Board of Supervisors

AGENDA FOR FLOOD CONTROL DISTRICT MEETING
Tuesday, May 6, 2014 at 10:00 a.m.
BOARD OF SUPERVISORS HEARING ROOM
1415 MELODY LANE, BUILDING G, BISBEE, AZ 85603

ANY ITEM ON THIS AGENDA IS OPEN FOR DISCUSSION AND POSSIBLE ACTION

ROLL CALL
Members of the Cochise County Board of Supervisors will attend either in person or by telephone, video or internet conferencing.

CALL TO THE PUBLIC

This is the time for the public to comment. Members of the Board may not discuss items that are not specifically identified on the agenda.

CONSENT

Board of Supervisors

1. Approve the Minutes of the Flood Control District meeting for April 22, 2014.

ACTION

Community Development

2. Approve a contract for equipment installation and monitoring services with JE Fuller/Hydrology & Geomorphology (JEF) for the Palominas Recharge Project.

Pursuant to the Americans with Disabilities Act (ADA), Cochise County does not, by reason of a disability, exclude from participation in or deny benefits or services, programs or activities or discriminate against any qualified person with a disability. Inquiries regarding compliance with ADA provisions, accessibility or accommodations can be directed to Chris Mullinax, Safety/Loss Control Analyst at (520) 432-9720, FAX (520) 432-9716, TDD (520) 432-8360, 1415 Melody Lane, Building F, Bisbee, Arizona 85603.

Cochise County - 1415 Melody Lane, Building G - Bisbee, Arizona 85603
(520) 432-9200 - Fax (520) 432-5016 - Email: board@cochise.az.gov
www.cochise.az.gov

"PUBLIC PROGRAMS, PERSONAL SERVICE"

Consent 1.

Flood Control District Meeting **Board of Supervisors**

Meeting Date: 05/06/2014

Minutes

Submitted By: Arlethe Rios, Board of Supervisors

Department: Board of Supervisors

Presentation: No A/V Presentation **Recommendation:**

Document Signatures: **# of ORIGINALS Submitted for Signature:**

NAME of PRESENTER: N/A **TITLE of PRESENTER:** N/A

Mandated Function?: **Source of Mandate or Basis for Support?:**

Information

Agenda Item Text:

Approve the Minutes of the Flood Control District meeting for April 22, 2014.

Background:

n/a

Department's Next Steps (if approved):

n/a

Impact of NOT Approving/Alternatives:

n/a

To BOS Staff: Document Disposition/Follow-Up:

n/a

Budget Information

Information about available funds

Budgeted: ◯ **Funds Available:** ◯ **Amount Available:**

Unbudgeted: ◯ **Funds NOT Available:** ◯ **Amendment:** ☐

Account Code(s) for Available Funds

1:

Fund Transfers

Attachments

Minutes

PROCEEDINGS OF THE COCHISE COUNTY FLOOD CONTROL DISTRICT
MEETING HELD ON
Tuesday, April 22, 2014

A Special Meeting of the Cochise County Flood Control District was held on Tuesday, April 22, 2014 10:00 a.m. in the Board of Supervisors' Hearing Room, 1415 Melody Lane, Building G, Bisbee, Arizona.

Present: Ann English, Chairman; Richard R. Searle, Vice-Chairman; Patrick G. Call, Director

Staff Present: Michael J. Ortega, County Administrator
Jim Vlahovich, Deputy County Administrator
Britt W. Hanson, Chief Civil Deputy County Attorney
Arlethe G. Rios, Clerk of the Board

Chairman English called the meeting to order at 10:23 a.m.

ANY ITEM ON THIS AGENDA IS OPEN FOR DISCUSSION AND POSSIBLE ACTION

PLEDGE OF ALLEGIANCE

THE ORDER OR DELETION OF ANY ITEM ON THIS AGENDA IS SUBJECT TO MODIFICATION AT THE MEETING

CALL TO THE PUBLIC

This is the time for the public to comment. Members of the Board may not discuss items that are not specifically identified on the agenda.

CONSENT

Chairman English requested that item 1 be removed from the Consent Agenda.

Board of Supervisors

1. Approve Grazing License with Lazy H Slash, LLC for the Three Canyons/Palominas Parcel owned by the Flood Control District effective July 1, 2014 for a term on one year with automatic six month renewals unless canceled by either party.

2. Approve the Minutes of the Flood Control District meeting for November 5, 2013; February 25, 2014; and March 11, 2014.

   Vice-Chairman Searle moved to approve item 2 on the Consent Agenda. Supervisor Searle seconded the motion and it carried unanimously.

ACTION

3. Pursuant to A.R.S. 38-431-03(A)(3) and (A)(7), the Board may vote to go into Executive Session for discussion or consultation for legal advice with the attorney or attorneys of the public body or to discuss and consult with designated representatives in order to consider its position and instruct its representatives regarding negotiations for the purchase, sale, or lease of real property.

   Discuss the possible acquisition of two parcels for flood control and drainage purposes.

   Mr. Ortega recommended that the Board move into Executive Session.

   Supervisor Call made a motion to go into Executive Session as authorized under the cited section. Vice-Chairman Searle seconded the motion which passed unanimously and the Board convened in Executive Session at 10:25 a.m.

   The Board came out of Executive Session at 10:34 a.m.

   Supervisor Call made a motion that the County Administrator is to proceed as directed during the course of the Executive Session. Vice-Chairman Searle seconded the motion and it was approved, 3-0.

Chairman English adjourned the meeting at 10:40 a.m.

APPROVED:

_____
Ann English, Chairman

ATTEST:

_____
Arlethe G. Rios, Clerk of the Board

Action 2.

Flood Control District Meeting **Community Development**

Meeting Date: 05/06/2014

Palominas Recharge Monitoring Contract

Submitted By:	Rorri Perez, Community Development		
Department:	Community Development	**Division:**	Floodplain
Presentation:	No A/V Presentation	**Recommendation:**	Approve
Document Signatures:	BOS Signature Required	**# of ORIGINALS Submitted for Signature:**	2
NAME of PRESENTER:	Karen Riggs	**TITLE of PRESENTER:**	Director
Mandated Function?:	Not Mandated	**Source of Mandate or Basis for Support?:**	

Docket Number (If applicable):

Information

Agenda Item Text:

Approve a contract for equipment installation and monitoring services with JE Fuller/Hydrology & Geomorphology (JEF) for the Palominas Recharge Project.

Background:

The Palominas Recharge Project will provide flood control and recharge in the area to the north and east of Palominas Elementary School. The project will also be monitored to determine the effectiveness of recharge at the site and for various pilot recharge infrastructure that will aid in the design of future recharge projects. Monitoring data will be collected for the first year after all monitoring equipment is installed, and quarterly and annual monitoring reports will be provided.

Department's Next Steps (if approved):

Execute contract. The County will have the monitoring equipment installed and begin gathering and monitoring data.

Impact of NOT Approving/Alternatives:

Monitoring equipment will not be installed and monitoring data will not be collected. There will be no way to determine the effectiveness of the recharge infrastructure. No information will be available to design of future recharge projects. Monitoring is a key component of the project and required by the grant.

To BOS Staff: Document Disposition/Follow-Up:

2 copies of the contract will be hand carried to Clerk of the Board when signed by contractor.

Budget Information

Information about available funds

Budgeted: (●) **Funds Available:** (●) **Amount Available:**

Unbudgeted: ( ) **Funds NOT Available:** ( ) **Amendment:** ☐

Account Code(s) for Available Funds 1:

Fund Transfers

Fiscal Year: 13/14

One-time Fixed Costs? ($$$):

Ongoing Costs? ($$$):

County Match Required? ($$$): 50873

A-87 Overhead Amt? (Co. Cost Allocation $$$):

Source of Funding?:

Fiscal Impact & Funding Sources (if known):

Attachments

Executive Summary
Scope of Work & Proposal

COCHISE COUNTY

COMMUNITY DEVELOPMENT

"Public Programs...Personal Service"

DATE: April 25, 2014

TO: Board of Supervisors

FROM: Karen Riggs, P.E., Director

SUBJECT: Palominas Recharge Project Monitoring Contract

Recommendation: Flood Control District staff recommends that the FCD Board approve the contract for monitoring equipment installation, first year monitoring and reporting for the Palominas Flood Control/Recharge Project.

Background (Brief): The Palominas Recharge Project will provide flood control and recharge in the area to the north and east of Palominas Elementary School. The project will also be monitored to determine the effectiveness of recharge at the site and for various pilot recharge infrastructure that will aid in the design of future recharge projects. Monitoring data will be collected for the first year after all monitoring equipment is installed, and quarterly and annual monitoring reports will be provided.

Fiscal Impact & Funding Sources: The Flood Control District applied for and was awarded a Walton Family Foundation grant for the Palominas Recharge Project in December of 2011. The project is under construction now with an estimated completion by July 1, 2014. The funding for the monitoring contract has been set aside from the approved grant funds in the FCD budget. The county share of the construction and monitoring is 25% of the total. The rest is grant funded. Upon contract approval the County share will be transferred from the FCD to the Walton grant budget fund. The contract maximum is $203,490 and the County's share of that is $50,873.

Next Steps/Action Items/Follow-up: Execute contract. The County will have the monitoring equipment installed and begin gathering and monitoring data.

Impact of NOT approving: Monitoring equipment will not be installed and monitoring data will not be collected. There will be no way to determine the effectiveness of the recharge infrastructure. No information will be available to design of future recharge projects. Monitoring is a key component of the project and required by the grant.

JE Fuller/ Hydrology & Geomorphology, Inc.

Jon Fuller, PE, RG, PH, CFM, DWRE	**Brian Iserman, PE, CFM**	**Brian Fry, PE, CFM**	**John Wallace, PE, CFM**
Ted Lehman, PE	**Jeff Despain, PE, CFM**	**Brian Schalk, PE, CFM**	**Robert Shand, PE**
W. Scott Ogden, PE, CFM	**Patricia Quinn, PE, RLS**	**Jon Ahern, PE, CFM**	**Ian Sharp, PE, CFM**
Robert Lyons, PE, CFM	**Tyler Azeltine, BA**	**Nate Vaughan, PE**	**Chris Rod, PE**
Mike Kellogg, RG, CFM	**Ethan Rode, CTC**	**Nathan Logan, PE, CFM**	**Cyrus Miller, PE, CFM**
Hari Raghavan, PhD, PE, CFM	**Annette Griffin, AAS**	**Peter Acton, MS**	**Cory Helton, EIT, MS**

April 24, 2014

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

RE: Proposal – Equipment Installation and Monitoring at Palominas Recharge Project

Dear Karen:

Per your request, JE Fuller/Hydrology & Geomorphology (JEF) is providing you with this proposal for the referenced services. The following items are attached;

A. Scope of Work from Cochise County
B. GeoSystems Analysis, Inc (GSA) Cost Proposal.

The total estimated fee for services based on the enclosed is $203.490.

The above fee is based on the following;

- $179,400 fee per the attached GSA cost proposal, and
- A 5% markup on the GSA proposal plus up to 12 hours/month of JEF staff time at $105/hour for the 12 month duration of the project. Total JEF fee of $24,090.

JEF appreciates the opportunity to provide you with this proposal. Please feel free to contact myself or Cyrus Miller at 623-3112 if you have any questions regarding this proposal.

Sincerely,
JE Fuller/Hydrology & Geomorphology, Inc.

John M. Wallace, P.E.
President

Attachments; A & B as described above

8400 S. Kyrene Rd., Ste 201	**1 West Deer Valley Rd., Ste 101**	**523 N. Beaver St., 2nd Floor**	**40 E. Helen Street**
Tempe, Arizona 85284	**Phoenix, AZ 85027**	**Flagstaff, AZ 86001**	**Tucson, Arizona 85705**
480-752-2124 (voice)	**623-889-0166 (voice)**	**928-214-0887 (voice)**	**520-623-3112 (voice)**
480-839-2193 (fax)	**480-839-2193 (fax)**	**928-214-0887 (fax)**	**520-623-3130 (fax)**

www.jefuller.com

ATTACHMENT A

COCHISE COUNTY and THE NATURE CONSERVANCY

EQUIPMENT INSTALLATION AND MONITORING CONTRACT

SCOPE OF WORK

PALOMINAS RECHARGE PROJECT

ATTACHMENT A

COCHISE COUNTY and THE NATURE CONSERVANCY
EQUIPMENT INSTALLATION AND MONITORING CONTRACT
SCOPE OF WORK
PALOMINAS RECHARGE PROJECT
Dated April 15th, 2014

The tasks listed below are the identified elements to this scope of work for equipment installation, monitoring, and reporting for the Palominas Recharge Project. The contractor, in its proposal, may suggest modifications to this scope of work and the tasks with justification for those suggested modifications to the Project Team. The scope shall be revised to include any accepted modifications prior to contract award.

TASK 1. PROJECT MANAGEMENT

The contractor shall:

- Identify a project manager who shall be responsible for managing the budget, schedule, and deliverables throughout the project, including the management of budget, schedule, and deliverables of any subcontractors, as well as report directly to the County's project manager;
- Identify all subcontractors who shall be involved in the project;
- Participate in and/or lead as appropriate all monthly 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 monitoring goals/approaches, as the project progresses;
- Suggest additional milestones leading to ensure achievement of project goals, as the project progresses;
- Assign roles and communication system for contractor and subcontractor project team members; and
- Identify key stakeholders groups, contacts for each group, and timing for project participation with assistance from the Project Team.

It is anticipated that the contract shall be awarded on or before May 15th, 2014. The contractor 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.

Deliverable 1. Monthly Reports and Invoices and Monthly Conference Calls/Meetings
Deliverable 2. Initial Project Schedule with Monthly Updates as needed

TASK 2. MONITORING EQUIPMENT INSTALLATION RELATED ACTIVITIES

The contractor shall install new monitoring equipment as described in the Monitoring Plan (Attachment B) and in the following sections.

ATTACHMENT A

Installation of monitoring equipment shall be conducted after essential construction activities of the Flood Control and Recharge Project have been completed, unless otherwise noted. The contractor shall work closely with the Owner's Representative to determine the ideal time for work activities.

TASK 2.1. DRILLING OVERSIGHT FOR INSTALLATION OF MONITORING WELLS AND INSTRUMENTED BOREHOLES

The contractor shall provide oversight of drilling and installation of monitoring wells and instrument boreholes. Three new monitoring wells plus eight instrumented boreholes shall be installed at the approximate locations shown in Figure 1 of Attachment B.

- The three new monitoring wells shall be drilled and completed to total depths not to exceed 50 feet below ground surface (ft bgs) (Attachment B, Figure 5).
- Five Level 1 instrumented boreholes shall be installed to total depths not to exceed 30 ft bgs (Attachment B, Figure 7).
- Three Level 2 instrumented boreholes shall be installed to total depths not to exceed 35 ft bgs (Attachment B, Figure 8).

The contractor shall oversee drilling and completion of each monitoring well and instrumented borehole and characterize and log the lithology of cuttings at each hole during drilling. During drilling, the contractor shall collect representative samples for laboratory analysis of particle size, water content, and saturated and unsaturated hydraulic properties. Laboratory analysis shall be performed to support lithologic classification and flux analysis.

At a minimum, the contractor shall acquire and install the following monitoring equipment as specified for each monitoring well and instrumented borehole (Attachment B, Figures 7 and 8):

- At each monitoring well: One pressure transducer and datalogger.
- At each Level 1 instrumented borehole: Five volumetric water content and temperature sensors at selected depths, plus datalogger.
- At each Level 2 instrumented borehole: Five volumetric water content and temperature sensors at selected depths, three matric potential sensors (e.g., advanced tensiometers) at selected depths, plus datalogger.

All equipment shall be calibrated as necessary and evaluated for functionality prior to installation. Equipment shall be connected to datalogger, which shall be programmed to record measurements at least four times per day. Installation diagrams shall be provided for all equipment.

TASK 2.2. INSTALLATION OF STILLING WELLS

The contractor shall install basic stilling wells at the outflow of each in-channel basin and the detention basin (Attachment B, Figure 1).

The stilling wells shall consist of 2-inch diameter PVC housing to be attached to the concrete weir walls using concrete bolts. Pressure transducers shall be positioned in each stilling well and programmed to record the water level height at 15-minute intervals. Installation diagrams shall be provided for the still wells.

TASK 2.3. INSTALLATION OF DRY WELLS AND INFILTRATIONTRENCHES

The contractor shall install pressure transducers in the dedicated locations (that is, the PVC tubing installed specifically to house the pressure transducer) for each of six dry wells and three infiltration trenches (see 95% design plans for more details). Each pressure transducer shall be programmed to record water levels at 15-minute intervals. Installation diagrams shall be provided for all equipment.

TASK 2.4. INSTALLATION OF PRECIPITATION GAGES

The contractor shall install three tipping-bucket precipitation gages at locations throughout the Palominas watershed (Attachment B, Figure 4). Gages shall be installed according to manufacturer's specifications. Installation diagrams shall be provided for all equipment.

TASK 2.5. DRAFT AND FINAL INSTALLATION REPORT

Once installation activities are complete, the contractor shall prepare and submit a draft Installation Report within one month. The Installation Report shall include installation diagrams for all equipment as well as laboratory results. Following review by the Project Team, the contractor shall respond to comments and revise and submit the final Installation Report.

Deliverable 3. Draft Installation Report
Deliverable 4. Response to Comments and Final Installation Report

3.0 MONITORING ACTIVITIES

For purposes of this Scope of Work, the monitoring activities include compilation of data collected during background (ongoing) monitoring plus actively monitoring the project site for the period of one year following installation of monitoring equipment.

TASK 3.1. BACKGROUND MONITORING

Water levels in one existing monitoring well (East Well, Attachment B, Figure 1) have been monitored since March 2013. A pressure transducer records continuous water levels and periodic manual measurements are taken when data is downloaded approximately four times per year. The contractor shall continue to monitor water levels at this well throughout the duration of the project.

Additionally, there are two existing USGS wells near the study area. Water levels at the southern well (USGS Site ID 312214110071602) have been continuously monitored while water levels at the northern well (USGS Site ID 312318110071901) are measured periodically. The contractor shall provide and install a pressure transducer to measure water levels continuously in the northern well; the contractor shall coordinate with the well owner and the Project Team as necessary to install the transducer and collect data. The contractor shall collect and compile all available data from these two USGS wells; data shall be evaluated in conjunction with the first year of monitoring.

TASK 3.2 MONITORING THE FIRST YEAR OF RECHARGE ACTIVITIES

Following installation of the monitoring equipment, the contractor shall monitor the project for a period of one year, with a minimum of four site visits. During each site visit, data shall be downloaded from all equipment. Water levels shall be measured manually and site observations shall be recorded. If necessary, instrument repair and maintenance shall be performed within two weeks of data quality assurance. Data shall be collected and quality assurance conducted according to industry-accepted standards. All field data shall be recorded in field logs and on field sheets, as appropriate. All field notes shall be converted to an electronic format (PDF files). Automated data shall be uploaded to an Excel or Access database, as appropriate, and provided to the Project Team.

TASK 4.0. DATA INTERPRETATION AND REPORTING

TASK 4.1. DATA INTERPRETATION

The contractor shall calculate the following monitoring metrics for the surface water detention basin, the in-channel recharge basins, and the improved in-channel basins (with dry wells and infiltration trenches):

- Estimated volume of surface water flow,
- Estimated volume of infiltration,
- Estimated evaporative depths and volumes,
- Estimated recharge rate and volume of recharge per acre and/or per linear foot,
- Estimated additional recharge resulting from alternative technologies (singlechamber dry wells, dual-chamber dry wells and trenches),
- Estimated cost per acre-foot of recharge, and
- Relationship between precipitation and surface water flow into the detention and recharge basins, correlation of real data to modeled precipitation-runoff estimates.

For the above items, incremental changes (increases or decreases) obtained from the dry wells and infiltration trenches shall be calculated.

Additionally, data collected as part of the monitoring plan shall be used to:

- Evaluate the relationship between precipitation and surface water flow into the detention basins and recharge basins
- Correlate observed data to modeled precipitation-runoff estimates, as described in Monitoring Plan (Attachment B)
- Compare soil conditions for those areas affected by recharge to those upstream from project activities

TASK 4.2. QUARTERLY INTERIM DATA SUMMARIES

Following quarterly data collection, the contractor shall evaluate observed infiltration rates. If observed infiltration rates have fallen below a threshold limit (for example, less than 6 inches per day), Cochise County staff shall be notified of the need for basin maintenance (i.e. sediment removal and/or scarification, as specified in the Operation Plan).

Interim data summaries shall be provided to the Project Team on a quarterly basis following data collection. Data summaries shall include a brief overview of the project status, events, and recommendations (including maintenance recommendations).

Deliverables 5, 6, 7, and 8. Quarterly Interim Reports

TASK 4.3. ANNUAL REPORT

Prior to preparation of reports, the contractor shall provide a draft outline and summary of the organization and content of the annual report for review and comment by the Project Team.

The Draft Annual Report shall be submitted to the Project Team at the end of the first one-year monitoring period. Responses to Comments and a Final Annual Report shall be submitted within one month of receipt of comments from the Project Team.

The contractor shall clearly document all project activities, including data interpretation and analysis in the Annual Reports; all data and associated interpretations shall be provided to the Project Team in electronic format, as an appendix to Annual Reports.

Deliverable 9. Outline and Summary of Annual Report Organization and Content
Deliverable 10. Draft Annual Report
Deliverable 11. Responses to Comments and Final Annual Report

ATTACHMENT B

GSA Cost Proposal

April 24, 2014

John Wallace, PE
President
JE Fuller/Hydrology & Geomorphology, Inc.
40 E. Helen Street
Tucson, AZ 85705

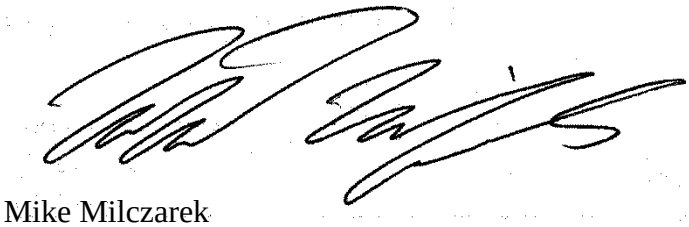
RE: Attachment B - Palominas Recharge Project – Monitoring Equipment Installation & Monitoring Cost Proposal

Dear John,

Please find attached an estimated cost proposal for the "Equipment Installation and Monitoring Contract Scope of Work Palominas Recharge Project" received from Cochise County and The Nature Conservancy.

If you should have any questions whatsoever, please do not hesitate to contact us.

Sincerely,



Mike Milczarek
Project Director

3393 N. Dodge Blvd
Tucson, Arizona 85719

phone: 520-628-9330
fax: 520-628-1122

WWW.GEOSYSTEMSANALYSIS.COM

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation

XYZ1 - JE Fuller/Cochise County

April 24, 2014

Table 1 - Cost Summary By Task

	Total Costs
1.0 - PROJECT MANAGEMENT	**$10,428**
No Subtask	$10,428
2.1 DRILLING OVERSIGHT FOR INSTALLATION OF MONITORING WELLS AND INSTRUMENTED BOREHOLES	**$82,711**
2.1a INSTALLATION OF MONITORING WELLS	$29,757
2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES	$52,954
2.2 - INSTALLATION OF STILLING WELLS	**$14,647**
No Subtask	$14,647
2.3 - INSTALLATION OF DRY WELLS AND INFILTRATIONTRENCHES	**$8,561**
No Subtask	$8,561
2.4. INSTALLATION OF PRECIPITATION GAGES	**$9,153**
No Subtask	$9,153
2.5. DRAFT AND FINAL INSTALLATION REPORT	**$11,273**
No Subtask	$11,273
3.0 MONITORING ACTIVITIES	**$24,301**
3.1 BACKGROUND MONITORING	$3,247
3.2 MONITORING THE FIRST YEAR OF RECHARGE ACTIVITIES	$21,053
4.0 DATA INTERPRETATION AND REPORTING	**$18,326**
4.1. DATA INTERPRETATION	$5,554
4.2 QUARTERLY INTERIM DATA SUMMARIES (3)	$3,269
4.3 ANNUAL REPORT	$9,503

Table 1 - Cost Summary By Task

	Total Costs
Proposal Grand Total	**$179,400**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 1.0 - PROJECT MANAGEMENT

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: No Subtask					
Program Director	Milczarek	64	$145	NA	9280
Clerical Staff	Torres	16	$65	NA	1040
			Subtask Total:		*$10,320*
Other Direct Costs					
Subtask: No Subtask					
Communications		1	$50	NA	50
Miscellaneous		1	$50	NA	50
			Subtask Total:		*$108*
	8.00% Overhead: $8.00		**Task Total**		**$10,428**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 2.1 DRILLING OVERSIGHT FOR INSTALLATION OF MONITORING WELLS AND INSTRUMENTED BOREHOLES

	Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs				
Subtask: 2.1a INSTALLATION OF MONITORING WELLS				
Program Director Milczarek	12	$145	NA	1740
Laboratory Manager Yao	2	$135	NA	270
Senior Hydrologist Rice	60	$95	NA	5700
Hydrologist 1 Calabrese	32	$75	NA	2400
Clerical Staff Torres	4	$65	NA	260
		Subtask Total:		*$10,370*
Subtask: 2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES				
Program Director Milczarek	12	$145	NA	1740
Laboratory Manager Yao	2	$135	NA	270
Senior Hydrologist Rice	96	$95	NA	9120
Hydrologist 1 Calabrese	112	$75	NA	8400
Clerical Staff Torres	8	$65	NA	520
		Subtask Total:		*$20,050*
Drilling Costs				
Subtask: 2.1a INSTALLATION OF MONITORING WELLS				
Mob/Demob	1	$1,200	NA	1200
Bollards (4 each)	2	$800	NA	1600
Support Equipment	3	$375	NA	1125
Surface Completion (per client's specifications)	3	$325	NA	975
Per Diem	2	$300	NA	600
ADWR Well Permit	3	$200	NA	600
Well Development	6	$180	NA	1080
Complete 2-inch Sch 40 PVC well casing, 0.20 slot screen, and steming materials	140	$27	NA	3780
Drilling Auger Rig 6-inch borehole	140	$12	NA	1680
		Subtask Total:		*$13,651*
Subtask: 2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES				
Support Equipment	4	$375	NA	1500
Surface Completion (per client's specifications)	8	$325	NA	2600
Per Diem	2	$300	NA	600
Well Completion Materials (all except client's instruments)	220	$19	NA	4180
Drilling Auger Rig 6-inch borehole	220	$12	NA	2640
		Subtask Total:		*$12,442*
Lab Costs				

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation

Table 2 - Detailed Costs

Subtask: 2.1a INSTALLATION OF MONITORING WELLS				
ACZ - Inorganic Primary & Secondary Drinking Water Standards	2	$451	$100	1002
		Subtask Total:		*$1,082*
Subtask: 2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES				
GSA - Saturated Hydraulic Conductivity (6-inch Repacked Core)	9	$100	NA	900
GSA - Particle Size Analysis - Wet Sieve	18	$65	NA	1170
GSA - Atterberg Limits	18	$55	NA	990
GSA - Bulk Density (2-inch core)	18	$10	NA	180
GSA - Moisture Content (Oven)	18	$10	NA	180
		Subtask Total:		*$3,694*

Rental Costs

Subtask: 2.1a INSTALLATION OF MONITORING WELLS				
Grundfos controller	1	$250	NA	250
Grundfos 2" Pump	1	$180	NA	180
Water Sounder	1	$50	NA	50
		Subtask Total:		*$518*
Subtask: 2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES				
Toughbook	1.5	$50	NA	75
		Subtask Total:		*$81*

Instruments Costs

Subtask: 2.1a INSTALLATION OF MONITORING WELLS				
In-situ communications package	1	$500	NA	500
In-Situ Level Logger	4	$425	$100	1800
Miscellaneous supplies	2	$100	NA	200
		Subtask Total:		*$2,700*
Subtask: 2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES				
Decagon 5-channel datalogger	5	$450	$100	2350
Refurbish CR-10X dataloggers	3	$350	NA	1050
Advanced tensiometers	9	$250	NA	2250
ECH20 Water Content & Temperature Sensors	40	$140	$200	5800
Miscellaneous supplies	4	$100	NA	400
Decagon Cables 50-ft extenders	40	$40	NA	1600
Sensor Cable - Burial Grade	355	$1	$30	385
1-inch PVC for AT's	175	$1	NA	131.25
1-inch tubing for AT's	175	$0	NA	43.75
		Subtask Total:		*$15,131*

Other Direct Costs

Subtask: 2.1a INSTALLATION OF MONITORING WELLS				
Lodging	6	$85	NA	510

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation

Table 2 - Detailed Costs

	Miscellaneous	4	$50	NA	200
	Subsistence	8	$35	NA	280
	2WD Transportation	600	$1	NA	339
			Subtask Total:		*$1,435*
Subtask: 2.1b - INSTALLATION OF INSTRUMENTED BOREHOLES					
	Lodging	6	$85	NA	510
	Miscellaneous	4	$50	NA	200
	Subsistence	8	$35	NA	280
	2WD Transportation	800	$1	NA	452
			Subtask Total:		*$1,557*
	8.00% Overhead: $3873.44		**Task Total**		**$82,711**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 2.2 - INSTALLATION OF STILLING WELLS

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: No Subtask					
Program Director	Milczarek	4	$145	NA	580
Senior Hydrologist	Rice	48	$95	NA	4560
Hydrologist 1	Calabrese	24	$75	NA	1800
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$7,070*
Instruments Costs					
Subtask: No Subtask					
In-Situ Level Logger		14	$425	$200	6150
Miscellaneous supplies		5	$100	NA	500
			Subtask Total:		*$7,182*
Other Direct Costs					
Subtask: No Subtask					
Subsistence		4	$35	NA	140
2WD Transportation		400	$1	NA	226
			Subtask Total:		*$395*
	8.00% Overhead: $561.28		**Task Total**		**$14,647**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 2.3 - INSTALLATION OF DRY WELLS AND INFILTRATIONTRENCHES

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: No Subtask					
Program Director	Milczarek	4	$145	NA	580
Hydrologist 1	Calabrese	36	$75	NA	2700
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$3,410*
Rental Costs					
Subtask: No Subtask					
Toughbook		1	$50	NA	50
			Subtask Total:		*$54*
Instruments Costs					
Subtask: No Subtask					
In-Situ Level Logger		9	$425	$50	3875
Miscellaneous supplies		4	$100	NA	400
			Subtask Total:		*$4,617*
Other Direct Costs					
Subtask: No Subtask					
Subsistence		3	$35	NA	105
2WD Transportation		600	$1	NA	339
			Subtask Total:		*$480*
	8.00% Overhead: $381.52		**Task Total**		**$8,561**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 2.4. INSTALLATION OF PRECIPITATION GAGES

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: No Subtask					
Program Director	Milczarek	8	$145	NA	1160
Senior Hydrologist	Rice	24	$95	NA	2280
Hydrologist 1	Calabrese	48	$75	NA	3600
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$7,170*
Rental Costs					
Subtask: No Subtask					
Toughbook		1	$50	NA	50
			Subtask Total:		*$54*
Instruments Costs					
Subtask: No Subtask					
In-Situ Level Logger		3	$425	$100	1375
Miscellaneous supplies		2	$100	NA	200
			Subtask Total:		*$1,701*
Other Direct Costs					
Subtask: No Subtask					
Subsistence		2	$35	NA	70
2WD Transportation		250	$1	NA	141.25
			Subtask Total:		*$228*
	8.00% Overhead: $146.90		**Task Total**		**$9,153**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 2.5. DRAFT AND FINAL INSTALLATION REPORT

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: No Subtask					
Program Director	Milczarek	12	$145	NA	1740
Techical Reviewer	Keller	6	$125	NA	750
Senior Hydrologist	Rice	24	$95	NA	2280
AutoCAD/GIS	Osorio	16	$75	NA	1200
Hydrologist 1	Calabrese	64	$75	NA	4800
Clerical Staff	Torres	4	$65	NA	260
			Subtask Total:		*$11,030*
Other Direct Costs					
Subtask: No Subtask					
Shipping		0.5	$50	NA	25
Reproduction		3	$50	NA	150
Communications		1	$50	NA	50
			Subtask Total:		*$243*
	8.00% Overhead: $18.00		**Task Total**		**$11,273**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 3.0 MONITORING ACTIVITIES

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 3.1 BACKGROUND MONITORING					
Hydrologist 1 Calabrese		16	$75	NA	1200
			Subtask Total:		*$1,200*
Subtask: 3.2 MONITORING THE FIRST YEAR OF RECHARGE ACTIVITIES					
Program Director Milczarek		16	$145	NA	2320
Laboratory Manager Yao		8	$135	NA	1080
Project Hydrologist Buchanan		36	$90	NA	3240
Hydrologist 1 Calabrese		160	$75	NA	12000
Clerical Staff Torres		4	$65	NA	260
Laboratory Technician Chavez		8	$65	NA	520
			Subtask Total:		*$19,420*
Instruments Costs					
Subtask: 3.1 BACKGROUND MONITORING					
Equipment replacement		2	$750	NA	1500
			Subtask Total:		*$1,620*
Other Direct Costs					
Subtask: 3.1 BACKGROUND MONITORING					
Miscellaneous		4	$50	NA	200
Subsistence		2	$35	NA	70
2WD Transportation		222	$1	NA	125.43
			Subtask Total:		*$427*
Subtask: 3.2 MONITORING THE FIRST YEAR OF RECHARGE ACTIVITIES					
Lodging		1	$85	NA	85
Miscellaneous		4	$50	NA	200
Communications		2	$50	NA	100
Subsistence		8	$35	NA	280
2WD Transportation		1500	$1	NA	847.5
			Subtask Total:		*$1,633*
	8.00% Overhead: $272.63		**Task Total**		**$24,301**

Palominas Recharge & Flood Control Project - Monitoring Equipment Installation
Table 2 - Detailed Costs

Task: 4.0 DATA INTERPRETATION AND REPORTING

		Quantity	Unit Cost	Shipping	Total Cost
Personnel Costs					
Subtask: 4.1. DATA INTERPRETATION					
Program Director	Milczarek	8	$145	NA	1160
Senior Soil Physist	Keller	4	$125	NA	500
Project Hydrologist	Buchanan	16	$90	NA	1440
Hydrologist 1	Calabrese	32	$75	NA	2400
			Subtask Total:		*$5,500*
Subtask: 4.2 QUARTERLY INTERIM DATA SUMMARIES (3)					
Program Director	Milczarek	12	$145	NA	1740
Project Hydrologist	Buchanan	12	$90	NA	1080
AutoCAD/GIS	Osorio	3	$75	NA	225
Clerical Staff	Torres	2	$65	NA	130
			Subtask Total:		*$3,175*
Subtask: 4.3 ANNUAL REPORT					
Program Director	Milczarek	16	$145	NA	2320
Senior Soil Physist	Keller	8	$125	NA	1000
Project Hydrologist	Buchanan	16	$90	NA	1440
Editor	Banerjee	8	$85	NA	680
Hydrologist 1	Calabrese	32	$75	NA	2400
AutoCAD/GIS	Osorio	12	$75	NA	900
Clerical Staff	Torres	8	$65	NA	520
			Subtask Total:		*$9,260*
Other Direct Costs					
Subtask: 4.1. DATA INTERPRETATION					
Reproduction		1	$50	NA	50
			Subtask Total:		*$54*
Subtask: 4.2 QUARTERLY INTERIM DATA SUMMARIES (3)					
Reproduction		1	$50	NA	50
Shipping		0.75	$50	NA	37.5
			Subtask Total:		*$94*
Subtask: 4.3 ANNUAL REPORT					
Shipping		0.5	$50	NA	25
Reproduction		4	$50	NA	200
			Subtask Total:		*$243*
	8.00% Overhead: $29.00		**Task Total**		**$18,326**
			PROPOSAL GRAND TOTAL:		**$179,400**