistivity method uses numerical modeling and inversion theory to estimate the electrical resistivity distribution of the subsurface from the acquired dataset. The inverse modeling is necessary, as measuring the resistivity is not a direct process. The acquired dataset only contains positions of the electrodes and the measured potential normalized to the injected current. However, the potential values are a result of the spatial resistivity distribution, allowing them to be used indirectly to back-calculate an estimate of the true resistivity that gives rise to those potential measurements. This back-calculation procedure is called inversion.

4.0 DELIVERABLES

A final report will be provided that discusses details on the methodology, results, interpretations, conclusions, and recommendations derived from the study. The report and all figures, tables, geophysical data, and appendices will be delivered to GSA electronically in Adobe PDF format. In addition, the following data will be transmitted with the technical report if requested:

- Handheld GPS survey data (.csv format)
- Raw resistivity data (.stg format)
- Survey layout data (.kml format for Google Earth, etc)

5.0 FINANCIAL & LEGAL

5.1 COST ESTIMATE

HGI is pleased to provide the following Fixed Price cost estimate for the scope of work described in this proposal.

Table 1. Fixed Price Cost Estimate.

Project Milestone (Task No.)	Task Description	Schedule of Payments	Estimate
1	**Mobilization/Demobilization** (inclusive of labor for packing/preparation, equipment rental, transportation/shipping, and field consumables)	Invoiced upon contract execution.	**$1,602**
2	**Data Collection (Coyote Wash)** (inclusive of labor for data collection, daily QA, preliminary field processing, and vehicle & equipment rental, daily per diem, and fuel)	Invoiced upon completion of data collection.	**$12,136**
3	**Data Collection (Gravel Pit)** (inclusive of labor for data collection, daily QA, preliminary field processing, and vehicle & equipment rental, daily per diem, and fuel)	Invoiced upon completion of data collection.	**$4,045**
4	**Data Analysis and Reporting** (inclusive of labor for data editing, processing, visualization, production of draft report, one round of comment information and submittal of final report)	Invoiced on submittal of draft report.	**$3,108**
	TOTAL		**$20,891**

5.2 CONTRACT TERMS

Each snapshot will be invoiced individually. HGI suggests the following contract terms based on the specifics of this proposal:

Contract Type: Fixed Price / Lump Sum
Payment Terms: Net 30
Late Fees: 2% of contract amount each 30 days invoice has not been paid.

6.0 PROJECT SCHEDULE

The following is a list of the major project tasks.

1) Execute contract between HGI and GSA or GSA's client
2) Work with GSA to finalize project schedule
3) Mobilize to site, meet with client
4) Complete field work
5) Complete and exit interview with client
6) Demobilize from project site
7) Process data at HGI office
8) Prepare and submit draft report
9) Receive and incorporate client comments
10) Submit final report

7.0 HEALTH AND SAFETY

7.1 SAFETY PROGRAM POLICY STATEMENT

HGI considers employee health and safety as our greatest responsibility. It is HGI's policy that every employee is entitled to a safe and healthy work environment which conforms to local, state, and federal regulations. Each individual employee is responsible for working safely, obeying company Safety Regulations, reporting unsafe conditions to their supervisor immediately, and making the safety and health of fellow employees and associates our personal concern.

hydroGEOPHYSICS, Inc. achieves the highest possible environmental health and safety standards by:

- Requiring a continual check of potentially hazardous operations or conditions maintained by Health and Safety personnel.
- Ensuring all employees have relevant safety training required by clients of HGI, local, state, and federal regulations, and that required training is by certified health and safety organizations
- Providing direction to management, supervisors, workers, and clients about their responsibilities, roles, and training for providing a safe and healthy work environment and complying with relevant health and safety laws and regulations at all times.
- Promoting and motivating management, supervisors, and workers to adhere to health and safety policies and procedures through recognition and reward of safe performance through annual incentives.
- Establishing and maintaining procedural and program controls developed jointly by management and staff for the purpose of helping individuals understand their personal roles and the roles of others to work toward common health and safety goals to minimize occupational risk.

- Encouraging workers to express concerns and suggest improvements on health and safety issues, through safety talks, meetings, or consultation with health and safety representatives.
- Detailing management, supervisors, workers, and patrons responsibilities and rights to "Stop Work" when unsafe conditions are discovered.
- Reviewing Environmental Health & Safety research, relevant industry practices and latest technology to promote best practices and health and safety enhancement.

7.2 SAFETY QUALIFICAITONS

Federal Certifications All HGI employees are:

- MSHA certified
- OSHA certified (29 CFR 1910.120) [Dept. of Labor]
- OSHA certified (29 CFR 1910.1200) [Dept. of Labor]

Field Operation Training and other training regiments for many of our employees may include:

- Lock-out/Tag-out /Try-out Training
- Lifesaving & First Aid
- Confined Space Training
- Rope & Rock Climbing Safety Training
- Fall Protection
- High Altitude Safety Training

8.0 ASSUMPTIONS & REQUIREMENTS

For the purpose of the above proposal and cost estimate, the following assumptions are made about the site conditions, logistics, and responsibilities of the client and HGI:

8.1 SAFETY CONSIDERATIONS

- Client is responsible for obtaining all required site permitting necessary for HGI to access the site to perform field activities prior to the crew mobilizing and commencing survey operations.
- Work will be completed under OSHA Level D PPE. Hard hats, gloves, hard toe boots and protective eyewear may be additionally required, depending on site-specific requirements or tasks to be completed.
- HGI crew chiefs have the right to halt their team's work during dangerous working conditions (e.g., electrical storms) that may threaten personnel or equipment safety.
- HGI personnel will complete no excavation.
- All work is expected to be conducted during normal business hours in day light.

8.2 LOGISTICAL CONSIDERATIONS

- Field personnel and equipment will mobilize from an HGI office location to the project site. Field personnel will stay at the project site for the duration for each phase of data acquisition.
- It is assumed that the survey area is within a ½ hour drive from lodging. Longer daily drives to and from the survey area may reduce overall daily production rates.
- Field days are defined as days when HGI personnel are available to work onsite. Delays that are not the fault of HGI (e.g., access issues) will be considered workdays.
- The data will be quality controlled, organized, and processed to a preliminary level each field day. Final processing and interpretation of data will be completed at HGI's Tucson office after the field crew demobilizes.

8.3 FINANCIAL CONSIDERATIONS

- HGI will be responsible for supplying trained field geophysicists, field laborers, equipment, rental truck, and consumable field supplies
- Days where the crew is not able to acquire data due to lack of access to the site or at the instruction of the client representative, the client will be charged at a daily rate of $4,100.
- HGI will charge 50 percent production rate (weather rate – personnel and equipment) during any severe weather periods (more than two hours) that prevent access to the field site or prevent normal operations from continuing (e.g., thunderstorms).
- Significant changes in scope will require HGI and Client to sign a change order agreement.
- HGI is responsible for HGI downtime costs when HGI equipment issues cause an extended downtime. HGI is not responsible, nor will bear costs associated with downtime that is beyond our control.
- The daily rates quoted above will apply for additional geophysical data coverage, if requested, prior to departure from the project site.
- Project reports will include allowances for one (1) cycle of revisions based on client comments; any additional revisions will be billed for on a time and materials basis

ATTACHMENT E
WestLand Scope of Work & Fee Estimate

WestLand Resources

August 26, 2016

Mr. Cy Miller
JE FULLER/HYDROLOGY & GEOMORPHOLOGY
40 East Helen Street
Tucson, Arizona 85705

RE: PROPOSAL FOR ENVIRONMENTAL AND CULTURAL SUPPORT FOR PHASE 2 INVESTIGATIONS AT THE BELLA VISTA PARCELS
WESTLAND PROPOSAL NO. P9351.16

Dear Mr. Miller:

WestLand Resources, Inc. (WestLand), is pleased to submit this proposal for environmental services in support of the Cochise County and the Nature Conservancy (together, the Parties) Phase 2 site investigations at the Bella Vista Property in Arizona (the Property). We understand that the Parties are planning additional investigations at the Property and the development of Conceptual Plans for a recharge project on the Property. WestLand proposes to provide the following services:

1) Review up to two Conceptual Plans of a recharge project to be constructed on the Property.
2) Provide a technical memorandum that discusses the biological and cultural regulatory issues that might affect the projects outlined in the Conceptual Plans. This memorandum will refer to the context, background, and details discussed in the Regulatory Review drafted for the initial investigation of the Bella Vista Property and information collected during prior biological and cultural investigations conducted by WestLand on the Property.
3) Participate in one 2-hour conference call with the Project Team to discuss results of WestLand' review.

We assume that JE Fuller will provide the Conceptual Plans and any linework will be provided in a CAD or GIS friendly format.

WestLand proposes to provide these services on a time-and-materials basis, in accordance with WestLand's current billing rates (attached) against a not-to-exceed budget of **$5,100**.

If you find this proposal to be acceptable, we understand that you will be providing us with a subcontracting agreement. Should you have any questions or require additional information, please do not hesitate to call. We look forward to the opportunity to work with you on this project.

Respectfully,
WestLand Resources, Inc.

David Cerasale, PhD
Project Manager

Attachment: WestLand 2016 Billing Rates

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